2014 Annual Report for the Big Tujunga Wash Mitigation Area Los Angeles County, California

Prepared for:

County of Los Angeles
Department of Public Works
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March 2015

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Big Tujunga Wash Mitigation Area
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Guide to Compliance with the Terms and Conditions in the California Department of Fish and Wildlife Streambed Alteration Agreement #1600-2008-0253-R5 for the Big Tujunga Wash Mitigation Area, Dated January 29, 2009 Expired March 31, 2014

A draft Streambed Alteration Agreement (SAA) (#1600-2008-0253-R5) was issued to the County of Los Angeles Department of Public Works (LACDPW) from California Department of Fish and Wildlife (CDFW) on January 29, 2009 (Appendix A). The SAA remained in effect through March 31, 2014. Since the expiration of the SAA, activities conducted at the Mitigation Area have been under the direct supervision of CDFW biologist Matthew Chirdon.

The following key provides a quick reference as to how the conditions were addressed and where the explanations of activities associated with the conditions are located in this document.

Resource Protection

Condition 1: Vegetation removal activities occurred between the dates of March 1 and September 1 and breeding bird pre-activity surveys were conducted prior to each exotic vegetation removal activity in 2014. In addition, a qualified biological monitor was present during all exotic vegetation removal activities to ensure that no impacts to nesting birds occurred (see Section 4.0). As a result, no impacts occurred to breeding/nesting birds within the Big Tujunga Wash Mitigation Area (Mitigation Area).

Condition 2: Nesting raptor surveys were conducted prior to all vegetation removal activities occurring within the Mitigation Area in 2014. There were no active raptor nests identified within the active work areas, and therefore no impacts occurred to nesting raptors and fencing of nests was not required (see Section 4.0).

Condition 3: Active bird nests were neither destroyed nor disturbed during the 2014 breeding season, in accordance with the Migratory Bird Treaty Act (MBTA) of 1918. Appropriate measures, such as pre-activity surveys and biological monitoring, were taken to prevent impacts to breeding/nesting birds protected under the MBTA.

Condition 4: Pre-activity surveys for sensitive species potentially occurring in the Mitigation Area were conducted prior to exotic vegetation removal activities (see Section 4.0).

Condition 5: CDFW was notified of the presence of all listed and sensitive species occurring within the Mitigation Area.

Condition 6: A qualified biological monitor was on site during clearing, enhancement, and restoration activities (see Section 4.0). The biological monitor conducted the appropriate pre-activity surveys on site prior to each activity occurring in an area.

Condition 7: All native vertebrate species encountered during clearing, enhancement, and restoration activities were safely relocated, as necessary. No native wildlife vertebrate species were harmed as a result of activities occurring in the Mitigation Area. No wildlife exclusionary devices were necessary, thus none were constructed. No work was conducted on site without the presence of a biological monitor (see Section 4.0).

Condition 8: A Contractor Education Brochure was created in both English and Spanish and was distributed to all contractors and subcontractors working on the site. This brochure also served as an informational brochure that was handed out to recreational user groups as part of the public outreach program (see Section 11.0). In addition, the biological monitor conducted tailgate worker education sessions prior to exotic vegetation activities occurring on the site. A copy of the Contractor Education Brochure is included as Appendix B.

Condition 9: A copy of the 2014 annual report will be submitted to CDFW.

Condition 10: CDFW did not determine that any threatened or endangered species will be affected by the implementation of the Master Mitigation Plan (MMP); therefore, no application was made for a State Incidental Take Permit.

Condition 11: Wildlife-proof trash receptacles have not yet been installed in the Mitigation Area.

Condition 12: Hunting was neither permitted nor authorized within the Mitigation Area in 2014.

Work Areas and Vegetation Removal

Condition 13: Disturbance and removal of non-native vegetation did not exceed the limits approved by CDFW, as stated in the MMP (see Section 4.0).

Condition 14: All personnel who conducted activities within site boundaries were provided maps, and no native vegetation was removed within the boundaries of the site. The work areas were clearly delineated and unnecessary impacts did not occur to ephemeral streams or riparian habitats. Activities conducted at the site did not result in any permanent adverse impacts to Haines Canyon Creek and/or Big Tujunga Wash.

Condition 15: Vegetation with a diameter at breast height (dbh) larger than 3 inches was not removed, except as stated in the MMP and approved by CDFW.

Condition 16: Native vegetation was not removed from the channel, bed, or banks of the stream except as provided for in the SAA.

Equipment and Access

Condition 17: Vehicles and equipment were neither operated within nor driven though water-covered portions of the stream.

Condition 18: Access to the site occurred solely via existing roads and established trails for all site maintenance and monitoring activities.

Fill and Spoil

Condition 19: Fill was not placed in any area of the Mitigation Area.

Structures

Condition 20: Materials associated with the MMP activities were not placed in any seasonally dry portions of the stream.

Condition 21: Installation of erosion control structures was not conducted during 2014, nor was there a need for such structures.

Condition 22: Bridges, culverts, and other structures were not constructed as part of activities associated with the MMP.

Condition 23: There was no construction of any temporary or permanent dams, structures, or flow restrictions as part of the activities associated with the MMP. However, recreational users of the site periodically built rock dams in the creek to create pools. The biologists carefully removed them to restore the natural flow in the creek (see Sections 9.0 and 11.0)

Pollution, Sedimentation, and Litter

Condition 24: All litter and pollution laws were adhered to by the contractors, subcontractors, and employees of LACDPW. Trash pickup was conducted regularly by the site users and the landscape contractor (see Section 9.0).

Condition 25: Equipment maintenance was not conducted in the Mitigation Area.

Condition 26: There were no hazardous spills of any kind in the Mitigation Area during 2014.

Condition 27: Activities conducted within the Mitigation Area in 2014 did not result in any turbid water (from dewatering or other activities) entering existing water courses.

Condition 28: Activities involving equipment washing (or other similar activities) were not conducted in the Mitigation Area in 2014 that would have resulted in the production of water containing mud, silt, or other pollutants.

Condition 29: Alteration to the stream's low-flow channel, bed, or banks was not conducted as a result of the implementation of activities in the Mitigation Area.

Condition 30: As stated under Condition 24, the only movement of rocks within the bed or banks of the stream occurred during the removal of rock dams created by recreational users. Removal of the rock dams was conducted by biologists who are familiar with the sensitive fishes in the stream (see Sections 9.0 and 11.0). These activities were conducted with as little silt generation as possible, and the rocks were placed back into the stream in a natural arrangement. Removal of the rock dams is critical for the federally listed (threatened) and California Species of Special Concern (SSC) Santa Ana sucker (*Catostomus santaanae*) that occurs in Haines Canyon Creek. Rock dam removal eliminates habitat that is better suited for exotic wildlife (bullfrogs [*Lithobates catesbeianus*], largemouth bass [*Micropterus salmoides*], etc.) that pose a threat to this species.

Permitting and Safeguards

Condition 31: The CDFW, United States Army Corps of Engineers (USACE), and Regional Water Quality Control Board (RWQCB) were consulted very early in the development of the implementation plan for the Mitigation Area (referred to as the Big Tujunga Conservation Area in the SAA). The USACE stated that they did not need to issue a permit because there would not be any fill within their jurisdiction. The continued implementation of the MMP and the Long-term Maintenance and Monitoring Plan (LTMMP) for the Mitigation Area is not expected to have any impact on USACE jurisdiction, nor will it have any water quality impacts. No additional permits or certifications are required from the RWQCB or the USACE.

Condition 32: LACDPW submitted the Conservation Easement (CE) on December 23, 2010. Additional work on the CE was not conducted in 2014.

Administrative-Miscellaneous

Condition 33: No amendments to the SAA were submitted to CDFW during the 2014 reporting period. CDFW did not identify any breaches of the SAA during the 2014 period.

Condition 34: There were no violations of any terms or conditions of the SAA during the 2014 period.

Condition 35: Copies of the SAA were provided to all the biologists, subcontractors, and workers who conducted activities in the Mitigation Area.

Condition 36: A pre-enhancement restoration meeting/briefing was held on November 11, 2009, prior to any exotic vegetation removal activities occurring in the Mitigation Area. Additional meetings were not necessary during 2014.

Condition 37: CDFW was notified prior to the start of exotic vegetation removal activities occurring within the Mitigation Area during the breeding bird season (see Section 4.0).

Conditions 38 and 39: A site visit was conducted with CDFW on January 22, 2014.

Conditions 40 through 42: CDFW did not issue a suspension or cancellation of the SAA in 2014.

1.0 INTRODUCTION

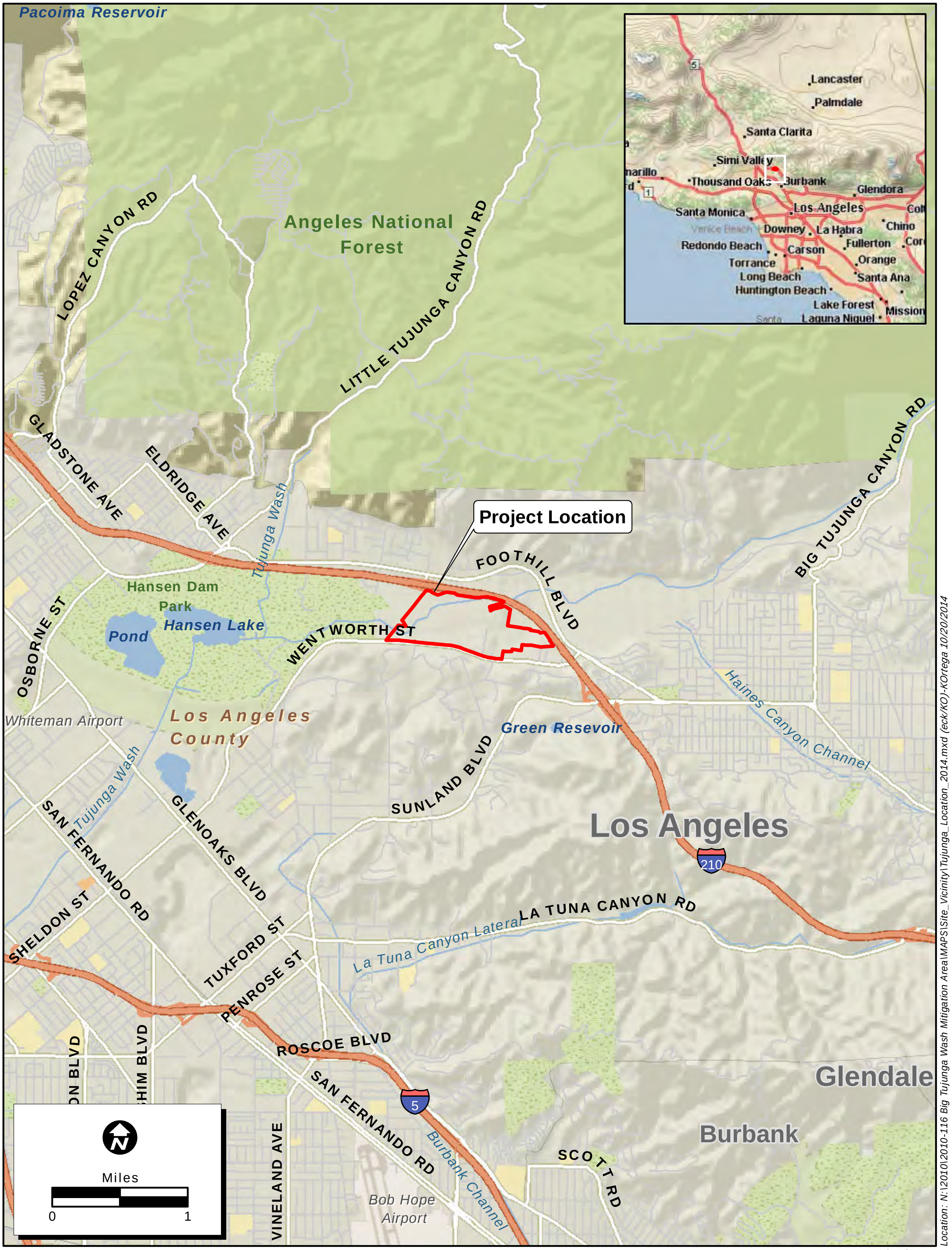
1.1 Purpose

The purpose of this report is to provide a summary of the management activities conducted at the Big Tujunga Wash Mitigation Area (Mitigation Area) from January to December 2014. These activities were conducted in accordance with the Master Mitigation Plan (MMP) for the Mitigation Area (Chambers Group 2000). The MMP was first created in 2000 to serve as a five-year guide for implementation of various enhancement programs and to fulfill the California Department of Fish and Wildlife (CDFW) requirement for the preparation of a management plan for the site. The ultimate goal of the Mitigation Area is to provide for long-term preservation, management, and enhancement of biological resources for the benefit of the state's fish and wildlife resources. The MMP encompasses strategies to enhance and protect existing habitat for wildlife and to create additional natural areas that could be used by native wildlife and numerous user (recreational) groups. In addition, the MMP includes programs for the removal of exotic fishes and amphibians, bullfrogs (*Lithobates catesbeianus*), and red swamp crayfish (*Procambarus clarkii*) from the Tujunga Ponds, trapping to control brown-headed cowbirds (*Molothrus ater*), development of a formal trails system, and development of a public awareness and education program at the site. Implementation of the MMP began in August 2000 and was completed five years later. An additional year of limited maintenance and surveys was added between late summer 2006 and late summer 2007. ECORP Consulting, Inc. (ECORP) was contracted by the County of Los Angeles Department of Public Works (LACDPW) in July 2007 to continue MMP activities as part of implementation of the Long-term Maintenance and Monitoring Plan (LTMMP) (Chambers Group 2006). This report summarizes all activities conducted in the Mitigation Area between January and December 2014.

1.2 Location and Setting

The Mitigation Area is located in Big Tujunga Wash, just downstream of the Interstate (I-) 210 Freeway overcrossing, near the City of Los Angeles' Sunland community in the San Fernando Valley, Los Angeles County. The site is bordered on the north by I-210, on the east by I-210 and the County of Los Angeles Department of Parks and Recreation (LACDPR) Tujunga Ponds, and on the south by Wentworth Street (Figure 1-1). The west side of the site is contiguous with the downstream portion of Big Tujunga Wash.

The Mitigation Area supports two watercourses: Big Tujunga Wash and Haines Canyon Creek. Big Tujunga Wash, in the northern portion of the site, is partially controlled by Big Tujunga Dam. Flow is intermittent based on rainfall amounts and water releases from the Dam. Haines Canyon Creek, located in the southern portion of the site, is a tributary that conveys water flow from Haines Canyon to Big Tujunga Wash. Flow is perennial and may be fed by groundwater and/or runoff from adjacent residential areas. The two drainages merge near the western boundary of the property and continue into the Hansen Dam Flood Control Basin, located approximately one-half mile downstream of the site. The site is located within a state-designated Significant Natural Area (LAX-018) and the biological resources found on the site are of local, regional, and statewide significance (Safford and Quinn 1998; CDFW 2014). The nearby Tujunga Ponds and surrounding habitat are located adjacent to the northeast corner of the site. An aerial photograph showing Big Tujunga Wash, Haines Canyon Creek, the Tujunga Ponds, and other geographic features can be found in Figure 1-2.



Map Date: 10/20/2014
Source: ESRI

Figure 1-1. Project Location

2014-003.003 Big Tujunga Wash Mitigation Area

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Location: N:\2010\2010-116 Big Tujunga Wash Mitigation Area\MAPS\Aerial_Maps\Onsite\Tujunga_Bank_Aerial_v3_2014.mxd (JSwager; DWagner) -KOrtega 10/23/2014

Aerial Date: NAIP 2012
10/23/2014

Figure 1-2. Big Tujunga Wash Mitigation Area

2014-003.003 Big Tujunga Wash Mitigation Area

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1.3 Summary of the Annual Report

Table 1-1 provides a list of the tasks described in the MMP that were implemented between January and December 2014. Certain tasks in the MMP were not conducted in 2014 because the scope of work requires that they be done once during a three-year period and that they be conducted during an average or better than average rainfall year. Examples of these include the focused surveys for sensitive native fishes, arroyo toad (*Anaxyrus californicus*), least Bell's vireo (*Vireo bellii pusillus*), and southwestern willow flycatcher (*Empidonax traillii extimus*). This suite of surveys was not conducted in 2014 because these surveys were last conducted in 2012. Two additional tasks were added in 2014 which included conducting a public hike with Los Angeles City Councilmember Felipe Fuentes (see Section 14.0) and the creation of an updated vegetation map (see Section 15.0). Compendia of all plant and wildlife species observed in the Mitigation Area in 2014 are included as Appendix C.

Table 1-1. Mitigation and Monitoring Tasks Implemented and/or Continued in 2014

Implemented and/or Continued in 2014	
	TASK 1 – Continue Brown-headed Cowbird Trapping Program
x	Brown-headed Cowbird Trapping Program
x	Final Trapping Report
	TASK 2 – Continue Exotic Plant Eradication Program
x	Combined Exotic Plant Removal and Maintenance Program
x	Exotic Plant Memos
	TASK 3 – Water Lettuce Control Program
	Water Lettuce Herbicide Application
	Follow-up Inspections and Memos
	TASK 4 – Continue Exotic Wildlife Eradication Program
x	Exotic Wildlife Removal Efforts
x	Exotic Wildlife Memos
x	Final Exotic Wildlife Removal Report
	TASK 5 – Water Quality Monitoring Program
x	Water Quality Monitoring
x	Water Quality Results Report
	TASK 6 – Trails Monitoring Program
x	Trails Maintenance and Monitoring Site Visits
x	Trails Maintenance and Monitoring Memos
	Trail Cleanup Day

Implemented and/or Continued in 2014	
	TASK 7 – Community Awareness Program
x	Biannual Newsletters
x	Community Advisory Committee Meeting
x	Community Advisory Committee Meeting Minutes
	TASK 8 – Public Outreach Program
x	Public Outreach Weekend Site Visits
x	Public Outreach Memo
	TASK 9 – Special Assessment
x	Special Assessment
x	Special Assessment Memo
	TASK 10 – Annual Report
x	2014 Draft Annual Report
x	2014 Final Annual Report
	TASK 11 – Meetings
x	Meetings with LACDPW, Agencies, Public, and Consultants
	TASK 12 – Coordination with LACDPR
x	Coordination with LACDPR
	TASK 13 – Public Hike with Councilmember
x	Public Hike with Councilmember Felipe Fuentes
	TASK 14 – Updated Vegetation Map
x	Vegetation Mapping Site Visit
x	Updated Vegetation Map and Memo

1.3.1 Continuation of Brown-headed Cowbird Trapping Program

Brown-headed cowbird trapping was conducted in and around the Mitigation Area in the spring and summer of 2014. This program is outlined in the MMP as a method to enhance the ecological value of the site by reducing and ultimately eliminating the occurrence of brood parasitism of native riparian bird species. Two cowbird traps were placed within the Mitigation Area and two traps were placed outside the Mitigation Area in suitable cowbird foraging habitat. A total of 75 cowbirds were removed from the four traps between April 1 and June 30, 2014. Details of the brown-headed cowbird trapping program are found in Section 2.0.

1.3.2 Continuation of Exotic Plant Eradication Program

This task consisted of ongoing monitoring of past exotic plant removal efforts and continued removal of exotic and invasive vegetation. Periodic site visits were conducted to determine the locations of exotic plant species removal efforts, to strategize the best course of action, and to determine if and where additional treatments were necessary. The actual removal of exotic plants was conducted at various times throughout the year to ensure that removal techniques would coincide with the exotic plant species' growth cycles. The major focus of this task for the 2014 period was treating exotic plant species (such as giant reed [*Arundo donax*], black mustard [*Brassica nigra*], and eupatory [*Ageratina adenophora*]) with CDFW-approved herbicides. The exotic plant species eradication activities that were conducted in 2014 are summarized in Section 4.0.

1.3.3 Water Lettuce Control Program

A new task, water lettuce (*Pistia stratiotes*) removal, was added to the Exotic Plant Eradication Program in 2011 due to an infestation of this non-native plant in the Tujunga Ponds. Following manual removal in early January 2012, remaining patches of water lettuce were treated with CDFW-approved herbicide in January, July, August, and September 2012, and again in July and August 2013. No additional herbicide treatments were applied in 2014. Details of the water lettuce program are summarized in Section 5.0.

1.3.4 Continuation of Exotic Wildlife Eradication Program

This task consists of the continued removal of non-native, invasive wildlife species. Efforts were focused on removal of exotic aquatic wildlife species, primarily bullfrogs, largemouth bass (*Micropterus salmoides*), crayfish, and Mozambique tilapia (*Oreochromis mossambicus*), from perennial waters at the Tujunga Ponds and Haines Canyon Creek. Exotic wildlife removal efforts targeted both life stages of bullfrogs (tadpoles and adults) in an effort to maximize the efficiency of the removal program. A total of three exotic removal efforts occurred during the 2014 reporting period. Exotic wildlife removal tasks implemented in 2014 are summarized in Section 6.0.

1.3.5 Water Quality Monitoring Program

Water quality sampling for the Mitigation Area was conducted by MWH Global, Inc. (MWH) on October 29, 2014. A summary of the results of this monitoring is included in Section 8.0.

1.3.6 Trails Monitoring Program

The Trails Monitoring Program aims to allow recreational use of the Mitigation Area while still preserving sensitive wildlife and their habitats. Four site visits were conducted in 2014 to look for areas that might qualify for trail closures, identify areas where trails were blocked by trash or debris, and mark locations of extensive stands of poison oak (*Toxicodendron diversilobum*). Areas that required minor erosion repairs were remedied during the visit or in combination with other task site visits. More extensive problem areas were mapped for repair at a later time. The Tenth Annual Trail Cleanup Day, scheduled for the September/October 2014 timeframe, was cancelled due to the generally clean nature of the Mitigation Area. Trail maintenance tasks implemented in 2014 and further information about the Trail Cleanup Day is summarized in Section 9.0.

1.3.7 Community Awareness Program

This program consists of the continued implementation of the Community Advisory Committee (CAC) meetings. The meetings were previously held semiannually, in spring and fall of each year. Starting in 2014, meetings are to be held in the spring of each year. ECORP assisted LACDPW with development of meeting agendas and any supporting handouts (including an updated Mitigation Area Incident Map), summarizing CAC meeting minutes, and producing the Spring and Fall newsletters for distribution by LACDPW. The status of the Community Awareness Program and activities conducted in 2014 are summarized in Section 10.0.

1.3.8 Public Outreach Program

A new community outreach program was implemented in 2009 to educate the various types of recreational user groups about the sensitivity of plant communities and wildlife species present in the Mitigation Area. This program was continued in 2014 due to its past success. On-site interviews and education about the Mitigation Area were conducted on twelve separate occasions by ECORP's bilingual biologists. The biologists handed out bilingual brochures describing the ecological purpose of the Mitigation Area, the importance of protecting sensitive biological resources, and permitted recreational uses within the Mitigation Area. While on site, they documented the presence of rock dams within Haines Canyon Creek and any unusual observations or circumstances. A full description of the outreach effort, as well as several notable incidents in 2014, are included in Section 11.0.

1.3.9 Special Assessment

ECORP's staff was available to provide assessments on an on-call basis. One such assessment was conducted on February 19, 2014, after a small fire broke out within the Mitigation Area. A full description of the assessment is included in Section 12.0.

1.3.10 Preparation and Submittal of Annual Report

This task refers to the preparation of the annual report and the individual task reports that are included as appendices to the annual report.

1.3.11 Attendance at Meetings with Agencies, Public, and Consultants

ECORP's staff attended meetings as necessary with LACDPW regarding various aspects of the MMP implementation. One meeting was held at the Mitigation Area on January 22, 2014, with CDFW and LACDPW. Another meeting was held at the Mitigation Area on August 26, 2014 with United States Army Corps of Engineers (USACE) and LACDPW. This is discussed in Section 13.0.

1.3.12 Coordination with LACDPR

ECORP's staff informed and coordinated with LACDPR concerning activities that took place within the Mitigation Area and the Tujunga Ponds LACDPR parcel.

1.3.13 Public Hike with Councilmember

In conjunction with LACDPW, ECORP's staff conducted a public hike in the Mitigation Area on May 31, 2014, with the City of Los Angeles Councilmember (Council District 7) Felipe Fuentes along with members of the public. This is discussed in Section 14.0.

1.3.14 Long-term Management Plan

ECORP submitted a draft version of the Long-term Management Plan (LTMP) to LACDPW in October 2012. A revised draft was submitted on January 20, 2014. Further coordination with LACDPW and CDFW is necessary to finalize this document.

1.3.15 Mitigation Area Boundaries

The Mitigation Area boundaries were updated and monuments and marker posts were installed by an LACDPW survey team in March and April 2014. ECORP was contacted to determine if any marker posts were potentially hazardous to visitors of the Mitigation Area. This is discussed in Sections 9.0 and 15.0.

1.3.16 Updated Vegetation Map

In June 2014, a vegetation mapping effort was conducted to update the vegetation map created by ECORP in 2009. The map denotes changes in vegetation that occurred within the Mitigation Area. This task is currently on hold per LACDPW request. This is discussed in Section 15.0.

2.0 CONTINUATION OF BROWN-HEADED COWBIRD TRAPPING PROGRAM

The brown-headed cowbird trapping program was established at the Mitigation Area to decrease and ultimately eliminate nest parasitism on sensitive songbird species present or potentially present in the Mitigation Area, such as least Bell's vireo and southwestern willow flycatcher. Trapping and eradicating brown-headed cowbirds increases the ecological value of the site by enhancing the reproductive success of these sensitive riparian songbirds and promoting general breeding activity within the Mitigation Area. Trapping in the Mitigation Area was conducted yearly between 2001 and 2006 and again between 2009 and 2012. Trapping was not conducted in 2007 and 2008, as it was one of the tasks originally scheduled to occur once every three years. CDFW requested that this task be completed every year in the most recent Streambed Alteration Agreement (SAA) issued for the site (dated January 29, 2009). In 2014, Griffith Wildlife Biology operated two cowbird traps within the Mitigation Area and two traps adjacent to the Mitigation Area between April 1 and June 30, 2014. The methodology, results, and discussion of the 2014 trapping are presented below and a full copy of the report is included as Appendix D.

2.1 Brown-headed Cowbird Natural History

Brown-headed cowbirds are brood parasites. Cowbirds do not make a nest of their own, nor do they contribute in raising their young. This species parasitizes the nests of native host species by laying their larger egg(s) in the host species' nests and leaving the egg(s) and chick(s) to be reared by the native host. Brown-headed cowbird young are often larger and more demanding than their host offspring, resulting in the host birds raising the cowbird chick and neglecting their own young. Female cowbirds can lay up to 40 eggs during the breeding season (ranging from two to four months; Scott and Ankney 1980).

Population declines of sensitive native songbirds such as the least Bell's vireo and the southwestern willow flycatcher can be partially attributed to high nest parasitism rates by brown-headed cowbirds. In many areas, the reduction or elimination of brown-headed cowbirds through trapping has been directly related to increases in native bird populations.

2.2 Methodology

Brown-headed cowbird trapping was conducted by Griffith Wildlife Biology according to the Brown-headed Cowbird Trapping Protocol, the standard protocol accepted by the United States Fish and Wildlife Service (USFWS) and CDFW (Griffith Wildlife Biology 1992). Four traps were established in and around the Mitigation Area: Trap 1 at the Hansen Dam Stables, Traps 2 and 3 inside the Mitigation Area, and Trap 4 at Gibson Ranch (Figure 2-1). Traps 2 and 3 were placed adjacent to riparian and coastal sage scrub habitat, while Traps 1 and 4 were placed in cowbird foraging areas.

Aerial Date: NAIP 2012
10/23/2014

Figure 2-1. Brown-headed Cowbird Trap Locations

2014-003.003 Big Tujunga Wash Mitigation Area

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Traps were removed from storage and transported to the Mitigation Area. Each trap, measuring approximately 6 feet wide, 8 feet long, and 6 feet tall, was constructed at each trap site. Food, water, perches, and shade were provided inside each trap. A sign was prominently placed outside each trap explaining the significance of the trap and urging recreational users not to tamper with it. Each trap contained at least one decoy cowbird as of April 9. As of April 22, the preferred ratio of male to female decoys was established, with at least two males for every three females (up to 3 males and 5 females). The traps were opened on April 1 and operated every day (including holidays) until June 30, 2014. Each trap was serviced daily by either the Principal Investigator or a trapping assistant. Daily servicing activities included:

- Replenishing and/or cleaning the water source;
- Refilling the feed tray with sunflower-free seed;
- Repairing the perches, foraging pad, sign, shade cloth, or lock as needed;
- Wing clipping newly captured female cowbirds;
- Adding/removing decoy cowbirds to maintain the appropriate male to female ratio (2:3);
- Removing and releasing non-target native bird species in the traps; and
- Recording all activities and appropriate data on a data sheet.

Traps were disassembled and returned to storage after June 30, 2014. Cowbirds not used as decoys were euthanized with carbon monoxide and moved off-site to be provided as forage for raptor rehabilitation/reintroduction facilities.

2.3 Results

A total of 75 cowbirds were removed during the 2014 trapping season (51 males and 24 females). Most cowbirds were captured and removed between weeks four (beginning April 20) and six (beginning May 4) of the 13-week trapping period. Trap vandalism did not occur during the 2014 trapping season so there were no losses of decoys or trapping days.

A total of 338 non-target birds (i.e., all species except brown-headed cowbirds) of six native bird species were captured in the traps. The six non-target species that were captured included California towhee (*Pipilo crissalis*), European starling (*Sturnus vulgaris*), house finch (*Carpodacus mexicanus*), house sparrow (*Passer domesticus*), red-winged blackbird (*Agelaius phoeniceus*), and white-crowned sparrow (*Zonotrichia leucophrys*). Banded cowbirds and/or banded non-target species were not captured during the trapping season. Most non-target birds (336 individuals) captured during the trapping period were released unharmed and in good health. Two non-target individuals (two California towhees) were classified as mortalities due to intraspecific competition inside the traps. There were no mortalities of decoy or non-target birds due to the lack of water, food, shade, or unclean conditions in the trap. There were no mortalities of decoy birds inside the traps during the 13 weeks of trapping.

2.4 Discussion

The number of brown-headed cowbirds trapped during the 2014 season is low compared to other trapping years but within the range of 2001-2014 numbers. Locally raised juveniles are relatively easy to capture within their natal habitat and can be a good indication of the success of a trapping program. No juvenile brown-headed cowbirds were removed during the 2014 trapping season, possibly indicating that nest parasitism levels were essentially eliminated during the breeding season.

In order to effectively reduce regional cowbird populations, brown-headed cowbird trapping would need to be conducted on a yearly basis until the number of cowbirds captured decreases each year. Yearly trapping has been effective at reducing nest parasitism on native host species present in the riparian habitat at the Mitigation Area. Griffith Wildlife Biology recommended no change in the protocol, the number of traps (4), or the dates and duration of cowbird trapping (13 weeks, April 1 to June 30). They do, however, recommend potentially relocating Trap 2 west of its current location within the Mitigation Area to increase trapping success. They suggest searching for an alternative location in March 2015 prior to the start of the trapping season.

3.0 HABITAT RESTORATION PROGRAM

The habitat restoration program was originally established to preserve, improve, and create habitat for Santa Ana sucker, Santa Ana speckled dace (*Rhinichthys osculus* ssp.3), arroyo chub (*Gila orcuttii*), arroyo toad, least Bell's vireo, and southwestern willow flycatcher, all sensitive and listed species known to either occur or have a high potential to occur on site. These species are associated with aquatic and/or riparian habitats; therefore, the habitat restoration program focused on the restoration of cottonwood-willow riparian habitat. The goal of the initial habitat restoration plan was to remove invasive, non-native, and weedy species, such as giant reed, and to replant these areas with native riparian species. The enhancement plan consisted of various tasks designed to remove the non-native species, prepare the areas prior to planting, install cuttings and container plant materials, and monitor the success of the plantings. Initial installation of willow riparian habitat along Haines Canyon Creek occurred in 2000 and 2001. The habitat restoration program was ongoing through the first part of 2007, when the last plantings were installed. Failure of the plantings due to environmental conditions and vandalism initiated a reevaluation of the restoration program in late 2007.

When ECORP took over the contract for the implementation of the MMP in mid-2007, the habitat restoration plan was revised in order to better address the changing needs of the Mitigation Area and address the long-term maintenance needs of the restoration areas. The habitat restoration plan was also updated in 2009 (ECORP 2009) and is included in Appendix C of the 2009 Annual Report for the Mitigation Area (ECORP 2010).

3.1 Summary of the Original Habitat Restoration Efforts

The original habitat restoration efforts conducted in the Mitigation Area are addressed in detail in Section 2.2 of the 2009 Annual Report for the Big Tujunga Wash Mitigation Area (ECORP 2010); however, a summary of the original habitat restoration efforts is also found below. During the first five years following implementation of the original MMP, habitat restoration efforts within the Mitigation Area focused on planting new riparian woodland overstory and understory plants in existing canopy openings or in openings that were created after extensive stands of invasive exotic species were removed. Container plantings and cuttings of native plant species were placed throughout the Mitigation Area and watered on a regular basis to promote survival. In 2004, the cuttings and container plantings were found to have a low survival rate, presumably due to the lack of naturally available water. It was concluded at that time that natural recruitment was more effective at filling openings in the riparian canopy than the active planting program, so no new planting efforts were conducted until 2007.

Additional planting efforts occurred in 2007; however, 2007 was a severe drought year and none of the native plant cuttings survived. A watering program was implemented immediately to promote survival and the planted container plants did survive. No additional losses of these container plants were noted following the watering program.

3.2 Current Status of the Habitat Restoration Program

The planting and maintenance portions of the habitat restoration program were terminated in 2010 (ECORP 2011). The exotic plant removal component of the habitat restoration program, however, was continued and the exotic plant removal task was absorbed into the new exotic plant eradication and maintenance program during the contract revision in 2012. The exotic plant eradication and maintenance program activities conducted in 2014 are discussed in Section 4.0.

4.0 CONTINUATION OF EXOTIC PLANT ERADICATION AND MAINTENANCE PROGRAM

The purpose of the exotic plant eradication and maintenance program at the Mitigation Area is to increase the ecological value of the existing native vegetation communities. The original exotic plant removal program targeted the riparian communities in and around Haines Canyon Creek, Big Tujunga Wash, and the Tujunga Ponds. This program was expanded in 2012 due to the contract revision and now encompasses the cottonwood/willow restoration area maintenance and oak-sycamore woodland weeding activities. By removing exotic plant species and continually performing maintenance in these areas throughout the Mitigation Area, native plant species are able to flourish because competition for resources such as light and water is reduced. This ultimately allows for natural recovery of native plant communities and increased chances of success within the restoration areas, which results in an improvement in the ecological function of the entire area. Improvement of the function of these habitats benefits common and sensitive species of plants and wildlife that either occur or have the potential to occur at the Mitigation Area. Table 4-1 lists the exotic plant species targeted for eradication and Table 4-2 lists all the additional exotic plant species observed within the Mitigation Area.

Table 4-1. Target Exotic Plant Species

Common Name	Scientific Name
Eupatory	*Ageratina adenophora*
Palms	*Arecastrum* sp., *Washingtonia* sp., etc.
Giant reed	*Arundo donax*
Mustards	*Brassica* sp.
Italian thistle	*Carduus pycnocephalus*
Non-native weedy thistles	*Cirsium* sp.
Umbrella plant	*Cyperus involucratus*
Water hyacinth	*Eichhornia crassipes*
Eucalyptus	*Eucalyptus* sp.
Fennel	*Foeniculum vulgare*
Sweet clover	*Melilotus albus*
Tree tobacco	*Nicotiana glauca*
Common plantain	*Plantago major*
Castor bean	*Ricinus communis*
Pepper trees	*Schinus* sp.
Milk thistle	*Silybum marianum*
Tamarisk	*Tamarix ramosissima*
<u>Non-native annual grasses</u> Wild oat Slender wild oats Foxtail chess Ripgut brome Soft chess Mediterranean barley Italian ryegrass Annual beard grass	 *Avena fatua* *Avena barbata* *Bromus madritensis* ssp. *rubens* *Bromus diandrus* *Bromus hordeaceus* *Hordeum murinum* *Lolium multiflorum* *Polypogon monspeliensis*

Common Name	Scientific Name
Non-native perennial grasses	
Pampas grass Bermuda grass Fountain grass Smilo grass	*Cortaderia selloana* *Cynodon dactylon* *Pennisetum setaceum* *Piptatherum miliaceum*

Table 4-2. Additional Exotic Plant Species Observed in the Mitigation Area

Common Name	Scientific Name
Bentgrass	*Agrostis viridis*
Tree of Heaven	*Ailanthus altissima*
Aloe vera	*Aloe* sp.
Belladonna lily	*Amaryllis belladonna*
Scarlet pimpernel	*Anagallis arvensis*
Southern catalpa	*Catalpa bignonioides*
Tocalote	*Centaurea melitensis*
Spotted spurge	*Chamaesyce maculata*
Poison hemlock	*Conium maculatum*
Pride of Madeira	*Echium candicans*
Red-stemmed filaree	*Erodium cicutarium*
Petty spurge	*Euphorbia peplus*
Roundleaf geranium	*Geranium rotundifolium*
Shortpod mustard	*Hirschfeldia incana*
Smooth cat's ear	*Hypochaeris glabra*
Glossy privet	*Ligustrum lucidum*
Sweet alyssum	*Lobularia maritima*
Cheeseweed	*Malva parviflora*
High mallow	*Malva sylvestris*
Horehound	*Marrubium vulgare*
Alfalfa	*Medicago sativa*
Marvel of Peru	*Mirabilis jalapa*
Sand plantain	*Plantago psyllium*
Curly dock	*Rumex crispus*
Fiddle dock	*Rumex pulcher*
Tumble mustard	*Sisymbrium altissimum*
Spanish broom	*Spartium junceum*
Spiny sowthistle	*Sonchus asper*
Common sowthistle	*Sonchus oleraceus*
Common chickweed	*Stellaria media*
Feverfew	*Tanacetum parthenium*
Common dandelion	*Taraxacum officinale*
Puncture vine	*Tribulus terrestris*
Chinese elm	*Ulmus parvifolia*
Wand mullein	*Verbascum virgatum*
Water speedwell	*Veronica anagallis-aquatica*
Periwinkle	*Vinca major*

Common Name	Scientific Name
<u>Non-native annual grasses</u> Red brome Barnyard grass Common wheat	 *Bromus rubens* *Echinochloa crus-galli* *Triticum aestivum*
<u>Non-native perennial grasses</u> Perennial veldtgrass Perennial ryegrass	 *Ehrharta calycina* *Lolium perenne*

The revised approach to the exotic plant eradication and maintenance program also includes a more aggressive program of targeting the elimination of the large, non-native trees that create the dense overstory within the Mitigation Area. Removal of these exotic tree species will create a more open canopy within the Mitigation Area, which will allow more sunlight to reach the native plant species growing beneath the canopy. The tree species targeted under the exotic plant eradication and maintenance program are listed in Table 4-3.

Table 4-3. Invasive Exotic Tree Species

Common Name	Scientific Name
Acacia species	*Acacia dealbata* and *Acacia* spp.
Common catalpa	*Catalpa bignonioides*
Eucalyptus	*Eucalyptus* spp.
Ornamental fig	*Ficus carica*
Evergreen ash	*Fraxinus uhdei*
Japanese privet	*Ligustrum japonicum*
Liquidambar	*Liquidambar stryraciflua*
Mulberry	*Morus alba*
Wild tobacco	*Nicotiana glauca*
Castor bean	*Ricinus communis*
California pepper	*Schinus molle*
Brazilian pepper	*Schinus terebinifolius*
Chinese elm	*Ulmus parvifolius*
Palms	*Washingtonia* spp., *Phoenix canariensis*, etc.

4.1 Exotic Plant Eradication Methods

Exotic plant eradication activities took place throughout the riparian and upland portions of the entire Mitigation Area. These eradication activities also included weeding in the upland area between Big Tujunga Wash and the northern boundary of the Mitigation Area. Before 2012, this area was not previously part of the areas that were actively weeded on a regular basis, but infestations of invasive exotic plant species (fountain grass [*Pennisetum setaceum*]) and weeds (thistle [*Cirsium* spp.] and mustard [*Brassica* spp.]) reached levels that needed to be controlled and are now included in regular exotic plant removal efforts. Although exotic plant eradication efforts were conducted throughout the entire Mitigation Area in 2014, Figure 4-1 shows the areas that are considered high priority for targeting exotic plant species.

Aerial Date: NAIP 2012
10/23/2014

Figure 4-1. High Priority Exotic Plant Removal Locations

2014-003.003 Big Tujunga Wash Mitigation Area

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Pre-activity surveys were conducted by qualified biologists prior to each exotic plant eradication effort to document exotic plant locations and any sensitive biological resources to avoid during the removal efforts. During the pre-activity surveys, the biologists conducted a walkthrough of all trails in the riparian and upland areas. Coordinates of new exotic plant species locations or sensitive biological resources (such as active bird nests) were taken with a global positioning system (GPS) unit and recorded on data sheets. CDFW was notified prior to the commencement of removal activities, in accordance with the Mitigation Area's SAA (see Appendix E).

During the exotic plant eradication efforts, a biological monitor was present to ensure that crews conducted work within the appropriate pre-defined work areas and that the removal activities did not result in impacts to sensitive biological resources, such as nesting bird activity. The biological monitor also conducted daily tailgate sessions to remind the crews about the sensitive biological resources present in the Mitigation Area. A bilingual worker education brochure that contained general information and guidelines pertaining to the site was distributed to all new workers entering the site (see Appendix B). The biological monitor was responsible for showing the removal crews locations of exotic plant species that had been recorded during previous site visits and pre-activity surveys. Newly identified stands of exotic vegetation were treated as they were discovered. Plants and trees treated with herbicide were flagged with survey flagging and/or location coordinates were taken to aid in detection during follow-up visits to determine success. All treated areas were documented by the biological monitor and digital photographs were taken to document removal efforts. Following the completion of each eradication effort, a memo was prepared that documented the eradication activities and locations, as well as the presence of any sensitive biological resources. All exotic plant removal efforts were conducted according to the terms and conditions of the SAA.

Exotic plants and trees were removed either manually (by cutting or sawing) or by herbicide treatment. Gas-powered circular hand-saws and hand tools (machete or axe) were used for cutting or girdling exotic trees. Large exotic trees, which were girdled in 2012, were monitored for regrowth. Locations within a 15-foot distance from permanent (Haines Canyon Creek, Tujunga Ponds) or temporary (ephemeral ponds from rains) bodies of water were treated with an approved water-certified herbicide (such as AquaMaster™). All other locations were treated with either Razor Pro® or, when girdling, with Garlon 4® herbicide. Cuttings of giant reed stands (and other exotic plant species) were not removed from the site but were arranged in a manner that would prevent re-growth or establishment of new stands. The cuttings were placed in areas that would not impede visitor traffic, pose a safety hazard, or affect the aesthetics of the site.

Weed removal activities in the oak/sycamore area near the Cottonwood gate to the Mitigation Area were conducted by hand using Round-Up® herbicide, hand tools, and gasoline-powered weed whackers. The weed removal efforts were timed to remove weeds and non-native grasses during the growing season and prior to deposition of new seeds in the restoration area.

4.2 Exotic Plant Eradication Efforts in 2014

Site-wide exotic plant eradication occurred during three different efforts in 2014: April 21 through 24, May 5 through 8, and May 12 (first effort); August 11 through 15 (second effort); and December 4, 8 through 10, and 15 (third effort). Rain events occurred on the site in early December, which slightly affected the schedule of the third removal effort. ECORP biologists Carley Lancaster, Amy Trost, Rebecca Valdez, and Phillip Wasz conducted the pre-activity surveys and/or the biological monitoring for exotic plant eradication efforts.

Exotic plant and tree eradication efforts were conducted throughout the entire Mitigation Area. The eradication activities did not result in impacts to any sensitive biological resources. No bird nests were discovered during exotic plant removal activities.

Notes and representative site photographs were taken and the coordinates of additional weed/exotic plant locations were recorded using a handheld GPS unit.

Copies of all memos documenting exotic plant removal, CDFW notifications, and photographs taken during removal efforts can be found in Appendix E.

5.0 WATER LETTUCE CONTROL PROGRAM

During an exotic wildlife removal effort in March 2011, aquatic biologists noticed that the Tujunga Ponds were becoming infested with water lettuce, an invasive plant commonly used in aquariums and ponds. Within one month of the initial observation, the entire East Tujunga Pond was completely covered with the surface-growing plant. Within two months the entire West Tujunga Pond was covered. The infestation was so great that the waterways between the ponds and Haines Canyon Creek were becoming suffocated. Water lettuce is listed under the United States Department of Agriculture's Plant Database as an invasive and noxious weed and is thought to spread via dumping of aquariums (USDA NRCS 2011). The water lettuce at the Tujunga Ponds has the potential to threaten habitat in Haines Canyon Creek for endangered species such as the Santa Ana sucker, as well as have a negative impact on the native turtle and bird species that use the ponds as habitat. ECORP immediately contacted LACDPW to create a plan for water lettuce removal from the Mitigation Area waterways.

Intensive water lettuce removal efforts were immediately initiated to control the infestation. Physical removal efforts were conducted between June and December 2011, as well as between January and September 2012. Detailed descriptions of the physical removal efforts can be found in the 2011 and 2012 Annual Reports for the Big Tujunga Wash Mitigation Area (ECORP 2012a; ECORP 2013).

Following the initial physical removal of the water lettuce, a monitoring and maintenance program was established in 2012 to keep the water lettuce populations in check and prevent another infestation from occurring in the Tujunga Ponds and Connector Channel. The program consisted of monthly herbicide applications conducted on an as-needed basis paired with follow-up site inspections to monitor the success of the herbicide application. Four herbicide application efforts were conducted in 2012 and two additional applications were applied in 2013 (ECORP 2012a; ECORP 2014). Renovate®, an herbicide designed for use within aquatic environments and approved by CDFW for use within the Mitigation Area, was applied to patches of hard-to-reach water lettuce within southern cattails (*Typha domingensis*) and other vegetation around the pond perimeters. During regular site visits, biologists did not observe any evidence of water lettuce. The absence of water lettuce during the site visit provided evidence that the water lettuce herbicide applications were successful.

Water lettuce was not observed in the Mitigation Area in 2014.

6.0 EXOTIC WILDLIFE ERADICATION PROGRAM

The overall purpose of the exotic wildlife removal program is to maintain, restore, and create suitable habitat for native aquatic species, and to remove and eliminate ecological pressures resulting from the presence of exotic species. The program consists of the removal of non-native fishes, bullfrogs, turtles, and red swamp crayfish from both of the Tujunga Ponds and Haines Canyon Creek.

In an ongoing effort to protect and enhance the existing habitat at the Mitigation Area for native wildlife species, ECORP has continued the exotic aquatic species removal effort as described in the MMP. The MMP provides direction for the eradication of exotic wildlife from the Tujunga Ponds (East Pond and West Pond) and Haines Canyon Creek to relieve some of the potentially negative impacts to native species. Due to the fecund nature of exotic species and their ability to inhabit various habitat types while tolerating extreme environmental conditions, exotic species can outcompete natives for available space and food resources. Exotics can also directly impact native species through predation of adults and their young, or indirectly through the transmission of pathogens or parasites.

ECORP fisheries biologists conducted an initial site survey when ECORP was issued the contract to continue implementation of the MMP. The purpose of the site assessment survey was to determine the most appropriate methods for continuing the exotic aquatic wildlife eradication program. The goal was to identify those methods that would produce the most significant impacts on the eradication of exotic aquatic wildlife species and ultimately result in the enhancement of habitat for the native fishes in Haines Canyon Creek. The data presented in this section of the annual report summarize the results of three exotic removal efforts conducted during 2014. A copy of the full report can be found in Appendix F.

6.1 Methodology

A wide range of removal methods were used during the 2014 exotic aquatic species removal efforts, including fyke net trapping, spearfishing, dip-netting/hand capturing, bullfrog gigging, two-person seining, minnow trapping, turtle trapping, and gillnetting. Electrofishing was not a method employed during 2014 to capture exotic aquatic species.

Fyke net trapping was conducted solely in the Connector Channel. All spearfishing and hand-capturing efforts were conducted while snorkeling. Dip-netting was performed in Haines Canyon Creek during diurnal removal efforts and at night in combination with bullfrog gigging and spearfishing surveys. Bullfrog gigging was primarily done at night by patrolling the perimeter of the ponds and throughout Haines Canyon Creek. Two-person seining surveys were accomplished using un-bagged seines mounted on poles within Haines Canyon Creek. Turtle and crayfish/minnow traps were baited with cans of sardines and cat food with small holes punched into them. All traps remained open overnight. Gillnets were used in the ponds and were checked every eight hours during the removal efforts. Additionally, during snorkeling activities any Centrarchid (Sunfish Family) nests or bullfrog egg masses observed were destroyed or removed.

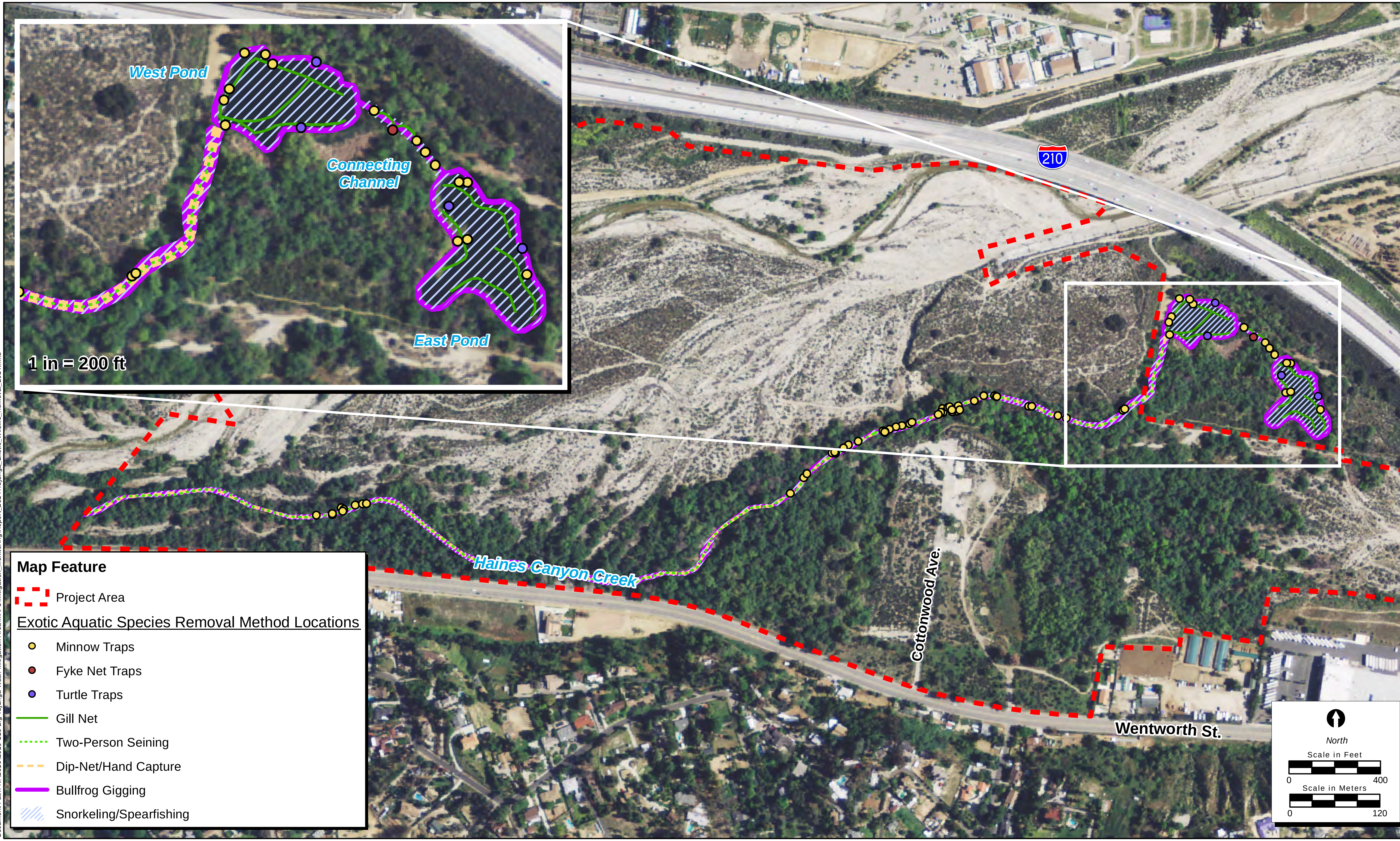
Prior to each removal effort, all potential sampling methods were evaluated for efficacy based upon the current site conditions and information derived from previous removal efforts. In an attempt to reduce the potential for theft, removal, or vandalism of the sampling equipment, the trap locations were often strategically deployed into areas that were inaccessible to the public. Sampling locations and the various sampling methods utilized during 2014 are shown in Figure 6-1.

The 2014 removal of exotic aquatic species from the Mitigation Area was conducted over three removal efforts: April 7 through 9 (first effort), April 29 through May 2 (second effort), and November 10 through 14 (third effort) and November 17 through 21 (fourth effort). All removal efforts were conducted under the direction of ECORP biologist Brian Zitt, USFWS 10(a)(1)(A) recovery permit holder for Santa Ana sucker (TE-27460A-1). Results of the sampling efforts were summarized in Exotic Wildlife Removal Memos following each of the surveys. The locations of aquatic removal efforts are displayed in Figure 6-1.

6.2 Results

A total of 2,055 individuals consisting of 11 exotic aquatic species (seven fishes, one amphibian, two reptile, and one invertebrate) and two native species were captured during the 2014 removal efforts (Table 6-1). Of the total, 99.8 percent (number of individuals [n]=2,050) of the individuals captured were exotic and removed from the site. Haines Canyon Creek accounted for 69.4 percent of the total catch (n=1,427), while the remaining 30.6 percent were captured in other water features: West Pond (n=468), Connector Channel (n=62), and East Pond (n=98). The two native species (Santa Ana sucker [n=3] and southwestern pond turtle [n=2]) were collected in Haines Canyon Creek. These individuals were in good overall health and immediately released back into the creek. Additionally, several Santa Ana sucker (n=43) were incidentally observed while sampling in Haines Canyon Creek. One Santa Ana sucker was found dead in Haines Creek on November 11, 2014 during effort three. This mortality was not a result of the removal efforts conducted in the creek. Based on its size and the condition of its partially decomposed carcass, it appeared that the animal died of old age.

The four removal efforts resulted in the capture and removal of 970 red swamp crayfish, 711 largemouth bass, 231 western mosquitofish (*Gambusia affinis*), 74 green sunfish (*Lepomis cyanellus*), 40 bluegill (*L. macrochirus*), 8 common carp (*Cyprinus carpio*), 6 bullfrog (5 adults and 1 tadpoles), 5 goldfish (*Carassius auratus*), 3 red-eared slider (*Trachemys scripta elegans*), 1 Mozambique tilapia, and 1 southern painted turtle (*Chrysemys picta dorsalis*). A complete listing of all aquatic species captured during the 2014 sampling efforts is included in the full report in Appendix F.



Document Path: N:\2010\2010-116 Big Tujunga Wash Mitigation Area\MAPS\Mitigation_Monitoring\Report_2014\Tujunga_Exotic_Wildlife_Removal_2014.mxd

Aerial Date: NAIP 2012
1/13/2015

Figure 6-1. Exotic Aquatic Wildlife Species Sampling Locations

2014-003.003 Big Tujunga Wash Mitigation Area

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Table 6-1. Summary of Species Collected by Location and Method, 2014.

Removal Location	Removal Date	Exotic Species												Native Species		Total
		Goldfish	Common Carp	Western Mosquitofish	Green Sunfish	Bluegill	Largemouth Bass	Mozambique Tilapia	American Bullfrog Adult	American Bullfrog Tadpole	Southern Painted Turtle	Red-eared Slider	Red Swamp Crayfish	Santa Ana Sucker	Southwestern Pond Turtle	
Haines Canyon Creek	April 29-May 2, 2014						41		1				341			383
	November 10-13, 2014			208	7	1	100						380	3		699
	November 17-20, 2014	2		23	22		65		1				232			345
	Subtotal	**2**		**231**	**29**	**1**	**206**		**2**				**953**	**3**		**1,427**
West Pond	April 7-9, 2014				14	6	127		2			1			1	151
	April 29-May 2, 2014	1			19	11	130				1		4		1	167
	November 10-13, 2014					3	23					1				27
	November 17-20, 2014				2	19	102									123
	Subtotal	**1**			**35**	**39**	**382**		**2**		**1**	**2**	**4**		**2**	**468**
Connector Channel	April 7-9, 2014	1			1		35									37
	April 29-May 2, 2014				3		15			1			6			25
	Subtotal	**1**			**4**		**50**			**1**			**6**			**62**
East Pond	April 7-9, 2014	1	4		2		43					1				51
	April 29-May 2, 2014		4		4		30	1	1				7			47
	Subtotal	**1**	**8**		**6**		**73**	**1**	**1**			**1**	**7**			**98**
	Total	**5**	**8**	**231**	**74**	**40**	**711**	**1**	**5**	**1**	**1**	**3**	**970**	**3**	**2**	**2,055**

7.0 FUNCTIONAL ASSESSMENT AND SUCCESS MONITORING

Annual functional analyses in the Mitigation Area are used to quantitatively assess the progress of the restoration effort. A functional analysis was conducted on the site in 1997 to establish baseline functional values for the riparian habitats (Chambers Group 1998). ECORP conducted the functional analyses annually between 2007 and 2012 to determine whether the site had met success criteria that were outlined in Table 2-2 of the MMP (Chambers Group 2000). In 2012, it was determined that the site had, indeed, met the success criteria goals outlined in the MMP. Therefore, the functional assessment and success monitoring studies were not conducted in 2013 or 2014.

In order to determine the Functional Units (FU) per acre of the willow riparian habitat system, nine evaluation variables were combined into algorithms that express their relationship in the most streamlined fashion practical. Potential mathematical expressions of the relationship between evaluation variables were explored using guidelines in the USFWS Habitat Evaluation Procedures Handbook (1980). The maximum value that could be obtained if all variables were 1 is 10. To scale the FU to a value between 0 and 1, with 1 being the FU for a highly functional reference system in which all of the evaluation variables were equal to 1, the total value of the algorithm is divided by 10, the maximum possible score. Therefore the algorithm for willow riparian habitat is:

$$FU_{willow} = \frac{(((STD+COV)EXO+CON+CAR+FPA+TOP)REG+URB+RAR+RIC+SPE)}{10}$$

The total Functional Capacity Units (FCU) for the site is determined by multiplying the FU value by the number of acres of habitat present on the site:

$$FCU = FU_{willow} * \text{Acres of willow riparian habitat}$$

Table 7-1 compares the functional capacity values determined for the Mitigation Area based on annual functional analysis studies conducted between 1997 (baseline) and 2012. Overall, the Functional Units (FU) for the Mitigation Area increased by .09 from 0.79 in 1997 to 0.88 in 2012. The FU target that was set in the 2000 MMP was 0.87. The FU calculated in 2012 was 0.88, which exceeds the target FU value for the Mitigation Area.

A total of 76 acres of riparian vegetation was mapped at the Mitigation Area in 1997 (Table 7-1). Due to enhancement and restoration efforts conducted since 2000, approximately 15 acres of riparian habitat was added to the Mitigation Area, for a total of 91.2 acres in 2012. This increase in the acreage of riparian habitat contributed to the increase in the overall FU value in the Mitigation Area.

Table 7-1. Comparison of Functional Capacity Values

Variable	Success Criteria (2000)	2012	2011	2010	2009	2008	1997 (Baseline)
Structural Diversity (STD)	0.9	0.7	0.7	0.7	0.8	0.8	0.7
Riparian Habitat Cover (COV)	1.0	0.8	1.0	1.0	1.0	1.0	1.0
Percent of Exotic Invasive Species/Vegetation (EXO)	1.0	1.0	1.0	1.0	0.8	1.0	0.8
Contiguity of Habitat (CON)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Available Organic Carbon (CAR)	1.0	0.9	0.9	0.8	1.0	1.0	1.0
Characteristics of Flood-prone Area (FPA)	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Micro and Macro Topographic Complexity (TOP)	0.8	1.0	0.8	0.7	0.7	0.7	0.8
Hydrologic Regime of Riparian Zone (REG)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Urban Encroachment (URB)	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Rareness – Listed and Sensitive Species (RAR)	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Terrestrial Wildlife (Vertebrate) Species Richness (RIC)	0.8	1.0	0.6	0.8	1.0	1.0	0.7
Presence of Habitat Specialists (Terrestrial Vertebrate Wildlife) (SPE)	0.8	1.0	0.8	1.0	1.0	0.6	0.9
Functional Unit (FU)	**0.87**	**0.88**	**0.82**	**0.84**	**0.85**	**0.88**	**0.79**
Acres	**--**	**91.2**	**91.2**	**91.2**	**91.2**	**76.0**	**76.0**
FCU	**66.12**	**80.26**	**74.78**	**76.61**	**77.52**	**66.88**	**59.74**

8.0 WATER QUALITY MONITORING PROGRAM

ECORP's subconsultant, MWH Americas, Inc., conducted the annual water quality sampling for the site in 2014. The monitoring program has been designed to specifically address inputs to the site from upstream land uses such as the Angeles National Golf Club (previously named Canyon Trails Golf Club). Potential impacts to aquatic species from run-on to the site that contains excessive nutrients or pesticides are of primary concern. A series of sampling parameters were collected in the field from four sampling locations using a YSI 550A Field dissolved oxygen (DO) meter with thermometer and an Orion 230A pH meter with HACH 51935 electrode. Samples were taken at mid-depth, along a transect perpendicular to the stream channel alignment. Laboratory analysis of pesticides was performed at Emax Laboratories in Torrance, California. All other analyses were performed by Eurofin Eaton Laboratories in Monrovia, California. Quality assurance/quality control (QA/QC) procedures in each laboratory followed the methods described in their respective Quality Assurance Manuals. In addition to the water quality monitoring, flows in the outlet from the Tujunga Ponds, in Haines Canyon Creek (leaving the site), and in Big Tujunga Wash were estimated using a simple field procedure. A float (a small plastic ball) is used to measure stream velocity.

8.1 Baseline Water Quality

Sampling and analysis conducted by LACDPW prior to implementation of the MMP is considered the baseline for water quality conditions at the site. The results of baseline analyses conducted in April 2000 are listed in Table 8-1 and provided in the 2014 Water Quality Monitoring Report that is included as Appendix G. Higher bacteria and turbidity observed in the April 18, 2000 baseline samples were attributed to a rain event. Phosphorus levels were also high in the April 18, 2000 samples, perhaps due to release from sediments.

Table 8-1. Baseline Water Quality Sampling Results (2000)

Parameter	Units	Date	Haines Canyon Creek, inflow to Tujunga Ponds	Haines Canyon Creek, outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
pH	std units	4/12/00	7.78	7.68	7.96	7.91
		4/18/00	7.18	7.47	7.45	7.06
Ammonia-N	mg/L	4/12/00	0	0	0	0
		4/18/00	0	0	0	0
Kjeldahl-N	mg/L	4/12/00	0	0.1062	0.163	0
		4/18/00	0	0.848	0.42	0.428
Nitrite-N	mg/L	4/12/00	0.061	0	0	0
		4/18/00	0.055	0	0	0
Nitrate-N	mg/L	4/12/00	8.38	5.19	0	3.73
		4/18/00	8.2	3.91	0.253	0.438
Dissolved phosphorus	mg/L	4/12/00	0.078	0.056	0	0.063
		4/18/00	0.089	0.148	0.111	0.163
Total phosphorus	mg/L	4/12/00	0.086	0.062	0	0.066
		4/18/00	0.113	0.153	0.134	0.211
Turbidity	NTU	4/12/00	1.83	0.38	1.75	0.6
		4/18/00	4.24	323	4070	737
Fecal coliform	MPN/ 100 ml	4/12/00	500	300	40	80
		4/18/00	500	30,000	2,400	50,000
Total coliform	MPN/ 100 ml	4/12/00	3,000	5,000	170	1,700
		4/18/00	2,200	170,000	2,400	70,000

NA – data not available; station dry on the sample date
NTU – nephelometric turbidity units MPN – most probable number ND – non-detect

8.2 Water Quality Sampling Results for 2014

Results of laboratory analyses conducted by Emax and Eurofin Eaton Laboratories are summarized in Table 8-2. Note that the yields (percent recoveries) of QC samples were within acceptable limits (percentages) for all samples. In addition, some of the water quality constituents that are tested on an annual basis after the implementation of the MMP were not included in the baseline water quality sampling. Tests for herbicides and pesticides were added to determine whether or not these chemicals were being transported downstream to the Mitigation Area.

Table 8-2. Summary of Water Quality (October 29, 2014)

Parameter	Units	Haines Canyon Creek, Inflow to Tujunga Ponds	Haines Canyon Creek, Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Temperature	°C	20.8	18.4	NA	16.6
Dissolved Oxygen	mg/L	7.7	8.7	NA	9.7
pH	std units	6.79	6.90	NA	7.61
Total residual chlorine	mg/L	ND	ND	NA	ND
Ammonia-Nitrogen	mg/L	ND*	ND*	NA	ND*
Kjeldahl Nitrogen	mg/L	0.41*	ND*	NA	ND*
Nitrite-Nitrogen	mg/L	ND	ND	NA	ND
Nitrate-Nitrogen	mg/L	7.6	5.4	NA	4.9
Orthophosphate-P	mg/L	ND	ND	NA	0.013
Total phosphorus-P	mg/L	ND*	ND*	NA	ND*
Glyphosate	µg/L	ND	ND	NA	ND
Chloropyrifos**	ng/L	ND	ND	NA	ND
Pesticides (EPA 608)***	µg/L	ND	ND	NA	ND
Turbidity	NTU	0.79	0.42	NA	0.18
Fecal Coliform Bacteria	(MPN/100 ml)	33	230	NA	330*
Total Coliform Bacteria	(MPN/100 ml)	490	680	NA	490*

NA – data not available; station was dry on the sample date

NTU – nephelometric turbidity units MPN – most probable number ND – non-detect

* Due to sample preservation issues, bacteria results in Haines Canyon Creek are from samples taken October 30, 2014. Also due to sample preservation issues, TP, TKN and NH3-N results are from samples taken on November 17, 2014.

** The analytical method used for chloropyrifos (EPA 8141A) also tests for the following chemicals: azinphos-methyl, bolster, coumaphos, diazinon, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stirophos, parathion-methyl, tokuthion, and trichloronate.

*** EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, and toxaphene.

8.2.1 Discharge Measurements

Using the field technique described in the methodology section, the flows in the outlet from the Tujunga Ponds and in Haines Canyon Creek (leaving the site) were approximated. Estimated flows for October 2014 are summarized in Table 8-3.

Table 8-3. Estimated Flows for October 2014

Sampling Date	Approximate Flow (cubic feet per second)		
	Haines Canyon Creek, Outflow from Tujunga Ponds	Haines Canyon Creek, just before exit from site	Big Tujunga Wash
10/29/2014	3	2	station dry on sample date

8.2.2 Comparison of Results with Aquatic Life Criteria

Table 8-4 provides the results of the October 2014 water quality sampling when compared to objectives established by the Los Angeles Regional Water Quality Control Board for protection of beneficial uses in Big Tujunga Wash (including wildlife habitat) and the Environmental Protection Agency (EPA) criteria for freshwater aquatic life.

Table 8-4. Discussion of October 2014 Big Tujunga Wash Sampling Results

Parameter	Discussion
Temperature	• Observed temperatures were below levels of concern for growth and survival of warmwater fish species at all stations.
Dissolved oxygen	• Dissolved oxygen levels ranged from 7.7 mg/L in the inflow to the Tujunga Ponds to 9.7 in Haines Canyon Creek leaving the site. DO levels at all stations were above the recommended minimum (5.0 mg/L) and recommended mean (7.0 mg/L) for warmwater fish species.
pH	• Lowest pH was observed in the inflow to Tujunga Ponds (6.79), with highest pH observed in Haines Canyon Creek leaving the site (7.61). On this date, pH readings in Haines Canyon Creek and the Tujunga Ponds were within the 6.5 to 8.5 range identified in the Basin Plan (CRWQCB 1994).
Total residual chlorine	• No residual chlorine was detected at any station.
Nitrogen	• Nitrate-nitrogen measurements at all stations were below the drinking water standard of 10 mg/L. • Ammonia was below the detection limit at all stations.
Phosphorus	• Total phosphorus levels at all sites were below the method reporting limit of 0.031 mg/L, and therefore below EPA's recommended range for streams to prevent excess algae growth (recommended range is <0.05 – 0.1 mg/L).
Glyphosate	• Glyphosate was not detected at any station.
Chloropyrifos and Organophosphorous Pesticides	• Chloropyrifos and the other pesticides tested using EPA's analytical method 8141A were not detected at any station.
Organochlorine Pesticides	• Pesticides analyzed by EPA Method 608 were not detected at any station.
Turbidity	• Turbidity levels were very low (<1 NTU) at all stations.
Bacteria	• The fresh water bacteria standard for water contact recreation is for *E. coli* (126 MPN/100 ml geometric mean, 235 MPN/100 ml single sample limits). The observed fecal coliform levels were below the standard at two stations (Haines Canyon Creek inflow to and outflow from Tujunga Ponds). Fecal coliform was 330 MPN/100 ml in Haines Canyon Creek just before exit from site. Previously, the water contact standard was 200 MPN/100 ml fecal coliform. Sampling specifically for *E. coli* was not conducted. • Total coliform levels ranged from 490 MPN/100ml in Haines Canyon Creek inflow to Tujunga Ponds and just before exit from site to 680 MPN/100 ml in the outflow from the ponds. [Note that recreation standards are for *E. coli*. Total coliform standards apply to waterbodies where shellfish can be harvested for human consumption.]

9.0 TRAILS MONITORING PROGRAM

9.1 Trails System Maintenance

The goal of maintaining a formal trails system at the Mitigation Area is to allow recreational use of the Mitigation Area while still preserving sensitive wildlife and their habitats. The Mitigation Area contains both equestrian and hiking trails (Figure 9-1). The preservation of authorized trails is an essential component in the success of original restoration and enhancement of the site. This program has been continued in order to discourage the establishment of any new trails in the Mitigation Area. By ensuring that the authorized trails are kept clear and can be readily used by equestrians and hikers, the amount of unauthorized creation of new trails and illegal use of the Mitigation Area (e.g., camping, making fires) will be reduced. Maintenance and monitoring of the trail system is a necessary component of the overall restoration and enhancement program.

Four site visits were conducted in 2014. These visits occurred on April 18, 2014 (first visit), May 5, 2014 (second visit), May 29, 2014 (third visit), and December 1, 2014 (fourth visit). ECORP biologists Carley Lancaster, Amy Trost, Rebecca Valdez, Phillip Wasz, and Terrance Wroblewski conducted the trails monitoring visits.

The focus of these site visits was to look for areas that might qualify for trail closure, identify areas where trails were blocked by trash or debris, and mark locations of extensive stands of poison oak. Assessment of trail signs, information kiosks, portable toilets, site fencing, and gated entrances was included in each survey. An assessment of monuments and marker posts that were installed by a survey crew surveying the Mitigation Area boundaries was conducted during the second visit. Areas that required minor repairs were remedied during the four site visits or in combination with other site visits. More extensive problem areas were mapped for repair at a later time.

Trail maintenance was conducted by ECORP's landscape contractor, Natures Image, and supervised by ECORP biologists that were present on site at the time of maintenance. During the site visits, the biologists assessed trail conditions and identified locations that were in need of maintenance. Examples of maintenance issues identified during these site visits included:

- Fallen trees and branches obstructing trails;
- Overhanging tree branches at hiker and equestrian-height;
- Dense vegetation crowding trails;
- Erosion;
- Large dead trees with the potential to fall on the trail;
- Safety concerns;
- Rock dams and walls constructed in Haines Canyon Creek;
- Poison oak overgrowth; and
- Unauthorized trail establishment by recreational users.

The biologists reported any homeless encampments they encountered during the site visits to LACDPW.

Aerial Date: NAIP 2012
Map Date: 2012

Figure 9-1. Trails in the Mitigation Area

2014-003.003 Big Tujunga Wash Mitigation Area

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Maintenance activities to address the trail issues were monitored by ECORP biologists. Prior to any work, all members of the trail maintenance crew received an onsite orientation and instruction on the Mitigation Area's regulations and concerns relating to the area's sensitive species and habitat by a qualified ECORP biologist. These efforts were summarized following each of the maintenance visits. These memos are included as Appendix H.

9.2 Trail Cleanup Day

In 2012, the official name of the annual volunteer event held at the Mitigation Area changed to Trail Cleanup Day (previously named Trail Maintenance Day). The Tenth Annual Trail Cleanup Day was scheduled for the September/October 2014 timeframe; however, the event was cancelled due to the generally clean nature of the site and lack of trash and debris within the Mitigation Area.

10.0 COMMUNITY AWARENESS PROGRAM

The CAC was formed in early 2001 as part of MMP requirements for a community awareness program. Between 2001 and 2013, the CAC was meeting on a semiannual basis to update the community on the progress of ongoing restoration activities, ongoing exotic eradication activities, upcoming scheduled activities at the Mitigation Area, and to discuss any issues that the community would like to see addressed. In 2014, the CAC meetings changed from being held on a semiannual basis to being held annually in the spring. In July 2007 ECORP assumed the responsibilities of preparing the Spring and Fall newsletters, assisting with preparation of meeting agendas and handouts, and recording meeting minutes. All deliverables were submitted to LACDPW electronically for posting on the LACDPW web page (http://dpw.lacounty.gov/wrd/Projects/BTWMA).

Community residents and representatives from local community organizations serve as the major components of the CAC, but the committee also includes law enforcement, agency and elected official representatives from various local, state, and federal organizations. A list of the key stakeholders included as part of the most recent mailing is included in Appendix I.

10.1 Newsletters (Spring, Fall)

ECORP drafted two newsletters during 2014, the spring edition in April and the fall edition in September. Electronic versions of these newsletters were submitted to LACDPW for distribution and incorporation on their web page. Hard copies of the newsletters were also mailed to stakeholders and organizations. The newsletters are included in Appendix J.

10.2 CAC Meeting

The CAC meeting was held on Thursday April 24, 2014. The meeting was held from 6:30 to 8:30 P.M. at LACDPW's Hansen Yard, 10179 Glenoaks Boulevard, Sun Valley, California, 91352. The meeting reminder/invitation, meeting agenda, and minutes from the previous meeting were mailed to the most recent CAC mailing list approximately two weeks prior to the scheduled meeting. Additionally, the meeting agenda and the minutes from the previous CAC meeting were posted to the Mitigation Area website. One week prior to the CAC meeting, a final meeting reminder was sent via electronic mail (e-mail) that included a link to the materials posted on the Mitigation Area website.

ECORP representatives Mari Quillman and Kristen (Mobraaten) Wasz attended the meeting and provided a sign-in sheet for all attendees. ECORP recorded notes during the meeting in order to prepare the official meeting minutes summarizing the general proceedings. ECORP submitted draft meeting minutes to LACDPW for review and commenting prior to posting on the LACDPW web page. The proceedings at the 2014 CAC meeting were summarized in the meeting minutes, which are included as Appendix K.

In 2013, a new item was prepared for distribution at the Fall CAC meeting, a Mitigation Area Incident Map. This was continued in 2014 and ECORP prepared a map that documented the location and nature of all incidents that occurred within the Mitigation Area since the Fall 2013 CAC meeting (Figure 10-1). The map included locations of rock dams, picnicking spots, sites where people are often seen fishing or swimming, and public safety concerns such as homeless encampments and loose, aggressive dog encounters. Due to its continued success, the Incident Map will likely be distributed at meetings in the future.

Below is a list of major issues discussed during the 2014 CAC meeting.

- Change of CAC meetings from semiannual to annual
- Site visit and public hike with Los Angeles Council District 7 Councilmember Felipe Fuentes
- Status of Mitigation Area's new email address
- Updating the Streambed Alteration Agreement with CDFW
- Site Safety and Security Issues
    - Map of incidents reported within the Mitigation Area
    - Homeless encampments in the Mitigation Area
    - Fishermen spotted within the Mitigation Area
    - Trail safety issues caused by erosion
    - Unauthorized cutting of yucca stalks
    - Changes in law enforcement patrolling of the site
    - Remind visitors to contact the Los Angeles County Fire Department or Los Angeles Police Department regarding any incidents within the Mitigation Area. Visitors should contact LACDPW afterwards to prevent future incidents
- General site maintenance activities
    - Trimming vegetation at new crosswalks at the Mary Bell and South Wheatland entrances
    - Maintaining access roads and entrances for site users
- Updates on MMP Programs
    - Brown-headed cowbird trapping
    - Exotic plant removal activities
    - Exotic wildlife removal activities
    - Water quality monitoring
    - Trail restoration and maintenance
    - Bilingual community outreach efforts
    - Trail Cleanup Day

Aerial Date: USGS December 2010
12/9/2014

Figure 10-1. Big Tujunga Wash Mitigation Area Incident Map, October 2013 to April 2014

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2014-003.003 Big Tujunga Wash Mitigation Area

11.0 PUBLIC OUTREACH PROGRAM

In an ongoing effort to enhance and protect existing wildlife and habitats at the Mitigation Area, another task was developed and implemented during the 2009 contract year and continued in 2014. This task was the direct result of increasing evidence of problematic areas associated with recreational use throughout the Mitigation Area. ECORP and LACDPW developed new public outreach efforts to educate all types of recreational user groups about the importance of the Mitigation Area as a conservation area as well as to inform users of approved and prohibited types of recreational activities. This task was continued into the 2014 contract year because of its success in the years from 2009 to 2013.

During site visits in the spring and summer of 2009, ECORP biologists observed increasing problems with visitors using the waterways (Haines Canyon Creek and the Tujunga Ponds) in the Mitigation Area for recreational activities such as picnicking, fishing, swimming, and wading. In rare cases, cooking, barbequing, and alcohol consumption were observed. In areas popular for swimming, recreational users were using rocks, large boulders, and branches from nearby dead trees to dam the creek to create larger and deeper pools so they could swim. These types of recreational activities resulted in damage to the waterways and native riparian habitats and had the potential to reduce the ecological value of the site as a Mitigation Area. After observing and understanding the various problems associated with the recreational user groups in the Mitigation Area, ECORP and LACDPW created and implemented a bilingual recreational user education program to expand public outreach for the Mitigation Area. The program consisted of weekly site visits conducted by a bilingual biologist on peak use weekends in the spring and summer to educate the various user groups about the approved and prohibited activities within the Mitigation Area. A bilingual educational brochure was developed and distributed to the various user groups during the weekly site visits (Appendix B).

On-site interviews and education about the Mitigation Area were conducted on twelve separate occasions in 2014 by ECORP's bilingual biologists Alfredo Aguirre and Jerry Aguirre. These efforts occurred from May to September 2014. All outreach efforts took place on weekends (including holidays), during peak visiting hours between 10 A.M. and 3 P.M. During these outreach efforts, the biologists handed out bilingual brochures describing the ecological purpose of the Mitigation Area, the sensitive species found on site, and permitted recreational uses within the Mitigation Area. The brochure also outlined LACDPW's conservation goals, regulations regarding use of the site, and how the behavior and conduct of recreational visitors can further contribute to these goals.

ECORP biologists walked the established trails system and popular swimming/wading locations in the Haines Canyon Creek and Tujunga Ponds areas and spoke with visitors they encountered. Most outreach visits consisted of short question-and-answer sessions and informal interviews. Question topics included rules and regulations and the types of sensitive resources found in the Mitigation Area.

Visitors that were interviewed fell into one of two groups: non-equestrian groups or equestrian user groups. A total of 40 non-equestrian site users were encountered during the twelve outreach visits. Issues such as alcohol consumption, campfires, rock dams in the creek, littering, and dogs off leash were observed in some cases. Nearly all groups were receptive after receiving information about the Mitigation Area. One encounter with an intoxicated male occurred during the site visit conducted on June 15, 2014. The man was observed carrying beer into the Mitigation Area and was given a brochure.

Equestrians were approached and interviewed along the established trails, in the upland areas of the Mitigation Area, and near the Tujunga Ponds. Outreach events with equestrians were usually brief with most of these visitors being receptive to the outreach efforts. Riders were reminded to cross the creek single-file to minimize erosion along the banks and to stay on established trails. Additional awareness education was provided to riders regarding their horses leaving excrement in the waterways and the effects this has on sensitive habitat. Riders who were willing to act as stewards at the site were asked to call LACDPW if they notice any suspicious activity in the Mitigation Area.

ECORP biologists documented several effects of visitors on sensitive habitats in the Mitigation Area. The largest impacts by non-equestrian family groups were caused by swimming and rock dam construction within Haines Canyon Creek. Adolescents and adults were observed swimming and wading in an unauthorized swimming area located approximately 1,000 feet west of the South Wheatland entrance. One of the most detrimental activities associated with the popular swimming hole is the construction of rock dams designed to make the swimming areas deeper. The creation of these rock dams has persisted despite outreach efforts and constant removal. In an effort to reduce these effects, non-equestrian family groups were approached and educated during the outreach site visits. All rock dams were documented and reported for prompt removal. Additional adverse effects of non-equestrian family groups included increased littering within the popular picnic areas, vegetation removal, and unauthorized fire pits and campfires.

Equestrian site visitors have affected sensitive habitat by traveling off of the established trail system. Several equestrian riders were observed consuming alcohol during one of the outreach site visits, which could contribute to litter accumulation if the containers were not properly disposed. The creation of new trails and traveling off of established trails can be avoided with continued trail maintenance and equestrian site visitor education.

A memo documenting the results of all outreach efforts in 2014 are included in Appendix L.

12.0 SPECIAL ASSESSMENTS

On February 17, 2014, a small fire broke out within the Mitigation Area near the Mary Bell Entrance. The fire occurred on the Monday of Presidents' Day Weekend when pedestrian and equestrian traffic inside the Mitigation Area was likely increased. Following the fire, ECORP biologists Kristen (Mobraaten) Wasz and Amy Trost conducted a site visit on February 19, 2014, to determine the amount of damage. The area that was burned was less than one acre and, because it was such a small event, ECORP recommended that no actions needed to be taken. The area was periodically monitored during subsequent site visits to assess exotic plant growth or other issues possibly arising from the fire incident affecting the area. A memo documenting the results of the assessment is included in Appendix M.

13.0 ATTENDANCE AT MEETINGS WITH AGENCIES, PUBLIC, AND CONSULTANTS

ECORP was available on an on-call basis to attend meetings with agencies, the general public, and other consultants as a representative of LACDPW. One meeting was held at the Mitigation Area on January 22, 2014, with CDFW and LACDPW to introduce the Mitigation Area to the new CDFW liaison for LACDPW, Matthew Chirdon.

A meeting between LACDPW and ECORP occurred on January 29, 2014, at the LACDPW office in the City of Alhambra to discuss general Mitigation Area concerns and the 2014 contract.

Another meeting was held at the Mitigation Area on August 27, 2014, with USACE and LACDPW to discuss USACE mitigation credits in the Mitigation Area. Jemellee Cruz and Melanie Morita from LACDPW and ECORP biologists Mari Quillman and Kristen (Mobraaten) Wasz met with Bonnie Rogers from USACE. Pursuant to Special Condition No. 6 of Department of the Army (DA) permit SPL-1998-02700-AOA and No. 7 of DA permit SPL-2008-00851-KW, the Los Angeles County Flood Control District was required to implement the approved compensatory mitigation in the Final Master Mitigation Plan for Mitigation Area. The two DA permits addressed discharge of dredged and/or fill material into waters of the United States in association with the Los Angeles County soft-bottom channel maintenance permits. Ms. Rogers inspected the site on August 27, 2014, and determined that the compensatory mitigation project had met all of the performance standards in the Master Mitigation Plan and she determined that no further monitoring was required, however, she also stated that LACFCD will continue to be responsible for the long-term management of the Mitigation Area. On September 11, 2014, the USACE issued a mitigation release letter for the Mitigation Area.

Additional conference calls and meetings were held on an as-needed basis throughout the year between LACDPW and ECORP.

14.0 PUBLIC HIKE WITH COUNCILMEMBER

On February 13, 2014, representatives from LACDPW and ECORP met with City of Los Angeles Councilmember Felipe Fuentes of City Council District 7, which includes the communities of Pacoima, Sunland Tujunga, and Lake View Terrace, for a tour of the Mitigation Area (Figure 14-1). The Councilmember was so impressed with the resources in the Mitigation Area and the efforts put forth by LACDPW and ECORP to preserve the area in its natural state, that he scheduled his second public hike event, called the "Fuentes Family Hike," at the Mitigation Area.

On May 31, 2014, Councilmember Fuentes along with approximately 60 members of the public from all over District 7 arrived at the Mitigation Area. A tour was given of the trails running along Big Tujunga Wash and Haines Canyon Creek and around the Tujunga Ponds. The LACDPW representatives filled the attendees in on the history of the Mitigation Area and how the site is used to offset impacts from other LACDPW projects located within the Los Angeles River Watershed. ECORP's biologists explained the programs being conducted at the site and educated the participants about the plants and wildlife that are present in the Mitigation Area (Figure 14-2).

Figure 14-1. Councilmember Felipe Fuentes and the public with representatives from LACDPW, LACDPR, and ECORP

Figure 14-2. ECORP biologist Kristen Wasz talking about the Mitigation Area to attendees of the public hike.

15.0 UPDATED MITIGATION AREA MAP

In June 2014, a vegetation mapping effort was conducted to update the vegetation map previously created by ECORP in 2009 (ECORP 2010). The map denotes changes in vegetation that occurred as a result of natural events (e.g., rain, heavy flows, drought) and man-made changes associated with management of the Mitigation Area (e.g. habitat restoration, exotic plant removal). A draft version of memo detailing the findings of the effort and the updated vegetation map were submitted to LACDPW for review on July 29, 2014. The final map and memo are currently on hold until the condemnation of Cottonwood Avenue and Wheatland Avenue have been filed and the Mitigation Area boundaries have been officially determined.

16.0 REFERENCES

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APPENDIX A

Streambed Alteration Agreement #1600-2008-0253-R5

Big T Draft 1600

CALIFORNIA DEPARTMENT OF FISH AND GAME
South Coast Region
4949 Viewridge Avenue
San Diego, CA 92123

January 29, 2009

AGREEMENT REGARDING PROPOSED STREAM OR LAKE ALTERATION

THIS AGREEMENT, entered into between the State of California, Department of Fish and Game, hereinafter called the Department, and County of Los Angeles, Department of Public Works Water Resources Division (LACoDPWWRD), represented by Mr. Christopher Stone, 900 S. Fremont Avenue, Alhambra, California, 91803, (626) 458-6102, hereinafter called the Applicant or LACoDPWWRD, is as follows:

WHEREAS, pursuant to Section 1602 of California Fish and Game Code, the Applicant, on the 23rd day of July, 2008, notified the Department that they intend to divert or obstruct the natural flow of, or change the bed, channel, or bank of, or use material from: Big Tujunga Wash and Haines Canyon Creek, named tributaries to Hansen Dam Flood Control Basin, in Los Angeles County, to conduct extensive invasive species management and routine maintenance activities within the approximately 247-acre Big Tujunga Conservation Area. Jurisdictional streambeds and waters of the state regulated under Department authority which are to be impacted as a result of the Applicant's project-related activities include: Haines Canyon Creek, wash and ephemeral streambed(s), and wetlands, including vegetated riparian habitats. The portion of Haines Canyon Creek, wash and unnamed ephemeral streambed(s), and wetland to be impacted as a result of the Applicant's project-related activities can be located using the following resources: 1) United States Geological Survey 7.5 Minute Quad Map, Sunland, Township 2 N, Range 14 W, Los Angeles County; 2) Latitude: 34.16.80 North Longitude: 118.20.53 West 3) County Assessor's Parcel Number(s): MR 29-51-52, MB 16-166-167, MB 662-44, and MB 198-8-10

WHEREAS, the Department (represented by Jamie Jackson) during a site visit conducted on August 05, 2007, and based on information received by the Applicant, has determined that such operations may substantially adversely affect those existing fish and wildlife resources within the Haines Canyon Creek and Big Tujunga Wash watershed(s), the project site, and the vicinity of the project site, specifically identified as follows: **Fishes:** arroyo chub (*Gila Orcutti*), Santa Ana speckled dace (*Rhinichthys osculus*), Santa Ana sucker (*Catostomus santaanae*); **Amphibians:** arroyo southwestern toad (*Bufo microscaphus californicus*), California red-legged frog (*Rana aurora*), mountain yellow-legged frog (*Rana muscosa*), western toad (*Bufo boreas*); **Reptiles:** southwestern pond turtle (*Emys marmorata pallida*), San Diego horned lizard (*Phrynosoma coronatum blainvillii*), western fence lizard (*Sceloporus occidentalis*), side-botched lizard (*Uta stansburiana*); **Birds:** California gnatcatcher (*Polioptila californica californica*), southwestern willow flycatcher (*Empidonax traillii extimus*), least Bell's vireo (*bellii pusillus*), black-crowned night heron (*Nycticorax nycticorax*), mourning dove (*Zenaida macroura*), house finch (*Carpodacus mexicanus*), lesser goldfinch (*Carduelis psaltria*), black-headed grosbeak (*Pheucticus melanocephalus*), great blue heron (*Ardea Herodias*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), black-chinned hummingbird (*Archilochus californica*), rufous hummingbird (*Selasphorus rufus*), western scrub jay (*Aphelocoma californica*), Bullock's oriole (*Icterus bullockii*), California quail (*Callipepla californica*), loggerhead shrike (*Lanius ludovicianus*), barn swallow (*Hirundo rustica*), California towhee (*Pipilo crissalis*), Wilson's warbler (*Wilsonia pusilla*), Bewick's wren (*Thryomanes ludovicianus*), Cooper's hawk (*Accipiter cooperii*); **Mammals:** coyote (*Canis latrans*), brush rabbit (*Sylvilagus Bachmani*), muledeer (*Odocoileus hemionus*), California ground squirrel (*Spermophilus beecheyi*); **Native Plants:** slender-horned spineflower (*Dodecahema leptoceras)*, Nevin's barberry (*Berberis nevinii*), Plummer's mariposa lily (*Calochortus plummerae*), Mt. Gleason Indian paintbrush (*Castilleja gleasonii*), San Fernando Valley spineflower (*Chorizanthe parryi* var.

fernandina), Davidson's bush mallow (*Malacothamnus davidsonii*), Orcutt's linanthuis (*Linanthus orcuttii*),California sycamore (*Platanus racemosa*), white alder (*Alnus rhombifolia*), Fremont cottonwood (*Populus fremontii*), mulefat (*Baccharis salicifolia*), Scale-broom (*Lepidospartum squamatum*), cattails (*Typha latifolia*), California sagebrush (*Artemisia californica*), willow (*Salix* sp.), Southern Sycamore-Alder Riparian Woodland; and all other aquatic and wildlife resources in the area, including the riparian vegetation which provides habitat for such species in the area.

These resources are further detailed and more particularly described in the reports entitled "California Department of Fish and Game Streambed Alteration Application Big Tujunga Wash Mitigation Bank" dated July 2008, prepared by Gonzales Environmental Consulting, LLC, prepared for County of Los Angeles, Department of Public Works Water Resources Division; "The Final Master Mitigation Plan for the Big Tujunga Wash Conservation Area (FMMP)", dated April 2000, prepared by Chambers Group, prepared for the County of Los Angeles Department of Public Works, and shall be implemented as proposed, complete with all attachments and exhibits.

THEREFORE, the Department hereby proposes measures to protect fish and wildlife resources during the Applicant's work. The Applicant hereby agrees to accept and implement the following measures/conditions as part of the proposed work. The following provisions constitute the limit of activities agreed to and resolved by this Agreement. The signing of this Agreement does not imply that the Operator is precluded from doing other activities at the site. However, activities not specifically agreed to and resolved by this Agreement shall be subject to separate notification pursuant to Fish and Game Code Sections 1600 *et seq*.

If the Applicant's work changes from that stated in the notification specified above, this Agreement is no longer valid and a new notification shall be submitted to the Department of Fish and Game. Failure to comply with the provisions of this Agreement and with other pertinent code sections, including but not limited to Fish and Game Code Sections 5650, 5652, 5901, 5931, 5937, and 5948, may result in prosecution.

Nothing in this Agreement authorizes the Applicant to trespass on any land or property, nor does it relieve the Applicant of responsibility for compliance with applicable federal, state, or local laws or ordinances. A consummated Agreement does not constitute Department of Fish and Game endorsement of the proposed operation, or assure the Department's concurrence with permits required from other agencies.

This Agreement becomes effective the date of the Department's signature and the restoration and enhancement portion terminates on 03/31/2014. This Agreement shall remain in effect to satisfy the terms/conditions of this Agreement and all mitigation obligations associated with the FMMP. Any provisions of the Agreement may be amended at any time provided such amendment is agreed to in writing by both parties. Mutually approved amendments become part of the original agreement and are subject to all previously negotiated provisions.

Pursuant to Section 1600 et seq., the Applicant may request one extension of the Agreement; the Applicant shall request the extension of this Agreement prior to its termination. The one extension may be granted for up to five years from the date of termination of the Agreement and is subject to Departmental approval. The extension request and fees shall be submitted to the Department's South Coast Office at the above address. If the Applicant fails to request the extension prior to the Agreement's termination, then the Applicant shall submit a new notification with fees and required information to the Department. Any construction/impacts conducted under an expired Agreement are a violation of Fish and Game Code Section 1600 et seq. For complete information see Fish and Game Code Section 1600 et seq.

Project Location:

The approximately 247-acre project site is located within the Big Tujunga Wash, just downstream of the 210 Freeway over-crossing, near the City of Los Angeles' Sunland community in the San Gabriel Valley in Los Angeles County. The site is bordered on the north and east by the I-210 freeway and on the south by Wentworth Street. The west side of the site is contiguous with the downstream portion of the Big Tujunga Wash (2007 Thomas Brothers Guide page 503-B2:C2:D2).

Project Description:

The Final Master Mitigation Plan for the Big Tujunga Wash Conservation Area (FMMP), dated April 2000, prepared for the County of Los Angeles Department of Public Works, prepared by Chambers Group, shall be implemented as proposed. The FMMP proposes the long-term mitigation and management guidelines for the 247 acre Big Tujunga Site. Proposed works described within the FMMP includes elements designed to restore and enhance existing habitats on the Big Tujunga Wash site by removing non-native plant, fish, amphibian, and reptile species. In addition, the FMMP includes future plans to create a diverse coast live oak-California sycamore woodland and coastal sage scrub habitat in an area that is currently heavily disturbed. The FMMP proposes to target the Haines Canyon Creek and Big Tujunga Wash for removal of invasive plant (Arundo (*Arundo donax*), tamarisk (*Tamarix* spp.), eucalyptus (*Eucalyptus* spp.), pepper tree (*Schinus molle*), castor bean (*Ricinus communis)*, umbrella sedge (*Cyperus eragrostis* Nutsedge), mustards (*Brassica* spp.), tree tobacco (*Nicotiana* glauca), water hyacinth (*Eichornia crassipes*), cape ivy (*Delairea odorata*), etc.) and animal (brown-headed cowbird (*Molothrus ater*), bull frog (*Rana catesbeiana*), crayfish (*Theragra Chalcormma*)) species, management, enhancement, and reclamation of existing equestrian and hiking trails, brown-headed cowbird eradication, water quality monitoring, riparian habitat enhancement, site inspection and maintenance, and success monitoring (fish and wildlife) for the Big Tujunga Conservation Area. Contact: Mr. Christopher Stone at Phone: (626) 458-6102 for additional information.

The Department believes that a newer FMMP exists for the Big Tujunga Wash Conservation Area (BTWCA), prepared by Chambers Group for Los Angeles County Department of Public Works Water Resources Division (LACoDPWWRD), dated October 2006, which was not included with the Streambed Notification. The Department is in receipt of a FMMP dated April 2000. The Department requests a copy of the FMMP dated October 2006.

The Applicant shall provide clarification for the following items, as found in the FMMP dated October 2006, PRIOR to the Execution of this Agreement. If the following items are already adequately addressed within the FMMP the Applicant shall identify the location of the items within the FMMP. The Department shall determine if they have been adequately addressed or require further information. Once these items have been verified within the FMMP they may be removed from this draft document PRIOR to its execution.

- Conservation Credits Remaining.

Listed below is a table summarizing the mitigation acres already used within the BTWCA by LACoDPWWRD projects.

100 Channel Clearing	Friendly Wood Drain	Thompson Creek Dam Seismic Rehab	Puddingstone Diversion Cleanout	San Dimas Cleanout	Big Dalton Cleanout	Burro Canyon Debris Basins	Live Oak	Big Tujunga Dam Seismic Rehab	Devil's Gate Cleanout
62.7	1.6	1.7	5.1	5.1	3.34	0.3	2.0	0.43	2.68

The Department has not yet finalized the total number of credits available for use by LACoDPWWRD in the BTWCA. The Applicant estimates a total of 247 acres including both jurisdictional and upland areas. The total acreage for the BTWCA that the Department currently acknowledges is 207 acres with 122.05 remaining for credit. It has been determined that 84.95 acres have already been used. The Department requests that LACoDPWWRD provide detailed maps depicting total acres, acres remaining for mitigation purposes, additional acres utilized not accounted for in the above table, acres representing areas that are not, or will not, be restored to functional habitat. The primary area of concern is found in and around the Cottonwood entrance, where the old gravel mining pad occurred. Some of this area is not going to be restored and will remain in use as parking.

- Existing Public Use

The number of horse trails remains a concern to the Department. The density of trails, side loops, and duplication is a concern, as these areas do not support habitat and reduce wildlife's ability to utilize adjacent habitat. The trail running parallel to Haines Creek, the only perennial water source in this area is also a concern. Acreage for trails used by equestrian groups in the area, particularly wider trails in the alluvial scrub, shall be explicitly identified. Areas beyond five feet in width that are being impacted by trail use shall be calculated and deducted from the total remaining acres as determined by the Applicant available for future mitigation credit. Trail widths in alluvial areas could be narrowed. The LACoDPWWRD shall define and restrict use on pre-determined paths for equestrian uses. Similarly, continued public access to the two large ponds found adjacent to the BTWCA, owned by the Army Corps of Engineers, but maintained by LACoDPWWRD, create an ongoing management problem. Since the ponds were mitigation for wetland impacts to the 210 freeway, the continued presence of visitors disrupting the ecology and the introduction of exotic animals is a concern. Further efforts to explore whether this area can be closed to public access other than special uses, education visits, and similar types of activities need to be addressed.

- Functional Analysis Ratings

Page 10, Sec 2.3.1- indicates the functional condition of alluvial scrub increased from .79 to .88 (although it is unclear if this is the whole area, or just alluvial scrub, and the last paragraph discusses riparian habitat despite an alluvial scrub header). Please clarify what changed to account for this increase in functional condition of alluvial scrub? In addition, please describe the method that was used to determine the functional values of the habitat.

- Invasive Plants

Table 3-1 shows the list of targeted weeds for control. Please add eupatory (*Ageratina adenophora*) to this list (note on page 7 that control of this species is occurring).

- Patrolling

This section does not contain much information. The Department requests LACoDPWWRD provide the following information: What will be the patrol frequency? Who is anticipated to do patrolling? Will they have authority to write tickets? How do they access the site? How much of the site is anticipated to be viewed during a two-hour visit? The Department would like a commitment to regular patrols within the BTWCA.

- Water Quality Monitoring

If conducted annually, the most optimum time of year or hydrologic condition should be specified to maximize the effectiveness of the monitoring.

- Section 3.4- Contingency Measures-wildfire related

A pro-active Wildfire Emergency Response Plan should be included. Wildfire suppression (bulldozing, backfires, firelines, and retardants) can cause substantial damage to resources. This Plan could take the form of a good map that is provided to the local fire stations, with legends indicating: access points, areas of high sensitivity, contacts, request to minimize any ground disturbance, etc. A meeting with the Fire Department to refine the strategy should also occur.

- Site Maintenance Issues:

There is little or no information on maintenance of infrastructure, particularly fencing and gates. Please include this information.

- Arroyo toad surveys:

We suggest these occur ONLY in years of relatively normal rainfall, or wetter. If surveys are conducted every third year as proposed in the plan, and that year happens to be very dry, too much time could pass between surveys. The Department recommends a more flexible plan.

- Santa Ana Sucker

We suggest these occur ONLY in years of relatively normal rainfall, or wetter. If surveys are conducted every third year as proposed in the plan, and that year happens to be very dry, too much time could pass between surveys. The Department recommends a more flexible plan.

- Cowbird trapping

Cowbird trapping should continue each year. The cowbird trapping program was instituted to restore the BTWCA as potential habitat for least Bell's vireo and southwestern flycatcher. The Department requests a detailed analysis of the Applicant's proposed cowbird trapping and reporting program. The Department also requests the report due date for the brown-headed cowbird trapping reports be adjusted to eliminate two separately dated reports. Currently, the due dates are different for the Department versus the United States Fish and Wildlife Service (USFWS).

- Reporting

There are a number of reports that are shown as being sent only to the USFWS. The Department would also like to receive copies of these reports.

- Costs

There is no information on costs contained within the FMMP. Normally, this type of plan would include an operation and maintenance budget estimate. The Department requests that LACoDPWWRD provide a detailed cost analysis and budget outline for funding all future long-term maintenance and restoration efforts within the BTWCA.

IMPACTS

Temporary Impacts:

Temporary, minor impacts are anticipated in Department jurisdictional areas as a result of the Applicant's activities. The FMMP will improve the habitat quality of approximately 60 acres of southern willow woodlands along Haines Canyon Creek and the Big Tujunga Ponds. The Department shall be notified immediately if unforeseen temporary impacts occur within Department jurisdictional areas not previously considered as part of this Agreement or the FMMP as a result of the Applicants project-related activities. Conditions may need to be added or revised, based on new information, to prevent further temporary impacts from occurring in Department jurisdictional areas.

MITIGATION

Mitigation for all Temporary Impacts:

The Applicant shall implement the FMMP as proposed.

CONDITIONS

Resource Protection:

1. The Applicant shall not remove, or otherwise disturb vegetation or conduct any other project-related activities on the project site, to avoid impacts to breeding/nesting birds from March 1st to September 1st, the recognized breeding, nesting and fledging season for most bird species in the San Gabriel Valley.

2. Prior to any project-related activities during the raptor nesting season, January 31st to August 1st, a qualified biologist shall conduct a site survey for active nests two weeks prior to any scheduled project-related activities. If breeding activities and/or an active bird nest(s) are located and concurrence has been received from the Department, the breeding habitat/nest site shall be fenced a minimum of 500 feet in all directions, and this area shall not be disturbed until the nest becomes inactive, the young have fledged, the young are no longer being fed by the parents, the young have left the area, and the young will no longer be impacted by the project.

3. Be advised, migratory nongame native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918(50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take of all birds and their active nests including raptors and other migratory nongame birds (as listed under the Federal MBTA). This Agreement therefore does not allow the Applicant, any employees, or agents to destroy or disturb any active bird nest (§3503 Fish and Game Code) or any raptor nest (§3503.5) at any time of the year.

4. Due to the potential presence of arroyo chub, Santa Ana speckled dace, Santa Ana sucker, arroyo southwestern toad, California red-legged frog, mountain yellow-legged frog, southwestern pond turtle, San Diego horned lizard, black-crowned night heron, great blue heron, great egret, snowy egret, Cooper's hawk, southwestern willow flycatcher, California gnatcatcher loggerhead shrike, and least Bell's vireo, pre-restoration and enhancement field surveys for these species must be concluded no sooner than three-days prior to any site preparation, clearing, or other project-related activities. Findings, including negative findings, shall be submitted to the Department in written format prior to any site preparation activities.

5. If any of the species identified in condition 4 of this Agreement, any other threatened or endangered species or species of special concern are found within 150 feet of the Haines Canyon Creek or Big Tujunga Wash, the Applicant shall contact the Department immediately of the sighting and shall request an on-site inspection by Department representatives (to be done at the discretion of the Department) to determine if work shall begin/proceed. If work is in progress when sightings are made,

the Applicant shall cease all work within 500 feet of the area in which the sighting(s) occurred and shall contact the Department immediately, to determine if work shall recommence.

6. A qualified biological monitor, with all required collection permits, shall be required on site during clearing, enhancement and restoration activities, and shall conduct surveys sufficient to determine presence/absence for species identified as occurring, or potentially occurring, on site and immediately adjacent to the project location.

7. If any life stages of any native vertebrate species are encountered during clearing, enhancement or restoration activities, the monitor shall make every reasonable effort to relocate the species to a safe location. Exclusionary devices shall be erected to prevent the migration into or the return of species into the work site. If no biological monitor is available, project-related activities shall not begin, or shall be halted, until the biological monitor is present.

8. The Applicant shall have a qualified wildlife biologist and qualified botanists prepare for distribution to all Applicants contractors, subcontractors, project supervisors, and consignees a "Contractor Education Brochure" with pictures and descriptions of all sensitive, threatened, and endangered plant and animal species, known to occur, or potentially occurring, on the project site. Applicant's contractors and consignees shall be instructed to bring to the attention of the project biological monitor any sightings of species described in the brochure. A copy of this brochure shall submit to the Department for approval prior to any site preparation activities.

9. Electronic and written annual reports shall be required. An annual report shall be submitted to the Department by Jan. 1st of each year for 5 years after implementation of the FMMP for all plantings associated with the Applicants mitigation. This report shall include the survival, % cover, and height by species of both trees and shrubs. The number by species of plants replaced, an overview of the revegetation and exotic plant control efforts, and the method used to assess these parameters shall also be included. Photos from designated photo stations shall be included. If after several years it becomes apparent that plants are not surviving, additional mitigation shall be determined at that time, and Applicant shall be responsible for implementation and costs of additional mitigation. Annual reports shall include site enhancement and restoration progress, species encountered during biological surveys, and current conditions of all trails and trail activities. The Annual Report shall include graphics for vegetation communities and trails systems. Electronic reports shall be submitted to the Department no later than January 1st of each year and should be submitted to the following email address: jjackson@dfg.ca.gov. Hard copies shall be submitted to the address that appears on the header of this Agreement with the same deadline as electronic version.

10. If the Department determines that any threatened or endangered species will be impacted by the implementation of the FMMP, the Applicant shall contact Environmental Scientist Scott Harris at (626) 797-3170 to obtain information on applying for the State Take Permit for state-listed species, or contact the San Diego Regional office for the current point of contact. The Applicant certifies by signing this Agreement that the project site has been surveyed and shall not impact any state-listed rare, threatened or endangered species.

11. The Applicant shall install and use fully covered trash receptacles with secure lids (wildlife proof) in all work areas that may contain food, food scrapes, food wrappers, beverage containers, and other miscellaneous trash.

12. No hunting shall be authorized/permitted within the Big Tujunga Wash Conservation Area.

Work Areas and Vegetation Removal:

13. Disturbance or removal of vegetation shall not exceed the limits approved by the Department as stated in the FMMP.

14. The work area shall be flagged to identify its limits within the project footprint to avoid unnecessary impact to ephemeral streams and riparian habitat not included in the FMMP. Vegetation shall not be removed or intentionally damaged beyond these limits.

15. No vegetation with a diameter at breast height (DBH) in excess of three (3) inches, not previously described in the FMMP shall be removed or damaged without prior consultation and Department approval.

16. No living native vegetation shall be removed from the channel, bed, or banks of the stream outside the project footprint, except as otherwise provided for in this Agreement or as proposed in the FMMP.

Equipment and Access:

17. Vehicles shall not be driven or equipment operated in water covered portions of a stream or lake, or where wetland vegetation, riparian vegetation, or aquatic organisms may be destroyed, except as otherwise provided for in the Agreement or as described in the FMMP, and as necessary to complete authorized work. It is understood that conditions may need to be revised or added based on new information, if the Department becomes aware of activities outside the FMMP.

18. Access to the work site shall be via existing roads and access ramps. If no ramps are available in the immediate area, the Applicant may construct a ramp in the footprint of the project. Any ramp shall be removed upon completion of the project.

Fill and Spoil:

19. This Agreement does not authorize the use of any fill.

Structures:

20. Any materials placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life shall be removed from the project site prior to inundation by high flows.

21. Areas of disturbed soils with slopes toward a stream or lake shall be stabilized to reduce erosion potential. Planting, seeding and mulching is conditionally acceptable. Where suitable vegetation cannot reasonably be expected to become established, non-erodible materials, such as coconut fiber matting, shall be used for such stabilization. Any installation of non-erodible materials not described in the original project description shall be coordinated with the Department. Coordination may include the negotiation of additional Agreement provisions for this activity.

22. Installation of bridges, culverts, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade. Bottoms of permanent culverts shall be placed below stream channel grade.

23. This Agreement does not authorize the construction of any temporary or permanent dam, structure, flow restriction except as described in the FMMP.

Pollution, Sedimentation, and Litter:

24. The Applicant shall comply with all litter and pollution laws. All contractors, subcontractors and employees shall also obey these laws and it shall be the responsibility of the Applicant to insure compliance.

25. No equipment maintenance shall be done within or near any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas under any flow.

26. The clean-up of all spills shall begin immediately. The Department shall be notified immediately by the Applicant of any spills and shall be consulted regarding clean-up procedures.

27. Silty/turbid water from dewatering or other activities shall not be discharged into the stream. Such water shall be settled, filtered, or otherwise treated prior to discharge. The Applicant's ability to minimize turbidity/siltation shall be the subject of pre-construction planning and implementation of the FMMP.

28. Water containing mud, silt, or other pollutants from equipment washing or other activities, shall not be allowed to enter an ephemeral stream or flowing stream or placed in locations that may be subjected to high storm flows.

29. If a stream channel offsite or its low flow channel has been altered it shall be returned, as nearly as possible, to pre-project conditions without creating a possible future bank erosion problem, or a flat wide channel or sluice-like area. The gradient of the streambed shall be returned to pre-project grade unless such operation is part of a restoration project, in which case, the change in grade must be approved by the Department prior to project commencement.

30. Rock, gravel, and/or other materials shall not be imported to, taken from or moved within the bed or banks of the stream, except as otherwise addressed in this Agreement.

Permitting and Safeguards:

31. The Department believes that permits/certification may be required from the Regional Water Quality Control Board and the Army Corp of Engineers for this project, should such permits/certification is required, and a copy shall be submitted to the Department.

32. The Department requires that the 247-acre Big Tujunga Wash Conservation Area be preserved in perpetuity by way of a conservation easement (CE). The Department shall be listed as the sole third party beneficiary, if the Applicant retains fee title, on mitigation lands. The Applicant shall arrange to obtain the CE. Current templates for the Department's approved CE format, along with mitigation banking templates, can be downloaded from the Department's website, www.dfg.ca.gov . The legal advisors can be contacted at (916) 654-3821. The Conservation Easement process must be completed prior to December 31, 2010, or as extended by the Department, or the Applicant shall be in violation of the terms and conditions of this Agreement.

Administrative:

33. All provisions of this Agreement remain in force throughout the term of the Agreement. Any provisions of the Agreement may be amended or the Agreement may be terminated at any time provided such amendment and/or termination are agreed to in writing by both parties. Mutually approved amendments become part of the original Agreement and are subject to all previously negotiated provisions.

34. If the Applicant or any employees, agents, contractors and/or subcontractors violate any of the terms or conditions of this Agreement, all work shall terminate immediately and shall not proceed until the Department has taken all of its legal actions.

35. The Applicant shall provide a copy of this Agreement, and all required permits and supporting documents provided with the notification or required by this Agreement, to all contractors, subcontractors, and the Applicant's project supervisors. Copies of this Agreement and all required permits and supporting documents, shall be readily available at work site at all times during periods of active work and must be presented to any Department personnel, or personnel from another agency upon demand. All contractors shall read and become familiar with the contents of this Agreement.

36. A pre-enhancement restoration meeting/briefing shall be held involving all the contractors and subcontractors, concerning the conditions in this Agreement.

37. The Applicant shall notify the Department, in writing, at least five (5) days prior to initiation of restoration enhancement (project) activities and at least five (5) days prior to completion of enhancement and restoration (project) activities. Notification shall be sent to the Department at PO Box 92890, Pasadena, California, 91109. Attn: Jamie Jackson. FAX Number (626) 296-3430, Reference # 1600-2008-0253-R5.

38. The Applicant herein grants to Department employees and/or their consultants (accompanied by a Department employee) the right to enter the project site at any time, to ensure compliance with the terms and conditions of this Agreement and/or to determine the impacts of the project on wildlife and aquatic resources and/or their habitats.

39. The Department reserves the right to enter the project site at any time to ensure compliance with terms/conditions of this Agreement.

40. The Department reserves the right to cancel this Agreement, after giving notice to the Applicant, if the Department determines that the Applicant has breached any of the terms or conditions of the Agreement.

41. The Department reserves the right to suspend or cancel this Agreement for other reasons, including but not limited to, the following:

a. The Department determines that the information provided by the Applicant in support of this Agreement/Notification is incomplete or inaccurate;

b. The Department obtains new information that was not known to it in preparing the terms and conditions of this Agreement;

c. The condition of, or affecting fish and wildlife resources change; and

d. The Department determines that project activities have resulted in a substantial adverse effect on the environment.

42. Before any suspension or cancellation of the Agreement, the Department will notify the Applicant in writing of the circumstances which the Department believes warrant suspension or cancellation. The Applicant will have seven (7) working days from the date of receipt of the notification to respond in writing to the circumstances described in the Department's notification. During the seven (7) day response period, the Applicant shall immediately cease any project activities which the Department specified in its notification as resulting in a substantial adverse effect on the environment and which will

continue to substantially adversely affect the environment during the response period. The Applicant may continue the specified activities if the Department and the Applicant agree on a method to adequately mitigate or eliminate the substantial adverse effect.

CONCURRENCE

County of Los Angeles
Department of Public Works Water Resources Division
Represented by Mr. Christopher Stone
900 S. Fremont Avenue
Alhambra, California, 91803
(626) 458-6102

Name (signature) Date

Name (printed)

Title

California Department of Fish and Game

Helen R. Birss Date
Environmental Program Manager
South Coast Region

This Agreement was prepared by Jamie Jackson, Environmental Scientist, South Coast Region.

APPENDIX B

Public Outreach and Worker Education Brochure

Big T's future depends on you!

Over time, small changes add up. Changing the Big T habitat – making new trails, swimming in the stream, or leaving behind litter – adds up over time. In many cases, the changes are irreversible or require a great deal of time and money to return habitat to what it was like before. These are changes that harm Big T's animals.

Protect Big T for future generations.

When people who visit Big T act to protect its animals and their habitat, everyone wins. Help safeguard Big T's future by sharing this information with a friend or becoming involved in community projects to preserve Big T.

¡El futuro de Big T depende de usted!

Con el tiempo, pequeños cambios se acumulan modificando el hábitat de Big T por ejemplo: haciendo nuevos caminos, nadando en el arroyo, o dejando basura, la cual se acumula a lo largo del tiempo. En muchos casos, los cambios son irreversibles o requieren una gran inversión de tiempo y dinero para regresar el hábitat original. Estos son los cambios que perjudican a los animales de Big T.

Proteja Big T para las futuras generaciones.

¡Cuando las personas que visitan Big T siguen las regulaciones que lo protegen, les comunican a otros acerca de la importancia de las regulaciones, o participan en proyectos comunitarios para preservar este lugar, los animales que viven en Big T y la gente que lo visita ganan!

www.ladpw.org/wrd/Projects/BTWMA/

All visitors must obey these regulations or a citation will be given:

a. Hours of Operation: Sunrise to Sunset
b. No fires of any kind
c. No swimming
d. No wheeled vehicles or bicycles
e. No camping
f. Dogs must be on leashes.

Todos los visitantes del Big T deben obedecer todas las reglas, los que no observan las reglas serán multados.

a. Horas de visita: Salida del sol al Atardecer
b. No fogatas de ningún tipo
c. No nadar
d. No vehículos o bicicletas
e. No acampar
f. Los perros deben estar con correas.

¿Preguntas? / Questions?

LACDPW: Grace Yu
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Big T

PUBLIC WORKS

Did you know that the Big Tujunga Wash is a protected "forest"

*Big T, as we like to call it, is maintained by the **County of Los Angeles Department of Public Works** (LACDPW). Big T is so unique that there are regulations to protect it from destruction and abuse. We hope that by learning more about Big T, you'll agree that these regulations make sense.*

¿Sabía usted que el Big Tujunga Wash es un "bosque" protegido?

Big T, como nos gusta llamarlo, es mantenido por el **Departamento de Obras Públicas del Condado de Los Angeles** (LACDPW). Big T es tan único que hay regulaciones para protegerlo de la destrucción y el abuso. Estas regulaciones provienen del Gobierno Federal, el Estado de California, y del gobierno local. Esperamos que al aprender más sobre Big T, estará de acuerdo en que estas regulaciones tienen sentido.

Big T is like a small island

It is surrounded by a large city. Roads, highways, and houses can be found just outside of Big T that are not suitable habitat for Big T's animals.

The plants and many of the animals that live here stay here. For several species of birds, Big T is an important resting place during their migration. For fish, Big T is their only home.

Over time the island has gotten smaller and smaller. Big T is sensitive to changes that come from altering or changing habitat. These changes can cause important habitat to disappear. When habitat disappears, animals disappear.

Big T es como una isla pequeña

Está rodeado de una ciudad grande. Caminos, carreteras, y casas se pueden encontrar a los alrededores de Big T que no ofrecen hábitat adecuado para los animales de Big T.

Las plantas y muchos de los animales que habitan este lugar se quedan aquí. Para varias especies de aves, Big T es un importante lugar de descanso durante su migración. Para los peces, Big T es su único hogar.

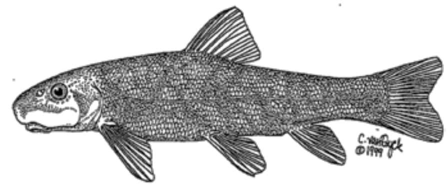
Con el tiempo la isla se ha hecho más pequeña. Big T es sensible a los cambios de su hábitat. Estos cambios pueden causar que un hábitat tan importante desaparezca. Cuando esto sucede los animales y las plantas también pueden desaparecer.

There is no place like Big T

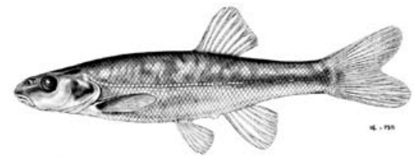
Big T is unique because of the plants and animals that live here. Several of these animals are so rare that regulations have been made to protect where they live. This means that the plants, water, soil, and rocks that make up their homes (or habitat) must not be disturbed or altered.

No hay lugar como Big T

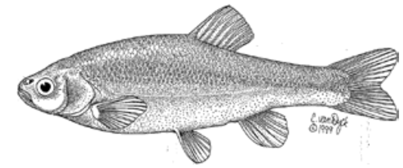
Big T es único por las plantas y los animales que viven aquí. Varios de estos animales son tan únicos que se han hecho regulaciones para proteger el lugar donde viven. Esto significa que las plantas, el agua, la tierra, y las piedras que componen sus hogares (o hábitat) no debe ser dañado.



Santa Ana sucker
(*Catostomus santaanae*)

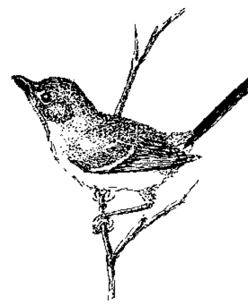


Santa Ana speckled dace
Carpita pinta
(*Rhinichthys osculus*)



Arroyo chub
(*Gila orcutti*)

Southwestern willow flycatcher
(*Empidonax traillii extimus*)



Bell's vireo
(*Vireo bellii pusillus*)

California Sycamore
(*Platanus racemosa*)

Black willow (*Salix nigra*)

Did you know that these plants and animals rely on each other to survive? And did you know that this community could one day disappear if we don't protect it?

¿Sabía usted que estas plantas y animales dependen de unos a otros para sobrevivir? ¿Y sabía usted que un día esta comunidad podría desaparecer si no la protegemos?

No dams/No presas

APPENDIX C

Plant and Wildlife Compendia

2014 Big Tujunga Wash Mitigation Area Master Plant List

Scientific Name	**Common Name**
GYMNOSPERMS	
PINACEAE	**PINE FAMILY**
*Cedrus deodara**	deodar cedar
*Pinus halepensis**	aleppo pine
ANGIOSPERMS (DICOTYLEDONS)	
ACERACEAE	**MAPLE FAMILY**
Acer negundo var. *californicum*	box elder
ANACARDIACEAE	**SUMAC OR CASHEW FAMILY**
Malosma laurina	laurel sumac
Rhus integrifolia	lemonade sumac
Toxicodendron diversilobum	Pacific poison oak
APIACEAE	**CARROT FAMILY**
*Conium maculatum**	poison hemlock
*Foeniculum vulgare**	sweet fennel
APOCYNACEAE (or ASCLEPIADACEAE)	**DOGBANE FAMILY**
*Vinca major**	Periwinkle
ASTERACEAE	**SUNFLOWER FAMILY**
*Ageratina adenophora**	sticky eupatory
Ambrosia acanthicarpa	annual bursage
Ambrosia artemisiifolia	annual ragweed
Artemisia californica	coastal sagebrush
Artemisia douglasiana	mugwort
Artemisia dracunculus	tarragon
Baccharis salicifolia	mule fat
*Carduus pychocephalus**	Italian thistle
*Centaurea melitensis**	tocalote
Cirsium occidentale var.*occidentale*	cobweb thistle
Conyza canadensis	Canadian horseweed
Heterotheca grandiflora	telegraph weed
Heterotheca sessiliflora	golden aster
*Hypochaeris glabra**	smooth cat's ear
*Lactuca serriola**	prickly lettuce
Lepidospartum squamatum	scalebroom
Malacothrix saxatilis	cliff desert dandelion
Pluchea odorata	salt marsh fleabane
Pseudognaphalium biolettii (bicolor)	bicolor cudweed
Pseudognaphalium canescens	fragrant everlasting
Rafinesquia californica	California plumeseed
Senecio flaccidus var. *douglasii*	sand-wash butterweed
*Sonchus asper**	spiny sowthistle
*Sonchus oleraceus**	common sowthistle
Stephanomeria pauciflora var. *pauciflora*	wire-lettuce

Scientific Name	**Common Name**
*Tanacetum parthenium**	feverfew
*Taraxacum officinale**	common dandelion
BETULACEAE	**BIRCH FAMILY**
Alnus rhombifolia	white alder
BIGNONIACEAE	**BIGNONIA FAMILY**
*Catalpa bignonioides**	southern catalpa
BORAGINACEAE	**BORAGE FAMILY**
*Echium candicans**	Pride of Madeira
BRASSICACEAE	**MUSTARD FAMILY**
*Hirschfeldia incana**	shortpod mustard
*Lobularia maritima**	sweet alyssum
Nasturtium officinale	watercress
*Sisymbrium altissimum**	tumble mustard
CACTACEAE	**CACTUS FAMILY**
Opuntia littoralis	coastal prickly pear
CAPRIFOLIACEAE	**HONEYSUCKLE FAMILY**
Sambucus nigra ssp. *caerulea (= S. mexicana)*	blue elderberry
*Stellaria media**	common chickweed
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Chenopodium sp.	goosefoot
CRASSULACEAE	**STONECROP FAMILY**
Dudleya lanceolata	coastal dudleya
CURCURBITACEAE	**GOURD FAMILY**
Marah macrocarpus	Cucamonga manroot
CUSCUTACEAE	**DODDER FAMILY**
Cuscuta sp.	dodder
*Chamaesyce maculata**	spotted spurge
Croton californicus	croton
*Euphorbia peplus**	petty spurge
*Ricinus communis**	castor bean
FABACEAE	**LEGUME FAMILY**
Acmispon scoparius (= Lotus s.)	common deerweed
*Medicago sativa**	alfalfa
*Melilotus albus**	sweet clover
*Spartium junceum**	Spanish broom
FAGACEAE	**OAK FAMILY**
Quercus agrifolia	California live oak
Quercus berberidifolia	scrub oak
GERANIACEAE	**GERANIUM FAMILY**
*Erodium cicutarium**	red-stemmed filaree
*Geranium rotundifolium**	roundleaf geranium
GROSSULARIACEAE	**GOOSEBERRY FAMILY**
Ribes aureum	golden currant
HYDROPHYLLACEAE	**WATERLEAF FAMILY**

Scientific Name	**Common Name**
Eriodictyon crassifolium	thickleaf yerba santa
Phacelia ramosissima	branching phacelia
JUGLANDACEAE	**WALNUT FAMILY**
Juglans californica (List 4.2)	Southern California walnut
LAMIACEAE	**MINT FAMILY**
*Marrubium vulgare**	horehound
Salvia mellifera	black sage
Stachys sp.	hedge nettle
LOASACEAE	**LOASA FAMILY**
Mentzelia laevicaulis	smoothstem blazingstar
MALVACEAE	**MALLOW FAMILY**
*Malva parviflora**	cheeseweed
*Malva sylvestris**	high mallow
*Ficus carica**	edible fig
*Ficus nitida**	Indian fig
MYRTACEAE	**MYRTLE FAMILY**
Eucalyptus sp. *	gum tree
NYCTAGINACEAE	**FOUR O'CLOCK FAMILY**
*Mirabilis jalapa**	marvel of Peru
OLEACEAE	**OLIVE FAMILY**
*Fraxinus udhei**	evergreen ash
Fraxinus velutina	velvet ash
*Ligustrum lucidum**	glossy privet
ONAGRACEAE	**EVENING PRIMROSE FAMILY**
Camissonia bistorta	California sun cup
Camissonia californica	California evening primrose
Clarkia unguiculata	elegant clarkia
Epilobium brachycarpum	tall annual willowherb
Oenothera elata	evening primrose
PAPAVERACEAE	**POPPY FAMILY**
Eschscholzia californica	California poppy
PLANTAGINACEAE	**PLANTAIN FAMILY**
*Plantago major**	common plantain
*Plantago psyllium**	sand plantain
PLATANACEAE	**PLANE TREE FAMILY**
Platanus racemosa	western sycamore
POLEMONIACEAE	**PHLOX FAMILY**
Eriastrum densifolium	giant woolly star
POLYGONACEAE	**BUCKWHEAT FAMILY**
Eriogonum fasciculatum	California buckwheat
Eriogonum gracile	slender wooly buckwheat
Polygonum hydropiperoides	swamp smartweed
Pterostegia drymarioides	California thread-stem
Rumex sp.	dock
*Rumex crispus**	curly dock

Scientific Name	**Common Name**
*Rumex pulcher**	fiddle dock
PRIMULACEAE	**PRIMROSE FAMILY**
*Anagallis arvensis**	scarlet pimpernel
RANUNCULACEAE	**BUTTERCUP FAMILY**
Delphinium cardinale	scarlet larkspur
RHAMNACEAE	**BUCKTHORN FAMILY**
Ceanothus sp.	ceanothus
ROSACEAE	**ROSE FAMILY**
Heteromeles arbutifolia	toyon
Prunus ilicifolia ssp. *ilicifolia*	holly-leaf cherry
Rosa californica	California rose
Rubus ursinus	California blackberry
SALICACEAE	**WILLOW FAMILY**
Populus fremontii	Fremont cottonwood
Salix exigua	narrowleaf willow
Salix gooddingii	Goodding's willow
Salix laevigata	red willow
Salix lasiolepis	arroyo willow
SCROPHULARIACEAE	**FIGWORT FAMILY**
Mimulus guttatus	common monkeyflower
*Verbascum virgatum**	wand mullein
*Veronica anagallis-aquatica**	water speedwell
SIMAROUBACEAE	**QUASSIA FAMILY**
*Ailanthus altissima**	tree of heaven
SOLANACEAE	**NIGHTSHADE FAMILY**
Datura wrightii	jimson weed
Nicotiana attenuata	coyote tobacco
*Nicotiana glauca**	tree tobacco
Solanum americanum	American black nightshade
ULMACEAE	**ELM FAMILY**
*Ulmus parvifolia**	Chinese elm
URTICACEAE	**NETTLE FAMILY**
Urtica dioica	stinging nettle
VITACEAE	**GRAPE FAMILY**
Vitis girdiana	desert wild grape
ZYGOPHYLLACEAE	**CALTROP FAMILY**
*Tribulus terrestris**	puncture vine
ANGIOSPERMS (MONOCOTYLEDONS)	
AGAVACEAE (or Liliaceae)	**AGAVE FAMILY**
Hesperoyucca whipplei (=Yucca w.)	chaparral yucca
AMARYLLIDACEAE	**AMARYLLIS FAMILY**
*Amaryllis belladonna**	belladonna lily
ASPHODELACEAE	**ALOE FAMILY**
Aloe sp.*	aloe vera
CYPERACEAE	**SEDGE FAMILY**

Scientific Name	**Common Name**
Cyperus sp.	flatsedge
*Cyperus involucratus**	umbrella plant
POACEAE	**GRASS FAMILY**
*Agrostis viridis**	bentgrass
*Arundo donax**	giant reed
*Avena barbata**	slender oat
*Avena fatua**	wild oat
*Bromus diandrus**	ripgut brome
*Bromus rubens**	red brome
*Cynodon dactylon**	bermuda grass
*Echinochloa crus-galli**	barnyard grass
*Ehrharta calycina**	perennial veldtgrass
*Lolium perenne**	perennial ryegrass
*Piptatherum miliaceum**	smilo grass
*Polypogon monspeliensis**	rabbitsfoot grass
*Schismus barbatus**	mediterranean schismus
*Triticum aestivum**	common wheat
*Vulpia myuros**	rat-tail fescue
TYPHACEAE	**CATTAIL FAMILY**
Typha domingensis	southern cattail
* non-native species	

2014 Big Tujunga Wash Mitigation Area Master Wildlife List

Scientific Name	**Common Name**
INVERTEBRATES	
MALACOSTRACA	**CRABS, LOBSTERS, SHRIMP**
CAMBARIDAE	**FRESHWATER CRAYFISH**
Procambarus clarkia	red swamp crayfish*
MOLLUSCA	**MOLLUSKS**
CORBICULIDAE	**BASKET CLAMS**
Corbicula fluminea	Asiatic Clam*
OSTEICTHYES (BONY FISHES)	
ACTINOPTERYGII	**RAY-FINNED FISHES**
CATOSTOMIDAE	**SUCKER FISHES**
Catostomus santaanae	Santa Ana sucker***
CENTRARCHIDAE	**SUNFISHES**
Lepomis cyanellus	green sunfish*
Lepomis macrochirus	bluegill *
Micropterus salmoides	largemouth bass*
CICHLIDAE	**CICHLIDS**
Oreochromis mossambicus	Mozambique tilapia*
CYPRINIDAE	**TRUE MINNOWS**
Carassius auratus	gold fish*
Cyprinus carpio	common carp*
Gila orcuttii	Arroyo chub**
POECILIIDAE	**LIVEBEARERS**
Gambusia affinis	western mosquitofish*
AMPHIBIANS	
RANIDAE	**TRUE FROGS**
Lithobates catesbeianus	American bullfrog*
REPTILES	
COLUBRIDAE	**EGG-LAYING SNAKES**
Lampropeltis getula californiae	California kingsnake
Pituophis catenifer	gopher snake
EMYDIDAE	**SLIDERS**
Actinemys marmorata pallida	southwestern pond turtle**
Chrysemys picta dorsalis	southern painted turtle*
Trachemys scripta elegans	red-eared slider*
PHRYNOSOMATIDAE	**SPINY LIZARDS**
Sceloporus occidentalis	western fence lizard
TEIIDAE	**WHIPTAILS AND RACERUNNERS**
Aspidoscelous tigris	western whiptail

Scientific Name	**Common Name**
BIRDS	
ACCIPITRIDAE	**HAWKS**
Accipiter cooperii	Cooper's hawk**
Buteo jamaicensis	red-tailed hawk
Buteo lineatus	red-shouldered hawk
AEGITHALIDAE	**BUSHTITS**
Psaltriparus minimus	bushtit
ANATIDAE	**DUCKS, GEESE AND SWANS**
Anas americana	American wigeon
Anas platyrhynchos	mallard
Branta canadensis	Canada goose
ARDEIDAE	**HERONS AND EGRETS**
Ardea alba	great egret
Ardea herodias	great blue heron
Butorides virescens	green heron
CATHARTIDAE	**NEW WORLD VULTURES**
Cathartes aura	turkey vulture
COLUMBIDAE	**DOVES AND PIDGEONS**
Zenaida macroura	mourning dove
CORVIDAE	**JAYS, CROWS, AND THEIR ALLIES**
Aphelocoma californica	western scrub-jay
Corvus brachyrhynchos	American crow
Corvus corax	common raven
EMBERIZIDAE	**SPARROWS AND THEIR ALLIES**
Junco hyemalis	dark-eyed junco
Melospiza melodia	song sparrow
Melozone crissalis	California towhee
Pipilo maculatus	spotted towhee
Zonotrichia leucophrys	white-crowned sparrow
FALCONIDAE	**FALCONS**
Falco sparverius	American kestrel
FRINGILLIDAE	**FINCHES**
Carduelis lawrencei	Lawrence's goldfinch
Carduelis psaltria	lesser goldfinch
Carduelis tristis	American goldfinch
Carpodacus mexicanus	house finch
HIRUNDINIDAE	**SWALLOWS**
Petrochelidon pyrrhonota	cliff swallow
Stelgidopteryx serripennis	northern rough-winged swallow
ICTERIDAE	**BLACKBIRDS AND ORIOLES**
Agelaius phoeniceus	red-winged blackbird

Scientific Name	**Common Name**
Molothrus ater	brown-headed cowbird*
MIMIDAE	**MOCKINGBIRDS AND THRASHERS**
Mimus polyglottos	northern mockingbird
Toxostoma redivivum	California thrasher
ODONTOPHORIDAE	**NEW WORLD QUAIL**
Callipepla californica	California quail
PARIDAE	**TITMICE AND CHICKADEES**
Baeolophus inornatus	oak titmouse
PARULIDAE	**WOOD-WARBLERS**
Dendroica coronata	yellow-rumped warbler
Geothlypis trichas	common yellowthroat
PASSERIDAE	**OLD WORLD SPARROWS**
Passer domesticus	house sparrow
PICIDAE	**WOODPECKERS**
Colaptes auratus	northern flicker
Melanerpes formicivorus	acorn woodpecker
Picoides nuttallii	Nuttall's woodpecker
Picoides pubescens	downy woodpecker
PTILOGONATIDAE	**SILKY FLYCATCHERS**
Phainopepla nitens	phainopepla
RALLIDAE	**RAILS**
Fulica americana	American coot
REGULIDAE	**KINGLETS**
Regulus calendula	ruby-crowned kinglet
SCOLOPACIDAE	**SANDPIPERS**
Gallinago delicata	Wilson's snipe
STURNIDAE	**STARLINGS AND MYNAS**
Sturnus vulgaris	European starling*
SYLVIIDAE	**WRENTITS**
Chamaea fasciata	wrentit
TROCHILIDAE	**HUMMINGBIRDS**
Calypte anna	Anna's hummingbird
TROGLODYTIDAE	**WRENS**
Cistothorus palustris	marsh wren
Thryomanes bewickii	Bewick's wren
TURDIDAE	**BLUEBIRDS**
Catharus guttatus	hermit thrush
Sialia mexicana	western bluebird
TYRANNIDAE	**TYRANT FLYCATCHERS**
Myiarchus cinerascens	ash-throated flycatcher
Sayornis nigricans	black pheobe

Scientific Name	**Common Name**
Tyrannus vociferans	Cassin's kingbird
MAMMALS	
CANIDAE	**DOGS**
Canis lupus familiaris	domestic dog*
Canis latrans	coyote
EQUIDAE	**HORSES AND ALLIES**
Equus caballus	domestic horse*
FELIDAE	**CATS**
Lynx rufus	Bobcat
LEPORIDAE	**HARES AND RABBITS**
Lepus californius	black-tailed jackrabbit
Syvilagus audubonii	desert cottontail
MURIDAE	**MICE AND RATS**
Neotoma sp.	woodrat
PROCYONIDAE	**RACCOONS AND RINGTAILS**
Procyon lotor	Northern raccoon
SCIURIDAE	**SQUIRRELS**
Sciurus niger	fox squirrel*
Spermophilus beecheyi	California ground squirrel
*Non-native species **CDFW Species of Special Concern/Watch List Species/FP Species ***State and/or Federally Listed Species	

APPENDIX D

2014 Brown-headed Cowbird Trapping Report

2014 BIG TUJUNGA WASH MITIGATION AREA

BROWN-HEADED COWBIRD CONTROL PROGRAM

GRIFFITH WILDLIFE BIOLOGY

2014 BIG TUJUNGA WASH MITIGATION AREA

BROWN-HEADED COWBIRD CONTROL PROGRAM

prepared for:

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EXECUTIVE SUMMARY

Four cowbird traps were operated in the vicinity of Big Tujunga Wash Mitigation Area near Hansen Dam in 2014. The purpose of the trapping was to reduce the incidence of brown-headed cowbird (*Molothrus ater*) brood parasitism among local native host species, particularly endangered, threatened, or sensitive host species including the least Bell's vireo (*Vireo bellii pusillus*) and the southwestern willow flycatcher (*Empidonax traillii extimus*). The traps were operated from April 1 to June 30 (13 weeks). Each trap contained at least 1 decoy cowbird as of April 9, and the preferred 2-3 male and 3-5 female decoys as of April 22 and subsequently.

Seventy-five (75) cowbirds were removed, including 51 males, 24 females, and 0 juveniles, which is below the 2001-2014 average of 117.

The male: female capture ratio was 2:1. Most of the adult cowbirds were captured in weeks 4-6 (23% of the trapping period): 24/51 males (47%) and 21/24 females (88%). No banded cowbirds or other banded birds were captured and the traps were not vandalized.

In addition to cowbirds, 338 non-target birds consisting of 6 different species were captured, of which all but 2 (0.6%) were released unharmed. This total includes the multiple capture, release, and recapture of a smaller number of individuals. No sensitive or endangered, threatened, or candidate non-target species were captured. No decoy or non-target birds died due to lack of food or water, or because of unclean conditions.

No changes to the number of traps, dates of operation, or operation protocol are recommended.

<u>Key words:</u> Big Tujunga Wash, brood parasitism, brown-headed cowbird (*Molothrus ater*), California, California gnatcatcher (*Polioptila californica californica*), coastal sage scrub, Hansen Dam, least Bell's vireo (*Vireo bellii pusillus*), riparian, southwestern willow flycatcher (*Empidonax traillii extimus*).

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INTRODUCTION

Brown-headed Cowbird

The brown-headed cowbird (*Molothrus ater*, cowbird) is a brood parasite. Cowbirds do not make nests or raise young. They lay eggs in the nests of other birds, called hosts, which then raise the cowbird. Female cowbirds defend breeding territories (Darley 1968, 1983; Raim 2000) and can lay 40-100 eggs each spring (Scott and Ankney 1983, Holford and Roby 1993, Smith and Arces 1994). Cowbirds may remove or puncture host eggs during parasitism events, and may kill older host nestlings to initiate host renesting and create parasitism opportunities. Cowbirds are extreme generalists and parasitize nearly every species (at least 220) with which they are sympatric (Friedmann 1963, Friedmann and Kiff 1985). This lack of host specificity allows the extirpation or extinction of rare species (like the vireo) without harm to the cowbird.

Brown-headed cowbirds (males dark, females light).

Two cowbird eggs in a least Bell's vireo nest.

Cowbirds are native to the Great Plains and were closely associated with bison. It is possible that brood parasitism developed because cowbirds traveled with bison and seldom remained in one locale long enough to build a nest, lay and incubate a clutch of eggs, raise nestlings, and care for fledglings. Host species that co-evolved with cowbirds on the Great Plains and margins have behavioral defense mechanisms against parasitism, including cowbird egg removal, nest abandonment, and re-clutching. Hosts in the Far West generally do not.

Cowbirds were first documented in California at Borrego Springs in 1896; the first cowbird egg found in California was in a least Bell's vireo (*Vireo bellii pusillus*, vireo) nest on the San Gabriel River (Unitt 1984). By 1930, cowbirds were "well established" throughout the region (Willett 1933); by 1955 they had reached British Columbia (Flahaut and Schultz 1955). Cowbirds may or may not have reached the Far West without the unwitting aid of man. Regardless, massive anthropogenic landscape alteration, particularly the provision of year-round cowbird forage by agricultural and livestock operations and the coincident wholesale destruction of native habitats, allowed the establishment of an artificially large cowbird population, and the resulting devastating impact upon local hosts.

In contrast to the increase in distribution and abundance of cowbirds in California over the last century, populations of most native birds are in decline, primarily due to their dependence upon increasingly reduced, fragmented, and degraded native habitats in which they are less productive and more susceptible to predation and parasitism (Gaines 1974, Goldwasser et al 1980). Thus there is an inverse relationship between the amount of native habitat and associated avian populations, such as the vireo and flycatcher, and the number and subsequent impact of brown-headed cowbirds and predators upon such populations.

Cowbird eggs hatch sooner than host eggs and the young are larger and more aggressive. Therefore cowbird chicks are able to outcompete their host nest-mates; small host chicks are often simply smothered or starved to death by the older, larger cowbird chick. Large host species can raise a cowbird without significant harm to their own reproductive effort (Weatherhead 1989, Robinson et al. 1995). Small host species like the endangered vireo, southwestern willow flycatcher (*Empidonax traillii extimus*, flycatcher), and California gnatcatcher (*Polioptila californica californica*) can raise only a cowbird chick and none of their own young from parasitized nests (Grzybowski 1995). Nest failure from predation or weather results in re-nesting and normal reproductive success. Brood parasitism, however, consumes the time and energy of an entire breeding season and results in complete reproductive failure (Griffith and Griffith 2000). Decreased productivity caused by persistent cowbird parasitism caused or contributed to the endangered/threatened status of these host species (USFWS 1986, 1993, 1995, 1998).

Cowbird chick in California gnatcatcher nest.

Cowbird chick and smothered/starved gnatcatcher chick.

<u>Cowbird Trapping</u>

The recipe for least Bell's vireo recovery is simple: habitat protection (including land acquisition, exclusion of motorized vehicles and domestic/feral animals, and removal of invasive plants such as *Arundo donax* and *Tamarisk spp*.) combined with cowbird trapping. It has been repeatedly demonstrated that parasitism can be dramatically reduced or eliminated, even over large areas, by removing cowbirds from targeted host habitat during the host breeding season (for the vireo, minimally April – June 30; non-breeding season trapping can also be helpful) using several traps spaced at roughly 1 km intervals within host habitat ("topical trapping") (Griffith and Griffith 2000). More traps are needed for large, wide rivers, or if there are cowbird foraging areas such as dairies or stables nearby. Cowbird trapping reduces parasitism rates among the vireo from pre-trapping levels of 50%-100% to essentially zero. The entire avian host community benefits from trapping, not just the primary target species (unlike nest monitoring/ cowbird egg removal). For the vireo, cowbird trapping increases per-pair productivity from about 1.3 young per pair to more than 3.5 per pair; the difference between decreasing populations / extinction and increasing populations / recovery (Griffith and Griffith 2000). In areas where such topical trapping has been performed for several years, the abundance and diversity of all host species present (not just the intended beneficiary endangered species) has increased markedly (Griffith and Griffith 2000).

The traps are baited with live decoy cowbirds, abundant bait seed and clean water, shade, and perches to attract cowbirds whether they are seeking food, water, shelter, companionship, and/or sex. Since female cowbirds lay the eggs, they are the primary targets of trapping programs. Males are also important as they may participate in egg removal and host nest destruction activities, and are required to fertilize each egg before it is laid. The sex ratio of the at-large cowbird population is assumed to be 1:1. The goal of trapping programs is to capture as many females as possible and achieve a capture sex ratio at or below 1:1.

Male cowbirds are more active and vocal (attractive as decoys) when at least 2 are present; female cowbirds are more likely to enter traps containing more females than males (GWB 1992). Therefore, at least 2 male and 3 female decoy cowbirds are utilized in each trap (and often 3m/5f).

The capture of non-target birds (non-cowbirds) is undesirable yet unavoidable. Many non-target birds are less hardy than cowbirds. To reduce non-target captures, the capture slot is only 1 3/8 inches wide (large enough for cowbirds, small enough to exclude many non-target species), 1-inch hardware cloth is used for the trap panels (small enough to contain cowbirds yet large enough to allow smaller species to exit), and bait seed without sunflower seed is utilized (sunflower seed attracts some non-target species but not cowbirds; cowbirds prefer millet). To reduce non-target mortality, the traps are checked daily and non-target species are handled with care and released immediately. Some predation by hawks, owls, and snakes, and some mortality from intraspecific competition within the traps (particularly among towhees), is inevitable. The goal of trapping programs is to achieve 0% non-target species mortality; rates above 2% are considered unacceptable and indicative of poorly managed programs (GWB 1992).

Male cowbird interacts with decoys before entering trap.

Cowbirds foraging for seed and insects at a dairy.

Cowbird Trapping at Big Tujunga

The cowbird control project at Big Tujunga Wash Mitigation Area was initiated in 2001 and performed in 2001-2006 and 2009-2014. Its purpose is to enhance reproductive success among the least Bell's vireo and other host species by decreasing or eliminating cowbird brood parasitism by removing cowbirds from riparian habitat.

Cowbird traps have also been operated immediately downstream at Hansen Dam Basin in 1996, 1997, and 2001-2014 (GWB 2014), and immediately upstream of Interstate 210 at Angeles National Golf Course in 2008-2014 (GWB 2014a).

STUDY AREA

Big Tujunga Wash Mitigation Area is located in the northwestern portion of the Los Angeles basin in Los Angeles County, California (Figure 1). The site has a typical Mediterranean climate with warm, dry summers and cool, wet winters. The wash supports healthy stands of high-quality willow-dominated habitat of the type preferred by the least Bell's vireo and southwestern willow flycatcher. Some coastal sage scrub of the type preferred by the California gnatcatcher is found in the wash and surrounding hills.

A growing population of least Bell's vireo is found immediately downstream within the Hansen Dam Basin. In 2009, 44 sites occupied by vireos (39 pairs, 5 single males) were detected within the Hansen Dam Basin (GWB 2009). Vireos are expanding their range slightly upstream from the basin, but are not known to have occupied the Big Tujunga Wash study area (upstream of the Hansen Dam Stables and downstream of I-210).

A complete natural history of the study area is available in Big Tujunga Wash Master Mitigation Plan (Chambers Group, Inc 2000).

METHODS

Four cowbird traps were placed, activated, operated, serviced, disassembled, and stored per the *Brown-headed Cowbird Trapping Protocol* (GWB 1992, updates) and state and federal permit requirements (Figures 2-4). Trap 1 (Hansen Dam Stables) and Traps 3 and 4 (Gibson Ranch) were in foraging areas. Trap 2 and Trap 3 were within the Big Tujunga Wash Mitigation Area adjacent to riparian and coastal sage habitat. The traps were placed, assembled, and activated on April 1, then operated from April 1 to June 30, 2014 (91 days, 13 weeks).

Each trap is 6 feet wide, 8 feet long, and 6 feet tall, with a 1 3/8 inch wide capture slot on top through which cowbirds can drop down and in but cannot fly up and out. The traps include: 1 floor, 2 side, 2 end (door and back), and 2 top panels, and a plywood slot board.

Transporting cowbird trap panels to the trap site.

Cowbird trap placed and "flowered" for easy assembly.

Each trap was aligned in the field on a north-south axis. A foraging tray was placed on the front portion of the floor panel centered under the capture slot. Four perches made of dead giant reed or ½" diameter dowel were installed in each trap: one in each trap corner at chest height (except above the door) and one in a rear corner at knee height (for subordinate birds). A warning/ informative sign was stapled to the front of each trap (Appendix 1). Shade cloth was applied to the west-facing side panel. Finally, a one-gallon water guzzler, approximately 1 lb of sunflower-free wild birdseed (on the foraging tray), and live decoy cowbirds were added to each trap, and the trap was locked.

Each trap contained at least 1 decoy cowbird as of April 9; decoy numbers were built to the preferred 2-3 male and 3-5 female live decoys as of April 22 and subsequently maintained at that level. The right primary wing feathers of each female decoy were kept clipped to ensure their demise upon accidental release or escape. Many of the live decoys used to stock the traps in the early season were captured off-site.


Trap assembly supplies.


Bait seed ready to be added through the capture slot.


Shade cloth on the west-facing panel.


Adding live decoy cowbirds to trap from transport cage.


Unclipped wing.


Clipped wing.

The traps were serviced daily from April 1 to June 30. Daily servicing consisted of releasing all non-target birds, adding bait seed, adding water and/or cleaning the water guzzler as needed, wing-clipping newly captured female cowbirds, adding or removing decoy cowbirds to maintain the preferred decoy ratio, repairing or replacing the perches, foraging pad, sign, shade cloth or lock as needed, repairing damage from vandals, if any, and recording all activities on a data sheet. Data sheets were submitted daily to the task manager. The traps were deactivated, disassembled, and transported to off-site storage at the end of June.

The number of cowbirds removed is a net number calculated by subtracting from the gross number of cowbirds captured: the number of banded cowbirds released, cowbirds released by vandals, cowbirds accidentally released, and unexplained missing decoy cowbirds. Captured cowbirds not utilized as decoys were euthanized with carbon monoxide and provided as forage to raptor rehabilitation/reintroduction facilities. A complete cowbird trapping protocol is available from Griffith Wildlife Biology (GWB 1992).

This project was performed under the authority of USFWS Federal Endangered Species Permit TE 758175-7 and a Letter Permit from the California Department of Fish & Wildlife. The Principal Investigator was J.T. Griffith. The Project Manager was J.C. Griffith. The Trap Technicians were M. Birney, J.T. Griffith, and K. Griffith.

RESULTS

Seventy-five (75) cowbirds were removed in 2014, including 51 males, 24 females, and 0 juveniles (Table 1, Table 2). The male: female capture ratio was 2:1. No banded cowbirds or other banded birds were captured. The first cowbirds (5 males) were captured in Trap 4 on April 13. As is typical, most of the adult cowbirds were captured as they dispersed into the study area early in the season. During Weeks 4-6 (April 22 – May 12; 23% of the trapping period), 24/51 males (47%) and 21/24 females (87.5%) were removed (Figure 5).

All trap sites except Trap 2 (0 males, 0 females, 0 juveniles) performed well and should be utilized in 2015. Trap 4 captured the most males (31) and females (14).

In addition to cowbirds, 338 non-target birds of 6 species were captured, of which all but 2 (0.6%) were released unharmed (Table 3). The mortality was caused by intraspecific competition within the traps between adult California towhees (*Melozone crissalis*). The total includes the multiple capture, release, and recapture of a smaller number of individuals. No sensitive or endangered, threatened, or candidate non-target species were captured.

No decoy or non-target birds died due to lack of food or water, or because of unclean conditions. The traps were not vandalized in 2014; traps were operational for all 364 traps days.

The time spent at each trap each day, exclusive of travel time, ranged from 5 minutes to 60 minutes depending upon: the number of cowbirds and non-target birds captured and released, the number of live decoy transfers necessary to maintain the proper decoy ratio, the number of water guzzlers scrubbed, the number and severity of vandalism events, and other variables.

DISCUSSION AND CONCLUSIONS

Extremely hot, dry, and windy conditions early in the spring seemed to disrupt the typical movements, numbers, and behavior of both cowbirds and vireos, making the 2014 somewhat anomalous. To obtain decoy cowbirds (the four Mitigation Area traps require at least 8 males and 12 females) GWB operates traps in Riverside County in March at large dairies, where there are normally thousands of cowbirds. In 2014, there were only a few hundred cowbirds present. Conditions were similar at and adjacent to Gibson Ranch (Traps 3 and 4), with fewer cowbirds present this year than in past years. We presume that the phenomenon was weather-related, and not indicative of a long-term trend or a reduction in cowbird numbers regionally.

The number of cowbirds removed in 2014 (51 males, 24 females, 0 juveniles = 75) is at the low end but within the range of 2001-2014 numbers: males r= 9-103 avg 56.1; females r= 11-111 avg 56.5; juveniles r= 0-18 avg 4.33. It is good to be reminded that the objective of cowbird trapping is to reduce or eliminate brood parasitism among targeted host species, not (necessarily) to capture large numbers of cowbirds. If the latter were the primary goal, traps would be operated only at dairies and stables (where large numbers of cowbirds can be captured, with little effect on parasitism rates) and not along the river (where cowbird density is low, but where the females captured are those breeding in the immediate area). The Mitigation Area foraging area traps are immediately adjacent to the riparian habitat, so their captures are hugely impactful.

The removal of 24 females in 2014 precluded up to 960-1,440 parasitism events (40-60 eggs per female) allowing the production of as many as 3,840-5,760 songbird young (4 per otherwise parasitized nest) in the study area. Because not all parasitism events are viable and not all cowbird eggs are laid in the nests of small hosts, the actual numbers of cowbird eggs and songbird young are likely much lower but still significant.

Locally raised cowbirds are easily and quickly captured after fledging, and are therefore good indicators of the efficacy of a trapping program. Despite the overall low capture numbers, zero juvenile cowbirds were removed in 2014, suggesting that cowbird parasitism was essentially eliminated in the study area in 2014.

Topical trapping reduces/ eliminates brood parasitism in a targeted area, to broad general benefit (Griffith and Griffith 2000). Annual topical trapping does not, however, reduce the regional cowbird population (if only because so few cowbirds are trapped in so few areas). If it did, the number of cowbirds captured each year would gradually decline, as would the need for cowbird control. However, the number of cowbirds removed each year has not declined (despite down years in 2013-2014, 2009-2012 were the highest per-trap capture totals in the 12-year period, even with a 91 day vs. 122 day trapping season). If cowbirds were not removed each year, the parasitism rate among hosts would return to pre-trapping levels.

In the absence of proven regional cowbird control, the Big Tujunga Wash Mitigation Area cowbird control project, which successfully removes the local cowbirds and reduces parasitism in the study area to near 0%, will be required indefinitely.

MANAGEMENT RECOMMENDATIONS

1. No changes in the number of traps (4), operation dates (April 1 to June 30), or operation protocol are recommended.

2. Trap 2, the sole (pure) riparian-area trap, could be resituated within the Mitigation Bank Area in hopes of increasing efficacy. The trap site performed well in 2012 (removed 2 males and 4 females) but not in 2013 (1 male, 0 females) or 2014 (0 males, 0 females). It is possible that the site would do well in 2015. We recommend that alternative trap sites, somewhere west of the current site, be explored in late March 2015, and that if a better site is located that it be utilized.

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Figure 1. 2014 Big Tujunga Wash Mitigation Area brown-headed cowbird control project study area.

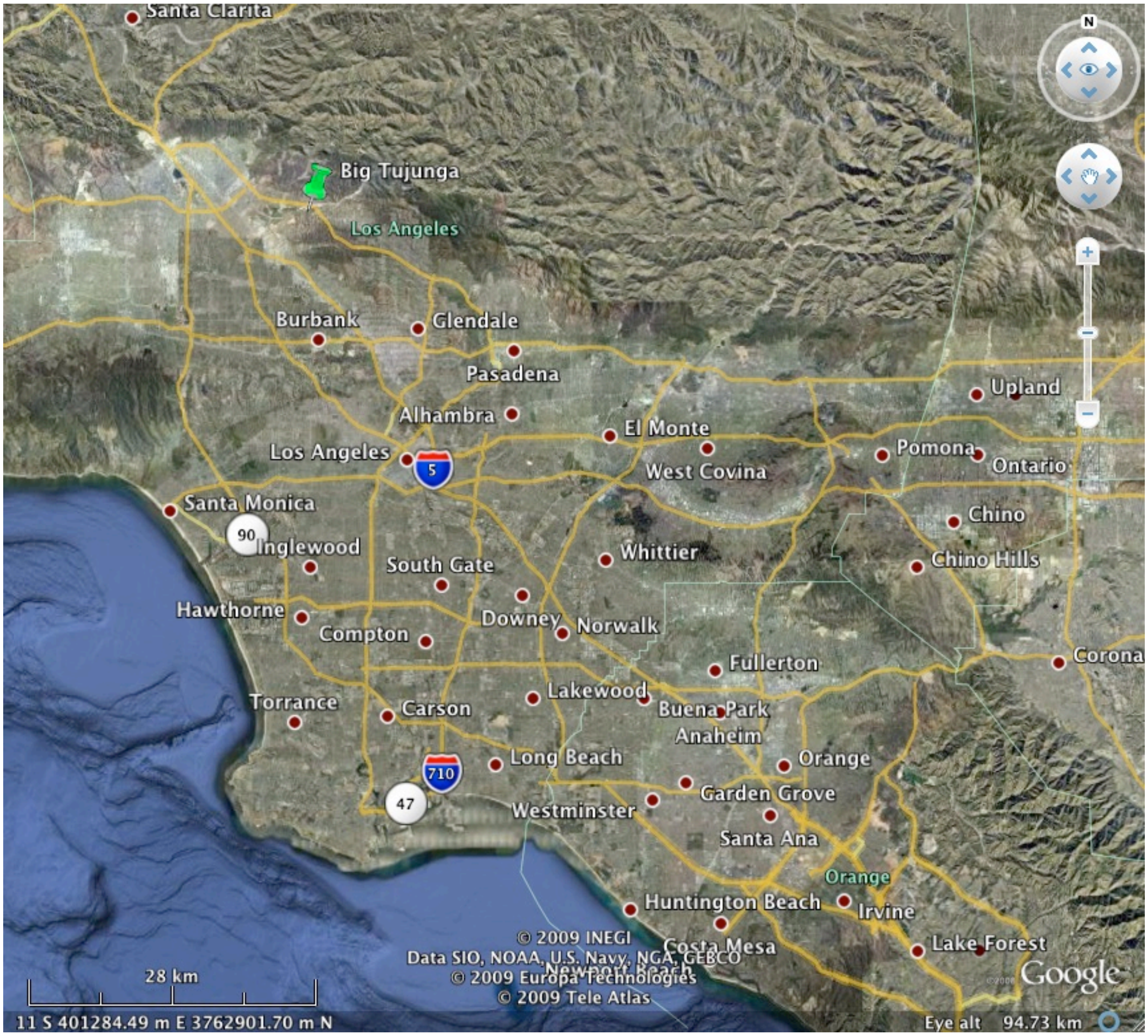


Figure 2. 2014 Big Tujunga Wash Mitigation Area brown-headed cowbird trap locations.

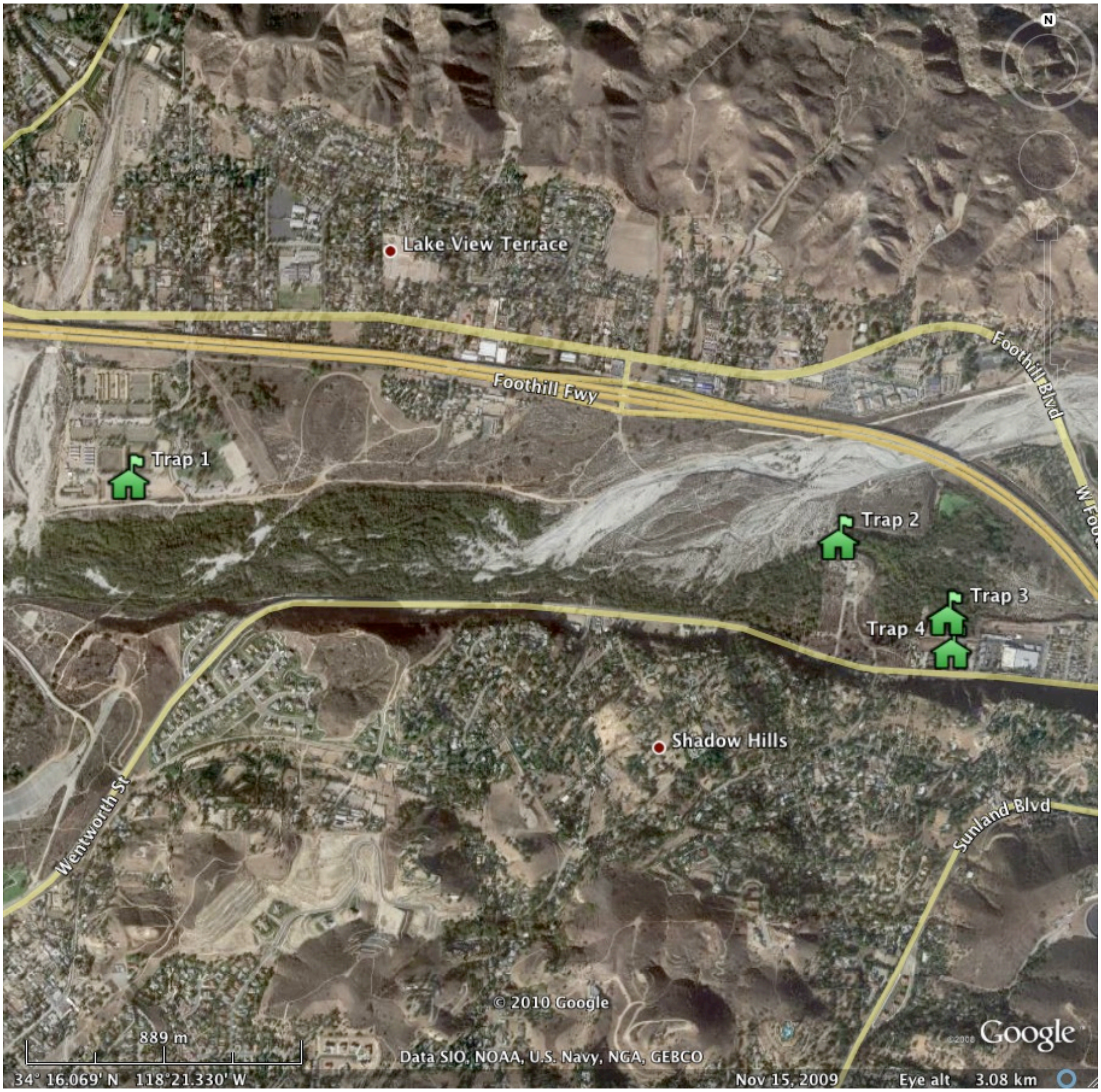
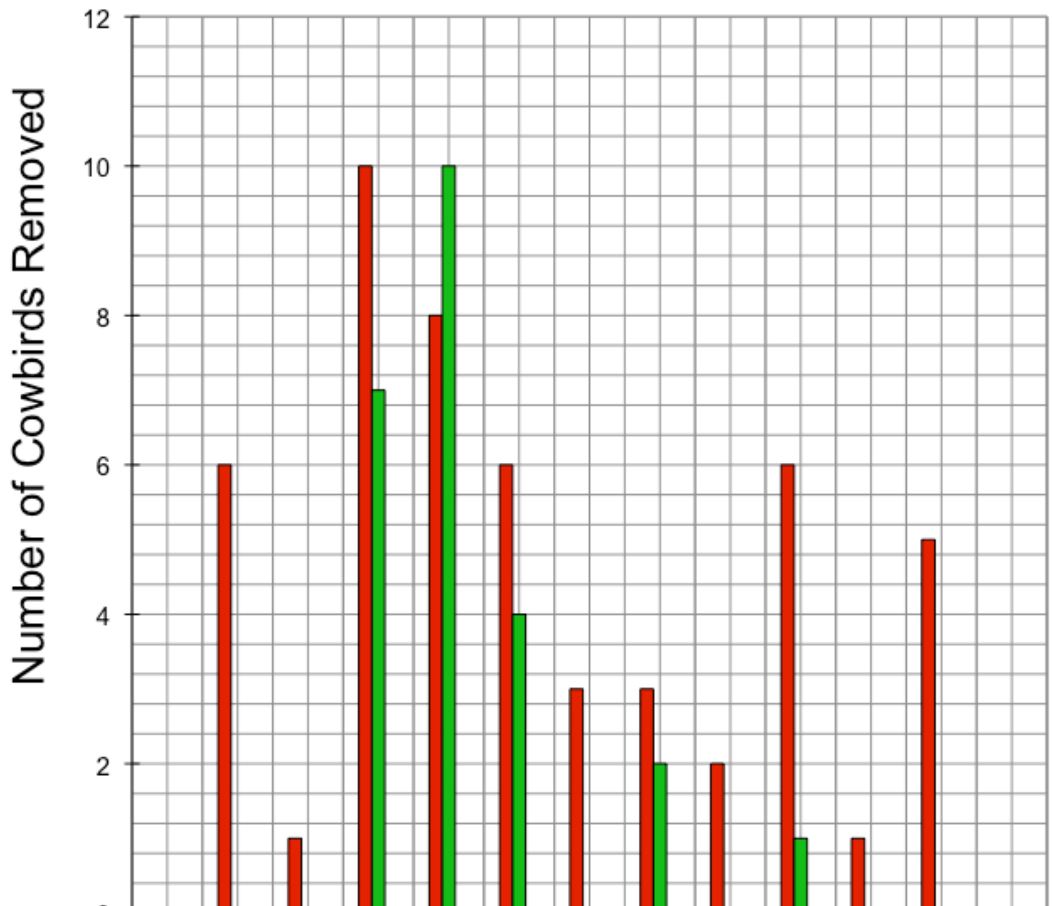


Figure 3. 2014 Big Tujunga Wash Mitigation Area brown-headed cowbird Trap 1 (top) and Trap 2 (bottom).

Figure 4. 2014 Big Tujunga Wash Mitigation Area brown-headed cowbird Trap 3 (top) and Trap 4 (bottom).

Figure 5. Number of male (M), female (F), and juvenile (J) cowbirds removed per week at and in the Vicinity of Big Tujunga Wash Mitigation Area in 2014.



	1-7	8-14	15-21	22-28	29-5	6-12	13-19	20-26	27-2	3-9	10-16	17-23	24-30
M	0	6	1	10	8	6	3	3	2	6	1	5	0
F	0	0	0	7	10	4	0	2	0	1	0	0	0
J	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 1. Number of brown-headed cowbirds captured at and in the vicinity of Big Tujunga Wash Mitigation Area, 2001-2014.

Year	Number of Traps	Trapping Period	Number of Cowbirds Captured				Number Per Trap	M:F Ratio
			Male	Female	Juvenile	Total		
2001	7	3/15 - 7/15	37	24	9	70	10.00	1.54
2002	7	3/15 - 7/16	66	105	2	173	24.71	0.63
2003	7	3/15 - 6/19	9	11	0	20	2.86	0.82
2004	7	3/15 - 7/15	46	37	6	89	12.71	1.24
2005	7	3/30 - 8/1	53	66	18	137	19.57	0.80
2006	4	4/6 - 6/29	30	24	2	56	14.00	1.25
2009	4	4/1 - 6/30	78	111	3	192	48.00	0.70
2010	4	4/1 - 6/30	78	67	1	146	36.50	1.16
2011	4	4/1 - 6/30	103	99	9	211	52.75	1.04
2012	4	4/2 - 6/30	68	68	1	137	34.25	1.00
2013	4	4/1 - 6/30	54	42	1	97	24.25	1.29
2014	4	4/1 - 6/30	51	24	0	75	18.75	2.13
TOTAL	63		673	678	52	1403	22.27	0.99
AVG	5.73		56.08	56.50	4.33	116.92	20.41	0.99

2001-2005: Chambers Group, Inc. 2005
2006-2013: Griffith Wildlife Biology (GWB) 2006-2013

Table 2. Number of male (M), female (F), and juvenile (J) cowbirds captured per day, per week, per trap, and total at and in the vicinity of Big Tujunga Wash Mitigation Area in 2014.

Date	Trap 1			Trap 2			Trap 3			Trap 4			TOTAL		
	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J
Apr 1													0	0	0
2													0	0	0
3													0	0	0
4													0	0	0
5													0	0	0
6													0	0	0
7													0	0	0
wk 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8													0	0	0
9													0	0	0
10													0	0	0
11													0	0	0
12													0	0	0
13										5			5	0	0
14										1			1	0	0
wk 2	0	0	0	0	0	0	0	0	0	6	0	0	6	0	0
15													0	0	0
16													0	0	0
17													0	0	0
18													0	0	0
19													0	0	0
20										1			1	0	0
21													0	0	0
wk 3	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0
22	1	1								4			5	1	0
23										2	2		2	2	0
24											1		0	1	0
25										1	2		1	2	0
26										2			2	0	0
27													0	0	0
28											1		0	1	0
wk 4	1	1	0	0	0	0	0	0	0	9	6	0	10	7	0
29	1									1	5		2	5	0
30													0	0	0
May 1										1			1	0	0
2								1			1		0	2	0
3								1		1			1	1	0
4	1						3	2					4	2	0
5													0	0	0
wk 5	2	0	0	0	0	0	3	4	0	3	6	0	8	10	0
6	3	1								1			4	1	0
7													0	0	0
8													0	0	0
9								1					0	1	0
10										1	1		1	1	0
11	1	1											1	1	0
12													0	0	0
wk 6	4	2	0	0	0	0	0	1	0	2	1	0	6	4	0
13													0	0	0
14													0	0	0
15							1						1	0	0
16													0	0	0
17													0	0	0
18										1			1	0	0
19							1						1	0	0
wk 7	0	0	0	0	0	0	2	0	0	1	0	0	3	0	0

Date	Trap 1			Trap 2			Trap 3			Trap 4			TOTAL		
	M	F	J	M	F	J	M	F	J	M	F	J	M	F	J
20										1			1	0	0
21													0	0	0
22								1					0	1	0
23													0	0	0
24													0	0	0
25													0	0	0
26							1			1	1		2	1	0
wk 8	0	0	0	0	0	0	1	1	0	2	1	0	3	2	0
27										1			1	0	0
28													0	0	0
29							1						1	0	0
30													0	0	0
31													0	0	0
Jun 1													0	0	0
2													0	0	0
wk 9	0	0	0	0	0	0	1	0	0	1	0	0	2	0	0
3										1			1	0	0
4										2			2	0	0
5													0	0	0
6	1												1	0	0
7							1	1					1	1	0
8													0	0	0
9										1			1	0	0
wk 10	1	0	0	0	0	0	1	1	0	4	0	0	6	1	0
10													0	0	0
11													0	0	0
12													0	0	0
13							1						1	0	0
14													0	0	0
15													0	0	0
16													0	0	0
wk 11	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0
17													0	0	0
18													0	0	0
19							1			1			2	0	0
20													0	0	0
21										1			1	0	0
22	2												2	0	0
23													0	0	0
wk 12	2	0	0	0	0	0	1	0	0	2	0	0	5	0	0
24													0	0	0
25													0	0	0
26													0	0	0
27													0	0	0
28													0	0	0
29													0	0	0
30													0	0	0
wk 13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	**10**	**3**	**0**	**0**	**0**	**0**	**10**	**7**	**0**	**31**	**14**	**0**	**51**	**24**	**0**

Table 3. Number of non-target species captured & released (C&R) or preyed upon (PU) in cowbird traps at and in the vicinity of Big Tujunga Wash Mitigation Area in 2014.

Species	Week 1		Week 2		Week 3		Week 4		Week 5		Week 6		Week 7	
	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU
CATO	30		43	1	35		36		31		29	1	18	
WCSP	2		1											
EUST														
RWBL														
HOFI	6				3		1							
HOSP											3			
TOTAL	38	0	44	1	38	0	37	0	31	0	32	1	18	0

Species	Week 8		Week 9		Week 10		Week 11		Week 12		Week 13		**TOTAL**	
	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU	C&R	PU	**C&R**	**PU**
CATO	16		17		15		18		15		8		**311**	**2**
WCSP													**3**	**0**
EUST			4										**4**	**0**
RWBL					1								**1**	**0**
HOFI							1		1				**12**	**0**
HOSP	1										1		**5**	**0**
TOTAL	17	0	21	0	16	0	19	0	16	0	9	0	**336**	**2**

CATO	California towhee
WCSP	white-crowned sparrow
EUST	European starling
RWBL	red-winged blackbird
HOFI	house finch
HOSP	house sparrow

Notes:

1. HOSP euthanized as required by permit; not counted as such here so as to not skew PU data.

2. Mortality caused by intraspecific competition within the traps by CATO.

Appendix 1. Warning/informational sign placed on cowbird traps at Big Tujunga Wash Mitigation Area in 2014.

PLEASE **DO NOT DISTURB**

ENDANGERED SPECIES MANAGEMENT PROGRAM

This trap is operated by GWB under authority of the U.S. Fish & Wildlife Service and the California Department of Fish & Wildlife. The purpose of the trap is to remove brown-headed cowbirds from the breeding habitat of endangered songbirds during the nesting season (April - July) to allow normal reproduction. Cowbirds are non-native, artificially abundant blackbirds. Cowbirds never build nests. Instead, they lay their eggs (one every other day for 80-120 days) in the nests of other birds (hosts). This is called brood parasitism. The host parents then raise a single cowbird; their own chicks are smothered. This trap contains live decoy male (shiny black body, brown head) and female (plain brown) cowbirds. THIS TRAP IS SERVICED DAILY to care for the decoy birds, release all non-cowbirds, and add fresh seed and water. Please do not interfere with the operation of this trap. For each female cowbird removed, up to 240 more native songbird young are raised in this area. If you have questions about the operation of this trap, please call 906.337.0782 or visit www.griffithwildlife.com

THANK YOU FOR YOUR COOPERATION

GRIFFITH WILDLIFE BIOLOGY

APPENDIX E

Exotic Plant Removal Memos and CDFW Notifications

Exotic Plant Removal Memos

June 23, 2014
(2014-003.003/002/2)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: First Phase Memorandum for the Exotic Plant Removal (April and May 2014) in the Riparian Area of the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Yu:

This memorandum serves as a documentation of the first phase exotic plant removal activities at the Big Tujunga Wash Mitigation Area (Mitigation Area) during April and May 2014.

A pre-activity reconnaissance site visit and nesting bird survey was conducted on April 18, 2014 by ECORP Consulting, Inc. (ECORP) biologist Rebecca Valdez. This site visit was conducted to identify any sensitive biological resources (such as bird nests because the timing of the event occurred during the breeding bird season) and to identify areas with high densities of exotic plant species. Active bird nests were not documented within the weeding areas and sensitive resources were not observed during the survey. Large areas of exotic plant species were flagged and recorded using a global positioning system (GPS) unit. These areas included re-growth of giant reed (*Arundo donax*), castor bean (*Ricinus communis*), tree tobacco (*Nicotiana glauca*), and various other weeds and exotic plant species.

The actual removal of the invasive exotic plant species was conducted by ECORP's landscape contractor (Natures Image, Inc.) from April 21 through 25, May 5 through 8, and May 12, 2014. Prior to any work, all members of the landscape contractor crew received an onsite orientation and instruction on the Mitigation Area's regulations and concerns related to the area's sensitive species and habitat by the qualified biological monitor. ECORP biologists Carley Lancaster, Amy Trost, and Rebecca Valdez monitored exotic plant removal activities occurring between April 21 and May 12, 2014.

The removal effort began at the northern end of the Tujunga Ponds on April 21, 2014. The removal efforts were focused on removing species such as brome grasses (*Bromus sp.*), black mustard (*Brassica nigra*), and various species of thistle from the understory (Figures 1, 2, and 3). Large stands of exotic species were cut down using machetes and

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then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand.

The removal effort continued on April 22, 2014, with work continuing near the southern end of the Tujunga Ponds and in the eastern portion of Haines Canyon Wash. The main species of focus were giant reed (Figure 5), black mustard, castor bean (Figure 6), and various species of thistle. Large stands of exotic species were cut down using machetes and then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand.

Exotic plant removal activities continued on April 23 and 24, 2014, where crews worked along trails in cottonwood-willow riparian woodland east of Cottonwood Avenue and west of Gibson Ranch. The main species of focus were giant reed, black mustard, castor bean, and tree tobacco. Two homeless encampments were discovered on April 23, 2014 (Figures 7 and 8). The County of Los Angeles Department of Public Works (LACDPW) was immediately notified of the location of these encampments via email.

The removal activities continued on May 5 and May 6, 2014 where the crews worked along Haines Creek. The crew walked along the edge of the creek targeting species such as giant reed, non-native thistle, black mustard, castor bean, and tree tobacco. The crews also used weed whackers to remove overgrown vegetation along the trails throughout the Mitigation Area (Figure 9). One homeless encampment was discovered on May 5, 2014 (Figure 10). LACDPW was immediately notified of the location this encampment via email. The crew also suspected someone was sleeping in the portable toilet at the Cottonwood Avenue entrance. LACDPW was notified of this as well.

On May 7 and 8, 2014 the crew used weed whackers in the upland areas from the Cottonwood Avenue to Gibson Ranch to remove large stands of mustard and brome grasses. After the plants were weed whacked, the crew sprayed herbicide on them (Figures 11 and 12). On May 8, 2014, the crew continued to spray for exotics in the upland area north of Haines Creek inside of Tujunga wash (Figure 13). Targeted species included castor bean, giant reed, and black mustard.

On May 12, 2014 the crew finished clearing black mustard in the upland areas near Cottonwood Avenue using weed whackers and herbicide (Figure 14). During the removal activities the biologist was approached by a man who was carrying a fishing pole and appeared to be homeless. He asked what type of chemicals were being used in the herbicide and left before the biologist could give a sufficient answer. He was agitated and appeared displeased with the removal effort activities.

Trails maintenance activities (clearing existing trails, removing trash and debris, etc.) were conducted along the trails adjacent to Haines Canyon Creek, from Cottonwood Avenue to the Tujunga Ponds, on April 24, 2014. On May 5, 2014 the crew completed the remainder of the trails maintenance in the riparian areas including from Cottonwood Avenue to the western border of the Mitigation Area. The main area of concern was fallen tree branches obstructing trails and posing a threat to equestrian users. The landscape contractor’s crew used chainsaws and modified weed whackers to trim and/or remove trail obstructions.

No bird nests were discovered during the exotic plant removal effort.

During the removal process the following protocols were conducted to minimize disturbance to sensitive habitat and species:

- Nesting bird surveys were conducted prior to the start of the exotic plant removal effort and again on a daily basis by the biological monitors in specific areas the crews planned to work in prior to the start of any removal activities.
- Only water-soluble herbicide was used in areas within a 15-foot distance from all water sources. Water sources include Haines Canyon Creek, Tujunga Ponds, and any standing or ponded water. Outside of the 15-foot distance, oil-based and water-based herbicides were used.
- In the limited cases when the landscape contractor's crew members and ECORP biologists entered Haines Canyon Creek, crossings were made only at established creek crossings to minimize disturbance to sensitive habitat and species.

The second exotic plant removal effort is tentatively scheduled for mid-July 2014.

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED: ______________________ DATE: June 23, 2014

Carley Lancaster
Assistant Biologist

Figure 1. Brome grasses sprayed during exotic plant removal effort.

Figure 2. Black mustard sprayed during exotic plant removal effort.

Figure 3. Non-native thistle sprayed during exotic plant removal effort.

Figure 4. Crew spraying and trimming vegetation around ponds during exotic plant removal.

Figure 5. Giant reed sprayed with herbicide.

Figure 6. Castor bean sprayed with herbicide.


Figure 7. Homeless encampment #1 in the cottonwood-willow riparian habitat.


Figure 8. Homeless encampment #2 in the cottonwood-willow riparian habitat.

Figure 9. Crew using weed whacker on trails.

Figure 10. Homeless encampment #3 at the edge of the cottonwood-willow riparian habitat.

Figure 11. Mustard near Gibson Ranch before removal.

Figure 12. Mustard near Gibson Ranch after removal.

Figure 13. Crew spraying exotic plants in Big Tujunga Wash.

Figure 14. Crew clearing mustard near the Cottonwood Avenue entrance using weed whackers.

August 22, 2014
(2014-003.003/002/2)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: Second Phase Memorandum for the Exotic Plant Removal (August 2014) in the Riparian Area of the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Yu:

This memorandum serves as a documentation of the second phase exotic plant removal activities at the Big Tujunga Wash Mitigation Area (Mitigation Area) during August 2014.

A pre-activity reconnaissance site visit and nesting bird survey was conducted on August 8, 2014 by ECORP Consulting, Inc. (ECORP) biologist Phillip Wasz. This site visit was conducted to identify any sensitive biological resources (such as bird nests because the timing of the event occurred during the breeding bird season) and to identify areas with high densities of exotic plant species. Active bird nests were not documented within or in the vicinity of the weeding areas and sensitive resources were not observed during the survey. Large areas of exotic plant species were flagged and/or recorded using a global positioning system (GPS) unit. These areas included re-growth of giant reed (*Arundo donax*), castor bean (*Ricinus communis*), umbrella sedge (*Cyperus involucratus*), and various other weeds and exotic plant species.

The removal of the invasive exotic plant species was conducted by ECORP's landscape contractor (Natures Image, Inc.) from August 11 through 15, 2014. Prior to any work, all members of the landscape contractor crew received an onsite orientation and instruction on the Mitigation Area's regulations and concerns related to the area's sensitive species and habitat by the qualified biological monitor. ECORP biologists Phillip Wasz and Rebecca Valdez monitored the exotic plant removal activities.

The removal effort began at the northern end of the Tujunga Ponds on August 11, 2014. The removal efforts were focused on removing species such as umbrella sedge, giant reed, castor bean, black mustard (*brassica nigra*), sweet clover (*Melilotus indicus*), and various non-native grasses from the understory (Figures 1 and 2). Large stands of exotic species were cut down using machetes and then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand. Two homeless encampments were discovered on August 11, 2014 (Figures 3 and 4) and the County of

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Los Angeles Department of Public Works (LACDPW) was immediately notified of the location of these encampments via email.

The removal effort continued on August 12 and 13, 2014, with work continuing around the Tujunga Ponds and along Haines Creek. The main species of focus were umbrella sedge, giant reed, castor bean, black mustard, sweet clover, and various non-native grasses. Large stands of exotic species were cut down using machetes and then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand. The crews also used weed whackers and machetes to remove overgrown vegetation around the Tujunga Ponds and along Haines Creek (Figure 5).

Exotic plant removal activities continued on August 14 and 15, 2014, where crews worked along trails in cottonwood-willow riparian woodland east of Wheatland Avenue and west of Gibson Ranch. The main species of focus were umbrella sedge, giant reed, castor bean, black mustard, sweet clover, and various non-native grasses. The crews also used weed whackers and machetes to remove overgrown vegetation, including poison oak (*Toxicodendron diversilobum*) (Figure 6), throughout the Mitigation Area.

Trails maintenance activities (clearing existing trails, removing trash and debris, etc.) were conducted throughout the Mitigation Area from August 11 through August 15, 2014. The main area of concern was fallen tree branches obstructing trails and posing a threat to equestrian users. The landscape contractor's crew used chainsaws and modified weed whackers to trim and/or remove trail obstructions (Figure 7).

No bird nests were discovered during the exotic plant removal effort.

During the removal process the following protocols were conducted to minimize disturbance to sensitive habitat and species:

- Nesting bird surveys were conducted prior to the start of the exotic plant removal effort and again on a daily basis by the biological monitors in specific areas the crews planned to work in prior to the start of any removal activities.
- Only water-soluble herbicide was used in areas within a 15-foot distance from all water sources. Water sources include Haines Canyon Creek, Tujunga Ponds, and any standing or ponded water. Outside of the 15-foot distance, oil-based and water-based herbicides were used.
- In the limited cases when the landscape contractor's crew members and ECORP biologists entered Haines Canyon Creek, crossings were made only at established creek crossings to minimize disturbance to sensitive habitat and species.

The third exotic plant removal effort is tentatively scheduled for November 2014.

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED: ____________________________ DATE: August 22, 2014

Carley Lancaster
Assistant Biologist

Figure 1. Umbrella sedge sprayed during exotic plant removal effort.

Figure 2. Giant reed sprayed during exotic plant removal effort.

Figure 3. Homeless encampment #1 in the cottonwood-willow riparian habitat.

Figure 4. Homeless encampment #2 in the cottonwood-willow riparian habitat.

Figure 5. Crew trimming overgrown vegetation along trails.

Figure 6. Poison oak trimmed back from trail.


Figure 7. Tree limbs cut back during trail clearing.

January 6, 2015
(2014-003.003/002/2)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: Third Phase Memorandum for the Exotic Plant Removal (December 2014) in the Riparian Area of the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Yu:

This memorandum serves as a documentation of the third phase exotic plant removal activities at the Big Tujunga Wash Mitigation Area (Mitigation Area) during December 2014.

A pre-activity reconnaissance site visit and survey was conducted on December 1, 2014 by ECORP Consulting, Inc. (ECORP) biologist Amy Trost. This site visit was conducted to identify any sensitive biological resources and to identify areas with high densities of exotic plant species. Sensitive resources were observed during the survey. Large areas of exotic plant species were flagged and/or recorded using a global positioning system (GPS) unit (all coordinates are Universal Transverse Mercator [UTM], North American Datum 1983 [NAD 83] 11S). These areas included re-growth of castor bean (*Ricinus communis*), umbrella sedge (*Cyperus involucratus*), and various other weeds and exotic plant species.

The removal of the invasive exotic plant species was conducted by ECORP's landscape contractor (Natures Image, Inc.) on December 4, 8, 9, 10, and 15, 2014. No work was conducted on December 5, 11, or 12, 2014 due to predicted rainfall. Prior to any work, all members of the landscape contractor crew received an onsite orientation, a bilingual informational brochure, and instruction on the Mitigation Area's regulations and concerns related to the area's sensitive species and habitat by a qualified ECORP biologist.

The crew began removal efforts in Haines Canyon Wash, south of the Tujunga Ponds, on December 4, 2014. The removal efforts were focused on removing species such as giant reed (*Arundo donax*), castor bean, tree of heaven (*Ailanthus altissima*), and various other non-native species from the understory (Figures 1 and 2). Large stands of exotic species were cut down using machetes and then sprayed with herbicide, while smaller solitary plants were either sprayed or pulled out by hand. Two homeless encampments were discovered on December 4, 2014 (Figures 3 and 4; 376562E, 3792479N and 376500E, 3792522N) and the County of Los Angeles Department of Public Works (LACDPW) was immediately notified of the location of these encampments via email. The second of these homeless encampments was occupied and two large dogs were tethered outside.

The removal effort continued on December 8, 2014, with work beginning in Big Tujunga Wash. The main species of focus were umbrella sedge, giant reed, tamarisk (*Tamarix ramosissima*), sweet clover (*Meliotus albus*), tree tobacco (*Nicotiana glauca*), and various non-native grasses (Figure 5). On December 8, 2014, various locations of spray paint vandalism on Mitigation Area signs were discovered near the North Wheatland entrance. One Spanish translation sign was also missing in this area. (Figures 6 and 7). LACDPW was immediately notified of the location of these issues via email.

Exotic plant removal continued on December 9, 2014 in the upland area near the Cottonwood Avenue entrance. Due to forecasted rain events later in the week, the crew conducted trails maintenance throughout the riparian habitat in the Mitigation Area on December 10, 2014. The crew also cleared vegetation by hand and with rakes around the base of cottonwood (*Populus* sp.) trees planted during the initial restoration effort (Figure 8). During trails maintenance activities an unauthorized trail was observed (376189E, 3792667N). The trail cut across native vegetation leading from the trail north of the Cottonwood Avenue entrance, leading to the riparian habitat. The biologist blocked the trail using fallen branches and sticks (Figures 9 and 10).

The final day of exotic removal activities occurred on December 15, 2014. Crews went back to working in the upland area near the Cottonwood Avenue and Mary Bell entrances. The main species of focus were giant reed and various non-native grasses (Figure 11).

ECORP biologists Carley Lancaster, Amy Trost, and Rebecca Valdez monitored exotic plant removal activities occurring the month of December. During the removal process the following protocols were conducted to minimize disturbance to sensitive habitat and species:

- Site visit and survey was conducted in work areas prior to the maintenance crews beginning the removal process.
- Only water-soluble herbicide was used in areas within a 15-foot distance from all water sources. Water sources include Haines Canyon Creek, Tujunga Ponds, and any standing or ponded water. Outside of the 15-foot distance, oil-based and water-based herbicides were used.
- In the limited cases when the landscape contractor's crew members and ECORP biologists entered Haines Canyon Creek, crossings were made only at established creek crossings to minimize disturbance to sensitive habitat and species.

This is the final exotic plant removal effort for 2014. No additional exotic plant removal activities will be conducted in 2014.

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED: ______________________ DATE: January 6, 2015

Amy Trost
Assistant Biologist

Figure 1. Castor bean sprayed during exotic plant removal effort.

Figure 2. Giant reed sprayed during exotic plant removal effort.

Figure 3. First homeless encampment discovered west of Haines Canyon Wash.

Figure 4. Second homeless encampment discovered west of Haines Canyon Wash.

Figure 5. Crew spraying a tamarisk in Big Tujunga Wash.

Figure 6. Vandalism on signs near North Wheatland entrance.

Figure 7. Missing Spanish translation sign near Big Tujunga Wash.

Figure 8. Vegetation cleared around planted cottonwood tree.

Figure 9. Unauthorized trail leading from the upland area near the Cottonwood Avenue entrance.

Figure 10. Unauthorized trail after being blocked.

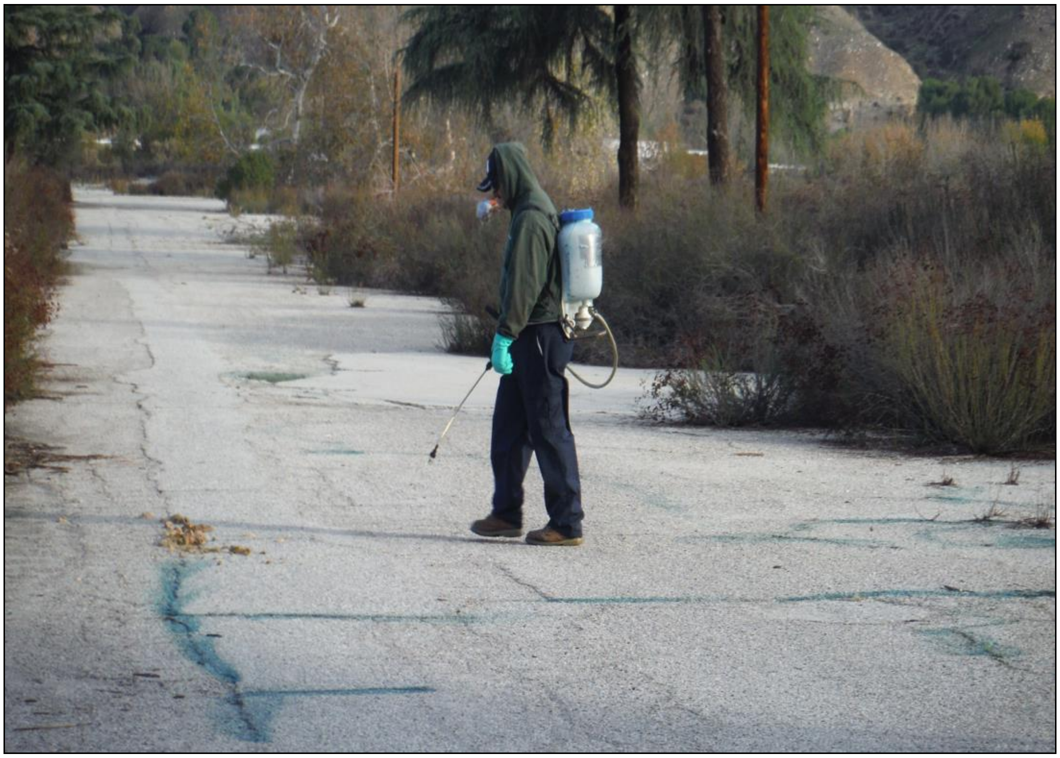

Figure 11. Crew spraying for non-native grasses near the Cottonwood Avenue entrance.

CA Department of Fish and Wildlife Notifications

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

April 15, 2014
(2014-003.003/002/2)

Mr. Matthew Chirdon
California Department of Fish and Wildlife
P.O. Box 279
Newbury Park, CA 91319

RE: Notification No. 1600-2008-0253-R5 – Big Tujunga Wash Mitigation Area Exotic Plant Removal and Maintenance Activities (Sent via email to matthew.chirdon@wildlife.ca.gov)

Dear Mr. Chirdon:

The purpose of this letter is to provide notification that exotic plant removal activities will be conducted beginning April 21, 2014 at the Los Angeles County Department of Public Works' Big Tujunga Wash Mitigation Area near the City of Sunland in Los Angeles County. The activities will begin with the biologists conducting a pre-removal effort survey for nesting birds and to identify the areas where weeds, non-native grasses, and invasive exotic plant species will need to be removed. This pre-removal effort survey will take place on either April 18, 2014. The locations of all sensitive biological resources that are found will be identified using a Global Positioning System (GPS) and areas that will require maintenance will also be identified using a GPS. If active bird nests are identified, then an appropriately-sized buffer will be established as a "no work" zone. A biological monitor will be on site during maintenance and exotic plant removal activities.

If you have any questions regarding the activities or the project in general, please contact me at (714) 648-0630.

Sincerely,

ECORP Consulting, Inc.

Mari Quillman

Mari (Schroeder) Quillman
Principal Biological Resources Program Manager

1801 Park Court Place, Building B, Suite 103
Santa Ana, California 92701
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Fax: (714) 648-0935

Rocklin
Redlands
San Diego
Santa Ana

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

August 4, 2014
(2014-003.003/002/2)

Mr. Matthew Chirdon
California Department of Fish and Wildlife
P.O. Box 1797
Ojai, CA 93024

RE: Notification No. 1600-2008-0253-R5 – Big Tujunga Wash Mitigation Area Exotic Plant Removal and Maintenance Activities (Sent via email to matthew.chirdon@wildlife.ca.gov)

Dear Mr. Chirdon:

The purpose of this letter is to provide notification that exotic plant removal activities will be conducted beginning August 11, 2014 at the Los Angeles County Department of Public Works' Big Tujunga Wash Mitigation Area near the City of Sunland in Los Angeles County. The activities will begin with the biologists conducting a pre-removal effort survey for nesting birds and to identify the areas where weeds, non-native grasses, and invasive exotic plant species will need to be removed. This pre-removal effort survey will take place on August 8, 2014. The locations of all sensitive biological resources that are found will be identified using a Global Positioning System (GPS) and areas that will require maintenance will also be identified using a GPS. If active bird nests are identified, then an appropriately-sized buffer will be established as a "no work" zone. A biological monitor will be on site during maintenance and exotic plant removal activities.

If you have any questions regarding the activities or the project in general, please contact me at (714) 648-0630.

Sincerely,

ECORP Consulting, Inc.

Mari Quillman

Mari (Schroeder) Quillman
Principal Biological Resources Program Manager

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

December 1, 2014
(2014-003.003/002/2)

Mr. Matthew Chirdon
California Department of Fish and Wildlife
P.O. Box 1797
Ojai, CA 93024

RE: Notification No. 1600-2008-0253-R5 – Big Tujunga Wash Mitigation Area Exotic Plant Removal and Maintenance Activities (Sent via email to matthew.chirdon@wildlife.ca.gov)

Dear Mr. Chirdon:

The purpose of this letter is to provide notification that exotic plant removal and site maintenance activities will be conducted beginning December 4, 2014 at the Los Angeles County Department of Public Works' Big Tujunga Wash Mitigation Area near the City of Sunland in Los Angeles County. The activities will begin with the biologists conducting a pre-removal effort survey to identify the areas where weeds, non-native grasses, and invasive exotic plant species will need to be removed. The locations of all sensitive biological resources that are found will be identified using a Global Positioning System (GPS) unit and areas that will require maintenance will also be identified using a GPS unit. A biological monitor will be on site during maintenance and exotic plant removal activities.

If you have any questions regarding the activities or the project in general, please contact me at (714) 648-0630.

Sincerely,

ECORP Consulting, Inc.

Mari Quillman

Mari (Schroeder) Quillman
Principal Biological Resources Program Manager

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Santa Ana, California 92701
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Rocklin
Redlands
San Diego
Santa Ana

APPENDIX F

Exotic Wildlife Removal Memos and 2014 Report

Exotic Wildlife Removal Memos

April 16, 2014
(2014-003.003/004/4)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: **First Phase Exotic Aquatic Species Removal Effort (April 2014) in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.**

Dear Ms. Yu:

This letter serves as a summary of the exotic aquatic species removal efforts conducted by ECORP Consulting, Inc. (ECORP) for the Big Tujunga Wash Mitigation Area (Mitigation Area). The purpose of this program is to remove exotic aquatic wildlife from the Tujunga Ponds, Haines Canyon Creek, and Big Tujunga Wash to reduce their negative impacts on sensitive native species. These negative impacts on sensitive native species include, but are not limited to, the following: food and habitat competition, predation, and the potential to transmit harmful pathogens and parasites.

The exotic aquatic species removal effort took place April 7 through 9, 2014. The primary species targeted during the removal effort were largemouth bass (*Micropterus salmoides*) and American bullfrog (*Lithobates catesbeianus*). ECORP fisheries biologists Brian Zitt, Max Murray, Adam Schroeder, and Terrance Wroblewski conducted the removal effort which focused on removing exotic aquatic species from the Tujunga Ponds.

During this removal effort nine gillnets of various lengths (100 to 500 feet) and monofilament mesh sizes (0.5- to 2-inch) were used in the Tujunga Ponds (five nets in the West Tujunga Pond and four nets in the East Tujunga Pond). The use of various mesh sizes targeted multiple size classes of exotic fishes. A fyke net was deployed in the Connector Channel. Visibility in the ponds was good, ranging from 10 to 15 feet, which allowed snorkeling and spearfishing surveys to be conducted. Bullfrog gigging surveys were conducted along the perimeter of the ponds, Haines Creek, and the Tujunga Wash.

The exotic aquatic species captured and removed during this effort included, 4 common carp (*Cyprinus carpio*), 17 green sunfish (*Lepomis cyanellus*), 6 bluegill (*Lepomis macrochirus*), 205 largemouth bass, 2 goldfish (*Carassius auratus auratus*), 2 American bullfrogs, and 2 red-eared sliders (*Trachemys scripta elegans*).

Mozambique tilapia were not detected during these surveys; however, ECORP biologists observed large schools of newly spawned largemouth bass in both ponds during this removal effort. Water lettuce was not observed in the Tujunga Ponds or in Haines Canyon Creek during this removal effort. A male southwestern pond turtle (*Actinemys marmorata pallida*), a California Department of Fish and Wildlife Species of Special Concern, was observed in the West Tujunga Pond during this effort. The biologists did not observe any other native aquatic species during these surveys.

I hereby certify that the statements furnished above present the data and information required for this biological monitoring report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

SIGNED:______________________________ DATE: April 16, 2014

Brian Zitt
Fisheries Biologist

May 12, 2014
(2014-003.003/004/4)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: **Second Phase Exotic Aquatic Species Removal Effort (April/May 2014) in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.**

Dear Ms. Yu:

This letter serves as a summary of the exotic aquatic species removal efforts conducted by ECORP Consulting, Inc. (ECORP) for the Big Tujunga Wash Mitigation Area (Mitigation Area). The purpose of this program is to remove exotic aquatic wildlife from the Tujunga Ponds, Haines Canyon Creek, and Big Tujunga Wash to reduce their negative impacts on sensitive native species. These negative impacts on sensitive native species include, but are not limited to, the following: food and habitat competition, predation, and the potential to transmit harmful pathogens and parasites.

The second phase exotic aquatic species removal effort took place April 29 through May 2, 2014. The primary species targeted during the removal effort were largemouth bass (*Micropterus salmoides*), American bullfrog (*Lithobates catesbeianus*), and red swamp crayfish (*Procambarus clarkii*). ECORP fisheries biologists Brian Zitt, Adam Schroeder, Terrance Wroblewski, Carley Lancaster, and Emily Graf conducted the removal effort which focused on removing exotic aquatic species from the Tujunga Ponds and Haines Canyon Creek.

During this removal effort, six gillnets of various lengths (100 to 500 feet) and monofilament mesh sizes (0.5- to 2-inch) were used in the west Tujunga Pond. The use of various mesh sizes targeted multiple size classes of exotic fishes. A fyke net was deployed in the Connector Channel. Twenty-nine minnow traps were set in various locations in the Tujunga Ponds, Connector Channel, and Haines Canyon Creek. Four turtle traps were set in the Tujunga Ponds. Visibility in the ponds was average, ranging from 5 to 10 feet, which allowed snorkeling and spearfishing surveys to be conducted. Bullfrog gigging surveys were conducted along the perimeter of the Tujunga Ponds and in Haines Canyon Creek.

The exotic aquatic species captured and removed during this effort included, 1 goldfish (*Carassius auratus auratus*), 4 common carp (*Cyprinus carpio*), 26 green sunfish (*Lepomis cyanellus*), 11 bluegill (*Lepomis macrochirus*), 216 largemouth bass, 1 Mozambique tilapia (*Oreochromis mossambicus*), 3 American bullfrogs (2 adults and 1 tadpole), 358 red swamp crayfish, and 1 southern painted turtle (*Chrysemys picta dorsalis*). There was no evidence of Mozambique tilapia (*Oreochromis mossambicus*) breeding in the Tujunga Ponds. ECORP biologists did observe large schools of newly spawned largemouth bass in both Tujunga Ponds during this removal effort. The southern painted turtle was captured by hand in the west Tujunga Pond, and this is the first known occurrence of this species within the Mitigation Area. Water lettuce was not observed in the Tujunga Ponds or in Haines Canyon Creek during this removal effort.

A male southwestern pond turtle (*Actinemys marmorata pallida*), a California Department of Fish and Wildlife Species of Special Concern (CDFW SSC), was observed in the West Tujunga Pond. Twenty-five Santa Ana sucker (*Catostomus santaanae*), a federally listed (threatened) species and CDFW SSC, were observed in Haines Canyon Creek during this effort.

One minnow trap was stolen out of Haines Canyon Creek during the removal effort. The line used to secure the trap to a shrub was cut and the trap was removed.

I hereby certify that the statements furnished above present the data and information required for this biological monitoring report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

SIGNED: Adam Schroeder DATE: May 12, 2014

Adam Schroeder
Fisheries Biologist

December 2, 2014
(2014-003.003/004/4)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: Third and Fourth Phase Exotic Aquatic Species Removal Efforts (November 2014) in the Big Tujunga Wash Mitigation Area, Los Angeles County, California.

Dear Ms. Yu:

This letter serves as a summary of the third and fourth phase exotic aquatic species removal efforts conducted by ECORP Consulting, Inc. (ECORP) for the Big Tujunga Wash Mitigation Area (Mitigation Area). The purpose of this program is to remove exotic aquatic wildlife from the Tujunga Ponds, Haines Canyon Creek, and Big Tujunga Wash to reduce their negative impacts on sensitive native species. These negative impacts on sensitive native species include, but are not limited to, the following: food and habitat competition, predation, and the potential to transmit harmful pathogens and parasites.

The third and fourth phase exotic aquatic species removal efforts were conducted in succession and took place November 10 through 13, 2014, and November 17 through 20, 2014, respectively. The results from both removal efforts were combined into one memo to simplify the reporting and submittal process. The primary species targeted during the removal efforts were largemouth bass (*Micropterus salmoides*), American bullfrog (*Lithobates catesbeianus*), and red swamp crayfish (*Procambarus clarkii*). ECORP fisheries biologists Brian Zitt, Todd Chapman, Adam Schroeder, and Max Murray conducted the removal efforts which focused on removing exotic aquatic species from the Tujunga Ponds and Haines Canyon Creek.

Two-person seine surveys were conducted in various pools throughout Haines Canyon Creek, and in the west Tujunga Pond near the confluence with Haines Canyon Creek. Twenty-one minnow traps were set in various locations in Haines Canyon Creek, and four turtle traps were set in the Tujunga Ponds (two traps in each pond). Visibility in the west Tujunga Pond was average, ranging from 3 to 8 feet, which allowed SCUBA/snorkeling and spearfishing surveys to be conducted. SCUBA/snorkeling and spearfishing surveys were not conducted in the east Tujunga Pond as visibility was poor (less than 3 feet). Bullfrog gigging and spearfishing surveys were conducted in Haines Canyon Creek.

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The exotic aquatic species captured and removed during these efforts included 2 goldfish (*Carassius auratus auratus*), 231 western mosquitofish (*Gambusia affinis*), 31 green sunfish (*Lepomis cyanellus*), 23 bluegill (*Lepomis macrochirus*), 290 largemouth bass, 1 American bullfrog (adult male), 612 red swamp crayfish, and 1 red-eared slider (*Trachemys scripta elegans*). No Mozambique tilapia (*Oreochromis mossambicus*) were captured or observed during these removal efforts. ECORP biologists did observe schools of young-of-the-year largemouth bass in the west Tujunga Pond and in Haines Canyon Creek during these removal efforts. Water lettuce was not observed in the Tujunga Ponds or in Haines Canyon Creek during these removal efforts.

Three Santa Ana sucker (*Catostomus santaanae*), a federally listed (threatened) species and a California Department of Fish and Wildlife Species of Special Concern (CDFW SSC) were captured and immediately released, and an additional 18 were observed in Haines Canyon Creek during these efforts. Santa Ana speckled dace (*Rhinichthys osculus* ssp. 3), a CDFW SSC, and arroyo chub (*Gila orcuttii*), a CDFW SSC, were not captured or observed during these efforts.

One unauthorized creek crossing and several unauthorized trails were observed along Haines Canyon Creek. The unauthorized crossing was blocked off by the biologists using fallen tree branches to deter any further use. In one location along Haines Canyon Creek, several trees had been cut down with a saw to make a clearing. In another location near the downed trees, it appeared that there was some type of homeless camp site with several burlap sacks and fencing that may have been used to make minnow-style traps. These incidents were reported to the County of Los Angeles, Department of Public Works (LACDPW) via email on November 12, 2014.

Fishermen were observed fishing in both Tujunga Ponds, and further evidence of fishing in the Tujunga ponds and Haines Canyon Creek was prevalent in the form of discarded bait containers, fishing line, monofilament netting, and a homemade minnow trap that was found on the bank of Haines Canyon Creek. Trash was also prominent throughout Haines Canyon Creek and included numerous golf balls, cans, bottles, Styrofoam, and clothing. During surveys in Haines Canyon Creek on November 11, 2014, a young child's clothing was found along the bank, and it appeared that the clothing had been cut or ripped off. This finding was reported to LACDPW, who instructed ECORP biologists to file a police report. On November 12, 2014, ECORP biologists escorted two Los Angeles County Sheriff's Department deputies and one City of Los Angeles Department of Recreation and Parks ranger to the location of the child's clothing. The officers bagged and tagged the clothing and took a report (Incident report number: 914-00515-8399-444).

The morning of November 19, 2014, ECORP biologists found several old tires, stereo speakers, and tree branches dumped at the entrance to the Cottonwood Avenue gate, impeding entry to the Mitigation Area. These dumped items were moved to the side of the road so ECORP biologists could access the site. While removing turtle traps from the west Tujunga Pond on November 20, 2014, a dead double-crested cormorant (*Phalacrocorax auritus*) was found floating in the water. A spot of blood was observed in the middle of its back, indicating some sort of single point trauma; however, it is unclear if this was human inflicted (pellet rifle) or caused by another animal (e.g., bird of prey).

This concludes the exotic aquatic wildlife removal efforts conducted in the Mitigation Area for 2014. A report documenting the four removal efforts will be prepared and included in the appendix of the 2014 Annual Report for the Mitigation Area.

I hereby certify that the statements furnished above present the data and information required for this biological monitoring report, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

SIGNED: Adam Schroeder DATE: December 2, 2014

Adam Schroeder
Fisheries Biologist

2014 Exotic Wildlife Removal Report

2014 Exotic Aquatic Species Removal Report
for the
Big Tujunga Wash Mitigation Area

Prepared for:
County of Los Angeles
Department of Public Works
900 S. Fremont Avenue
Alhambra, California 91803-1331

January 2015

Prepared by:

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

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1.0 INTRODUCTION

ECORP Consulting, Inc. (ECORP) was contracted by the County of Los Angeles Department of Public Works (LACDPW) in July 2007 to continue the exotic aquatic species removal program that was set forth in the Master Mitigation Plan (MMP) for the Big Tujunga Wash Mitigation Area (Mitigation Area). The MMP was created to serve as a five-year guide for the implementation of various enhancement programs and to fulfill the California Department of Fish and Wildlife's (CDFW) (formerly California Department of Fish and Game [CDFG]) requirement for the preparation of a management plan for the Mitigation Area. The MMP includes multiple strategies to enhance and protect existing habitat for wildlife and to create additional natural areas that could be used by both native wildlife and numerous local groups. It also provides direction for the capture and removal of exotic aquatic species from the various watercourses located within the Mitigation Area in order to relieve some of the negative impacts that these individuals can have on natives. Implementation of the MMP initially began in August 2000, and a Long-term Management Plan (LTMP) is being developed to specifically address the continuation of this program into the future.

Historically, all southern California coastal freshwater fishes have experienced population and environmental impacts as a result of habitat alteration and dewatering and thus are greatly reduced in both their distribution and abundances (Moyle 2002; Swift et al. 1993). These impacts are further compounded by the effects exotic aquatic species can have on native fish assemblages. One such native freshwater fish assemblage in southern California is the South Coast Minnow-Sucker fish community (Ellison 1984), which is known to occur in the Mitigation Area. This assemblage consists of the following native fishes: Santa Ana sucker (*Catostomus santaanae*), a federally listed (threatened) species and a CDFW Species of Special Concern (SSC) (USFWS 2000, CDFW 2015); Santa Ana speckled dace (*Rhinichthys osculus* spp. 3), a CDFW SSC; and arroyo chub (*Gila orcuttii*), a CDFW SSC. Compared to historical records, the current distribution for each of these species has been severely reduced. The Mitigation Area provides an important refuge for these native fish populations from habitat alteration and dewatering. Additionally, the Mitigation Area is considered to be one of the last remaining locations in the Los Angeles River Drainage where these three species of fish can still be found (Swift et al. 1993).

The Mitigation Area currently provides suitable habitat for two sensitive reptile species, southwestern pond turtle (*Actinemys pallida*) and two-striped garter snake (*Thamnophis hammondii*). These species are both listed as CDFW SSC and are known to occur within the Mitigation Area. Historically, the Mitigation Area supported suitable habitat for federally listed, native amphibian species such as the arroyo toad (*Anaxyrus californicus*) and California red-legged frog (*Rana draytonii*). In recent years there have been no observations of either of these amphibian species in the Mitigation Area. Arroyo toads are considered to be habitat specialists, relying on specific features associated with large rivers and wash systems in southern California (USFWS 2009). Habitat alteration through changes or manipulation of the hydroperiod, generally associated with damming and/or controlling upstream water releases, likely contributed to the absence of arroyo toad within the Mitigation Area. Likewise, the absence of California red-legged frog is likely attributed to competition and predation pressures associated with the introduction of the exotic American bullfrog (bullfrog; *Lithobates catesbeianus*) (Hayes and Jennings 1986; Kiesecker and Blaustein 1998).

The purpose of implementing this exotic aquatic species removal program in the Mitigation Area is to restore, create, and maintain suitable habitat for native aquatic species. The program focuses on the removal of exotic fishes, reptiles, amphibians, and invertebrates from all aquatic habitats using a suite of sampling techniques. This report provides the results of the exotic aquatic species removal efforts conducted at the Mitigation Area in 2014.

1.1 Location and Setting

The Mitigation Area is located in Big Tujunga Wash (Wash), just downstream of the Interstate 210 (I-210) freeway overcrossing, near the City of Los Angeles' Sunland community, Los Angeles County (Figure 1-1). The Mitigation Area is bordered on the north by I-210, on the east by I-210 and the Tujunga Ponds, and on the south by Wentworth Street. The western boundary is bordered by high voltage power lines crossing the Wash just upstream of Hansen Dam Park and Recreation Area. The Mitigation Area is located within a state-designated Significant Natural Area (LAX-018), and the biological resources are of local, regional, state, and federal significance (Safford and Quinn 1998; CDFW 2014).

The Mitigation Area contains two watercourses (Figure 1-2): The Wash and Haines Canyon Creek (Haines Creek), both of which are designated as critical habitat for Santa Ana sucker in the Los Angeles River basin (USFWS 2010). The Wash, located in the northern portion of the Mitigation Area, is a wide (greater than 98 feet [ft] [30 meters {m}]) partially-concrete lined tributary of the Los Angeles River. Water flow in the Wash originates from the Big Tujunga Dam (approximately 10.9 miles [mi] [17.5 kilometers {km}] upstream) and is dependent on controlled releases and from local rainfall. Flow is therefore intermittent, leaving it dry for large portions of the year. Haines Creek, located in the southern portion of the Mitigation Area, is a tributary that conveys water flow from Haines Canyon to Big Tujunga Wash. Water flow is perennial and is fed by groundwater and/or runoff from adjacent residential areas. Haines Creek and the Wash merge near the western boundary of the Mitigation Area and continue into the Hansen Dam Flood Control Basin, located approximately 0.5 mi (0.8 km) downstream of the site.

Haines Creek is a relatively narrow (less than 33 ft [10 m] width) and densely vegetated stream with flow originating from the East and West Tujunga Ponds (Ponds). The creek contains a variety of flow types, ranging from slow moving glides (less than 1.0 foot/second [ft/s] [0.3 meters/second {m/s}]) and pools (greater than 1.6 ft [0.5 m]), to fast-flowing riffles and runs (greater than 1.0 ft/s [0.3 m/s]) over a mix of substrates (i.e., boulder, cobble, gravel, sand, and fine sediment). The banks along the creek provide a diverse set of habitats, ranging from deep pools with overhanging vegetation and undercuts, to shallow (less than 1.6 ft [0.5 m]) sandy beaches which can be suitable for juvenile life stages of native fishes and amphibians. Haines Creek maintains a dense riparian buffer which provides an intact canopy cover throughout a majority of its course in the Mitigation Area. This canopy layer helps to keep dissolved oxygen levels and water temperatures stable during the warm summer months. This riparian buffer also provides a source of large woody debris, instream vegetation, and bank stability.

Water flowing into Haines Creek originates from underground springs that supply water directly into the Ponds. The Ponds are located adjacent to the northeast corner of the Mitigation Area and consist of two large interconnected bodies of water each being approximately 330 ft (100 m) across at their widest point. The Ponds are divided into three distinct water features: the West Pond, the Connector Channel, and the East Pond.

Location: N:\2010\2010-116 Big Tujunga Wash Mitigation Area\MAPS\Site_Vicinity\Tujunga_Location_2014.mxd (eck/KO)-KOrtega 10/20/2014

Map Date: 10/20/2014
Source: ESRI

Figure 1-1. Project Location

2014-003.003 Big Tujunga Wash Mitigation Area

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Aerial Date: NAIP 2012
1/6/2015

Figure 1-2. Project Area Watercourses

2014-003.003 Big Tujunga Wash Mitigation Area

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The West Pond lies adjacent to the I-210 freeway, approximately 200 ft (60 m) to the south, and connects directly to Haines Creek. The West Pond has a surface area of approximately 10,500 square feet (ft^2) (3,200 square meters [m^2]) providing a complex, heterogeneous space for many aquatic species. The water depths range from 5.9 to 12.1 ft (1.8 to 3.7 m), and the substrate consists primarily of fine silts and sands in the middle of the pond with cobble and gravel areas along portions of the perimeter. The West Pond is oblong in shape with a relatively uniform and less convoluted bank. The banks are heavily lined with emergent and riparian vegetation that provide both submerged and overhanging habitat. Variations in algal and emergent aquatic plant growth along the banks fluctuate according to seasonal changes, contributing to the habitat complexity within the West Pond.

The Connector Channel is a 230 ft (70 m) long, narrow channel that connects the Ponds. This channel has a maximum width of 16 ft (5 m), with dense stands of emergent vegetation along both banks. Water depths range from less than 3.3 ft to 4.9 ft (1 m to 1.5 m), with the deepest point near the connection with the West Pond.

The East Pond lies adjacent to the I-210 freeway, approximately 210 ft (65 m) to the south. The East Pond has a surface area of approximately 10,800 ft^2 (3,300 m^2) and, like the West Pond, it also provides a diverse combination of aquatic habitats. Water depths in this pond range from 5.9 to 12.1 ft (1.8 to 3.7 m) with substrates consisting mainly of fine silts and sands in the middle with cobble and gravel areas along portions of the perimeter. The banks are heavily lined with emergent and riparian vegetation that provide both submerged and overhanging habitat. Unlike the West Pond, the East Pond possesses more complexity along its banks with several shallow water coves.

In addition to the aquatic habitats within the Mitigation Area, a cement lined drainage ditch, located between the equestrian trail and the I-210 freeway along the northeastern portion of the Ponds, also contains habitat for exotic aquatic species. This freeway drainage is located within the California Department of Transportation (Caltrans) easement just outside the Mitigation Area boundary/fence line. The freeway drainage is densely vegetated and holds water year round. Although a chain-link fence is in place along the freeway drainage, several openings allow biologists access to survey for exotic aquatic species. Following periods of heavy rain, the water can spill over from the freeway drainage and flood the adjacent equestrian trail. Flooding of the equestrian trail provides a continuous wetted habitat from the Ponds to the freeway drainage, and gives exotic aquatic species (i.e., red swamp crayfish [*Procambarus clarkii*] and bullfrog) an opportunity to move from the freeway drainage into the Ponds.

Haines Creek and the Ponds are in fact part of the same watercourse, but when taking into consideration the ecological requirements of the South Coast Minnow-Sucker assemblage these two systems are extremely different in the amount of suitable habitat they can each provide for native fishes. Historically, perennial deep-water habitats (i.e., ponds and lakes) were uncommon in southern California and thus, this type of habitat is not well suited for native southern California fishes, in particular the South Coast Minnow-Sucker fish assemblage. This perennial deep water habitat does, however, favor the exotic aquatic species currently present within the Mitigation Area. The substrates within both Ponds provide excellent breeding areas for exotics such as largemouth bass (*Micropterus salmoides*) and other Centrarchid (sunfish) species. The heavily vegetated banks surrounding both Ponds provide refuge and forage areas for larval and juvenile life stages of exotic aquatic species. Due to the perennial nature of the Ponds, they will continue to act as a nursery where exotic aquatic species can produce offspring that could eventually move down into Haines Creek.

1.2 Exotic Aquatic Species Ecology in Big Tujunga Wash Mitigation Area

Extremely favorable habitat conditions in the Ponds (i.e. clear, slow moving water; abundant vegetation; availability of prey items — both native and introduced) have allowed several exotic aquatic species to become established, either by following deliberate introductions or by natural range expansions from other locations. Furthermore, several of these species have persisted and proliferated due to the absence of natural predators and competitors. The presence of these exotic species in the Mitigation Area may be having both direct and indirect negative effects upon the resident native species.

One of the most notable and predictable effects of exotic species on natives is direct predation of both adults and their young (Minckley et al. 1991). Largemouth bass spawn from late spring to late fall which coincides with the spawning periods for Santa Ana sucker, Santa Ana speckled dace, and arroyo chub. Largemouth bass are known to cease feeding during their spawning period, but in the weeks leading up to the spawn they feed voraciously in shallow water areas and along vegetated banks (Moyle 2002). There is, therefore, a high risk of predation on gravid female and mature male native fishes during the largemouth bass pre-spawning period. Following their spawn the threat resumes for both adult and juvenile native fishes when largemouth bass resume their normal feeding activities. Predation of Santa Ana sucker was documented in October of 2007, when a Santa Ana sucker was discovered inside the stomach of a largemouth bass captured in Haines Creek (ECORP 2009).

Santa Ana sucker, Santa Ana speckled dace, and arroyo chub feed primarily on filamentous algae, crustaceans, insects, and detritus. Their diet places them in direct competition with many of the juvenile exotic fishes found within the Mitigation Area. For example, juvenile bluegill (*Lepomis macrochirus*) feed on both algae and zooplankton, juvenile green sunfish (*Lepomis cyanellus*) eat insects and zooplankton, and western mosquitofish (*Gambusia affinis*) feed upon zooplankton. The juvenile life stages of largemouth bass also feed primarily on zooplankton and small aquatic invertebrates (red swamp crayfish), prior to their dietary transition to larger prey items, including fish. Further, in freshwater fisheries, competition for food during juvenile life stages can force what is termed a “juvenile bottleneck,” wherein competition between juveniles of different species can cause a reduction in their successful transition from juvenile to pre-adult, affecting the number of individuals that eventually reach adulthood (Traxler and Murphy 1995).

The transmission of pathogens or parasites by exotic aquatic species is another potential threat to native species (Moyle and Nichols 1973), especially in instances where these individuals are deliberately introduced from different waterways or regions. One example of this threat is the largemouth bass virus (LMBV), which is currently known to only affect the largemouth bass (Grant et al. 2003). Genetic variations within LMBV have been observed from various infected populations, and these newly identified strains often manifest different symptoms within each affected population (Goldberg et al. 2003). This genetic variability suggests that although LMBV currently only affects largemouth bass, novel mutations of this virus could eventually pose a threat to native fishes.

2.0 METHODS

The 2014 removal of exotic aquatic species from the Mitigation Area was conducted over four removal efforts: April 7 through April 9 (effort one), April 29 through May 2 (effort two), November 10 through November 13 (effort three), and November 17 to November 20 (effort four). Removal efforts were conducted under the direction of ECORP biologist Brian Zitt, U.S. Fish and Wildlife Service (USFWS) 10(a)(1)(A) recovery permit holder for Santa Ana sucker (TE-27460A-1). Since the Mitigation Area is home to several special-status species, sampling methods were selected and deployed in habitats with the lowest potential for impacting native species, especially during their spawning/breeding season. In addition to the exotic aquatic wildlife species removal efforts in Haines Creek, efforts were also made to remove rock dams and foot bridges when they were encountered.

2.1 Removal Methods

A wide range of removal methods were used during the 2014 exotic aquatic species removal efforts, including fyke net trapping, spearfishing, dip-netting/hand capturing, bullfrog gigging, seining, minnow trapping, turtle trapping, and gillnetting (Table 2-1). Prior to each removal effort, all potential sampling methods were evaluated for efficacy based upon the current site conditions and information derived from previous removal efforts. In an attempt to reduce the potential for theft, removal, or vandalism of the sampling equipment, the trap locations were often strategically deployed into areas that were inaccessible to the public. Sampling locations and the various sampling methods utilized during 2014 are shown in Figure 2-1. A description of each method used during the exotic aquatic species removal efforts is presented below.

2.1.1 Fyke Net Trapping

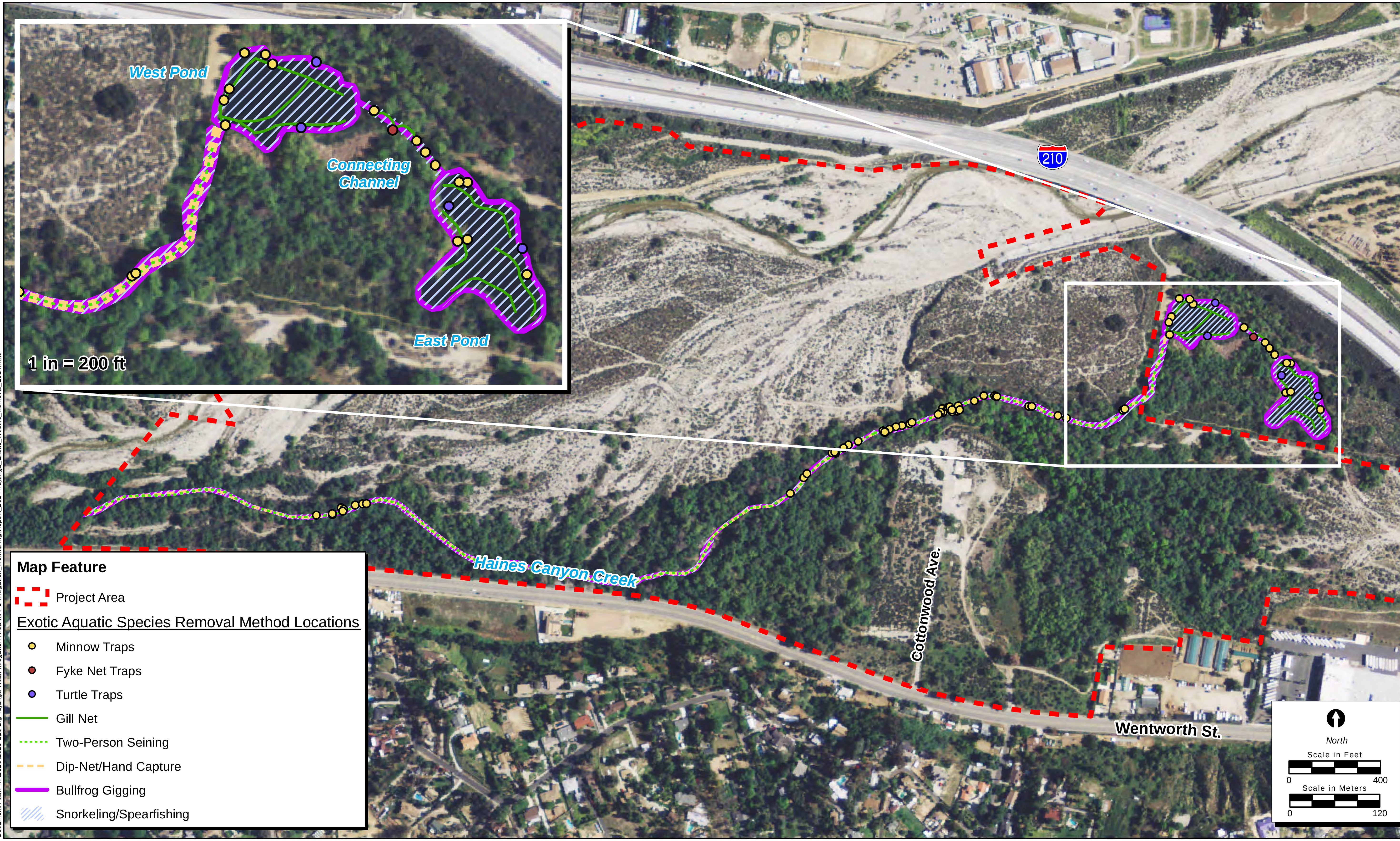
Fyke net traps are large hoop-style nets with detachable wings attached to the throat of the net. Each trap consisted of three steel frames (3.3-ft^2 [1.0-m^2]) wrapped with 0.25-inch (in) (6.35-millimeter [mm]) delta weave mesh, 15.0-ft (4.57-m) detachable wings (3.3-ft [1.0-m] high), and funnels (fykes) on the first, second, and third square frames. The wings provide the ability to block off channels or areas on either side of the trap, funneling fish to swim into the trap. Each trap was allowed to fish for a minimum of 12 hours prior to being checked. A fyke net trap was set in the center of the Connector Channel in water depths ranging from 3.0 to 3.3 ft (0.9 to 1.0 m) for a total of seven days during removal efforts one and two.

2.1.2 Spearfishing Surveys

Spearfishing was conducted while snorkeling, where surveyors used either banded spear guns or pole spear slings equipped with barbed, five-prong trident tips. Surveys were conducted in Haines Creek and the Ponds during the day and at night to target exotic fishes. When observed, sunfish nests were destroyed. These surveys provided biologists valuable insight into the current underwater habitat features, species-specific habitat preferences, and approximate locations of exotic aquatic species aggregations. Spearfishing was utilized as a sampling method for a total of 11 days during all four removal efforts.

Table 2-1. Removal Methods Used by Date, Big Tujunga Wash Mitigation Area, 2014.

Removal Location	Removal Dates	Fyke Net Trapping	Spearfishing (Day)	Spearfishing (Night)	Dip-Netting/ Hand Capturing	Bullfrog Gigging	Two-Person Seining	Minnow Trapping	Turtle Trapping	Gillnetting
Haines Canyon Creek	April 29, 2014			x	x	x				
	April 30, 2014							x		
	May 1, 2014		x	x		x		x		
	May 2, 2014							x		
	November 10, 2014						x			
	November 11, 2014						x	x		
	November 12, 2014			x		x	x			
	November 13, 2014							x		
	November 17, 2014			x		x	x			
	November 18, 2014							x		
	November 19, 2014						x	x		
	November 20, 2014							x		
West Pond	April 7, 2014		x	x		x				x
	April 8, 2014		x	x		x				x
	April 9, 2014		x							x
	April 29, 2014		x	x	x	x			x	x
	April 30, 2014		x	x		x		x	x	x
	May 1, 2014		x					x	x	x
	May 2, 2014		x						x	x
	November 12, 2014			x		x				
	November 17, 2014						x		x	
	November 18, 2014			x		x			x	
	November 19, 2014					x			x	
	November 20, 2014			x					x	
Connector Channel	April 7, 2014	x		x		x				
	April 8, 2014	x								x
	April 9, 2014	x								x
	April 29, 2014	x								
	April 30, 2014	x						x		
	May 1, 2014	x						x		
	May 2, 2014	x						x		
East Pond	April 7, 2014		x							x
	April 8, 2014		x	x		x				x
	April 9, 2014		x							x
	April 29, 2014		x						x	
	April 30, 2014		x	x				x	x	
	May 1, 2014		x			x		x	x	
	May 2, 2014							x	x	
	November 17, 2014								x	
	November 18, 2014								x	
	November 19, 2014								x	
	November 20, 2014								x	



Document Path: N:\2010\2010-116 Big Tujunga Wash Mitigation Area\MAPS\Mitigation_Monitoring\Report_2014\Tujunga_Exotic_Wildlife_Removal_2014.mxd

Aerial Date: NAIP 2012
1/13/2015

Figure 2-1. Exotic Aquatic Wildlife Species Sampling Locations

2014-003.003 Big Tujunga Wash Mitigation Area

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2.1.3 Dip-netting/Hand Capturing Surveys

Long handled dip-nets (0.12-in [3.00-mm] knotless nylon mesh) were used in the most appropriate habitats (e.g., undercut banks and areas containing overhanging vegetation) for capturing exotic aquatic wildlife species (i.e red swamp crayfish, juvenile fishes, bullfrog tadpoles). This method was employed during the day in areas of Haines Creek where seining was limited due to accessibility and also at night in combination with bullfrog gigging and spearfishing surveys. Red swamp crayfish and bullfrogs are most active at night and are therefore more susceptible to being located and captured. The use of a light source (either a head and/or hand lamp) is the most effective way to locate and identify red swamp crayfish and bullfrogs, because light directed into their eyes will reflect and thereby expose their location. Fish are generally inactive at night and easier to approach, which makes them more susceptible to being captured during night surveys. Although dip-nets are capable of sampling most habitats, it was sometimes necessary to capture some animals by hand during these surveys. Dip-netting/hand capturing surveys were used as a sampling method for two days during removal effort two.

2.1.4 Bullfrog Gigging Surveys

Bullfrog gigging surveys were conducted throughout Haines Creek and around the perimeter of the Ponds. These surveys focused mainly in areas where suitable habitat for bullfrog exists (pools and slow moving side channels with aquatic vegetation). Surveys were conducted at night, with the use of a light source, when adult and juvenile bullfrogs are most active and more susceptible to being located and captured. Biologists searched systematically for bullfrog eye-shine by shining a light along the shoreline, the surface of the water, and any exposed banks. In open areas, biologists scanned the area ahead of them looking for any eye-shine before moving slowly through an area searching the bank habitat in a more detailed manner. Often times (during the breeding season) surveyors would listen for calls around open water areas, a technique which helped cue surveyors in on the location of breeding adults. Adult and juvenile bullfrogs were captured either by hand or with the use of pole spear slings equipped with barbed, five-prong trident tips. Bullfrog gigging efforts were employed as a sampling method for a total of eight nights during all four removal efforts.

2.1.5 Two-person Seining Surveys

Two-person seining surveys were accomplished through the use of an un-bagged seine (0.12-in [3.00-mm]) (16-ft [5.0-m]) delta weave mesh mounted on poles within Haines Creek. Seines were generally hauled upstream or across pooled habitats and either pulled up out of the water or onto the banks. Seining was the preferred method used to sample slower moving waters lacking woody debris or heavy vegetation, and areas often too wide or deep for other sampling techniques to be effective. This method allows for the capture of large numbers of individuals while minimizing the potential for injury or mortality to native species. Two-person seining was used as a sampling method for a total of five days during removal efforts three and four.

2.1.6 Minnow Trapping

Minnow traps are two-piece cylinders (16-in [41-centimeter {cm}] in height by 10-in [25-cm] in diameter) encased in 0.250-in (6.35-mm) wire mesh with 1.00-in (2.52-cm) diameter funnel openings at either end. Minnow traps were typically set in slow moving water under overhanging riparian vegetation and along undercut banks to target the following species: red swamp crayfish, bullfrog tadpoles, and young-of-the-year (YOY) fishes. Minnow traps were baited with an attractant (i.e. Whiskas© brand tuna cat food), and secured to either the surrounding vegetation at various locations around the perimeter of both Ponds, in the Connector Channel, and in Haines Creek. Each trap was allowed to fish for a minimum of 12 hours prior to being checked. Minnow traps were used as a sampling method for a total of eight days during removal efforts two, three, and four.

2.1.7 Turtle Trapping

Turtle traps are hoop-net traps 3.9-ft (1.2-m) in total length consisting of three steel rings (20-in [51-cm] in diameter), surrounded by 1.5-in (38-mm) knotted nylon mesh, with a single fingered throat on the first ring. The traps were retrofitted with notched wooden stakes to ensure full deployment, and accessory floats to provide sufficient buoyancy for the maintenance of an adequate head space to allow captured turtles room to breathe. Orientation of the traps was typically directed toward the most suitable habitat within a sampling area. Typically traps were set in pool habitat areas containing little to no flow, and water depths of at least (3.3 ft [1.0 m]). These floating traps were baited with cans of sardines and secured to the bank. The turtle traps were placed in both Ponds and checked daily following a period of at least 12 hours in the water. Four turtle traps were employed as a sampling method for a total of eight days during removal efforts two and four.

2.1.8 Gillnetting

Gillnets are monofilament nets that sit vertically in the water column by means of a float line and a lead line. Fish swim into the net and become entrapped, usually at their gills. The mesh sizes vary from 0.4 to 3.9 in (1 to 10 cm) which allows for the capture of multiple size classes. Two different lengths of gillnet were deployed in the Ponds and the Connector Channel (98-ft [30-m] and 328-ft [100-m]). Gillnets were checked frequently during snorkeling and spearfishing surveys, with no longer than eight hours between checks. Due to the entanglement hazard involved with gillnetting, bilingual signs were posted around the access points to inform the public to stay out of the water. Gillnets were used as a sampling method for seven days during all three removal efforts.

2.2 Processing Protocol

All of the animals captured were identified to species, enumerated, and examined for any observable health conditions (e.g., parasites, lesions, fin erosion) which were noted and recorded onto standardized data sheets. The first 30 individuals of a species captured by each sampling method at a location were measured to the nearest mm standard length (SL). All native aquatic species captured during the removal efforts were returned unharmed to their original point of capture. All exotic aquatic species captured were humanely euthanized and buried on site.

The locations of each sampling area and species encountered during the surveys were recorded using a handheld Geographic Positioning System (GPS) unit (Garmin 60CSx™) in Universal Transverse Mercator (UTM) coordinates, North American Datum 1983 (NAD83). Photographs were taken of representative individuals from each species captured, site locations, and removal methods. Field notes regarding weather conditions and other habitat features were also recorded.

3.0 RESULTS

A total of 2,055 individuals were captured, consisting of 11 exotic aquatic species (seven fishes, one amphibian, two reptiles, and one invertebrate) and two native species during the 2014 removal efforts (Table 3-1). Of the total, 99.8 percent (number of individuals [n]=2,050) of the individuals captured were exotic and removed from the site. Haines Creek accounted for 69.4 percent of the total catch (n=1,427), while the remaining 30.6 percent were captured in other water features: West Pond (n=468), East Pond (n=98), and Connector Channel (n=62). The four removal efforts resulted in the capture and removal of 970 red swamp crayfish, 711 largemouth bass, 231 western mosquitofish, 74 green sunfish, 40 bluegill, 8 common carp (*Cyprinus carpio*), 6 bullfrog (5 adults and 1 tadpole), 5 goldfish (*Carassius auratus*), 3 red-eared slider (*Trachemys scripta elegans*), 1 southern painted turtle (*Chrysemys picta dorsalis*), and 1 Mozambique tilapia (*Oreochromis mossambicus*). Additionally, two native species were captured during the removal efforts (Santa Ana sucker [n=3] and southwestern pond turtle [n=2]).

Aside from one minnow trap being stolen from Haines Creek during effort two, there was no evidence of theft or vandalism to the traps during the removal efforts.

A complete listing of all aquatic species captured during the 2014 sampling efforts is included in Appendix A. Appendix B contains representative photographs of species captured, site locations, and removal methods. The results from each sampling location are provided in detail below.

3.1 Exotic Aquatic Species Captured in Haines Creek

A total of 1,427 individuals, consisting of seven exotic and one native species were captured in Haines Creek during the 2014 removal efforts, including five fishes (goldfish, western mosquitofish, green sunfish, bluegill, and largemouth bass), bullfrog (adults) and red swamp crayfish (Table 3-2). Red swamp crayfish were the most abundant species captured, accounting for 66.8 percent (n=953) of the total catch at this location. Two-person seining was the most effective method for capturing exotic aquatic species, accounting for 41.3 percent (n=588) of the exotic aquatic species captured at this location. Minnow trapping efforts accounted for 34.6 percent (n=492) of the exotic aquatic species, and spearfishing efforts (day and night) accounted for 19.5 percent (n=277) of the exotic aquatic species captured in Haines Creek. Combined, the remaining removal methods (dip-netting, hand captures, and bullfrog gigging) accounted for 4.7 percent (n=67) of the exotic aquatic species captured at this location.

Santa Ana sucker was the only sensitive native species detected in Haines Creek during the 2014 removal efforts. Two individuals were captured in minnow traps and one individual was captured while two-person seining. All Santa Ana sucker were in good overall health and immediately released back into the creek. An additional, 43 Santa Ana sucker (23 adult and 20 juvenile) were observed while sampling in Haines Creek.

One Santa Ana sucker was found dead in Haines Creek on November 11, 2014 during effort three. This mortality was not a result of the removal efforts conducted in the creek. Based on its size and the condition of its partially decomposed carcass, it appeared that the animal died of old age.

Table 3-1. Summary of Species Collected by Location and Method, 2014.

Removal Location	Removal Date	Exotic Species												Native Species		Total
		Goldfish	Common Carp	Western Mosquitofish	Green Sunfish	Bluegill	Largemouth Bass	Mozambique Tilapia	American Bullfrog Adult	American Bullfrog Tadpole	Southern Painted Turtle	Red-eared Slider	Red Swamp Crayfish	Santa Ana Sucker	Southwestern Pond Turtle	
Haines Canyon Creek	April 29-May 2, 2014						41		1				341			383
	November 10-13, 2014			208	7	1	100						380	3		699
	November 17-20, 2014	2		23	22		65		1				232			345
	Subtotal	**2**		**231**	**29**	**1**	**206**		**2**				**953**	**3**		**1,427**
West Pond	April 7-9, 2014				14	6	127		2			1			1	151
	April 29-May 2, 2014	1			19	11	130				1		4		1	167
	November 10-13, 2014					3	23					1				27
	November 17-20, 2014				2	19	102									123
	Subtotal	**1**			**35**	**39**	**382**		**2**		**1**	**2**	**4**		**2**	**468**
Connector Channel	April 7-9, 2014	1			1		35									37
	April 29-May 2, 2014				3		15			1			6			25
	Subtotal	**1**			**4**		**50**			**1**			**6**			**62**
East Pond	April 7-9, 2014	1	4		2		43					1				51
	April 29-May 2, 2014		4		4		30	1	1				7			47
	Subtotal	**1**	**8**		**6**		**73**	**1**	**1**			**1**	**7**			**98**
	Total	**5**	**8**	**231**	**74**	**40**	**711**	**1**	**5**	**1**	**1**	**3**	**970**	**3**	**2**	**2,055**

Table 3-2. Species Abundance Summary by Removal Method, Haines Canyon Creek, 2014.

		Exotic Species							Native Species	
Removal Method	**Removal Dates**	**Goldfish**	**Western Mosquitofish**	**Green Sunfish**	**Bluegill**	**Largemouth Bass**	**American Bullfrog Adult**	**Red Swamp Crayfish**	**Santa Ana Sucker**	**Total**
Spearfishing (Day)	April 29-May 2, 2014					4		12		**16**
	Subtotal					**4**		**12**		**16**
Spearfishing (Night)	April 29-May 2, 2014					29		69		**98**
	November 10-13, 2014			2		42		29		**73**
	November 17-20, 2014	2		6		27	1	54		**90**
	Subtotal	**2**		**8**		**98**	**1**	**152**		**261**
Dip-Netting/Hand Capturing	April 29-May 2, 2014					8		58		**66**
	Subtotal					**8**		**58**		**66**
Bullfrog Gigging	April 29-May 2, 2014						1			**1**
	Subtotal						**1**			**1**
Two-Person Seining	November 10-13, 2014		208	4	1	58		206	1	**478**
	November 17-20, 2014		23	11		37		40		**111**
	Subtotal		**231**	**15**	**1**	**95**		**246**	**1**	**589**
Minnow Trapping	April 29-May 2, 2014							202		**202**
	November 10-13, 2014			1				145	2	**148**
	November 17-20, 2014			5		1		138		**144**
	Subtotal			**6**		**1**		**485**	**2**	**494**
	Total	**2**	**231**	**29**	**1**	**206**	**2**	**953**	**3**	**1,427**

3.2 Exotic Aquatic Species Captured in the West Pond

A total of 466 individuals, consisting of eight exotic aquatic species were captured in the West Pond during the 2014 removal efforts, including four fishes (green sunfish, bluegill, largemouth bass, and Mozambique tilapia), bullfrog (adults), southern painted turtle, red-eared slider, and red swamp crayfish (Table 3-3). Largemouth bass was the most abundant species captured, accounting for 82.0 percent (n=382) of the total catch at this location. Combined, day and night spearfishing was the most effective method for removing exotic fishes, accounting for 60.9 percent (n=284) of the exotic aquatic species captured in the West Pond. Gillnetting accounted for 21.9 percent (n=102) of the catch at this location, while two-person seining accounted for 14.8 percent (n=69) of the catch. Minnow trapping, bullfrog gigging, and hand capture efforts combined to account for the remaining 2.4 percent (n=11) of the exotic aquatic species captured at this location. One male southwestern pond turtle was captured by hand during removal effort one, and recaptured during removal effort two.

3.3 Exotic Aquatic Species Captured in the Connector Channel

A total of 62 individuals, consisting of five exotic aquatic species were captured in the Connector Channel during the 2014 removal efforts, including three fishes (goldfish, green sunfish, and largemouth bass), bullfrog (tadpole), and red swamp crayfish (Table 3-4). Largemouth bass was the most abundant species captured, accounting for 80.6 percent (n=50) of the total catch at this location. Gillnetting accounted for 58.1 percent (n=36) of the catch, while fyke net and minnow trapping accounted for 29.0 percent (n=18) and 11.3 percent (n=7), respectively. One adult goldfish was captured while spearfishing at night, accounting for the remaining 1.6 percent of the total catch at this location. No native species were detected in the Connector Channel in 2014.

3.4 Exotic Aquatic Species Captured in the East Pond

A total of 98 individuals, consisting of eight exotic aquatic species were captured in the East Pond during the 2014 removal efforts, including five fishes (goldfish, common carp, green sunfish, largemouth bass, and Mozambique tilapia), bullfrog (adult), red-eared slider, and red swamp crayfish. (Table 3-5). Largemouth bass was the most abundant species captured, accounting for 74.5 percent (n=73) of the total catch at this location. Spearfishing accounted for 88.8 percent (n=87) of the total catch, while gillnetting and minnow trapping combined to account for the remaining 11.2 percent (n=11) of the total catch at this location. No native species were detected in the East Pond in 2014.

Table 3-3. Species Abundance Summary by Removal Method, West Pond, 2014.

		Exotic Species								Native Species	
Removal Method	Removal Dates	Goldfish	Green Sunfish	Bluegill	Largemouth Bass	American Bullfrog Adult	Southern Painted Turtle	Red-eared Slider	Red Swamp Crayfish	Southwestern Pond Turtle	Total
Spearfishing (Day)	April 7-9, 2014				33			1			**34**
	April 29-May 2, 2014	1			57						**58**
	Subtotal	**1**			**90**			**1**			**92**
Spearfishing (Night)	April 7-9, 2014		9	1	58						**68**
	April 29-May 2, 2014		7	3	33						**43**
	November 10-13, 2014			3	23			1			**27**
	November 17-20, 2014			4	50						**54**
	Subtotal		**16**	**11**	**164**			**1**			**192**
Hand Capturing	April 7-9, 2014									1	**1**
	April 29-May 2, 2014						1			1	**2**
	Subtotal						**1**			**2**	**3**
Bullfrog Gigging	April 7-9, 2014					2					**2**
	Subtotal					**2**					**2**
Two-person Seining	November 17-20, 2014		2	15	52						**69**
	Subtotal		**2**	**15**	**52**						**69**
Minnow Trapping	April 29-May 2, 2014		2		2				4		**8**
	Subtotal		**2**		**2**				**4**		**8**
Gillnetting	April 7-9, 2014		5	5	36						**46**
	April 29-May 2, 2014		10	8	38						**56**
	Subtotal		**15**	**13**	**74**						**102**
	Total	**1**	**35**	**39**	**382**	**2**	**1**	**2**	**4**	**2**	**468**

Table 3-4. Species Abundance Summary by Removal Method, Connector Channel, 2014.

Removal Method	Removal dates	Exotic Species					Total
		Goldfish	Green Sunfish	Largemouth Bass	American Bullfrog Tadpole	Red Swamp Crayfish	
Fyke Net Trapping	April 29-May 2, 2014		2	15	1		**18**
	Subtotal		**2**	**15**	**1**		**18**
Spearfishing (Night)	April 7-9, 2014	1					**1**
	Subtotal	**1**					**1**
Minnow Trapping	April 29-May 2, 2014		1			6	**7**
	Subtotal		**1**			**6**	**7**
Gillnetting	April 7-9, 2014		1	35			**36**
	Subtotal		**1**	**35**			**36**
	Total	**1**	**4**	**50**	**1**	**6**	**62**

Table 3-5. Species Abundance Summary by Removal Method, East Pond, 2014.

Removal Method	Removal Date	Exotic Species								Total
		Goldfish	Common Carp	Green Sunfish	Largemouth Bass	Mozambique Tilapia	American Bullfrog Adult	Red-eared Slider	Red Swamp Crayfish	
Spearfishing (Day)	April 7-9, 2014	1	1		25			1		**28**
	April 29-May 2, 2014		4		12	1				**17**
	Subtotal	**1**	**5**		**37**	**1**		**1**		**45**
Spearfishing (Night)	April 7-9, 2014			2	15					**17**
	April 29-May 2, 2014			3	18		1		3	**25**
	Subtotal			**5**	**33**		**1**		**3**	**42**
Minnow Trapping	April 29-May 2, 2014			1					4	**5**
	Subtotal			**1**					**4**	**5**
Gillnetting	April 7-9, 2014		3		3					**6**
	Subtotal		**3**		**3**					**6**
	Total	**1**	**8**	**6**	**73**	**1**	**1**	**1**	**7**	**98**

4.0 DISCUSSION

The four exotic aquatic species removal efforts conducted in 2014 captured and removed 2,050 exotic individuals, representing 11 exotic aquatic species. Haines Creek accounted for 69.4 percent of the exotic species captured, while the Ponds and Connector Channel accounted for the remaining 30.6 percent. The methods deployed were dependent on the habitat types being sampled, the life stages being targeted, and the time of year sampling was conducted. Combined, these methods targeted every exotic aquatic species at each of their life stages.

All removal efforts were conducted in a manner that avoided impacts to Santa Ana sucker, especially during their breeding season (March to August). Removal efforts one and two were conducted within the breeding season for sensitive fish species; therefore, sampling focused in and around the Ponds. Later in the year, removal efforts three and four took place outside the breeding season and focused primarily in Haines Creek. There were no mortalities or injuries to Santa Ana sucker resulting from the removal efforts. One dead Santa Ana sucker was found on November 11, 2014 while conducting two-person seining activities during effort three. Due to its size and the condition of its body, it appeared to have died of old age and not from the two-person seining effort (Appendix B, Photo B-16). The carcass was partially decomposed, indicating that death had occurred well before the start of the third removal effort. This species generally has a life span of four years and, therefore, will only grow to a certain length/size. This animal appeared to be a mature adult based on its measurements falling within the larger size class for this species.

As with previous years' removal efforts, red swamp crayfish and largemouth bass were the most abundant species in Haines Creek. Combined, these two species made up the majority (82 percent) of exotic aquatic species captured in 2014. Two-person seining continues to be the most effective tool, in lieu of electrofishing, to target pools and shallow undercuts of Haines Creek. Although seining is often limited to open water habitats, free of woody debris and other obstructions, it is an effective removal method and accounted for more individuals captured than any other method. Dip-netting and spearfishing were used in locations where seines were not capable of sampling (e.g., pools with large amounts of woody debris, deep undercut banks and locations with overhanging or instream vegetation). These methods allowed for all habitats to be sampled and were highly effective at removing large numbers of exotic aquatic species.

Bullfrog gigging continues to be the most effective method for capturing adult and juvenile bullfrogs. The gig, used to capture bullfrogs, is also used for spearfishing. This flexibility allows biologists to spear exotic fishes underwater or gig bullfrogs along the banks using the same equipment. In general, fish are less active at night, while red swamp crayfish appear to be more active. When water visibility is good, both of these scenarios allow for greater capture rates at night than during daytime surveys. Bullfrog tadpoles and egg masses were not observed during snorkeling surveys; however, one bullfrog tadpole was captured in the fyke net trap in the Connector Channel. The number of bullfrogs detected at the Mitigation Area has remained relatively low through the years, especially compared to other southern California locations where bullfrogs are present. This suggests that the lack of bullfrogs on site may be due to pressures associated with predation or environmental conditions, individuals may also preferentially select habitat outside the Mitigation Area or be dispersing from outside areas into the Mitigation Area (either on their own or through human introductions).

Spearfishing/snorkeling continues to be an effective tool for removing larger fishes, disrupting sunfish nests, and examining areas around downed trees, snags, and undercut banks for the presence of exotic turtles. This year, a single Mozambique tilapia was removed using a spear from the East Pond during removal effort number two. This species was first documented at the Mitigation Area in 2012 and, although it has the potential to rapidly reproduce within the Ponds, there has been no evidence of its breeding at the site. Although turtle traps were set in the Ponds during removal efforts two and four, the traps did not yield any captures. The abundance of prey items in the Ponds may preclude turtles from entering the baited traps. Conversely, two exotic turtle species (three red-eared sliders and one southern painted turtle) were captured while spearfishing/snorkeling in the Ponds in 2014. The southern painted turtle is the first known occurrence of the species at the Mitigation Area and was likely a pet that was released at the Ponds. In addition to the exotic turtles captured, a male southwestern pond turtle was captured. This male pond turtle had heavy scarring on its shell indicative of canid predation attempts. The last record of a southwestern pond turtle (a female also with distinctive markings on her carapace) in the Mitigation Area was in 2011 (ECORP 2012). Between 2007 and 2011 this female was the only southwestern pond turtle detected during surveys.

Gillnets were used in combination with spearfishing surveys in the Ponds and Connector Channel and were effective at capturing and removing large adult fishes. Gillnetting accounted for the majority of the catch (58.1 percent) in the Connector Channel and accounted for the second greatest number of exotic fishes captured in the Ponds. The presence of algae, emergent vegetation, and underwater visibility varied throughout the year in the Ponds and Connector Channel which can affect the effectiveness of gillnetting, snorkeling, and spearfishing surveys and lead to variation in catch rates. Largemouth bass was the dominate species captured in the Ponds and Connector Channel, accounting for 80.4 percent of the total in those locations. YOY largemouth bass and green sunfish were observed in large aggregations in the Ponds and Haines Creek, indicating both species successfully spawned in 2014.

Fyke net trapping was used sparingly in 2014, as the amount of available open water habitat in the Connector Channel was filled in with cattails. This made setting the traps challenging and may have restricted animals from migrating between the Ponds, which would have prevented them from being captured in the fyke net. Intensive minnow trapping took place in Haines Creek during removal efforts two, three, and four and yielded roughly 50 percent of the red swamp crayfish captured in Haines Creek. Traps were selectively placed in locations where red swamp crayfish were observed and trapped repeatedly until that location yielded no red swamp crayfish. A combination of passive (trapping) and active (seining, dipnetting, and spearfishing) were used to capture as many individuals as possible. Night surveys in Haines Creek also helped to target red swamp crayfish and note locations of higher densities for future trapping efforts.

Santa Ana sucker were the only native fish species detected in 2014 and the number of individuals detected were relative low (n=43). Successful breeding was documented in a single location in Haines Creek where 20 YOY were observed; however, this single observation is concerning since no other YOY were detected and in subsequent surveys only adult Santa Ana sucker were detected. This may be an artifact of sampling or it may be that these individuals were no longer present due to predation or some other factor.

4.1 Problems Encountered During Removal

Managing the public recreational usage at the Mitigation Area is challenging; and although outreach programs are in place, the progresses are limited by their resources, ability to reach non-residents, obtaining 100 percent compliance from all users, and having real-time enforceable actions taken when there are infractions. While conducting exotic wildlife species removals efforts, biologists recorded the following unauthorized activities: tree cutting, the formation of new trails and stream crossings, creation of rock dams, swimming, fishing, camping, trash dumping, and the consumption of alcoholic beverages. All unauthorized activities were immediately reported and, when possible, biologists educated the public on rules of the Mitigation Area. If the issue was not immediately resolved at the time of observation, it was addressed during follow-up site visits or by notifying LACDPW. Access points for the unauthorized trail and creek crossings were blocked off using fallen tree branches, while rock dams were dismantled and distributed haphazardly back into the creek. Rock dams are barriers for fish passage and alter the stream habitat type (from riffle or glide to deep pools) and instream habitat complexity (i.e., filamentous algae, aquatic macrophytes, and overhanging vegetation). These altered habitats often created suitable foraging and breeding habitat for exotic aquatic species. The removal of these man-made structures restores the natural flow of the creek, and removes the potential for adverse impacts to sensitive native fishes.

Trap locations were generally chosen based upon the availability of suitable habitat for exotic species, as well as the ability to keep the traps concealed and inaccessible to the public in an attempt to reduce the potential for theft, removal, or vandalism. Gillnets were the only exception due to a potential entanglement hazard. As a safety precaution, when gillnets were used, bilingual signs were posted at the access points to the Ponds warning people not to swim or fish in the water. The only issue of equipment being tampered with occurred during removal effort two. Despite efforts to conceal minnow traps in Haines Creek, a trap was stolen and the line used to secure the trap was cut.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The keys to enhancing and maintaining a successful exotic aquatic species removal program are: 1) maintain a systematic sampling approach that allows for dynamic variation with regard to changes in target species and their life stages, site conditions, and seasonal variations, 2) eliminate habitat for exotic aquatic species to breeding, foraging, or take up shelter, 3) eliminate the potential for migration and/or introductions, 4) educate the public on exotic species and provide opportunities for them to get involved, and 5) provide continuous monitoring efforts to ensure long-term success. Due to the various intricacies associated with the exotic aquatic species removal program (e.g., potential for migration, habitat complexity, sensitivity of avoiding impacts to native species who share the same habitat as targeted species) within the Mitigation Area, the complete eradication of exotic aquatic species is likely not possible without extensive measures.

The current exotic aquatic species removal program uses techniques which are effective at capturing individuals posing the greatest impact to native species within the Mitigation Area. This program incorporates a variety of sampling methods, often used in combination, to systematically target habitats with the highest densities of exotic aquatic species. Although the exotic aquatic species removal program continues to remove large numbers of exotic aquatic species, it is unclear what level of relief the current program is providing to the native species of the Mitigation Area. In 2012, native fishes surveys conducted in Haines Creek showed a trend of decreasing relative abundance of exotic species with distance away from the Ponds and increasing relative abundance of native fishes with distance away from the Ponds (ECORP 2013). The Ponds continue to provide exceptional breeding habitat for exotic aquatic species and efforts should be made to address this problem.

Prior exotic species reports have suggested transforming the Ponds into a stream-type system to coincide with the habitat in Haines Creek, which would benefit the native aquatic species of the Mitigation Area. Other suggestions have been made to install a fish screen at the confluence of the West Pond and Haines Creek in an effort to reduce the migration of exotic aquatic species downstream into the creek. Transforming the Ponds into a stream-type habitat would greatly reduce the available habitat for exotic aquatic species to breeding, foraging, or take up shelter; however, it would also eliminate habitat that may be used by migratory bird species. Fish screens do not address the problem, are costly to maintain, and only restrict size classes larger than the mesh size of the screen. In most instances, juvenile and YOY fishes would still be able to swim past fish screens and become established downstream.

Rock dams, foot bridges, and other obstructions in Haines Creek that impede the creeks natural flow can be problematic to native fishes and often create favorable conditions for exotic aquatic species. Efforts should continue to monitor for these types of obstructions and they should be removed when observed. Public outreach regarding the biological resources of the Mitigation Area should continue in an effort to educate recreational users of the approved and prohibited recreational activities at the site.

A clean-out effort conducted along the I-210 freeway drainage to remove suitable habitat for exotic aquatic species would be helpful to control exotic species near the ponds. LACDPW could work with Caltrans to either eliminate the source of the standing water or to determine what vegetation thinning could be done to decrease the suitability of this area for exotic aquatic species.

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APPENDIX A

Species Captured During the Exotic Aquatic Species Removal Efforts, 2014

Appendix A: Species Captured During the Exotic Aquatic Species Removal Efforts, 2014.

COMMON NAME	SCIENTIFIC NAME
MALOCOSTRACANS	**MALOCOSTRACA**
Freshwater Crayfishes	**Cambaridae**
Red swamp crayfish[3]	*Procambarus clarkii*
RAY-FINNED FISHES	**ACTINOPTERYGII**
Carps and Minnows	**Cyprinidae**
Goldfish[3]	*Carassius auratus*
Common carp[3]	*Cyprinus carpio*
Suckers	**Catostomidae**
Santa Ana sucker[1,2]	*Catostomus santaanae*
Livebearers	**Poeciliidae**
Western mosquitofish[3]	*Gambusia affinis*
Sunfishes	**Centrarchidae**
Green sunfish[3]	*Lepomis cyanellus*
Bluegill[3]	*Lepomis macrochirus*
Largemouth bass[3]	*Micropterus salmoides*
Cichlids	**Cichlidae**
Mozambique tilapia[3]	*Oreochromis mossambicus*
AMPHIBIANS	**AMPHIBIA**
True Frogs	**Ranidae**
American bullfrog[3]	*Lithobates catesbeianus*
REPTILES	**REPTILIA**
Pond turtles	**Emydidae**
Southwestern pond turtle[2]	*Actinemys pallida*
Southern painted turtle[3]	*Chrysemys picta dorsalis*
Red-eared slider[3]	*Trachemys scripta elegans*

[1] Federally Listed Threatened Species
[2] CDFW SSC
[3] Exotic Species

APPENDIX B

Exotic Aquatic Species Removal Photographs, 2014

B-1) Cut trees blocking Haines Canyon Creek.

B-2) ECORP biologists conducting two-person seining in Haines Canyon Creek.

Exotic Aquatic Species Removal Photographs

B-3) Unauthorized trail crossing Haines Canyon Creek.

B-4) Unauthorized trail crossing Haines Canyon Creek.

B-5) An ECORP biologist snorkeling large pools in Haines Canyon Creek.

B-6) Children wading in a dammed section of Haines Canyon Creek.

B-7) ECORP biologists conducting two-person seining in Haines Canyon Creek.

B-8) A largemouth bass captured while two-person seining in Haines Canyon Creek.

B-9) A largemouth bass captured while spearfishing in West Pond.

B-10) A common carp captured while spearfishing in the East Pond.

B-11) A goldfish captured while spearfishing in the West Pond.

B-12) Red swamp crayfish captured with minnow traps in Haines Canyon Creek.

Exotic Aquatic Species Removal Photographs

B-13) A southern painted turtle hand captured in the West Pond.

B-14) A Mozambique tilapia captured while spearfishing in the East Pond.

B-15) A Wilson's snipe observed on the bank of Haines Canyon Creek.

B-16) A dead adult Santa Ana sucker found in Haines Canyon Creek. This mortality was not as a result of exotic aquatic removal efforts.

APPENDIX G

2014 Water Quality Monitoring Report

County of Los Angeles
Department of Public Works

October 2014 Water Quality Monitoring Report

for the

Big Tujunga Wash Mitigation Area

December 2014

MWH

October 2014 Water Quality Monitoring Report

for the

Big Tujunga Wash Mitigation Area

December 2014

Prepared For:

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Water Quality Monitoring
October 2014

BACKGROUND

The County of Los Angeles Department of Public Works (LACDPW) purchased an approximately 210-acre parcel in Big Tujunga Wash as a mitigation area for Los Angeles County Flood Control District (LACFCD) projects throughout Los Angeles County. In coordination with local agencies, the LACDPW defined a number of measures to improve habitat quality at the site. A Final Master Mitigation Plan (FMMP) was prepared to guide the implementation of these enhancements. The FMMP also includes a monitoring program to gather data on conditions at the site during implementation of the improvements. The FMMP was prepared and is currently being implemented by ECORP Consulting, Inc. (ECORP). MWH, a subconsultant to ECORP, is responsible for the water quality monitoring program described in the FMMP. Water quality monitoring was conducted on a quarterly basis from the fourth quarter of 2000 through the fourth quarter of 2005. In 2006, monitoring was conducted on a semi-annual basis. In 2007 through 2009 monitoring was conducted annually, in December. In 2010, monitoring was conducted in November; pesticide sampling was conducted in early December. In 2012, monitoring was conducted in February and November, and in 2013 and 2014, monitoring was conducted in October. This report presents the results of the water quality sampling for October 2014.

The project site is located just east of Hansen Dam in the Shadow Hills area of the City of Los Angeles. Both Big Tujunga Wash, an intermittent stream, and Haines Canyon Creek, a perennial stream, traverse the project site in an east-to-west direction. The two Tujunga Ponds are located outside of the site boundary, at the far eastern side of the site.

Project Site Activities

A timeline of project-related activities including water quality sampling events is presented in **Table 1**.

Table 1
Major Activities to Date at the Big Tujunga Wash Mitigation Area

Date	Activity
4/2000	Baseline water quality sampling
11/2000 to 11/2001	Arundo, tamarisk, and pepper tree removal Chemical (Rodeo®) application
12/2000 to 11/2002	Water hyacinth removal
12/2000	Fish Sampling at Haines Canyon Creek
12/2000	Water quality sampling
1/2001 to present	Exotic aquatic wildlife (non-native fish, crayfish, bullfrog, and turtle) removal – conducted quarterly
2/2001	Partial riparian planting
3/2001	Selective clearing at Canyon Trails Golf Club
3/2001	Water quality sampling
6/2001	Water quality sampling
7/2001	Fish Sampling at Haines Canyon Creek
9/2001	Water quality sampling

Date	Activity
10/2001 to 11/2001	Fish Sampling at Haines Canyon Creek
12/2001	Water quality sampling
1/2002	Final riparian planting
2/2002	Upland replacement planting
3/2002	Water quality sampling
6/2002	Water quality sampling
7/2002	Fish Sampling at Haines Canyon Creek
9/2002	Water quality sampling
10/2002	Grading at Canyon Trails Golf Club begins
11/2002	Fish Sampling at Haines Canyon Creek
12/2002	Water quality sampling
3/2003	Water quality sampling
4/2003	Meeting with Canyon Trails Golf Club to discuss future use of herbicides and fertilizers
6/2003	Water quality sampling
8/2003	Fish Sampling at Haines Canyon Creek
9/2003	Water quality sampling
Fall 2003	Completion of the golf course construction
12/2003	Water quality sampling
1/2004	Fish Sampling at Haines Canyon Creek
4/2004	Water quality sampling
4/2004	Rock Dam Removal Day
6/2004	Angeles National Golf Club (previously named Canyon Trails) opens to the public
7/2004	Water quality sampling
10/2004	Water quality sampling
12/2004	Water quality sampling
4/2005	Water quality sampling
6/2005	Water quality sampling
10/2005	Water quality sampling
12/2005	Water quality sampling
7/2006	Water quality sampling
12/2006	Water quality sampling
12/2007	Water quality sampling
12/2008	Water quality sampling
8/2009 to 10/2009	The Station Fire was the largest fire in the recorded history of Angeles National Forest and the 10th largest fire in California since 1933. The fire burned a total of 160,577 acres. The fire was fully contained on October 16, 2009. (Source: Angeles National Forest Incident Update available - http://www.inciweb.org/incident/1856/)
12/2009	Water quality sampling
11/2010	Water quality sampling
12/2010	Water quality sampling for pesticides
9/2011 to 1/2012	Water lettuce removal
2/2012	Water quality sampling
11/2012	Water quality sampling
10/2013	Water quality sampling
10/29/14	Water quality sampling

Upstream Land Uses

The monitoring program has been designed to specifically address inputs to the site from upstream land uses such as the Angeles National Golf Club (previously named Canyon Trails Golf Club). The golf course has been operating since June 2004. Potential impacts to aquatic species from run-on to the site that contains excessive nutrients or pesticides are of primary concern. Pesticides potentially used at the Angeles National Golf Course include herbicides, insecticides, fungicides, and grass growth inhibitors (**Table 2**).

Actual use of pesticides is based on golf course maintenance needs. Based on the pesticide use information from the Golf Club, analysis of water samples for glyphosate, chlorpyrifos, other organophosphorous pesticides, and organochlorine pesticides is included in the sampling program for the Big Tujunga Wash Mitigation Area.

Table 2
Pesticides Potentially Used at the Angeles National Golf Club

Manufacturer and Product Name	Active Ingredient	Use
Syngenta Primo Maxx	trinexapac-ethyl	grass growth inhibitor used for turf management
Syngenta Reward	diquat dibromide	landscape and aquatic herbicide
Syngenta Barricade	prodiamine	pre-emergent herbicide
Bayer Prostar 70 WP	flutolanil	fungicide
Monsanto QuikPRO	ammonium salt of glyphosphate and diquat dibromide	herbicide
Monsanto Rodeo® Verdicon Kleenup® Pro Lesco Prosecutor	glyphosate	emerged aquatic weed and brush herbicide
Valent ProGibb T&O	gibberellic acid	plant growth regulator
BASF Insignia 20 WG	pyraclostrobin	fungicide
BASF Stalker	Isopropylamine salt of Imazapyr	herbicide
Dow Agrosciences Surflan A.S.	oryzalin	herbicide
Dow Agrosciences Dursban Pro	chlorpyrifos	insecticide
Mycogen Scythe	pelargonic acid	herbicide

Source: J. Reidinger, Angeles National Golf Club, pers. comm. to M. Chimienti, LACDPW, March 18, 2004 and Angeles National Golf Club Monthly Summary Pesticide Use Reports (December 2004, February 2005 and April 2007).

MATERIALS AND METHODS

Sampling Stations

Four sampling locations have been identified for the monitoring program for the Big Tujunga Wash Mitigation Area (**Figure 1**). **Table 3** summarizes sampling locations and the conditions observed on October 29, 2014. Due to sample preservation issues, bacteria samples in Haines Canyon Creek were re-taken on October 30, 2014. Also due to sample preservation issues, total phosphorus, Kjeldahl nitrogen and ammonia samples were re-taken in all three stations with flows on November 17, 2014.

Key to Features

Mitigation Area

Station Number	Name
1	Inflow to Tujunga Ponds
2	Outflow from Tujunga Ponds
3	Big Tujunga Wash
4	Haines Canyon Creek, just before exit from site

N

0 450 900 Feet

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Date: April 19, 2012

Big Tujunga Wash Mitigation Area
Water Quality Sampling Stations

MWH.

Figure 1

Table 3
Water Quality Sampling Locations and Conditions for October 2014

Date	October 29, 2014		
Air Temperature	Approximately 73-77 degrees Fahrenheit during sample collection period		
Skies	Clear, sunny		
Observations	Water clear at all locations, relatively low turbidity, horses crossing at outflow from Tujunga Ponds		
Sampling Locations	**Latitude**	**Longitude**	**Time of sample**
Haines Canyon Creek	34 16' 0.092'' N	118 21' 25.716' 'W	1130
Haines Canyon Creek, inflow to Tujunga Ponds	34 16' 6.040'' N	118 20' 22.616'' W	1310
Haines Canyon Creek, outflow from Tujunga Ponds	34 16' 8.263'' N	118 20' 30.824'' W	1230
Big Tujunga Wash	34 16' 11.615'' N	118 21' 4.519'' W	station dry

Sampling Parameters

Water Quality. Table 4 summarizes the sampling parameters included in the water quality monitoring program. The following meter was used in the field:

- Dissolved oxygen, pH and temperature – YSI 556-01 Multi Probe System

Pesticides were analyzed by Emax Laboratories, Inc., Torrance, California. All other analyses were performed at Eurofin Eaton Laboratories, Monrovia, California. Samples were taken at mid-depth, along a transect perpendicular to the stream channel alignment. Quality assurance/quality control (QA/QC) procedures in each laboratory followed the methods described in their respective Quality Assurance Manuals.

Table 4
Water Quality Sampling Parameters

Parameter	Analysis Location	Analytical Method
total Kjeldahl nitrogen (TKN)	laboratory	EPA 351.2
nitrite - nitrogen (NO_2-N)	laboratory	EPA 300.0 by IC
nitrate-nitrogen (NO_3-N)	laboratory	EPA 300.0 by IC
ammonia (NH_4)	laboratory	EPA 350.1
orthophosphate - P	laboratory	Standard Methods 4500PE/EPA 365.1
total phosphorus - P	laboratory	Standard Methods 4500PE/EPA 365.1
total coliform	laboratory	Standard Methods 9221B
fecal coliform	laboratory	Standard Methods 9221C
turbidity	laboratory	EPA 180.1
glyphosate (Roundup/Rodeo)[1]	laboratory	EPA 547
chlorpyrifos and organophosphorous pesticides[2]	laboratory	EPA 8141A
organochlorine pesticides[3]	laboratory	EPA 608
dissolved oxygen	field	Standard Methods 4500-O G
total residual chlorine	laboratory	Standard Methods 4500-Cl
temperature	field	Standard Methods 2550
pH	field	Standard Methods 4500-H+

Sources for analytical methods:
EPA. Method and Guidance for Analysis of Water.
American Public Health Association, American Waterworks Association, and Water Environment Federation. 1998. Standard Methods for the Examination of Water and Wastewater, 20th Edition. Washington D.C.

[1] First analysis completed in the first quarter of 2004

[2] First analysis completed in the fourth quarter of 2004. This analytical method tests for the following chemicals: azinphos-methyl, bolster, coumaphos, diazinon, chlorpyrifos, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stirophos, parathion-methyl, tokuthion, and trichloronate.

[3] First analysis completed in December 2007. EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, toxaphene and PCB.

Discharge Measurements. In addition to the water quality monitoring, flows in the outlet from the Tujunga Ponds and in Haines Canyon Creek leaving the site were estimated using a simple field procedure. The technique uses a float to measure stream velocity.

Calculating flow then involves solving the following equation:

$$\text{Flow} = ALC / T$$

Where:

A = Average cross-sectional area of the stream (stream width multiplied by average water depth)

L = Length of the stream reach measured (usually 20 feet)

C = A coefficient or correction factor (0.8 for rocky-bottom streams or 0.9 for muddy-bottom streams). This allows you to correct for the fact that water at the surface travels faster than near the stream bottom due to resistance from gravel, cobble, etc. Multiplying the surface velocity by a correction coefficient decreases the value and gives a better measure of the stream's overall velocity.

T = Time, in seconds, for the float to travel the length of L

RESULTS

Baseline Water Quality

Sampling and analysis conducted by LACDPW prior to implementation of the FMMP is considered the baseline for water quality conditions at the site. The results of baseline analyses conducted in April 2000 are presented in **Table 5**. Higher bacteria and turbidity observed in the 4/18/2000 samples are attributable to a rain event. Phosphorus levels were also high in the 4/18/2000 samples, due to release from sediments.

October 2014 Results

Water Quality

Results of analyses conducted by Eurofin Eaton and Emax Laboratories are appended to this report (**Appendix A**) and summarized in **Table 6**.

Table 5
Baseline Water Quality (2000)

Parameter	Units	Date	Haines Canyon Creek, Inflow to Tujunga Ponds	Haines Canyon Creek, Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Total coliform	MPN/ 100 ml	4/12/00	3,000	5,000	170	1,700
		4/18/00	2,200	170,000	2,400	70,000
Fecal coliform	MPN/ 100 ml	4/12/00	500	300	40	80
		4/18/00	500	30,000	2,400	50,000
Ammonia-N	mg/L	4/12/00	0	0	0	0
		4/18/00	0	0	0	0
Nitrate-N	mg/L	4/12/00	8.38	5.19	0	3.73
		4/18/00	8.2	3.91	0.253	0.438
Nitrite-N	mg/L	4/12/00	0.061	0	0	0
		4/18/00	0.055	0	0	0
Kjeldahl-N	mg/L	4/12/00	0	0.1062	0.163	0
		4/18/00	0	0.848	0.42	0.428
Dissolved phosphorus	mg/L	4/12/00	0.078	0.056	0	0.063
		4/18/00	0.089	0.148	0.111	0.163
Total phosphorus	mg/L	4/12/00	0.086	0.062	0	0.066
		4/18/00	0.113	0.153	0.134	0.211
pH	std units	4/12/00	7.78	7.68	7.96	7.91
		4/18/00	7.18	7.47	7.45	7.06
Turbidity	NTU	4/12/00	1.83	0.38	1.75	0.6
		4/18/00	4.24	323	4070	737

Table 6
Summary of Water Quality Results – October 29, 2014

Parameter	Units	Haines Canyon Creek, Inflow to Tujunga Ponds	Haines Canyon Creek, Outflow from Tujunga Ponds	Big Tujunga Wash	Haines Canyon Creek, just before exit from site
Temperature	°C	20.8	18.4	NA	16.6
Dissolved Oxygen	mg/L	7.7	8.7	NA	9.7
pH	std units	6.79	6.90	NA	7.61
Total residual chlorine	mg/L	ND	ND	NA	ND
Ammonia-Nitrogen	mg/L	ND*	ND*	NA	ND*
Kjeldahl Nitrogen	mg/L	0.41*	ND*	NA	ND*
Nitrite-Nitrogen	mg/L	ND	ND	NA	ND
Nitrate-Nitrogen	mg/L	7.6	5.4	NA	4.9
Orthophosphate-P	mg/L	ND	ND	NA	0.013
Total phosphorus-P	mg/L	ND*	ND*	NA	ND*
Glyphosate	µg/L	ND	ND	NA	ND
Chloropyrifos**	µg/L	ND	ND	NA	ND
Pesticides (EPA 608)***	µg/L	ND	ND	NA	ND
Turbidity	NTU	0.79	0.42	NA	0.18
Fecal Coliform Bacteria	(MPN/100 ml)	33	230	NA	330*
Total Coliform Bacteria	(MPN/100 ml)	490	680	NA	490*

NA – data not available; station dry on the sample date

NTU – nephelometric turbidity units MPN – most probable number ND – non-detect

* Due to sample preservation issues, bacteria results in Haines Canyon Creek are from samples taken October 30, 2014. Also due to sample preservation issues, TP, TKN and NH3-N results are from samples taken on November 17, 2014.

** The analytical method used for chloropyrifos (EPA 8141A) also tests for the following chemicals: azinphos-methyl, bolster, coumaphos, diazinon, demeton, dichlorvos, disulfoton, ethoprop, fensulfothion, fenthion, mevinphos, naled, phorate, runnel, stirophos, parathion-methyl, tokuthion, and trichloronate.

*** EPA method 608 tests for aldrin, BHC, Chlordane, DDD, DDE, DDT, dieldrin, endrin, endosulfan, heptaclor, methoxychlor, and toxaphene.

Discharge Measurements

Using the field technique described above, flows in the outlet from the Tujunga Ponds and in Haines Canyon Creek (leaving the site) were approximated. Estimated flows for October 2014 are summarized in **Table 7**.

Table 7
Estimated Flows for October 2014

Sampling Date	Approximate Flow (cubic feet per second)		
	Haines Canyon Creek, Outflow from Tujunga Ponds	Haines Canyon Creek, just before exit from site	Big Tujunga Wash
10/29/14	3	2	station dry on sample date

Comparison of Results with Aquatic Life Criteria

Tables 8 through **13** present objectives established by the United States Environmental Protection Agency (USEPA) and the Los Angeles Regional Water Quality Control Board (Regional Board) for protection of beneficial uses including freshwater aquatic life.

Table 8
National and Local Recommended Water Quality Criteria - Freshwaters

Parameter	Basin Plan Objectives[a]	EPA Criteria		
		CMC	CCC	Human Health
Temperature (°C)	b	See Table 13	See Table 13	--
Dissolved oxygen (mg/L)	>7.0 mean >5.0 min	5.0[c] (warmwater, early life stages, 1-day minimum)	6.0[c] (warmwater, early life stages, 7-day mean)	--
pH	6.5 - 8.5	--	6.5-9.0[d,e]	5.0-9.0[d,e]
Total residual chlorine (mg/L)	0.1	0.019[d,e]	0.011[d,e]	4.0 (maximum residual disinfectant level goal)
Fecal coliform (MPN/100 ml)	126[f] (geometric mean for *E. coli*) (water contact recreation)	--	--	Swimming stds: 33[g] (geometric mean for enterococci) 126[g] (geometric mean for *E. coli*)
Ammonia-nitrogen (mg/L)	See Tables 11 and 12	See Table 9	See Table 10	--
Nitrite-nitrogen (mg/L)	1	--	--	1 (primary drinking water std.)
Nitrate-nitrogen (mg/L)	10	--	--	10 (primary drinking water std.)
Total phosphorus (mg/L)	--	<0.05 – 0.1[e] (recommendation for streams, no criterion)		--
Turbidity (NTU)	h	i	i	5 (secondary drinking water standard) 0.5 – 1.0 (std. for systems that filter)

Notes:

-- No criterion

CMC Criteria Maximum Concentration or acute criterion

CCC Criteria Continuous Concentration or chronic criterion

a Source: California Regional Water Quality Control Board, Los Angeles Region. 1994. Water Quality Control Plan (Basin Plan). As amended.

b Narrative criterion: “The natural receiving water temperature of all regional waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such alteration in temperature does not adversely affect beneficial uses.”

c Source: USEPA. 1986. Ambient Water Quality Criteria for Dissolved Oxygen. EPA 440-5-86-003. Washington, D.C.

d Source: USEPA. 1999. National Recommended Water Quality Criteria – Correction. EPA 822-Z-99-001. Washington, D.C.

e Source: USEPA. 1986. Quality Criteria for Water. EPA 440/5-86-001. Washington, D.C.

f Single sample limits – *E. coli* density shall not exceed 235/100 ml.

g Source: USEPA. 1986. Ambient Water Quality Criteria for Bacteria – 1986. EPA 440-5-84-002. Washington, D.C.

h Narrative criterion: “Waters shall be free of changes in turbidity that cause nuisance or adversely affect beneficial uses.”

i Narrative criterion for freshwater fish and other aquatic life: “Settleable and suspended solids should not reduce the depth of the compensation point for photosynthetic activity by more than 10 percent from the seasonally established norm for aquatic life.”

Table 9
Temperature and pH-Dependent Values of the CMC (Acute Criterion)
Mussels Absent

CMC: Mussels Absent, mg N/L										
pH	Temperature, C									
	0	14	16	18	20	22	24	26	28	30
6.5	58.0	58.0	58.0	58.0	43.7	37.0	31.4	26.6	22.5	19.1
6.6	55.7	55.7	55.7	55.7	41.9	35.5	30.1	25.5	21.6	18.3
6.7	53.0	53.0	53.0	53.0	39.9	33.8	28.6	24.3	20.6	17.4
6.8	49.9	49.9	49.9	49.9	37.6	31.9	27.0	22.9	19.4	16.4
6.9	46.5	46.5	46.5	46.5	35.1	29.7	25.2	21.3	18.1	15.3
7.0	42.9	42.9	42.9	42.9	32.3	27.4	23.2	19.7	16.7	14.1
7.1	39.1	39.1	39.1	39.1	29.4	24.9	21.1	17.9	15.2	12.8
7.2	35.1	35.1	35.1	35.1	26.4	22.4	19.0	16.1	13.6	11.5
7.3	31.2	31.2	31.2	31.2	23.5	19.9	16.8	14.3	12.1	10.2
7.4	27.3	27.3	27.3	27.3	20.6	17.4	14.8	12.5	10.6	8.98
7.5	23.6	23.6	23.6	23.6	17.8	15.1	12.8	10.8	9.18	7.77
7.6	20.2	20.2	20.2	20.2	15.3	12.9	10.9	9.27	7.86	6.66
7.7	17.2	17.2	17.2	17.2	12.9	11.0	9.28	7.86	6.66	5.64
7.8	14.4	14.4	14.4	14.4	10.9	9.21	7.80	6.61	5.60	4.74
7.9	12.0	12.0	12.0	12.0	9.07	7.69	6.51	5.52	4.67	3.96
8.0	9.99	9.99	9.99	9.99	7.53	6.38	5.40	4.58	3.88	3.29
8.1	8.26	8.26	8.26	8.26	6.22	5.27	4.47	3.78	3.21	2.72
8.2	6.81	6.81	6.81	6.81	5.13	4.34	3.68	3.12	2.64	2.24
8.3	5.60	5.60	5.60	5.60	4.22	3.58	3.03	2.57	2.18	1.84
8.4	4.61	4.61	4.61	4.61	3.48	2.95	2.50	2.11	1.79	1.52
8.5	3.81	3.81	3.81	3.81	2.87	2.43	2.06	1.74	1.48	1.25
8.6	3.15	3.15	3.15	3.15	2.37	2.01	1.70	1.44	1.22	1.04
8.7	2.62	2.62	2.62	2.62	1.97	1.67	1.42	1.20	1.02	0.862
8.8	2.19	2.19	2.19	2.19	1.65	1.40	1.19	1.00	0.851	0.721
8.9	1.85	1.85	1.85	1.85	1.39	1.18	1.00	0.847	0.718	0.608
9.0	1.57	1.57	1.57	1.57	1.19	1.00	0.851	0.721	0.611	0.517

Note: Native species of freshwater mussels are not known for Big Tujunga Wash or Haines Canyon Creek.
CMC – Criteria Maximum Concentration (ammonia)
Source: USEPA. 2009. Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater. EPA 822-D-09-001. Washington, D.C.

Table 10
Temperature and pH-Dependent Values of the CCC (Chronic Criterion) Mussels Absent and Early Fish Life Stages Present

CCC: Mussels Absent and Early Fish Life Stages Present, mg N/L										
pH	Temperature (° Celsius)									
	0	14	16	18	20	22	24	26	28	30
6.5	6.36	6.36	6.36	6.36	6.36	6.11	5.37	4.72	4.15	3.65
6.6	6.26	6.26	6.26	6.26	6.26	6.02	5.29	4.65	4.09	3.60
6.7	6.15	6.15	6.15	6.15	6.15	5.91	5.19	4.57	4.01	3.53
6.8	6.00	6.00	6.00	6.00	6.00	5.77	5.08	4.46	3.92	3.45
6.9	5.84	5.84	5.84	5.84	5.84	5.61	4.93	4.34	3.81	3.35
7.0	5.64	5.64	5.64	5.64	5.64	5.42	4.76	4.19	3.68	3.24
7.1	5.41	5.41	5.41	5.41	5.41	5.20	4.57	4.02	3.53	3.10
7.2	5.14	5.14	5.14	5.14	5.14	4.94	4.35	3.82	3.36	2.95
7.3	4.84	4.84	4.84	4.84	4.84	4.66	4.09	3.60	3.16	2.78
7.4	4.52	4.52	4.52	4.52	4.52	4.34	3.82	3.36	2.95	2.59
7.5	4.16	4.16	4.16	4.16	4.16	4.00	3.52	3.09	2.72	2.39
7.6	3.79	3.79	3.79	3.79	3.79	3.65	3.21	2.82	2.48	2.18
7.7	3.41	3.41	3.41	3.41	3.41	3.28	2.89	2.54	2.23	1.96
7.8	3.04	3.04	3.04	3.04	3.04	2.92	2.57	2.26	1.98	1.74
7.9	2.67	2.67	2.67	2.67	2.67	2.57	2.26	1.98	1.74	1.53
8.0	2.32	2.32	2.32	2.32	2.32	2.23	1.96	1.72	1.52	1.33
8.1	2.00	2.00	2.00	2.00	2.00	1.92	1.69	1.49	1.31	1.15
8.2	1.71	1.71	1.71	1.71	1.71	1.64	1.45	1.27	1.12	0.982
8.3	1.45	1.45	1.45	1.45	1.45	1.40	1.23	1.08	0.949	0.835
8.4	1.23	1.23	1.23	1.23	1.23	1.18	1.04	0.914	0.804	0.706
8.5	1.04	1.04	1.04	1.04	1.04	0.999	0.878	0.772	0.679	0.597
8.6	0.878	0.878	0.878	0.878	0.878	0.844	0.742	0.652	0.573	0.504
8.7	0.742	0.742	0.742	0.742	0.742	0.714	0.628	0.552	0.485	0.426
8.8	0.631	0.631	0.631	0.631	0.631	0.606	0.533	0.469	0.412	0.362
8.9	0.539	0.539	0.539	0.539	0.539	0.518	0.455	0.400	0.352	0.309
9.0	0.464	0.464	0.464	0.464	0.464	0.446	0.392	0.345	0.303	0.266

Note: Native species of freshwater mussels are not known for Big Tujunga Wash or Haines Canyon Creek.
CCC – Criteria Continuous Concentration (ammonia)
Source: USEPA. 2009. Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater. EPA 822-D-09-001. Washington, D.C.

Table 11
30-Day Average Objective for Ammonia-N for Freshwaters Applicable to Waters Subject to the "Early Life Stage Present" Condition (mg N/L)

pH	Temperature (° Celsius)								
	14	16	18	20	22	24	26	28	30
6.5	6.67	6.06	5.33	4.68	4.12	3.62	3.18	2.80	2.46
6.6	6.57	5.97	5.25	4.61	4.05	3.56	3.13	2.75	2.42
6.7	6.44	5.86	5.15	4.52	3.98	3.50	3.07	2.70	2.37
6.8	6.29	5.72	5.03	4.42	3.89	3.42	3.00	2.64	2.32
6.9	6.12	5.56	4.89	4.30	3.78	3.32	2.92	2.57	2.25
7.0	5.91	5.37	4.72	4.15	3.65	3.21	2.82	2.48	2.18
7.1	5.67	5.15	4.53	3.98	3.50	3.08	2.70	2.38	2.09
7.2	5.39	4.90	4.31	3.78	3.33	2.92	2.57	2.26	1.99
7.3	5.08	4.61	4.06	3.57	3.13	2.76	2.42	2.13	1.87
7.4	4.73	4.30	3.78	3.32	2.92	2.57	2.26	1.98	1.74
7.5	4.36	3.97	3.49	3.06	2.69	2.37	2.08	1.83	1.61
7.6	3.98	3.61	3.18	2.79	2.45	2.16	1.90	1.67	1.47
7.7	3.58	3.25	2.86	2.51	2.21	1.94	1.71	1.50	1.32
7.8	3.18	2.89	2.54	2.23	1.96	1.73	1.52	1.33	1.17
7.9	2.80	2.54	2.24	1.96	1.73	1.52	1.33	1.17	1.03
8.0	2.43	2.21	1.94	1.71	1.50	1.32	1.16	1.02	0.897
8.1	2.10	1.91	1.68	1.47	1.29	1.14	1.00	0.879	0.773
8.2	1.79	1.63	1.43	1.26	1.11	0.973	0.855	0.752	0.661
8.3	1.52	1.39	1.22	1.07	0.941	0.827	0.727	0.639	0.562
8.4	1.29	1.17	1.03	0.906	0.796	0.700	0.615	0.541	0.475
8.5	1.09	0.990	0.870	0.765	0.672	0.591	0.520	0.457	0.401
8.6	0.920	0.836	0.735	0.646	0.568	0.499	0.439	0.386	0.339
8.7	0.778	0.707	0.622	0.547	0.480	0.422	0.371	0.326	0.287
8.8	0.661	0.601	0.528	0.464	0.408	0.359	0.315	0.277	0.244
8.9	0.565	0.513	0.451	0.397	0.349	0.306	0.269	0.237	0.208
9.0	0.486	0.442	0.389	0.342	0.300	0.264	0.232	0.204	0.179

Source: California Regional Water Quality Control Board, Los Angeles Region. 2005. Amendments to the Water Quality Control Plan – Los Angeles Region with Respect to Early Life Stage Implementation Provisions of the Inland Surface Water Ammonia Objectives for Freshwaters. Taken from USEPA. 1999. 1999 Update of Ambient Water Quality Criteria for Ammonia. EPA 822-R-99-014. Washington, D.C.

Table 12
One-Hour Average Objective for Ammonia-N for Freshwaters (mg N/L)

pH	Waters Designated COLD and/or MIGR	Waters Not Designated COLD and/or MIGR
6.5	32.6	48.8
6.6	31.3	46.8
6.7	29.8	44.6
6.8	28.1	42.0
6.9	26.2	39.1
7.0	24.1	36.1
7.1	22.0	32.8
7.2	19.7	29.5
7.3	17.5	26.2
7.4	15.4	23.0
7.5	13.3	19.9
7.6	11.4	17.0
7.7	9.65	14.4
7.8	8.11	12.1
7.9	6.77	10.1
8.0	5.62	8.40
8.1	4.64	6.95
8.2	3.83	5.72
8.3	3.15	4.71
8.4	2.59	3.88
8.5	2.14	3.20
8.6	1.77	2.65
8.7	1.47	2.20
8.8	1.23	1.84
8.9	1.04	1.56
9.0	0.885	1.32

Cold – Beneficial use designation of Cold Freshwater Habitat
MIGR – Beneficial use designation of Migration of Aquatic Organisms
Source: California Regional Water Quality Control Board, Los Angeles Region. 2002. Amendments to the Water Quality Control Plan – Los Angeles Region with Respect to Inland Surface Water Ammonia Objectives. Taken from USEPA. 1999. 1999 Update of Ambient Water Quality Criteria for Ammonia. EPA 822-R-99-014. Washington, D.C.

Table 13
Example Calculated Values for Maximum Weekly Average Temperature for Growth and Short-Term Maxima for Survival of Juvenile and Adult Fishes During the Summer

Species	Growth (°Celsius)	Maxima (°Celsius)
Black crappie	27	--
Bluegill	32	35
Channel catfish	32	35
Emerald shiner	30	--
Largemouth bass	32	34
Brook trout	19	24

Source: USEPA. 1986. Quality Criteria for Water. EPA 440/5-86-001. Washington, D.C.

DISCUSSION

Results from the October 2014 sampling are described by parameter in **Table 14**.

Table 14
Discussion of October 2014 Water Quality Sampling Results

Parameter	Discussion
Temperature	• Observed temperatures were below levels of concern for growth and survival of warmwater fish species at all stations.
Dissolved oxygen	• Dissolved oxygen levels ranged from 7.7 mg/L in the inflow to the Tujunga Ponds to 9.7 in Haines Canyon Creek leaving the site. DO levels at all stations were above the recommended minimum (5.0 mg/L) and recommended mean (7.0 mg/L) for warmwater fish species.
pH	• Lowest pH was observed in the inflow to Tujunga Ponds (6.79), with highest pH observed in Haines Canyon Creek leaving the site (7.61). On this date, pH readings in Haines Canyon Creek and the Tujunga Ponds were within the 6.5 to 8.5 range identified in the Basin Plan.
Total residual chlorine	• No residual chlorine was detected at any station.
Nitrogen	• Nitrate-nitrogen measurements at all stations were below the drinking water standard of 10 mg/L. • Ammonia was below the detection limit at all stations.
Phosphorus	• Total phosphorus levels at all sites were below the method reporting limit of 0.031 mg/L, and therefore below EPA's recommended range for streams to prevent excess algae growth (recommended range is <0.05 – 0.1 mg/L).
Glyphosate	• Glyphosate was not detected at any station.
Chloropyrifos and Organophosphorous Pesticides	• Chloropyrifos and the other pesticides tested using EPA's analytical method 8141A were not detected at any station.
Organochlorine Pesticides	• Pesticides analyzed by EPA Method 608 were not detected at any station.
Turbidity	• Turbidity levels were very low (<1 NTU) at all stations.
Bacteria	• The fresh water bacteria standard for water contact recreation is for *E. coli* (126 MPN/100 ml geometric mean, 235 MPN/100 ml single sample limits). The observed fecal coliform levels were below the standard at two stations (Haines Canyon Creek inflow to and outflow from Tujunga Ponds). Fecal coliform was 330 MPN/100 ml in Haines Canyon Creek just before exit from site. Previously, the water contact standard was 200 MPN/100 ml fecal coliform. Sampling specifically for *E. coli* was not conducted. • Total coliform levels ranged from 490 MPN/100ml in Haines Canyon Creek inflow to Tujunga Ponds and just before exit from site to 680 MPN/100 ml in the outflow from the ponds. [Note that recreation standards are for *E. coli*. Total coliform standards apply to waterbodies where shellfish can be harvested for human consumption.]

GLOSSARY

Ammonia-Nitrogen – NH_3-N is a gaseous alkaline compound of nitrogen and hydrogen that is highly soluble in water. Un-ionized ammonia (NH_3) is toxic to aquatic organisms. The proportions of NH_3 and ammonium (NH_4^+) and hydroxide (OH^-) ions are dependent on temperature, pH, and salinity.

Chlorine, residual – The chlorination of water supplies and wastewaters serves to destroy or deactivate disease-producing organisms. Residual chlorine in natural waters is an aquatic toxicant.

Chloropyrifos - white crystal-like solid insecticide widely used in homes and on farms. Used to control cockroaches, fleas, termites, ticks crop pests.

Coliform Bacteria – several genera of bacteria belonging to the family Enterobacteriaceae. Based on the method of detection, the coliform group is historically defined as facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria that ferment lactose with gas and acid formation within 48 hours at 35°C.

Fecal Coliform Bacteria – part of the intestinal flora of warm-blooded animals. Presence in surface waters is considered an indication of pollution.

Glyphosate - white compound broad-spectrum herbicide used to kill weeds.

Kjeldahl Nitrogen – Named for the laboratory technique used for detection, Kjeldahl nitrogen includes organic nitrogen and ammonia nitrogen.

Nitrate-Nitrogen – $NO3^-$-N is an essential nutrient for many photosynthetic autotrophs.

Nitrite-Nitrogen – $NO2^-$-N is an intermediate oxidation state of nitrogen, both in the oxidation of ammonia to nitrate and in the reduction of nitrate.

Orthophosphorus – the reactive form of phosphorus, commonly used as fertilizer.

pH – the hydrogen ion activity of water (pH) is measured on a logarithmic scale, ranging from 0 to 14. The pH of "pure" water at 25°C is 7.0 (neutral). Low pH is acidic; high pH is basic or alkaline.

Total Phosphorus – In natural waters, phosphorus occurs almost solely as orthophosphates, condensed phosphates, and organically bound phosphate. Phosphorus is essential to the growth of organisms.

Turbidity – attributable to the suspended and colloidal matter in water, including clay, silt, finely divided organic and inorganic matter, soluble colored organic compounds, and plankton and other microscopic organisms. The reduction of clearness in turbid waters diminishes the penetration of light and therefore can adversely affect photosynthesis.

APPENDIX A

BIG TUJUNGA WASH MITIGATION AREA
WATER QUALITY MONITORING PROGRAM

LABORATORY RESULTS
October 2014

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (626) 386-1101
1 800 566 LABS (1 800 566 5227)

ORELAP 4034

AT-1807

Laboratory Report

for

MWH Americas - Pasadena
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101
Attention: Sarah Garber

Date of Issue
12/09/2014
EUROFINS EATON ANALYTICAL

DST: David S Tripp

Project Manager

Report: 505701
Project: BIG-TUJUNGA
Group: Water Quality Monitoring
PO#: 10506132

* Accredited in accordance with TNI 2009 and ISO/IEC 17025:2005.
* Laboratory certifies that the test results meet all **TNI 2009 and ISO/IEC 17025:2005** requirements unless noted under the individual analysis.
* Following the cover page are State Certification List, ISO 17025 Accredited Method List, Acknowledgement of Samples Received, Comments, Hits Report, Data Report, QC Summary, QC Report and Regulatory Forms, as applicable.
* Test results relate only to the sample(s) tested.

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STATE CERTIFICATION LIST

State	Certification Number	State	Certification Number
Alabama	41060	**Mississippi**	Certified
Alaska	CA00006	**Montana**	Cert 0035
Arizona	AZ0778	**Nebraska**	Certified
Arkansas	Certified	**Nevada**	CA00006-2014-1
California-Monrovia-ELAP	2813	**New Hampshire ***	2959
California-Colton- ELAP	2812	**New Jersey ***	CA 008
California-Folsom- ELAP	2820	**New Mexico**	Certified
Colorado	Certified	**New York ***	11320
Connecticut	PH-0107	**North Carolina**	06701
Delaware	CA 006	**North Dakota**	R-009
Florida *	E871024	**Oregon (Primary AB) ***	**ORELAP 4034**
Georgia	947	**Pennsylvania ***	68-565
Guam	14-003r	**Rhode Island**	LAO00326
Hawaii	Certified	**South Carolina**	87016
Idaho	Certified	**South Dakota**	Certified
Illinois *	200033	**Tennessee**	TN02839
Indiana	C-CA-01	**Texas ***	T104704230-14-7
Kansas *	E-10268	**Utah ***	CA000062014-7
Kentucky	90107	**Vermont**	VT0114
Louisiana *	LA140009	**Virginia ***	460260
Maine	CA0006	**Washington**	C838
Maryland	224	**West Virginia**	9943 C
Commonwealth of Northern Marianas Is.	MP0004	**Wisconsin**	998316660
Massachusetts	M-CA006	**Wyoming**	8TMS-L
Michigan	9906	**EPA Region 5**	Certified
Los Angeles County Sanitation Districts	10264		

* NELAP/TNI Recognized Accreditation Bodies

The tests listed below are accredited and meet the requirements of ISO 17025 as verified by the ANSI-ASQ National Accreditation Board/ACLASS.
Refer to Certificate and scope of accreditation (AT 1807) found at: http://www.eatonanalytical.com

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Drinking Water	Food & Beverage	Waste Water
1,4-Dioxane	EPA 522	x	x	
2,3,7,8-TCDD	Modified EPA 1613B	x	x	
Acrylamide	In House Method	x	x	
Alkalinity	SM 2320B	x	x	x
Ammonia	EPA 350.1		x	x
Ammonia	SM 4500-NH3 H (18th)		x	x
Anions and DBPs by IC	EPA 300.0	x	x	x
Anions and DBPs by IC	EPA 300.1	x	x	
Asbestos	EPA 100.2	x		
Bicarbonate Alkalinity as HCO3	SM 2330B	x	x	x
BOD / CBOD	SM 5210B		x	x
Bromate	In House Method	x	x	
Carbamates	EPA 531.2	x	x	
Carbonate as CO3	SM 2330B	x	x	x
Carbonyls	EPA 556	x	x	
COD	EPA 410.4 / SM 5220D			x
Chloramines	SM 4500-CL G	x	x	x
Chlorinated Acids	EPA 515.4	x	x	
Chlorinated Acids	EPA 555	x	x	
Chlorine Dioxide	SM 4500-CLO2 D	x	x	
Chlorine -Total/Free/ Combined Residual	SM 4500-Cl G	x	x	x
Conductivity	EPA 120.1			x
Conductivity	SM 2510B	x	x	x
Corrosivity (Langelier Index)	SM 2330B	x	x	
Cyanide, Amenable	SM 4500-CN G	x		x
Cyanide, Free	SM 4500CN F	x	x	x
Cyanide, Total	EPA 335.4	x	x	x
Cyanogen Chloride (screen)	In House Method	x	x	
Diquat and Paraquat	EPA 549.2	x	x	
DBP/HAA	SM 6251B	x	x	
Dissolved Oxygen	SM 4500-O G		x	x
E. Coli	(MTF/EC+MUG)	x		
E. Coli	CFR 141.21(f)(6)(i)		x	x
E. Coli	SM 9223			x
E. Coli (Enumeration)	SM 9221B.1/ SM 9221F	x	x	
E. Coli (Enumeration)	SM 9223B	x	x	
EDB/DCBP	EPA 504.1	x		
EDB/DBCP and DBP	EPA 551.1	x	x	
EDTA and NTA	In House Method	x	x	
Endothall	EPA 548.1	x	x	
Enterococci	SM 9230B	x		x
Fecal Coliform	SM 9221 E (MTF/EC)	x		
Fecal Coliform	SM 9221C, E (MTF/EC)			x
Fecal Coliform (Enumeration)	SM 9221E (MTF/EC)	x	x	
Fecal Coliform with Chlorine Present	SM 9221E			x
Fecal Streptococci	SM 9230B	x		x
Fluoride	SM 4500-F C	x	x	x
Glyphosate	EPA 547	x	x	
Gross Alpha/Beta	EPA 900.0	x	x	x
HAAs/ Dalapon	EPA 552.3	x	x	
Hardness	SM 2340B	x	x	x
Heterotrophic Bacteria	In House Method	x	x	
Heterotrophic Bacteria	SM 9215 B	x	x	
Hexavalent Chromium	EPA 218.6	x	x	x
Hexavalent Chromium	EPA 218.7	x	x	
Hexavalent Chromium	SM 3500-Cr B or C (20th)			x

SPECIFIC TESTS	METHOD OR TECHNIQUE USED	Drinking Water	Food & Beverage	Waste Water
Hormones	EPA 539	x	x	
Hydroxide as OH Calc.	SM 2330B	x	x	
Kjeldahl Nitrogen	EPA 351.2			x
Mercury	EPA 245.1	x	x	x
Metals	EPA 200.7 / 200.8	x	x	x
Microcystin LR	ELISA	x	x	
NDMA	EPA 521	x	x	
Nitrate/Nitrite Nitrogen	EPA 353.2	x	x	x
OCL, Pesticides/PCB	EPA 505	x	x	
Ortho Phosphate	EPA 365.1	x	x	
Ortho Phosphate and Total Phosphorous	EPA 365.1/SM 4500-P E			x
Ortho Phosphorous	SM 4500P E	x	x	
Oxyhalides Disinfection Byproducts	EPA 317.0	x	x	
Perchlorate	EPA 331.0	x	x	
Perchlorate	EPA 314.0	x	x	
Perfluorinated Alkyl Acids	EPA 537	x	x	
pH	EPA 150.1	x		
pH	SM 4500-H+B	x	x	x
Phenylurea Pesticides/ Herbicides	In House Method	x	x	
Pseudomonas	IDEXX Pseudalert	x	x	
Radium-226	RA-226 GA	x	x	
Radium-228	RA-228 GA	x	x	
Radon-222	SM 7500RN	x	x	
Residue, Filterable	SM 2540C	x	x	x
Residue, Non-filterable	SM 2540D			x
Residue, Total	SM 2540B		x	x
Residue, Volatile	EPA 160.4			x
Semi-VOC	EPA 525.2	x	x	
Semi-VOC	EPA 625	x	x	x
Silica	SM 4500-Si D	x	x	x
Silica	SM 4500-SiO2 C	x		x
Sulfide	SM 4500-$S^{=}$ D			x
Sulfite	SM 4500-SO^{3}B	x	x	x
Surfactants	SM 5540C	x	x	x
Taste and Odor Analytes	SM 6040E	x	x	
Total Coliform	SM 9221 A, B	x	x	
Total Coliform (Enumeration)	SM 9221 A, B, C	x	x	
Total Coliform / E. coli	Colisure	x	x	
Total Coliform	SM 9221B			x
Total Coliform with Chlorine Present	SM 9221B			x
Total Coliform / E.coli	SM 9223	x	x	
TOC	SM 5310C		x	x
TOC/DOC	SM 5310C	x	x	
TOX	SM 5320B			x
Total Phenols	EPA 420.1			x
Total Phenols	EPA 420.4	x	x	x
Total Phosphorous	SM 4500 P F			x
Turbidity	EPA 180.1	x	x	x
Turbidity	SM 2130B	x		x
Uranium by ICP/MS	EPA 200.8	x	x	
UV 254	SM 5910B	x		
VOC	EPA 524.2/EPA 524.3	x	x	
VOC	EPA 624	x	x	x
VOC	EPA SW 846 8260	x	x	
VOC	In House Method	x	x	
Yeast and Mold	SM 9610	x	x	

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Acknowledgement of Samples Received

Addr: **MWH Americas - Pasadena**
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101

Attn: Sarah Garber
Phone: 626-568-6071

Client ID: MWH-ECORP
Folder #: 505701
Project: BIG-TUJUNGA
Sample Group: Water Quality Monitoring

Project Manager: David S Tripp
Phone: (626) 386-1158
PO #: 10506132.011601

The following samples were received from you on **October 29, 2014** at **1446**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical.

Sample #	Sample ID	Sample Date
201410290482	Haines Cyn Ck	10/29/2014 1130

Variable ID: HCC102914

@608_PCBS	@608_PEST	@8141EDD
Ammonia Nitrogen	Fecal Coliform Bacteria	Glyphosate
Nitrate as Nitrogen by IC	Nitrate as NO3 (calc)	Nitrite Nitrogen by IC
Orthophosphate as P (OPO4)	Orthophosphate as PO4	Total Chlorine Residual
Total Coliform Bacteria	Total Kjeldahl Nitrogen	Total phosphorus as P
Total phosphorus as PO4- Calc.	Turbidity	

Sample #	Sample ID	Sample Date
201410290483	TJ Ponds Out	10/29/2014 1230

Variable ID: TJPOUT102914

@608_PCBS	@608_PEST	@8141EDD
Ammonia Nitrogen	Fecal Coliform Bacteria	Glyphosate
Nitrate as Nitrogen by IC	Nitrate as NO3 (calc)	Nitrite Nitrogen by IC
Orthophosphate as P (OPO4)	Orthophosphate as PO4	Total Chlorine Residual
Total Coliform Bacteria	Total Kjeldahl Nitrogen	Total phosphorus as P
Total phosphorus as PO4- Calc.	Turbidity	

Sample #	Sample ID	Sample Date
201410290484	TJ Ponds IN	10/29/2014 1310

Variable ID: TJPIN102914

@608_PCBS	@608_PEST	@8141EDD
Ammonia Nitrogen	Fecal Coliform Bacteria	Glyphosate
Nitrate as Nitrogen by IC	Nitrate as NO3 (calc)	Nitrite Nitrogen by IC
Orthophosphate as P (OPO4)	Orthophosphate as PO4	Total Chlorine Residual
Total Coliform Bacteria	Total Kjeldahl Nitrogen	Total phosphorus as P
Total phosphorus as PO4- Calc.	Turbidity	

Sample #	Sample ID	Sample Date
201410300575	Haines Cyn Ck	10/30/2014 1330

Variable ID: HCC103014

Fecal Coliform Bacteria	Total Coliform Bacteria

Sample #	Sample ID	Sample Date
201411170096	Haines Cyn CK	11/17/2014 1030

Ammonia Nitrogen	Total Kjeldahl Nitrogen	Total phosphorus as P
Total phosphorus as PO4- Calc.		

Sample #	Sample ID	Sample Date
201411170097	Tujunga Ponds IN	11/17/2014 1125

Ammonia Nitrogen	Total Kjeldahl Nitrogen	Total phosphorus as P
Total phosphorus as PO4- Calc.		

Sample #	Sample ID	Sample Date
201411170098	Tujunga Ponds OUT	11/17/2014 1110

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Acknowledgement of Samples Received

Addr: **MWH Americas - Pasadena**
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101

Attn: Sarah Garber
Phone: 626-568-6071

Client ID: MWH-ECORP
Folder #: 505701
Project: BIG-TUJUNGA
Sample Group: Water Quality Monitoring

Project Manager: David S Tripp
Phone: (626) 386-1158
PO #: 10506132.011601

The following samples were received from you on **October 29, 2014** at **1446**. They have been scheduled for the tests listed below each sample. If this information is incorrect, please contact your service representative. Thank you for using Eurofins Eaton Analytical.

Sample #	Sample ID		Sample Date
	Ammonia Nitrogen	Total Kjeldahl Nitrogen	Total phosphorus as P
	Total phosphorus as PO4- Calc.		

Test Description

@608_PCBS -- Organochlorine PCBs

@608_PEST -- Organochlorine Pesticides

@8141EDD -- Organophosphorous Pesticides (Sub)

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CHAIN OF CUSTODY RECORD

750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

Phone: 626 386 1100
Fax: 626 386 1101

800 566 LABS (800 566 5227)

EUROFINS EATON ANALYTICAL USE ONLY: 565701

LOGIN COMMENTS:

SAMPLES CHECKED AGAINST COC BY: KC

SAMPLES LOGGED IN BY: DS

SAMPLES REC'D DAY OF COLLECTION? ☑ (check for yes)

SAMPLE TEMP RECEIVED AT:

☐ Colton / No. California / Arizona ____ °C (Compliance: 4 ± 2 °C)

☑ Monrovia 17.9 - 0.3 = 12.6 °C (Compliance: 4 ± 2 °C)

CONDITION OF BLUE ICE: Frozen ____ Partially Frozen ____ Thawed ____ Wet Ice ✓ No Ice ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME: MWH - ECORP

PROJECT CODE: 10506132.011601

EEA CLIENT CODE:

COC ID:

SAMPLE GROUP: Big T WQ Monitoring

TAT requested: rush by adv notice only STD ✓ 1 wk ___ 3 day ___ 2 day ___ 1 day ___

COMPLIANCE SAMPLES ☐ (check for yes)
- Requires state forms ☐

NON-COMPLIANCE SAMPLES ☒ (check for yes)
REGULATION INVOLVED: ____

Type of samples (circle one): **ROUTINE SPECIAL CONFIRMATION** (eg. SDWA, Phase V, NPDES, FDA,...)

SEE ATTACHED BOTTLE ORDER FOR ANALYSES ☒ (check for yes), ***OR***
list ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	FIELD DATA	FIELD DATA	ANALYSES	SAMPLER COMMENTS
10/29	1130	Haines Cyn CK	HCC102914	RSW			No Air space	
10/29	1230	TJ PONDS OUT	TJPOUT102914	RSW				
10/29	1310	TJ PONDS IN	TJPIN102914	RSW				
							LDR 10/29/14 1458	

*** MATRIX TYPES:** RSW = Raw Surface Water, RGW = Raw Ground Water, CFW = Chlor(am)inated Finished Water, FW = Other Finished Water, SEAW = Sea Water, WW = Waste Water, BW = Bottled Water, SW = Storm Water, SO = Soil, SL = Sludge, O = Other - Please Identify

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:	[signature]	SARAH GARBER	MWH	10/29/14	1446
RELINQUISHED BY:					
RECEIVED BY:	[signature]	KARLOS RUECKER	EEA	10/29/14	1446
RELINQUISHED BY:					
RECEIVED BY:					

QA FO 0029 (06/26/2013)

PAGE ____ OF ____

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750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
(626) 386-1100 FAX (626) 386-1101

Kit Order for MWH Americas - Pasadena

David S Tripp is your Eurofins Eaton Analytical Project Manager

Note: Sampler Please return this paper with your samples

Kit #: 99577
Created By: DST
Deliver By: 10/27/2014
STG: Bottle Orders
Ice Type: W

Client ID: MWH-ECORP
Project Code: BIG-TUJUNGA Bottle Orders
Group Name: Water Quality Monitoring
PO#/JOB#: ~~[illegible]~~.011601

10506132.011601

Ship Sample Kits to	Send Report to	Billing Address
MWH Americas - Pasadena 300 N. Lake Avenue Suite 400 Pasadena, CA 91101 Attn: Sarah Garber Phone: 626-568-6071	MWH Americas - Pasadena 300 N. Lake Avenue Suite 400 Pasadena, CA 91101 Attn: Sarah Garber Phone: 626-568-6071	MWH Americas Inc PO Box 6610 Broomfield, CO 80021 Attn: Accounts Payable

# of Samples	Tests	Bottles - Qty for each sample, type & preservative if a	UN DOT #
4	@8081A	2 1L amber glass no preservative	
4	@8141EDD	2 1L amber glass 8141WRD_NO_PRESERVATIVE	
4	Ammonia Nitrogen, Total Kjeldahl Nitrogen, Total phosphorus as P	1 250ml poly 0.5ml H2SO4 (50%)	UN1830
4	Fecal Coliform Bacteria, Total Coliform Bacteria	1 250ml poly sterilized 0.25ml thio (8%)	
4	Glyphosate	1 125ml amber glass no preservative	
4	Nitrate as Nitrogen by IC, Nitrate as NO3 (calc), Nitrite Nitrogen by IC, Orthophosphate as P, Turbidity	1 125ml poly no preservative	
4	Orthophosphate as PO4	1 125ml poly OPO4_no preservative	
4	Total Chlorine Residual	1 125ml amber glass CHL_no preservative	

Comments

SHIPPING: Please label "BIG T WASH" and include wet ice packing instructions. Client will pickup the sample kits on Monday 10/27 in the AM.

SAMPLER: Please return samples on fresh wet ice to the lab same day collected.

Code	Status	Date Shipped	Via	Tracking #	# of Coolers	Prepared By

505701

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CHAIN OF CUSTODY RECORD

750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

Phone: 626 386 1100
Fax: 626 386 1101

800 566 LABS (800 566 5227)

EUROFINS EATON ANALYTICAL USE ONLY:

LOGIN COMMENTS: 8.0-0.2=7.8°C

SAMPLES CHECKED AGAINST COC BY: ✓
SAMPLES LOGGED IN BY:
SAMPLES REC'D DAY OF COLLECTION? [✓] (check for yes)

SAMPLE TEMP RECEIVED AT:
[ ] Colton / No. California / Arizona ____ °C (Compliance: 4 ± 2 °C)
[✓] Monrovia 7.8 °C (Compliance: 4 ± 2 °C)

CONDITION OF BLUE ICE: Frozen ____ Partially Frozen ____ Thawed ____ Wet Ice ✓ No Ice ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME: MWH - ECorp
PROJECT CODE: 10506132.011601
EEA CLIENT CODE:
COC ID:
SAMPLE GROUP:

COMPLIANCE SAMPLES [ ] (check for yes)
- Requires state forms [ ]

NON-COMPLIANCE SAMPLES [ ] (check for yes)
REGULATION INVOLVED:

Type of samples (circle one): **ROUTINE SPECIAL CONFIRMATION** (eg. SDWA, Phase V, NPDES, FDA,...)

SEE ATTACHED BOTTLE ORDER FOR ANALYSES [ ] (check for yes), ***OR***
list ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)

TAT requested: rush by adv notice only STD ___ 1 wk ___ 3 day ___ 2 day ___ 1 day ___

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	FIELD DATA	FIELD DATA	fecal	total coliform	SAMPLER COMMENTS
10/30	1330	Haines Cyn CK	HCC103014	RSW			✓	✓	

LDR 10/30/14 1429

*** MATRIX TYPES: RSW** = Raw Surface Water **RGW** = Raw Ground Water **CFW** = Chlor(am)inated Finished Water **FW** = Other Finished Water **SEAW** = Sea Water **WW** = Waste Water **BW** = Bottled Water **SW** = Storm Water **SO** = Soil **SL** = Sludge **O** = Other - Please Identify

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:	[signature]	T. Garber	MWH	10/30/14	
RELINQUISHED BY:	[signature]	T Garber	MWH	10/30/14	1427
RECEIVED BY:	[signature]	Chris Cabrera	EEA	10/30/14	1427
RELINQUISHED BY:					
RECEIVED BY:					

QA FO 0029 (06/26/2013)

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formerly MWH Laboratories
750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
(626) 386-1100 FAX (626) 386-1101

Kit Order for MWH Americas - Pasadena

David S Tripp is your Eurofins Eaton Analytical Project Manager

Note: Sampler Please return this paper with your samples

Kit #: 100082
Created By: DST
Deliver By: 10/30/2014
STG: Bottle Orders
Ice Type: W

Client ID: MWH-ECORP
Project Code: BIG-TUJUNGA Bottle Orders
Group Name: Water Quality Monitoring
PO#/JOB#: 10506132

Ship Sample Kits to	Send Report to	Billing Address
MWH Americas - Pasadena 300 N. Lake Avenue Suite 400 Pasadena, CA 91101 Attn: Sarah Garber Phone: 626-568-6071	MWH Americas - Pasadena 300 N. Lake Avenue Suite 400 Pasadena, CA 91101 Attn: Sarah Garber Phone: 626-568-6071	MWH Americas Inc PO Box 6610 Broomfield, CO 80021 Attn: Accounts Payable

# of Sample	Tests	Bottles - Qty for each sample, type & preservative if a	UN DOT #
1	Fecal Coliform Bacteria, Total Coliform Bacteria	1 250ml poly sterilized 0.25ml thio (8%)	

Comments

SHIPPING: Label "BIG T WASH" and include wet ice packing instructions. Client will pickup the sample kits on TODAY 10/30 at noon.

SAMPLER: Return samples on fresh wet ice to the lab same day collected.

LOGIN: Add to folder # 505701.

Code	Status	Date Shipped	Via	Tracking #	# of Coolers	Prepared By

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CHAIN OF CUSTODY RECORD

~~508329~~

750 Royal Oaks Drive, Suite 100
Monrovia, CA 91016-3629

Phone: 626 386 1100
Fax: 626 386 1101

800 566 LABS (800 566 5227)

EUROFINS EATON ANALYTICAL USE ONLY:

LOGIN COMMENTS: Lab Temp = 4.4°C − 0.2°CF = 4.2°C

SAMPLES CHECKED AGAINST COC BY: LK

SAMPLES LOGGED IN BY: [illegible]

SAMPLES REC'D DAY OF COLLECTION? ☐ (check for yes)

SAMPLE TEMP RECEIVED AT:

☐ Colton / No. California / Arizona ______ °C (Compliance: 4 ± 2 °C)

☒ Monrovia ______ °C (Compliance: 4 ± 2 °C)

Frozen

CONDITION OF BLUE ICE: Frozen ____ Partially Frozen ____ Thawed ____ Wet Ice ✓ No Ice ____

METHOD OF SHIPMENT: Pick-Up / Walk-In / FedEx / UPS / DHL / Area Fast / Top Line / Other: ____

TO BE COMPLETED BY SAMPLER:

COMPANY/AGENCY NAME: MWH/ECORP

PROJECT CODE: Big Tujunga

EEA CLIENT CODE: 10506132

COC ID:

SAMPLE GROUP: resamples

TAT requested: rush by adv notice only STD ✓ 1 wk ___ 3 day ___ 2 day ___ 1 day ___

COMPLIANCE SAMPLES ☐ (check for yes) - Requires state forms ☐

NON-COMPLIANCE SAMPLES ☑ (check for yes)

REGULATION INVOLVED: ____

Type of samples (circle one): **ROUTINE SPECIAL CONFIRMATION** (eg. SDWA, Phase V, NPDES, FDA,...)

SEE ATTACHED BOTTLE ORDER FOR ANALYSES ☑ (check for yes), ***OR***

list ANALYSES REQUIRED (enter number of bottles sent for each test for each sample)

SAMPLE DATE	SAMPLE TIME	SAMPLE ID	CLIENT LAB ID	MATRIX *	FIELD DATA	FIELD DATA															SAMPLER COMMENTS
11/17	1030	Haines Cyn CK	HCC111714	RSW																	
11/17	1125	Tujunga Ponds IN	TJPIN111714	RSW																	
11/17	1110	Tujunga Ponds OUT	TJPOUT111714	RSW																	

2014

*** MATRIX TYPES:** **RSW** = Raw Surface Water, **RGW** = Raw Ground Water, **CFW** = Chlor(am)inated Finished Water, **FW** = Other Finished Water, **SEAW** = Sea Water, **WW** = Waste Water, **BW** = Bottled Water, **SW** = Storm Water, **SO** = Soil, **SL** = Sludge, **O** = Other - Please Identify

	SIGNATURE	PRINT NAME	COMPANY/TITLE	DATE	TIME
SAMPLED BY:	[signature]	SARAH GARBER	MWH	11/17/14	1232
RELINQUISHED BY:	[signature]	SARAH GARBER	MWH	11/17/14	1235
RECEIVED BY:	[signature]	Lonny Kukita	EEA	11/17/14	1235
RELINQUISHED BY:					
RECEIVED BY:					

QA FO 0029 (06/26/2013)

PAGE ____ OF ____

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formerly MWH Laboratories

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
(626) 386-1100 FAX (626) 386-1101

Kit Order for MWH Americas - Pasadena

David S Tripp is your Eurofins Eaton Analytical Project Manager

Note: Sampler Please return this paper with your samples

Kit #: 100842
Created By: DST
Deliver By: 11/14/2014
STG: Bottle Orders
Ice Type: W

Client ID: MWH-ECORP
Project Code: BIG-TUJUNGA Bottle Orders
Group Name: Resamples
PO#/JOB#: 10506132

Ship Sample Kits to
MWH Americas - Pasadena
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101

Attn: Sarah Garber
Phone: 626-568-6071

Send Report to
MWH Americas - Pasadena
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101

Attn: Sarah Garber
Phone: 626-568-6071

Billing Address
MWH Americas Inc
PO Box 6610
Broomfield, CO 80021

Attn: Accounts Payable

# of Sample	Tests	Bottles - Qty for each sample, type & preservative if ai	UN DOT #
3	Ammonia Nitrogen, Total Kjeldahl Nitrogen, Total phosphorus as P	1 250ml poly 0.5ml H_2SO_4 (50%)	UN1830

Comments

SHIPPING: One cooler. Label "BIG T WASH" and include wet ice packing instructions. Client will pickup the sample kit early Monday morning Nov 17.

SAMPLER: Return samples on fresh wet ice to the lab same day collected.

LOGIN: Add to folder # 505701.

Code	Status	Date Shipped	Via	Tracking #	# of Coolers	Prepared By

Eurofins Eaton Analytical
750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (626) 386-1101
1 800 566 LABS (1 800 566 5227)

Laboratory Comments
Report: 505701

MWH Americas - Pasadena
Sarah Garber
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101

Folder Comments

Analytical results for 8141 and 608 are submitted by Emax Laboratories, Inc. Torrance, CA, CA Certification No. 02116CA

Flags Legend:

H5 - This test is specified to be performed in the field within 15 minutes of sampling; sample was received and analyzed past the regulatory holding time.

M2 - Matrix spike recovery was low; the associated blank spike recovery was acceptable.

Q5 - Sample received with inadequate chemical preservation, but preserved by the laboratory.

R1 - RPD/RSD exceeded the method acceptance limit. See case narrative.

The Comments Report may be blank if there are no comments for this report.

Eaton Analytical

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (626) 386-1101
1 800 566 LABS (1 800 566 5227)

Laboratory Hits
Report: 505701

MWH Americas - Pasadena
Sarah Garber
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101

Samples Received on:
10/29/2014 1446

Analyzed	Analyte	Sample ID	Result	Federal MCL	Units	MRL
	201410290482	**Haines Cyn Ck**				
10/29/2014 17:11	Fecal Coliform Bacteria		70		MPN/100 mL	1.8
10/29/2014 17:23	Nitrate as Nitrogen by IC		4.9	10	mg/L	0.2
10/29/2014 17:23	Nitrate as NO3 (calc)		22	45	mg/L	0.88
10/29/2014 18:15	Orthophosphate as P		0.013		mg/L	0.01
10/30/2014 17:37	Orthophosphate as PO4		0.040		mg/L	0.031
10/29/2014 17:11	Total Coliform Bacteria		790		MPN/100 mL	1.8
10/29/2014 18:19	Turbidity		0.18	5	NTU	0.05
	201410290483	**TJ Ponds Out**				
10/29/2014 17:11	Fecal Coliform Bacteria		230		MPN/100 mL	1.8
10/29/2014 17:36	Nitrate as Nitrogen by IC		5.4	10	mg/L	0.2
10/29/2014 17:36	Nitrate as NO3 (calc)		24	45	mg/L	0.88
10/29/2014 17:11	Total Coliform Bacteria		680		MPN/100 mL	1.8
10/29/2014 18:21	Turbidity		0.42	5	NTU	0.05
	201410290484	**TJ Ponds IN**				
10/29/2014 17:11	Fecal Coliform Bacteria		33		MPN/100 mL	1.8
11/12/2014 19:33	Kjeldahl Nitrogen		0.64		mg/L	0.2
10/29/2014 17:49	Nitrate as Nitrogen by IC		7.6	10	mg/L	0.2
10/29/2014 17:49	Nitrate as NO3 (calc)		33	45	mg/L	0.88
10/29/2014 17:11	Total Coliform Bacteria		490		MPN/100 mL	1.8
11/20/2014 15:08	Total phosphorus as P		0.043		mg/L	0.02
10/31/2014 12:19	Total phosphorus as PO4- Calc.		0.13		mg/L	0.031
10/29/2014 18:18	Turbidity		0.79	5	NTU	0.05
	201410300575	**Haines Cyn Ck**				
10/30/2014 17:18	Fecal Coliform Bacteria		330		MPN/100 mL	1.8
10/30/2014 17:18	Total Coliform Bacteria		490		MPN/100 mL	1.8
	201411170097	**Tujunga Ponds IN**				
12/05/2014 18:26	Kjeldahl Nitrogen		0.41		mg/L	0.2

SUMMARY OF POSITIVE DATA ONLY

750 Royal Oaks Drive, Suite 100
Monrovia, California 91016-3629
Tel: (626) 386-1100
Fax: (626) 386-1101
1 800 566 LABS (1 800 566 5227)

Laboratory Data Report: 505701

MWH Americas - Pasadena
Sarah Garber
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101

Samples Received on:
10/29/2014 1446

Haines Cyn Ck (201410290482) — **Sampled on 10/29/2014 1130**

Variable ID: HCC102914

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	SM 9221C - Fecal Coliform Bacteria								
	10/29/2014	17:11	801742	(SM 9221C)	Fecal Coliform Bacteria	70	MPN/100 mL	1.8	1
	SM 9221B - Total Coliform Bacteria								
	10/29/2014	17:11	801741	(SM 9221B)	Total Coliform Bacteria	790	MPN/100 mL	1.8	1
	S4500PE/ 365.1 - Total phosphorus as PO4- Calc.								
	10/31/2014	12:19		(S4500PE/ 365.1)	Total phosphorus as PO4- Calc.	ND	mg/L	0.031	1
	4500P-E/365.1 - Orthophosphate as PO4 (CAL)								
	10/30/2014	17:37		(4500P-E/365.1)	Orthophosphate as PO4	0.040	mg/L	0.031	1
	EPA 547 - Glyphosate								
	11/05/2014	13:09	802347	(EPA 547)	Glyphosate	ND	ug/L	6	1
	EPA 300.0 - Nitrate, Nitrite by EPA 300.0								
	10/29/2014	17:23	801199	(EPA 300.0)	Nitrate as Nitrogen by IC	4.9	mg/L	0.2	2
	10/29/2014	17:23	801199	(EPA 300.0)	Nitrate as NO3 (calc)	22	mg/L	0.88	2
	10/29/2014	17:23	801199	(EPA 300.0)	Nitrite Nitrogen by IC	ND	mg/L	0.1	2
	SM4500-PE/EPA 365.1 - Total phosphorus as P (T-P)								
	10/30/2014	16:25	801528	(SM4500-PE/EPA 365.1)	Total phosphorus as P	ND (Q5)	mg/L	0.02	1
	EPA 351.2 - Total Kjeldahl Nitrogen								
	11/12/2014	19:27	803642	(EPA 351.2)	Kjeldahl Nitrogen	ND (Q5)	mg/L	0.2	1
	EPA 350.1 - Ammonia Nitrogen								
	11/04/2014	16:00	802049	(EPA 350.1)	Ammonia Nitrogen	ND	mg/L	0.05	1
	EPA 8141A - Organophosphorous Pesticides (Sub)								
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Azinphos methyl	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Bolstar	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Chlorpyrifos	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Coumaphos	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Demeton	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Diazinon	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Dichlorvos	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Disulfoton	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Ethoprop	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Fensulfothion	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Fenthion	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Methyl Parathion	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Mevinphos	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Naled	ND	ug/L	1	1

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Laboratory Data Report: 505701

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Samples Received on:
10/29/2014 1446

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Phorate	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Ronnel	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Stirophos	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Tokuthion	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Trichloronate	ND	ug/L	1	1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Tributylphosphate	106	%		1
11/3/2014	11/04/2014	15:08		(EPA 8141A)	Triphenyl Phosphate	123	%		1
		EPA 608 - Organochlorine Pesticides							
11/3/2014	11/04/2014	18:58		(EPA 608)	4,4-DDD	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	4,4-DDE	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	4,4-DDT	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Aldrin	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	alpha-BHC	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	alpha-Chlordane	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	beta-BHC	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	delta-BHC	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Dieldrin	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Endosulfan I (Alpha)	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Endosulfan II (Beta)	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Endosulfan Sulfate	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Endrin	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Endrin Aldehyde	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Endrin Ketone	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Gamma-BHC	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	gamma-Chlordane	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Heptachlor	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Heptachlor Epoxide	ND	ug/L	0.11	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Methoxychlor	ND	ug/L	1.1	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Toxaphene	ND	ug/L	2.2	1
11/3/2014	11/04/2014	18:58		(EPA 608)	Decachlorobiphenyl	86	%		1
11/3/2014	11/04/2014	18:58		(EPA 608)	Tetrachlorometaxylene	76	%		1
		EPA 608 - Organochlorine PCBs							
11/3/2014	11/05/2014	21:15		(EPA 608)	PCB 1016 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014	21:15		(EPA 608)	PCB 1221 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014	21:15		(EPA 608)	PCB 1232 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014	21:15		(EPA 608)	PCB 1242 Aroclor	ND	ug/L	1.1	1

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Samples Received on:
10/29/2014 1446

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
11/3/2014	11/05/2014	21:15		(EPA 608)	PCB 1248 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014	21:15		(EPA 608)	PCB 1254 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014	21:15		(EPA 608)	PCB 1260 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014	21:15		(EPA 608)	Decachlorobiphenyl	118	%		1
11/3/2014	11/05/2014	21:15		(EPA 608)	Tetrachlorometaxylene	85	%		1
		EPA 180.1 - Turbidity							
	10/29/2014	18:19	801168	(EPA 180.1)	Turbidity	0.18	NTU	0.05	1
		4500P-E/365.1 - Orthophosphate as P (OPO4)							
	10/29/2014	18:15	801182	(4500P-E/365.1)	Orthophosphate as P	0.013	mg/L	0.01	1
		SM 4500-CL G - Total Chlorine Residual (H3=past HT not compliant)							
	10/29/2014	16:00	801410	(SM 4500-CL G)	Total Chlorine Residual (H3=past HT not compliant)	ND (H5)	mg/L	0.1	1

TJ Ponds Out (201410290483) — **Sampled on 10/29/2014 1230**

Variable ID: TJPOUT102914

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
		SM 9221C - Fecal Coliform Bacteria							
	10/29/2014	17:11	801742	(SM 9221C)	Fecal Coliform Bacteria	230	MPN/100 mL	1.8	1
		SM 9221B - Total Coliform Bacteria							
	10/29/2014	17:11	801741	(SM 9221B)	Total Coliform Bacteria	680	MPN/100 mL	1.8	1
		S4500PE/ 365.1 - Total phosphorus as PO4- Calc.							
	10/31/2014	12:19		(S4500PE/ 365.1)	Total phosphorus as PO4- Calc.	ND	mg/L	0.031	1
		4500P-E/365.1 - Orthophosphate as PO4 (CAL)							
	10/30/2014	17:37		(4500P-E/365.1)	Orthophosphate as PO4	ND	mg/L	0.031	1
		EPA 547 - Glyphosate							
	11/05/2014	13:21	802347	(EPA 547)	Glyphosate	ND	ug/L	6	1
		EPA 300.0 - Nitrate, Nitrite by EPA 300.0							
	10/29/2014	17:36	801199	(EPA 300.0)	Nitrate as Nitrogen by IC	5.4	mg/L	0.2	2
	10/29/2014	17:36	801199	(EPA 300.0)	Nitrate as NO3 (calc)	24	mg/L	0.88	2
	10/29/2014	17:36	801199	(EPA 300.0)	Nitrite Nitrogen by IC	ND	mg/L	0.1	2
		SM4500-PE/EPA 365.1 - Total phosphorus as P (T-P)							
	10/30/2014	16:27	801528	(SM4500-PE/EPA 365.1)	Total phosphorus as P	ND (Q5)	mg/L	0.02	1
		EPA 351.2 - Total Kjeldahl Nitrogen							
	11/12/2014	19:32	803642	(EPA 351.2)	Kjeldahl Nitrogen	ND (Q5)	mg/L	0.2	1
		EPA 350.1 - Ammonia Nitrogen							
	11/04/2014	16:04	802049	(EPA 350.1)	Ammonia Nitrogen	ND (M2)	mg/L	0.05	1
		EPA 8141A - Organophosphorous Pesticides (Sub)							
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Azinphos methyl	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Bolstar	ND	ug/L	1	1

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Samples Received on:
10/29/2014 1446

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Chlorpyrifos	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Coumaphos	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Demeton	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Diazinon	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Dichlorvos	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Disulfoton	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Ethoprop	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Fensulfothion	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Fenthion	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Methyl Parathion	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Mevinphos	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Naled	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Phorate	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Ronnel	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Stirophos	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Tokuthion	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Trichloronate	ND	ug/L	1	1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Tributylphosphate	75	%		1
11/3/2014	11/04/2014	16:53		(EPA 8141A)	Triphenyl Phosphate	82	%		1
		EPA 608 - Organochlorine Pesticides							
11/3/2014	11/04/2014	19:17		(EPA 608)	4,4-DDD	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	4,4-DDE	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	4,4-DDT	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	Aldrin	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	alpha-BHC	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	alpha-Chlordane	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	beta-BHC	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	delta-BHC	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	Dieldrin	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	Endosulfan I (Alpha)	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	Endosulfan II (Beta)	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	Endosulfan Sulfate	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	Endrin	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	Endrin Aldehyde	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	Endrin Ketone	ND	ug/L	0.11	1
11/3/2014	11/04/2014	19:17		(EPA 608)	Gamma-BHC	ND	ug/L	0.11	1

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Samples Received on:
10/29/2014 1446

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
11/3/2014	11/04/2014 19:17		(EPA 608)	gamma-Chlordane	ND	ug/L	0.11	1
11/3/2014	11/04/2014 19:17		(EPA 608)	Heptachlor	ND	ug/L	0.11	1
11/3/2014	11/04/2014 19:17		(EPA 608)	Heptachlor Epoxide	ND	ug/L	0.11	1
11/3/2014	11/04/2014 19:17		(EPA 608)	Methoxychlor	ND	ug/L	1.1	1
11/3/2014	11/04/2014 19:17		(EPA 608)	Toxaphene	ND	ug/L	2.3	1
11/3/2014	11/04/2014 19:17		(EPA 608)	Decachlorobiphenyl	84	%		1
11/3/2014	11/04/2014 19:17		(EPA 608)	Tetrachlorometaxylene	81	%		1

EPA 608 - Organochlorine PCBs

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
11/3/2014	11/05/2014 21:36		(EPA 608)	PCB 1016 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014 21:36		(EPA 608)	PCB 1221 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014 21:36		(EPA 608)	PCB 1232 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014 21:36		(EPA 608)	PCB 1242 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014 21:36		(EPA 608)	PCB 1248 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014 21:36		(EPA 608)	PCB 1254 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014 21:36		(EPA 608)	PCB 1260 Aroclor	ND	ug/L	1.1	1
11/3/2014	11/05/2014 21:36		(EPA 608)	Decachlorobiphenyl	115	%		1
11/3/2014	11/05/2014 21:36		(EPA 608)	Tetrachlorometaxylene	91	%		1

EPA 180.1 - Turbidity

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	10/29/2014 18:21	801168	(EPA 180.1)	Turbidity	0.42	NTU	0.05	1

4500P-E/365.1 - Orthophosphate as P (OPO4)

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	10/29/2014 18:14	801182	(4500P-E/365.1)	Orthophosphate as P	ND	mg/L	0.01	1

SM 4500-CL G - Total Chlorine Residual (H3=past HT not compliant)

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	10/29/2014 16:00	801410	(SM 4500-CL G)	Total Chlorine Residual (H3=past HT not compliant)	ND (H5)	mg/L	0.1	1

TJ Ponds IN (201410290484) — **Sampled on 10/29/2014 1310**

Variable ID: TJPIN102914

SM 9221C - Fecal Coliform Bacteria

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	10/29/2014 17:11	801742	(SM 9221C)	Fecal Coliform Bacteria	33	MPN/100 mL	1.8	1

SM 9221B - Total Coliform Bacteria

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	10/29/2014 17:11	801741	(SM 9221B)	Total Coliform Bacteria	490	MPN/100 mL	1.8	1

S4500PE/ 365.1 - Total phosphorus as PO4- Calc.

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	10/31/2014 12:19		(S4500PE/ 365.1)	Total phosphorus as PO4- Calc.	0.13	mg/L	0.031	1

4500P-E/365.1 - Orthophosphate as PO4 (CAL)

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	10/30/2014 17:37		(4500P-E/365.1)	Orthophosphate as PO4	ND	mg/L	0.031	1

EPA 547 - Glyphosate

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	11/05/2014 13:32	802347	(EPA 547)	Glyphosate	ND	ug/L	6	1

EPA 300.0 - Nitrate, Nitrite by EPA 300.0

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	10/29/2014 17:49	801199	(EPA 300.0)	Nitrate as Nitrogen by IC	7.6	mg/L	0.2	2

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Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
	10/29/2014	17:49	801199	(EPA 300.0)	Nitrate as NO3 (calc)	33	mg/L	0.88	2
	10/29/2014	17:49	801199	(EPA 300.0)	Nitrite Nitrogen by IC	ND	mg/L	0.1	2
		SM4500-PE/EPA 365.1 - Total phosphorus as P (T-P)							
	11/20/2014	15:08	805461	(SM4500-PE/EPA 365.1)	Total phosphorus as P	0.043 (Q5)	mg/L	0.02	1
		EPA 351.2 - Total Kjeldahl Nitrogen							
	11/12/2014	19:33	803642	(EPA 351.2)	Kjeldahl Nitrogen	0.64 (Q5)	mg/L	0.2	1
		EPA 350.1 - Ammonia Nitrogen							
	11/04/2014	16:07	802049	(EPA 350.1)	Ammonia Nitrogen	ND	mg/L	0.05	1
		EPA 8141A - Organophosphorous Pesticides (Sub)							
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Azinphos methyl	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Bolstar	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Chlorpyrifos	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Coumaphos	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Demeton	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Diazinon	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Dichlorvos	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Disulfoton	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Ethoprop	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Fensulfothion	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Fenthion	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Methyl Parathion	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Mevinphos	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Naled	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Phorate	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Ronnel	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Stirophos	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Tokuthion	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Trichloronate	ND	ug/L	0.93	1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Tributylphosphate	89	%		1
11/3/2014	11/04/2014	17:28		(EPA 8141A)	Triphenyl Phosphate	94	%		1
		EPA 608 - Organochlorine Pesticides							
11/3/2014	11/04/2014	19:35		(EPA 608)	4,4-DDD	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	4,4-DDE	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	4,4-DDT	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Aldrin	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	alpha-BHC	ND	ug/L	0.095	1

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Laboratory Data Report: 505701

MWH Americas - Pasadena
Sarah Garber
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101

Samples Received on:
10/29/2014 1446

Prepared	Analyzed		QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
11/3/2014	11/04/2014	19:35		(EPA 608)	alpha-Chlordane	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	beta-BHC	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	delta-BHC	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Dieldrin	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Endosulfan I (Alpha)	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Endosulfan II (Beta)	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Endosulfan Sulfate	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Endrin	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Endrin Aldehyde	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Endrin Ketone	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Gamma-BHC	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	gamma-Chlordane	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Heptachlor	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Heptachlor Epoxide	ND	ug/L	0.095	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Methoxychlor	ND	ug/L	0.95	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Toxaphene	ND	ug/L	1.9	1
11/3/2014	11/04/2014	19:35		(EPA 608)	Decachlorobiphenyl	83	%		1
11/3/2014	11/04/2014	19:35		(EPA 608)	Tetrachlorometaxylene	87	%		1
		EPA 608 - Organochlorine PCBs							
11/3/2014	11/05/2014	21:56		(EPA 608)	PCB 1016 Aroclor	ND	ug/L	0.095	1
11/3/2014	11/05/2014	21:56		(EPA 608)	PCB 1221 Aroclor	ND	ug/L	0.95	1
11/3/2014	11/05/2014	21:56		(EPA 608)	PCB 1232 Aroclor	ND	ug/L	0.95	1
11/3/2014	11/05/2014	21:56		(EPA 608)	PCB 1242 Aroclor	ND	ug/L	0.95	1
11/3/2014	11/05/2014	21:56		(EPA 608)	PCB 1248 Aroclor	ND	ug/L	0.95	1
11/3/2014	11/05/2014	21:56		(EPA 608)	PCB 1254 Aroclor	ND	ug/L	0.95	1
11/3/2014	11/05/2014	21:56		(EPA 608)	PCB 1260 Aroclor	ND	ug/L	0.95	1
11/3/2014	11/05/2014	21:56		(EPA 608)	Decachlorobiphenyl	115	%		1
11/3/2014	11/05/2014	21:56		(EPA 608)	Tetrachlorometaxylene	94	%		1
		EPA 180.1 - Turbidity							
	10/29/2014	18:18	801168	(EPA 180.1)	Turbidity	0.79	NTU	0.05	1
		4500P-E/365.1 - Orthophosphate as P (OPO4)							
	10/29/2014	18:13	801182	(4500P-E/365.1)	Orthophosphate as P	ND	mg/L	0.01	1
		SM 4500-CL G - Total Chlorine Residual (H3=past HT not compliant)							
	10/29/2014	16:00	801410	(SM 4500-CL G)	Total Chlorine Residual (H3=past HT not compliant)	ND (H5)	mg/L	0.1	1

Haines Cyn Ck (201410300575) **Sampled on 10/30/2014 1330**

Variable ID: HCC103014

Rounding on totals after summation.
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Laboratory Data
Report: 505701

MWH Americas - Pasadena
Sarah Garber
300 N. Lake Avenue
Suite 400
Pasadena, CA 91101

Samples Received on:
10/29/2014 1446

Prepared	Analyzed	QC Ref #	Method	Analyte	Result	Units	MRL	Dilution
			SM 9221C - Fecal Coliform Bacteria					
	10/30/2014 17:18	801753	(SM 9221C)	Fecal Coliform Bacteria	330	MPN/100 mL	1.8	1
			SM 9221B - Total Coliform Bacteria					
	10/30/2014 17:18	801749	(SM 9221B)	Total Coliform Bacteria	490	MPN/100 mL	1.8	1
Haines Cyn CK (201411170096)					**Sampled on 11/17/2014 1030**			
			S4500PE/ 365.1 - Total phosphorus as PO4- Calc.					
	12/03/2014 15:02		(S4500PE/ 365.1)	Total phosphorus as PO4- Calc.	ND	mg/L	0.031	1
			SM4500-PE/EPA 365.1 - Total phosphorus as P (T-P)					
	12/02/2014 16:44	806334	(SM4500-PE/EPA 365.1)	Total phosphorus as P	ND	mg/L	0.02	1
			EPA 351.2 - Total Kjeldahl Nitrogen					
	12/05/2014 18:19	807707	(EPA 351.2)	Kjeldahl Nitrogen	ND (M2)	mg/L	0.2	1
			EPA 350.1 - Ammonia Nitrogen					
	11/24/2014 19:27	805850	(EPA 350.1)	Ammonia Nitrogen	ND	mg/L	0.05	1
Tujunga Ponds IN (201411170097)					**Sampled on 11/17/2014 1125**			
			S4500PE/ 365.1 - Total phosphorus as PO4- Calc.					
	12/03/2014 15:02		(S4500PE/ 365.1)	Total phosphorus as PO4- Calc.	ND	mg/L	0.031	1
			SM4500-PE/EPA 365.1 - Total phosphorus as P (T-P)					
	12/02/2014 16:48	806334	(SM4500-PE/EPA 365.1)	Total phosphorus as P	ND	mg/L	0.02	1
			EPA 351.2 - Total Kjeldahl Nitrogen					
	12/05/2014 18:26	807707	(EPA 351.2)	Kjeldahl Nitrogen	0.41	mg/L	0.2	1
			EPA 350.1 - Ammonia Nitrogen					
	11/24/2014 19:28	805850	(EPA 350.1)	Ammonia Nitrogen	ND	mg/L	0.05	1
Tujunga Ponds OUT (201411170098)					**Sampled on 11/17/2014 1110**			
			S4500PE/ 365.1 - Total phosphorus as PO4- Calc.					
	12/03/2014 15:02		(S4500PE/ 365.1)	Total phosphorus as PO4- Calc.	ND	mg/L	0.031	1
			SM4500-PE/EPA 365.1 - Total phosphorus as P (T-P)					
	12/02/2014 16:53	806334	(SM4500-PE/EPA 365.1)	Total phosphorus as P	ND	mg/L	0.02	1
			EPA 351.2 - Total Kjeldahl Nitrogen					
	12/05/2014 18:36	807707	(EPA 351.2)	Kjeldahl Nitrogen	ND (M2,R1)	mg/L	0.2	1
			EPA 350.1 - Ammonia Nitrogen					
	11/24/2014 19:29	805850	(EPA 350.1)	Ammonia Nitrogen	ND	mg/L	0.05	1

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QC Ref # 801168 - Turbidity — **Analysis Date: 10/29/2014**

201410290482	Haines Cyn Ck	Analyzed by: MXT
201410290483	TJ Ponds Out	Analyzed by: MXT
201410290484	TJ Ponds IN	Analyzed by: MXT

QC Ref # 801182 - Orthophosphate as P (OPO4) — **Analysis Date: 10/29/2014**

201410290482	Haines Cyn Ck	Analyzed by: MIA8
201410290483	TJ Ponds Out	Analyzed by: MIA8
201410290484	TJ Ponds IN	Analyzed by: MIA8

QC Ref # 801199 - Nitrate, Nitrite by EPA 300.0 — **Analysis Date: 10/29/2014**

201410290482	Haines Cyn Ck	Analyzed by: CYP
201410290483	TJ Ponds Out	Analyzed by: CYP
201410290484	TJ Ponds IN	Analyzed by: CYP

QC Ref # 801410 - Total Chlorine Residual (H3=past HT not complian — **Analysis Date: 10/29/2014**

201410290482	Haines Cyn Ck	Analyzed by: NJR
201410290483	TJ Ponds Out	Analyzed by: NJR
201410290484	TJ Ponds IN	Analyzed by: NJR

QC Ref # 801528 - Total phosphorus as P (T-P) — **Analysis Date: 10/30/2014**

201410290482	Haines Cyn Ck	Analyzed by: KXS
201410290483	TJ Ponds Out	Analyzed by: KXS

QC Ref # 801741 - Total Coliform Bacteria — **Analysis Date: 10/29/2014**

201410290482	Haines Cyn Ck	Analyzed by: YE5A
201410290483	TJ Ponds Out	Analyzed by: YE5A
201410290484	TJ Ponds IN	Analyzed by: YE5A

QC Ref # 801742 - Fecal Coliform Bacteria — **Analysis Date: 10/29/2014**

201410290482	Haines Cyn Ck	Analyzed by: YE5A
201410290483	TJ Ponds Out	Analyzed by: YE5A
201410290484	TJ Ponds IN	Analyzed by: YE5A

QC Ref # 801749 - Total Coliform Bacteria — **Analysis Date: 10/30/2014**

201410300575	Haines Cyn Ck	Analyzed by: FHC

QC Ref # 801753 - Fecal Coliform Bacteria — **Analysis Date: 10/30/2014**

201410300575	Haines Cyn Ck	Analyzed by: FHC

QC Ref # 802049 - Ammonia Nitrogen — **Analysis Date: 11/04/2014**

201410290482	Haines Cyn Ck	Analyzed by: KXS
201410290483	TJ Ponds Out	Analyzed by: KXS
201410290484	TJ Ponds IN	Analyzed by: KXS

QC Ref # 802347 - Glyphosate — **Analysis Date: 11/05/2014**

201410290482	Haines Cyn Ck	Analyzed by: SZZ
201410290483	TJ Ponds Out	Analyzed by: SZZ
201410290484	TJ Ponds IN	Analyzed by: SZZ

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QC Summary: 505701

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QC Ref # 803642 - Total Kjeldahl Nitrogen		**Analysis Date: 11/12/2014**
201410290482	Haines Cyn Ck	Analyzed by: KXS
201410290483	TJ Ponds Out	Analyzed by: KXS
201410290484	TJ Ponds IN	Analyzed by: KXS
QC Ref # 805461 - Total phosphorus as P (T-P)		**Analysis Date: 11/20/2014**
201410290484	TJ Ponds IN	Analyzed by: KXS
QC Ref # 805850 - Ammonia Nitrogen		**Analysis Date: 11/24/2014**
201411170096	Haines Cyn CK	Analyzed by: KXS
201411170097	Tujunga Ponds IN	Analyzed by: KXS
201411170098	Tujunga Ponds OUT	Analyzed by: KXS
QC Ref # 806334 - Total phosphorus as P (T-P)		**Analysis Date: 12/02/2014**
201411170096	Haines Cyn CK	Analyzed by: MYH
201411170097	Tujunga Ponds IN	Analyzed by: MYH
201411170098	Tujunga Ponds OUT	Analyzed by: MYH
QC Ref # 807707 - Total Kjeldahl Nitrogen		**Analysis Date: 12/05/2014**
201411170096	Haines Cyn CK	Analyzed by: KXS
201411170097	Tujunga Ponds IN	Analyzed by: KXS
201411170098	Tujunga Ponds OUT	Analyzed by: KXS

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Laboratory QC Report: 505701

MWH Americas - Pasadena

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
QC Ref# 801168 - Turbidity by EPA 180.1						**Analysis Date: 10/29/2014**			
DUP1_201410290359	Turbidity	0.070	0.05	0.0670	NTU		(0-20)	20	4.4
LCS1	Turbidity		20	21.2	NTU	106	(90-110)		
LCS2	Turbidity		20	21.1	NTU	106	(90-110)	20	0.47
MBLK	Turbidity			<0.05	NTU				
MRL_CHK	Turbidity		0.05	0.0530	NTU	106	(50-150)		
QC Ref# 801182 - Orthophosphate as P (OPO4) by 4500P-E/365.1						**Analysis Date: 10/29/2014**			
LCS1	Orthophosphate as P		0.25	0.233	mg/L	93	(90-110)		
LCS2	Orthophosphate as P		0.25	0.237	mg/L	95	(90-110)	20	1.7
MBLK	Orthophosphate as P			<0.01	mg/L				
MRL_CHK	Orthophosphate as P		0.01	0.0140	mg/L	140	(50-150)		
MS_201410290115	Orthophosphate as P	0.085	0.5	0.574	mg/L	98	(90-110)		
MSD_201410290115	Orthophosphate as P	0.085	0.5	0.566	mg/L	96	(90-110)	20	1.4
QC Ref# 801199 - Nitrate, Nitrite by EPA 300.0 by EPA 300.0						**Analysis Date: 10/29/2014**			
LCS1	Nitrate as Nitrogen by IC		2.5	2.35	mg/L	94	(90-110)		
LCS2	Nitrate as Nitrogen by IC		2.5	2.32	mg/L	93	(90-110)	20	1.3
MBLK	Nitrate as Nitrogen by IC			<0.10	mg/L				
MRL_CHK	Nitrate as Nitrogen by IC		0.05	0.0449	mg/L	90	(50-150)		
MS_201410290106	Nitrate as Nitrogen by IC	ND	1.3	1.23	mg/L	93	(80-120)		
MS_201410290141	Nitrate as Nitrogen by IC	ND	1.3	2.40	mg/L	89	(80-120)		
MSD_201410290106	Nitrate as Nitrogen by IC	ND	1.3	1.23	mg/L	93	(80-120)	20	0.0
MSD_201410290141	Nitrate as Nitrogen by IC	ND	1.3	2.44	mg/L	91	(80-120)	20	1.6
LCS1	Nitrite Nitrogen by IC		1.0	1.06	mg/L	106	(90-110)		
LCS2	Nitrite Nitrogen by IC		1.0	1.06	mg/L	106	(90-110)	20	0.0
MBLK	Nitrite Nitrogen by IC			<0.10	mg/L				
MRL_CHK	Nitrite Nitrogen by IC		0.05	0.0483	mg/L	97	(50-150)		
MS_201410290106	Nitrite Nitrogen by IC	ND	0.5	0.534	mg/L	107	(80-120)		
MS_201410290141	Nitrite Nitrogen by IC	ND	0.5	1.04	mg/L	104	(80-120)		
MSD_201410290141	Nitrite Nitrogen by IC	ND	0.5	1.02	mg/L	102	(80-120)	20	1.9
MSD_201410290106	Nitrite Nitrogen by IC	ND	0.5	0.531	mg/L	106	(80-120)	20	0.56
QC Ref# 801410 - Total Chlorine Residual (H3=past HT not compliant) by SM 4500-CL G						**Analysis Date: 10/29/2014**			
LCS1	Total Chlorine Residual		1.0	1.01	mg/L	101	(85-115)		
LCS2	Total Chlorine Residual		1.0	1.00	mg/L	100	(85-115)	20	1
MBLK	Total Chlorine Residual			<0.1	mg/L				
MRL_CHK	Total Chlorine Residual		0.1	0.0900	mg/L	90	(50-150)		

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by Underlining.
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

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Laboratory QC Report: 505701

MWH Americas - Pasadena

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
QC Ref# 801528 - Total phosphorus as P (T-P) by SM4500-PE/EPA 365.1						**Analysis Date: 10/30/2014**			
LCS1	Total phosphorus as P		0.4	0.407	mg/L	102	(90-110)		
LCS2	Total phosphorus as P		0.4	0.389	mg/L	97	(90-110)	20	4.5
MBLK	Total phosphorus as P			<0.01	mg/L				
MRL_CHK	Total phosphorus as P		0.02	0.0275	mg/L	138	(50-150)		
MS_201410130052	Total phosphorus as P		0.4	0.510	mg/L	101	(90-110)		
MS_201409040685	Total phosphorus as P	ND	0.4	0.377	mg/L	94	(90-110)		
MSD_201409040685	Total phosphorus as P	ND	0.4	0.383	mg/L	96	(90-110)	20	1.6
MSD_201410130052	Total phosphorus as P		0.4	0.511	mg/L	101	(90-110)	20	0.20
QC Ref# 802049 - Ammonia Nitrogen by EPA 350.1						**Analysis Date: 11/04/2014**			
LCS1	Ammonia Nitrogen		0.5	0.499	mg/L	100	(90-110)		
LCS2	Ammonia Nitrogen		0.5	0.497	mg/L	99	(90-110)	20	0.40
MBLK	Ammonia Nitrogen			<0.025	mg/L				
MRL_CHK	Ammonia Nitrogen		0.05	0.0451	mg/L	90	(53-118)		
MS_201410280683	Ammonia Nitrogen	ND	0.5	0.383	mg/L	**77**	(90-110)		
MS_201410290483	Ammonia Nitrogen	ND	0.5	0.429	mg/L	**84**	(90-110)		
MSD_201410280683	Ammonia Nitrogen	ND	0.5	0.394	mg/L	**79**	(90-110)	20	2.8
MSD_201410290483	Ammonia Nitrogen	ND	0.5	0.414	mg/L	**81**	(90-110)	20	3.6
QC Ref# 802347 - Glyphosate by EPA 547						**Analysis Date: 11/05/2014**			
CCCH	Glyphosate		25	21.6	ug/L	86	(80-120)		
CCCM	Glyphosate		10	9.23	ug/L	92	(80-120)		
LCS1	Glyphosate		10	9.91	ug/L	99	(70-130)		
MBLK	Glyphosate			<6	ug/L				
MRL_CHK	Glyphosate		6.0	6.45	ug/L	107	(50-150)		
MS_201410290471	Glyphosate	ND	10	9.26	ug/L	93	(70-130)		
MS2_201410300011	Glyphosate	ND	10	9.22	ug/L	92	(70-130)		
MSD_201410290471	Glyphosate	ND	10	9.08	ug/L	91	(70-130)	20	2.0
QC Ref# 803642 - Total Kjeldahl Nitrogen by EPA 351.2						**Analysis Date: 11/12/2014**			
LCS1	Kjeldahl Nitrogen		4.0	4.20	mg/L	105	(90-110)		
LCS2	Kjeldahl Nitrogen		4.0	4.15	mg/L	104	(90-110)	20	1.2
MBLK	Kjeldahl Nitrogen			<0.1	mg/L				
MRL_CHK	Kjeldahl Nitrogen		0.2	0.198	mg/L	99	(50-150)		
MS_201411030353	Kjeldahl Nitrogen	ND	4.0	4.23	mg/L	102	(90-110)		
MS_201410290482	Kjeldahl Nitrogen	ND	4.0	4.18	mg/L	103	(90-110)		
MSD_201411030353	Kjeldahl Nitrogen	ND	4.0	4.01	mg/L	96	(90-110)	10	5.3
MSD_201410290482	Kjeldahl Nitrogen	ND	4.0	4.27	mg/L	106	(90-110)	10	2.1

Spike recovery is already corrected for native results.
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RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
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Laboratory QC Report: 505701

MWH Americas - Pasadena

QC Type	Analyte	Native	Spiked	Recovered	Units	Yield (%)	Limits (%)	RPDLimit (%)	RPD%
QC Ref# 805461 - Total phosphorus as P (T-P) by SM4500-PE/EPA 365.1						**Analysis Date: 11/20/2014**			
LCS1	Total phosphorus as P		0.4	0.379	mg/L	95	(90-110)		
LCS2	Total phosphorus as P		0.4	0.375	mg/L	94	(90-110)	20	1.1
MBLK	Total phosphorus as P			<0.01	mg/L				
MRL_CHK	Total phosphorus as P		0.02	0.0279	mg/L	140	(50-150)		
MS_201411070112	Total phosphorus as P	ND	0.4	0.379	mg/L	91	(90-110)		
MS_201411040313	Total phosphorus as P	0.022	0.4	0.376	mg/L	<u>89</u>	(90-110)		
MSD_201411040313	Total phosphorus as P	0.022	0.4	0.386	mg/L	91	(90-110)	20	2.6
MSD_201411070112	Total phosphorus as P	ND	0.4	0.349	mg/L	<u>83</u>	(90-110)	20	8.2
QC Ref# 805850 - Ammonia Nitrogen by EPA 350.1						**Analysis Date: 11/24/2014**			
LCS1	Ammonia Nitrogen		0.5	0.505	mg/L	101	(90-110)		
LCS2	Ammonia Nitrogen		0.5	0.504	mg/L	101	(90-110)	20	0.20
MBLK	Ammonia Nitrogen			<0.025	mg/L				
MRL_CHK	Ammonia Nitrogen		0.05	0.0481	mg/L	96	(53-118)		
MS_201411220065	Ammonia Nitrogen	32	0.5	79.9	mg/L	95	(90-110)		
MS_201411130874	Ammonia Nitrogen	0.40	0.5	0.830	mg/L	<u>85</u>	(90-110)		
MSD_201411130874	Ammonia Nitrogen	0.40	0.5	0.839	mg/L	<u>87</u>	(90-110)	20	1.1
MSD_201411220065	Ammonia Nitrogen	32	0.5	80.8	mg/L	97	(90-110)	20	1.1
QC Ref# 806334 - Total phosphorus as P (T-P) by SM4500-PE/EPA 365.1						**Analysis Date: 12/02/2014**			
LCS1	Total phosphorus as P		0.4	0.417	mg/L	104	(90-110)		
LCS2	Total phosphorus as P		0.4	0.419	mg/L	105	(90-110)	20	0.48
MBLK	Total phosphorus as P			<0.01	mg/L				
MRL_CHK	Total phosphorus as P		0.02	0.0205	mg/L	102	(50-150)		
MS_201411120148	Total phosphorus as P	ND	0.4	0.395	mg/L	99	(90-110)		
MS_201411170097	Total phosphorus as P	ND	0.4	0.414	mg/L	100	(90-110)		
MSD_201411170097	Total phosphorus as P	ND	0.4	0.432	mg/L	104	(90-110)	20	4.3
MSD_201411120148	Total phosphorus as P	ND	0.4	0.421	mg/L	105	(90-110)	20	6.4
QC Ref# 807707 - Total Kjeldahl Nitrogen by EPA 351.2						**Analysis Date: 12/05/2014**			
LCS1	Kjeldahl Nitrogen		4.0	3.66	mg/L	92	(90-110)		
LCS2	Kjeldahl Nitrogen		4.0	3.84	mg/L	96	(90-110)	20	4.8
MBLK	Kjeldahl Nitrogen			<0.1	mg/L				
MRL_CHK	Kjeldahl Nitrogen		0.2	0.226	mg/L	113	(50-150)		
MS_201411170098	Kjeldahl Nitrogen	ND	4.0	4.28	mg/L	107	(90-110)		
MS_201411170096	Kjeldahl Nitrogen	ND	4.0	3.13	mg/L	<u>78</u>	(90-110)		
MSD_201411170096	Kjeldahl Nitrogen	ND	4.0	3.48	mg/L	<u>87</u>	(90-110)	10	<u>11</u>
MSD_201411170098	Kjeldahl Nitrogen	ND	4.0	3.50	mg/L	<u>88</u>	(90-110)	10	<u>20</u>

Spike recovery is already corrected for native results.
Spikes which exceed Limits and Method Blanks with positive results are highlighted by <u>Underlining.</u>
Criteria for MS and Dup are advisory only, batch control is based on LCS. Criteria for duplicates are advisory only, unless otherwise specified in the method.
RPD not calculated for LCS2 when different a concentration than LCS1 is used.
RPD not calculated for Duplicates when the result is not five times the MRL (Minimum Reporting Level).
(S) - Indicates surrogate compound.
(I) - Indicates internal standard compound.

TABLE OF CONTENTS

CLIENT: **EUROFINS EATON ANALYTICAL**

PROJECT: **505701**

SDG: **14J225**

** - Not Requested

EMAX
LABORATORIES, INC.
1835 W. 205th Street
Torrance, CA 90501
Tel: (310) 618-8889
Fax: (310) 618-0818

Date: 11-12-2014
EMAX Batch No.: 14J225

Attn: Jackie Contreras

Eurofins Eaton Analytical
750 Royal Oaks Dr., Suite 100
Monrovia, CA 91016-3629

Subject: Laboratory Report
Project: 505701

Enclosed is the Laboratory report for samples received on 10/31/14.
The data reported relate only to samples listed below :

Sample ID	Control #	Col Date	Matrix	Analysis
201410290482	J225-01	10/29/14	WATER	PCBS
				PESTICIDES
				PESTICIDES ORGANOPHOSPHORUS
201410290483	J225-02	10/29/14	WATER	PCBS
				PESTICIDES
				PESTICIDES ORGANOPHOSPHORUS
201410290484	J225-03	10/29/14	WATER	PCBS
				PESTICIDES
				PESTICIDES ORGANOPHOSPHORUS

The results are summarized on the following pages.

Please feel free to call if you have any questions concerning these results.

Sincerely yours,

Caspar J. Pang
Laboratory Director

EMAX certifies that results included in this report meets all NELAC & DOD requirements unless noted in the Case Narrative.

NELAC Accredited Certificate Number 02116CA
L-A-B Accredited DoD ELAP and ISO/IEC 17025 Certificate Number L2278 Testing

eurofins | Eaton Analytical

Submittal Form & Purchase Order 99-31495

14J225

Date: 10/30/2014

***REPORTING REQUIRMENTS:** *Do Not Combine Reports with any other samples submitted under different Folder Numbers!*
Report & Invoice must have the Folder # **505701** Sub PO# **99-31495** and Job # **1000014**

Report all quality control data according to Method. Include dates analyzed. Date extracted (if extracted) and Method reference on the report.
Results must have Complete data & QC with Approval Signature.

Ship To:
EMAX Laboratories, Inc.
1835 W. 205th St.

Torrance, CA 90501

Phone: 310-618-8889 Fax: 310-618-0818

Reports: Jackie Contreras Sub-Contracting Administrator
EMAIL TO: ***us20_subcontract@eurofinsus.com***
Eurofins Eaton Analytical 750 Royal Oaks Drive, Suite 100, Monrovia, CA 91016
Phone (626) 386-1165 Fax (626) 386-1122
Invoices to: Eurofins Eaton Analytical
Accounts Payable 2425 New Holland Pike, Lancaster, PA 17605

Provide in each Report the Specified State Certification # & Exp Date for requested tests + matrix.

Samples from: **CALIFORNIA**

Folder #:	**Report Due:**	**Sub PO #:**
505701	**11/14/2014**	**99-31495**

	JLS	Use Lab Order # for ID	*Client Sample ID for reference only*	Analysis Requested	Sample Date & Time	Matrix	PWS Systemcode	PWSID
1		201410290482	Haines Cyn Ck		10/29/14 1130	DW		
	EPA 608	@608_PEST		Organochlorine Pesticides				
	EPA 608	@608_PCBS		Organochlorine PCBs				
	EPA 8141A	@8141EDD		Organophosphorous Pesticides (Sub)				
2		201410290483	TJ Ponds Out		10/29/14 1230	DW		
	EPA 608	@608_PEST		Organochlorine Pesticides				
	EPA 608	@608_PCBS		Organochlorine PCBs				
	EPA 8141A	@8141EDD		Organophosphorous Pesticides (Sub)				
3		201410290484	TJ Ponds IN		10/29/14 1310	DW		
	EPA 608	@608_PEST		Organochlorine Pesticides				
	EPA 608	@608_PCBS		Organochlorine PCBs				
	EPA 8141A	@8141EDD		Organophosphorous Pesticides (Sub)				

Relinquished by: M. DE MESA Sample Control EEA Date 10-30-14 Time 1246
Received by: ________ Date ________ Time ________
Relinquished by: Sample Control Date ________ Time ________
Received by: Cecilia [illegible] Date 10/31/14 Time 11:45

NOTIFICATION REQUIRED IF RECEIVED OUTSIDE OF 0-6 CELSIUS

An Acknowledgement of Receipt is requested to attn: Jackie Contreras

Temp - 4.5°C

SAMPLE RECEIPT FORM 1

Reference Number: SM02.7.3

Type of Delivery	Airbill / Tracking Number	ECN 14J225
☑ Fedex ☐ UPS ☐ GSO ☐ Others	6159 8298 0808	Recipient Chavez
☐ EMAX Courier ☐ Client Delivery		Date 10/31/14 Time 11:45

COC INSPECTION

☑ Client Name ☐ Client PM/FC ☐ Sampler Name ☑ Sampling Date/Time ☑ Sample ID ☑ Matrix

☑ Address ☐ Tel # / Fax # ☐ Courier Signature ☑ Analysis Required ☐ Preservative (if any) ☑ TAT

Safety Issues (if any) ☐ High concentrations expected ☐ From Superfund Site ☐ Rad screening required

Note:

PACKAGING INSPECTION

Container ☑ Cooler ☐ Box ☐ Other

Condition ☑ Custody Seal ☑ Intact ☐ Damaged

Packaging ☑ Bubble Pack ☐ Styrofoam ☐ Popcorn ☑ Sufficient ☐ ______

Temperatures (Cool, ≤6 °C but not frozen) ☑ Cooler 1 4.5 °C ☐ Cooler 2 ______ °C ☐ Cooler 3 ______ °C ☐ Cooler 4 ______ °C ☐ Cooler 5 ______ °C

☐ Cooler 6 ______ °C ☐ Cooler 7 ______ °C ☐ Cooler 8 ______ °C ☐ Cooler 9 ______ °C ☐ Cooler 10 ______ °C

Thermometer: A - S/N 130538805 B - S/N 140253070 C - S/N ______ D - S/N ______

Comments: ☐ **Temperature is out of range. PM was informed IMMEDIATELY.** FM 10/31/14

Note:

DISCREPANCIES

LabSampleID	LabSampleContainerID	Code	ClientSample Label ID / Information	Corrective Action
1-3		D8	PCBs { instead received two bottles for 8141 }	R8

10/31/14

☐ pH holding time requirement for water samples is 15 mins. Water samples for pH analysis are received beyond 15 minutes from sampling time.

NOTES/OBSERVATIONS:

LEGEND:

☐ **Continue to next page.**

Code	Description- Sample Management
D1	Analysis is not indicated in ______
D2	Analysis mismatch COC vs label
D3	Sample ID mismatch COC vs label
D4	Sample ID is not indicated in ______
D5	Container -[improper] [leaking] [broken]
D6	Date/Time is not indicated in ______
D7	Date/Time mismatch COC vs label
D8	Sample listed in COC is not received
D9	Sample received is not listed in COC
D10	No initial/date on corrections in COC/label
D11	Container count mismatch COC vs received
D12	Container size mismatch COC vs received

Code	Description-Sample Management
D13	Out of Holding Time
D14	Bubble is >6mm
D15	No trip blank in cooler
D16	Preservation not indicated in ______
D17	Preservation mismatch COC vs label
D18	Insufficient chemical preservative
D19	Insufficient Sample
D20	No filtration info for dissolved analysis
D21	No sample for moisture determination
D22	
D23	
D24	

Code	Description-Sample Management
R1	Proceed as indicated in ☐ COC ☐ Label
R2	Refer to attached instruction
R3	*Cancel the analysis*
R4	Use vial with smallest bubble first
R5	Log-in with latest sampling date and time+1 min
R6	Adjust pH as necessary
R7	Filter and preserved as necessary
R8	Inform Client
R9	
R10	
R11	
R12	

REVIEWS:

Sample Labeling [signature] Date 10/31/14 | SRF [signature] Date 10/31/14 | PM [signature] Date 10/31/14

ORIGIN ID:WHPA (626) 386-1100
KARLOS RUECKER
EUROFINS EATON ANALYTICAL
750 ROYAL OAKS DR SUITE 100

MONROVIA, CA 91016
UNITED STATES US

SHIP DATE: 30OCT14
ACTWGT: 89.5 LB
CAD: 31999/CAFE2806
DIMS: 28x15x16 IN

BILL SENDER

SAMPLE RECEIVING
EMAX LABORATORIES, INC.
1835 W. 205TH STREET

TORRANCE CA 90501
(310) 618-8889 X 118 REF: 99-31495
PO: MLD DEPT: SAMPLE PREP. / SHIPPING

FedEx
Express

E

J141214073001uv

FRI - 31 OCT AA
STANDARD OVERNIGHT

TRK# 0201 6159 8298 0808

92 HHRA

90501
CA-US LAX

1243

REPORTING CONVENTIONS

DATA QUALIFIERS:

Lab Qualifier	AFCEE Qualifier	Description
J	F	Indicates that the analyte is positively identified and the result is less than RL but greater than MDL.
N		Indicates presumptive evidence of a compound.
B	B	Indicates that the analyte is found in the associated method blank as well as in the sample at above QC level.
E	J	Indicates that the result is above the maximum calibration range.
*	*	Out of QC limit.

Note: The above qualifiers are used to flag the results unless the project requires a different set of qualification criteria.

ACRONYMS AND ABBREVIATIONS:

CRDL	Contract Required Detection Limit
RL	Reporting Limit
MRL	Method Reporting Limit
PQL	Practical Quantitation Limit
MDL	Method Detection Limit
DO	Diluted out

DATES

The date and time information for leaching and preparation reflect the beginning date and time of the procedure unless the method, protocol, or project specifically requires otherwise.

LABORATORY REPORT FOR

EUROFINS EATON ANALYTICAL

505701

METHOD 608
PESTICIDES

SDG#: 14J225

CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project : 505701

SDG : 14J225

METHOD 608
PESTICIDES

A total of three (3) water samples were received on 10/31/14 for Pesticides analysis, Method 608 in accordance with USEPA Wastewater Test Methods at 40 CFR Part 136.

Holding Time
Samples were analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument performance was checked prior to calibration. DDT and Endrin breakdown were within specification. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried on at a frequency required by the project. All project calibration requirements were satisfied. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was analyzed at the frequency required by the project. For this SDG, one method blank was analyzed with the samples. Results were compliant to project requirement.

Lab Control Sample
A set of LCS/LCD was analyzed with the samples in this SDG.
Percent recoveries for CPK001WL/C were all within QC limits.

Matrix QC Sample
No matrix QC sample was designated in this SDG.

Surrogate
Surrogates were added on QC and field samples. Surrogate recoveries were within project QC limits. Refer to sample result forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. All project requirements were met; otherwise, anomalies were discussed within the associated QC parameter. Positive sample results were confirmed by a second column. Relative percentage difference (RPD) between the two results was evaluated. If RPD is less than 40% and peaks are well defined the higher result is reported. Where RPD is greater than 40% the chromatogram is checked for anomalies and results are selected based on processed knowledge. If there is no evidence of any chromatographic ambiguity, the higher result is reported.

LAB CHRONICLE
PESTICIDES

Client : EUROFINS EATON ANALYTICAL
Project : 505701

SDG NO. : 14J225
Instrument ID : F9

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	CPK001WB	1	NA	11/04/1418:03	11/03/1410:00	RK04019A	RK04016A	CPK001W	Method Blank
LCS1W	CPK001WL	1	NA	11/04/1418:21	11/03/1410:00	RK04020A	RK04016A	CPK001W	Lab Control Sample (LCS)
LCD1W	CPK001WC	1	NA	11/04/1418:40	11/03/1410:00	RK04021A	RK04016A	CPK001W	LCS Duplicate
201410290482	J225-01	1.09	NA	11/04/1418:58	11/03/1410:00	RK04022A	RK04016A	CPK001W	Field Sample
201410290483	J225-02	1.14	NA	11/04/1419:17	11/03/1410:00	RK04023A	RK04016A	CPK001W	Field Sample
201410290484	J225-03	0.95	NA	11/04/1419:35	11/03/1410:00	RK04024A	RK04016A	CPK001W	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD 608
PESTICIDES

Client : EUROFINS EATON ANALYTICAL	Date Collected: 10/29/14
Project : 505701	Date Received: 10/31/14
Batch No. : 14J225	Date Extracted: 11/03/14 10:00
Sample ID: 201410290482	Date Analyzed: 11/04/14 18:58
Lab Samp ID: J225-01	Dilution Factor: 1.09
Lab File ID: RK04022A	Matrix : WATER
Ext Btch ID: CPK001W	% Moisture : NA
Calib. Ref.: RK04016A	Instrument ID : F9

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
ALPHA-BHC	(ND)|ND	0.11	0.011|0.011
GAMMA-BHC (LINDANE)	(ND)|ND	0.11	0.011|0.011
BETA-BHC	(ND)|0.12	0.11	0.011|0.011
HEPTACHLOR	(ND)|ND	0.11	0.011|0.011
DELTA-BHC	(ND)|ND	0.11	0.011|0.011
ALDRIN	(ND)|0.014J	0.11	0.011|0.011
HEPTACHLOR EPOXIDE	(ND)|ND	0.11	0.011|0.011
GAMMA-CHLORDANE	(ND)|ND	0.11	0.011|0.011
ALPHA-CHLORDANE	(ND)|ND	0.11	0.011|0.011
ENDOSULFAN I	(ND)|ND	0.11	0.011|0.011
4,4'-DDE	(ND)|ND	0.11	0.011|0.011
DIELDRIN	(ND)|ND	0.11	0.011|0.011
ENDRIN	(ND)|ND	0.11	0.011|0.011
4,4'-DDD	(ND)|ND	0.11	0.011|0.011
ENDOSULFAN II	(ND)|ND	0.11	0.011|0.011
4,4'-DDT	(ND)|ND	0.11	0.011|0.011
ENDRIN ALDEHYDE	(ND)|ND	0.11	0.011|0.011
ENDOSULFAN SULFATE	(ND)|ND	0.11	0.011|0.011
ENDRIN KETONE	(ND)|ND	0.11	0.011|0.011
METHOXYCHLOR	(ND)|ND	1.1	0.11|0.11
TOXAPHENE	(ND)|ND	2.2	0.55|0.55

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.2932|(0.3330)	0.4360	67.3|(76.4)	30-140
DECACHLOROBIPHENYL	0.3534|(0.3732)	0.4360	81.0|(85.6)	60-130

RL : Reporting Limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

METHOD 608
PESTICIDES

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	10/29/14
Project	: 505701	Date Received:	10/31/14
Batch No.	: 14J225	Date Extracted:	11/03/14 10:00
Sample ID:	201410290483	Date Analyzed:	11/04/14 19:17
Lab Samp ID:	J225-02	Dilution Factor:	1.14
Lab File ID:	RK04023A	Matrix	: WATER
Ext Btch ID:	CPK001W	% Moisture	: NA
Calib. Ref.:	RK04016A	Instrument ID	: F9

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
ALPHA-BHC	(ND) | ND	0.11	0.011 | 0.011
GAMMA-BHC (LINDANE)	(ND) | ND	0.11	0.011 | 0.011
BETA-BHC	(ND) | 0.40	0.11	0.011 | 0.011
HEPTACHLOR	(ND) | ND	0.11	0.011 | 0.011
DELTA-BHC	(ND) | ND	0.11	0.011 | 0.011
ALDRIN	(ND) | 0.031J	0.11	0.011 | 0.011
HEPTACHLOR EPOXIDE	(ND) | (0.027J)	0.11	0.011 | 0.011
GAMMA-CHLORDANE	(ND) | ND	0.11	0.011 | 0.011
ALPHA-CHLORDANE	(ND) | ND	0.11	0.011 | 0.011
ENDOSULFAN I	(ND) | ND	0.11	0.011 | 0.011
4,4'-DDE	(ND) | ND	0.11	0.011 | 0.011
DIELDRIN	(ND) | ND	0.11	0.011 | 0.011
ENDRIN	(ND) | ND	0.11	0.011 | 0.011
4,4'-DDD	(ND) | ND	0.11	0.011 | 0.011
ENDOSULFAN II	(ND) | ND	0.11	0.011 | 0.011
4,4'-DDT	(ND) | ND	0.11	0.011 | 0.011
ENDRIN ALDEHYDE	(ND) | ND	0.11	0.011 | 0.011
ENDOSULFAN SULFATE	(ND) | ND	0.11	0.011 | 0.011
ENDRIN KETONE	(ND) | ND	0.11	0.011 | 0.011
METHOXYCHLOR	(ND) | ND	1.1	0.11 | 0.11
TOXAPHENE	(ND) | ND	2.3	0.57 | 0.57

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.3276 | (0.3685)	0.4560	71.8 | (80.8)	30-140
DECACHLOROBIPHENYL	0.3629 | (0.3824)	0.4560	79.6 | (83.9)	60-130

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

METHOD 608
PESTICIDES

Client : EUROFINS EATON ANALYTICAL
Project : 505701
Batch No. : 14J225
Sample ID: 201410290484
Lab Samp ID: J225-03
Lab File ID: RK04024A
Ext Btch ID: CPK001W
Calib. Ref.: RK04016A

Date Collected: 10/29/14
Date Received: 10/31/14
Date Extracted: 11/03/14 10:00
Date Analyzed: 11/04/14 19:35
Dilution Factor: 0.95
Matrix : WATER
% Moisture : NA
Instrument ID : F9

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
ALPHA-BHC	(ND)|ND	0.095	0.0095|0.0095
GAMMA-BHC (LINDANE)	(ND)|ND	0.095	0.0095|0.0095
BETA-BHC	(ND)|ND	0.095	0.0095|0.0095
HEPTACHLOR	(ND)|ND	0.095	0.0095|0.0095
DELTA-BHC	(ND)|ND	0.095	0.0095|0.0095
ALDRIN	(ND)|0.030J	0.095	0.0095|0.0095
HEPTACHLOR EPOXIDE	(ND)|ND	0.095	0.0095|0.0095
GAMMA-CHLORDANE	(ND)|ND	0.095	0.0095|0.0095
ALPHA-CHLORDANE	(ND)|ND	0.095	0.0095|0.0095
ENDOSULFAN I	(ND)|ND	0.095	0.0095|0.0095
4,4'-DDE	(ND)|ND	0.095	0.0095|0.0095
DIELDRIN	(ND)|ND	0.095	0.0095|0.0095
ENDRIN	(ND)|ND	0.095	0.0095|0.0095
4,4'-DDD	(ND)|ND	0.095	0.0095|0.0095
ENDOSULFAN II	(ND)|ND	0.095	0.0095|0.0095
4,4'-DDT	(ND)|ND	0.095	0.0095|0.0095
ENDRIN ALDEHYDE	(ND)|ND	0.095	0.0095|0.0095
ENDOSULFAN SULFATE	(ND)|ND	0.095	0.0095|0.0095
ENDRIN KETONE	(ND)|ND	0.095	0.0095|0.0095
METHOXYCHLOR	(ND)|ND	0.95	0.095|0.095
TOXAPHENE	(ND)|ND	1.9	0.48|0.48

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.2815|(0.3301)	0.3800	74.1|(86.9)	30-140
DECACHLOROBIPHENYL	0.2987|(0.3163)	0.3800	78.6|(83.2)	60-130

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

QC SUMMARIES

METHOD 608
PESTICIDES

Client : EUROFINS EATON ANALYTICAL	Date Collected: NA
Project : 505701	Date Received: 11/03/14
Batch No. : 14J225	Date Extracted: 11/03/14 10:00
Sample ID: MBLK1W	Date Analyzed: 11/04/14 18:03
Lab Samp ID: CPK0D1WB	Dilution Factor: 1
Lab File ID: RK04019A	Matrix : WATER
Ext Btch ID: CPK001W	% Moisture : NA
Calib. Ref.: RK04016A	Instrument ID : F9

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
ALPHA-BHC	(ND)|ND	0.10	0.010|0.010
GAMMA-BHC (LINDANE)	(ND)|ND	0.10	0.010|0.010
BETA-BHC	(ND)|ND	0.10	0.010|0.010
HEPTACHLOR	(ND)|ND	0.10	0.010|0.010
DELTA-BHC	(ND)|ND	0.10	0.010|0.010
ALDRIN	(ND)|ND	0.10	0.010|0.010
HEPTACHLOR EPOXIDE	(ND)|ND	0.10	0.010|0.010
GAMMA-CHLORDANE	(ND)|ND	0.10	0.010|0.010
ALPHA-CHLORDANE	(ND)|ND	0.10	0.010|0.010
ENDOSULFAN I	(ND)|ND	0.10	0.010|0.010
4,4'-DDE	(ND)|ND	0.10	0.010|0.010
DIELDRIN	(ND)|ND	0.10	0.010|0.010
ENDRIN	(ND)|ND	0.10	0.010|0.010
4,4'-DDD	(ND)|ND	0.10	0.010|0.010
ENDOSULFAN II	(ND)|ND	0.10	0.010|0.010
4,4'-DDT	(ND)|ND	0.10	0.010|0.010
ENDRIN ALDEHYDE	(ND)|ND	0.10	0.010|0.010
ENDOSULFAN SULFATE	(ND)|ND	0.10	0.010|0.010
ENDRIN KETONE	(ND)|ND	0.10	0.010|0.010
METHOXYCHLOR	(ND)|ND	1.0	0.10|0.10
TOXAPHENE	(ND)|ND	2.0	0.50|0.50

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.2630|(0.2795)	0.4000	65.7|(69.9)	30-130
DECACHLOROBIPHENYL	0.3063|(0.3216)	0.4000	76.6|(80.4)	60-130

RL : Reporting limit
Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT:	EUROFINS EATON ANALYTICAL
PROJECT:	505701
BATCH NO.:	14J225
METHOD:	METHOD 608

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	CPK001WB	CPK001WL	CPK001WC		
LAB FILE ID:	RK04019A	RK04020A	RK04021A		
DATE EXTRACTED:	11/03/1410:00	11/03/1410:00	11/03/1410:00	DATE COLLECTED:	NA
DATE ANALYZED:	11/04/1418:03	11/04/1418:21	11/04/1418:40	DATE RECEIVED:	11/03/14
PREP. BATCH:	CPK001W	CPK001W	CPK001W		
CALIB. REF:	RK04016A	RK04016A	RK04016A		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
gamma-BHC (Lindane)	(ND)|ND	0.200	0.153|(0.167)	76|(84)	0.200	0.156|(0.163)	78|(82)	2|(2)	70-130	30
Heptachlor	(ND)|ND	0.200	0.154|(0.162)	77|(81)	0.200	0.153|(0.166)	76|(83)	1|(2)	60-130	30
Aldrin	(ND)|ND	0.200	0.157|(0.204)	78|(102)	0.200	0.161|(0.184)	80|(92)	3|(10)	70-130	30
Dieldrin	(ND)|ND	0.200	0.168|(0.170)	84|(85)	0.200	0.169|(0.170)	84|(85)	1|(0)	70-140	30
Endrin	(ND)|ND	0.200	0.166|(0.170)	83|(85)	0.200	0.168|(0.171)	84|(86)	1|(1)	70-140	30
4,4'-DDT	(ND)|ND	0.200	(0.176)|0.175	(88)|88	0.200	(0.179)|0.174	(90)|87	(2)|1	70-140	30

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
Tetrachloro-m-xylene	0.4000	0.2906|(0.3073)	72.7|(76.8)	0.4000	0.2751|(0.2930)	68.8|(73.3)	30-130
Decachlorobiphenyl	0.4000	0.3227|(0.3426)	80.7|(85.6)	0.4000	0.3187|(0.3370)	79.7|(84.2)	60-130

LABORATORY REPORT FOR

EUROFINS EATON ANALYTICAL

505701

METHOD 608
PCBs

SDG#: 14J225

CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project : 505701

SDG : 14J225

METHOD 608
PCBS

A total of three (3) water samples were received on 10/31/14 for PCBs analysis, Method 608 in accordance with USEPA Wastewater Test Methods at 40 CFR Part 136.

Holding Time
Samples were analyzed within the prescribed holding time.

Instrument Performance and Calibration
Instrument performance was checked prior to calibration. DDT and Endrin breakdown were within specification. Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using secondary source (ICV). Continuing calibration (CCV) was carried on at a frequency required by the project. All project calibration requirements were satisfied. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was analyzed at the frequency required by the project. For this SDG, one method blank was analyzed with the samples. Results were compliant to project requirement.

Lab Control Sample
A set of LCS/LCD was analyzed with the samples in this SDG.
Percent recoveries for 60K001WL/C were all within QC limits.

Matrix QC Sample
No matrix QC sample was designated in this SDG.

Surrogate
Surrogates were added on QC and field samples. Surrogate recoveries were within project QC limits. Refer to sample result forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. All project requirements were met; otherwise, anomalies were discussed within the associated QC parameter.

LAB CHRONICLE
PCBs

Client : EUROFINS EATON ANALYTICAL
Project : 505701

SDG NO. : 14J225
Instrument ID : GCT071

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	CPK001WB	1	NA	11/05/1420:15	11/03/1410:00	KK05034A	KK05033A	CPK001W	Method Blank
LCS1W	60K001WL	1	NA	11/05/1420:35	11/03/1410:00	KK05035A	KK05033A	CPK001W	Lab Control Sample (LCS)
LCD1W	60K001WC	1	NA	11/05/1420:55	11/03/1410:00	KK05036A	KK05033A	CPK001W	LCS Duplicate
201410290482	J225-01	1.09	NA	11/05/1421:15	11/03/1410:00	KK05037A	KK05033A	CPK001W	Field Sample
201410290483	J225-02	1.14	NA	11/05/1421:36	11/03/1410:00	KK05038A	KK05033A	CPK001W	Field Sample
201410290484	J225-03	0.95	NA	11/05/1421:56	11/03/1410:00	KK05039A	KK05033A	CPK001W	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD 608
PCBs

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Client	: EUROFINS EATON ANALYTICAL	Date Collected:	10/29/14
Project	: 505701	Date Received:	10/31/14
Batch No.	: 14J225	Date Extracted:	11/03/14 10:00
Sample ID:	201410290482	Date Analyzed:	11/05/14 21:15
Lab Samp ID:	J225-01	Dilution Factor:	1.09
Lab File ID:	KK05037A	Matrix	: WATER
Ext Btch ID:	CPK001W	% Moisture	: NA
Calib. Ref.:	KK05033A	Instrument ID	: GCT071

==

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
PCB-1016	(ND)|ND	1.1	0.55|0.55
PCB-1221	(ND)|ND	1.1	0.55|0.55
PCB-1232	(ND)|ND	1.1	0.55|0.55
PCB-1242	(ND)|ND	1.1	0.55|0.55
PCB-1248	(ND)|ND	1.1	0.55|0.55
PCB-1254	(ND)|ND	1.1	0.55|0.55
PCB-1260	(ND)|ND	1.1	0.55|0.55

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.3609|(0.3717)	0.4360	82.8|(85.3)	40-140
DECACHLOROBIPHENYL	(0.5131)|0.4842	0.4360	(118)|111	60-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

METHOD 608
PCBs

Client : EUROFINS EATON ANALYTICAL	Date Collected: 10/29/14
Project : 505701	Date Received: 10/31/14
Batch No. : 14J225	Date Extracted: 11/03/14 10:00
Sample ID: 201410290483	Date Analyzed: 11/05/14 21:36
Lab Samp ID: J225-02	Dilution Factor: 1.14
Lab File ID: KK05038A	Matrix : WATER
Ext Btch ID: CPK001W	% Moisture : NA
Calib. Ref.: KK05033A	Instrument ID : GCT071

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
PCB-1016	(ND)|ND	1.1	0.57|0.57
PCB-1221	(ND)|ND	1.1	0.57|0.57
PCB-1232	(ND)|ND	1.1	0.57|0.57
PCB-1242	(ND)|ND	1.1	0.57|0.57
PCB-1248	(ND)|ND	1.1	0.57|0.57
PCB-1254	(ND)|ND	1.1	0.57|0.57
PCB-1260	(ND)|ND	1.1	0.57|0.57

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.4008|(0.4157)	0.4560	87.9|(91.2)	40-140
DECACHLOROBIPHENYL	(0.5248)|0.4859	0.4560	(115)|107	60-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

METHOD 608
PCBs

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	10/29/14
Project	: 505701	Date Received:	10/31/14
Batch No.	: 14J225	Date Extracted:	11/03/14 10:00
Sample ID:	201410290484	Date Analyzed:	11/05/14 21:56
Lab Samp ID:	J225-03	Dilution Factor:	0.95
Lab File ID:	KK05039A	Matrix	: WATER
Ext Btch ID:	CPK001W	% Moisture	: NA
Calib. Ref.:	KK05033A	Instrument ID	: GCT071

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
PCB-1016	(ND) | ND	0.95	0.48 | 0.48
PCB-1221	(ND) | ND	0.95	0.48 | 0.48
PCB-1232	(ND) | ND	0.95	0.48 | 0.48
PCB-1242	(ND) | ND	0.95	0.48 | 0.48
PCB-1248	(ND) | ND	0.95	0.48 | 0.48
PCB-1254	(ND) | ND	0.95	0.48 | 0.48
PCB-1260	(ND) | ND	0.95	0.48 | 0.48

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.3432 | (0.3571)	0.3800	90.3 | (94.0)	40-140
DECACHLOROBIPHENYL	(0.4382) | 0.4059	0.3800	(115) | 107	60-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

QC SUMMARIES

METHOD 608
PCBs

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	NA
Project	: 505701	Date Received:	11/03/14
Batch No.	: 14J225	Date Extracted:	11/03/14 10:00
Sample ID:	MBLK1W	Date Analyzed:	11/05/14 20:15
Lab Samp ID:	CPK001WB	Dilution Factor:	1
Lab File ID:	KK05034A	Matrix	: WATER
Ext Btch ID:	CPK001W	% Moisture	: NA
Calib. Ref.:	KK05033A	Instrument ID	: GCT071

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
PCB-1016	(ND)|ND	1.0	0.50|0.50
PCB-1221	(ND)|ND	1.0	0.50|0.50
PCB-1232	(ND)|ND	1.0	0.50|0.50
PCB-1242	(ND)|ND	1.0	0.50|0.50
PCB-1248	(ND)|ND	1.0	0.50|0.50
PCB-1254	(ND)|ND	1.0	0.50|0.50
PCB-1260	(ND)|ND	1.0	0.50|0.50

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TETRACHLORO-M-XYLENE	0.3109|(0.3137)	0.4000	77.7|(78.4)	20-140
DECACHLOROBIPHENYL	(0.4410)|0.4092	0.4000	(110)|102	70-130

Left of | is related to first column ; Right of | related to second column
Final result indicated by ( )
* Out side of QC Limit

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT:	EUROFINS EATON ANALYTICAL				
PROJECT:	505701				
BATCH NO.:	14J225				
METHOD:	METHOD 608				
MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	CPK001WB	60K001WL	60K001WC		
LAB FILE ID:	KK05034A	KK05035A	KK05036A		
DATE EXTRACTED:	11/03/1410:00	11/03/1410:00	11/03/1410:00	DATE COLLECTED:	NA
DATE ANALYZED:	11/05/1420:15	11/05/1420:35	11/05/1420:55	DATE RECEIVED:	11/03/14
PREP. BATCH:	CPK001W	CPK001W	CPK001W		
CALIB. REF:	KK05033A	KK05033A	KK05033A		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
PCB-1016	(ND)|ND	5.00	(5.25)|4.63	(105)|93	5.00	(5.59)|5.02	(112)|100	(6)|8	60-140	30
PCB-1260	(ND)|ND	5.00	5.28|(5.32)	106|(106)	5.00	5.54|(5.58)	111|(112)	5|(5)	70-140	30

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
Tetrachloro-m-xylene	0.4000	0.3602|(0.3636)	90.0|(90.9)	0.4000	0.3488|(0.3569)	87.2|(89.2)	20-140
Decachlorobiphenyl	0.4000	(0.4796)|0.4456	(120)|111	0.4000	(0.4729)|0.4393	(118)|110	70-130

LABORATORY REPORT FOR

EUROFINS EATON ANALYTICAL

505701

METHOD 3520C/8141A
ORGANOPHOSPHOROUS COMPOUNDS BY GC

SDG#: 14J225

CASE NARRATIVE

Client : EUROFINS EATON ANALYTICAL

Project : 505701

SDG : 14J225

METHOD 3520C/8141A
ORGANOPHOSPHOROUS COMPOUNDS BY GC

A total of three (3) water samples were received on 10/31/14 for Pesticides Organophosphorus analysis, Method 3520C/8141A in accordance with USEPA SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.

Holding Time
Samples were analyzed within the prescribed holding time.

Calibration
Multi-calibration points were generated to establish initial calibration (ICAL). ICAL was verified using a secondary source (ICV). Continuing calibration (CCV) verifications were carried on a frequency specified by the project. All calibration requirements were within acceptance criteria. Refer to calibration summary forms of ICAL, ICV and CCV for details.

Method Blank
Method blank was analyzed at the frequency required by the project. For this SDG, one method blank was analyzed with the samples. Results were compliant to project requirement.

Lab Control Sample
A set of LCS/LCD was analyzed with the samples in this SDG. Percent recoveries for NPK001WL/C were all within QC limits.

Matrix QC Sample
No matrix QC sample was designated in this SDG.

Surrogate
Surrogates were added on QC and field samples. Surrogate recoveries were within project QC limits. Refer to sample result forms for details.

Sample Analysis
Samples were analyzed according to prescribed analytical procedures. All project requirements were met; otherwise, anomalies were discussed within the associated QC parameter.

LAB CHRONICLE
ORGANOPHOSPHOROUS COMPOUNDS BY GC

Client : EUROFINS EATON ANALYTICAL
Project : 505701

SDG NO. : 14J225
Instrument ID : GCT012

WATER

Client Sample ID	Laboratory Sample ID	Dilution Factor	% Moist	Analysis DateTime	Extraction DateTime	Sample Data FN	Calibration Data FN	Prep. Batch	Notes
MBLK1W	NPK001WB	1	NA	11/04/1412:51	11/03/1410:00	ZK04003A	ZK04002A	NPK001W	Method Blank
LCS1W	NPK001WL	1	NA	11/04/1413:26	11/03/1410:00	ZK04004A	ZK04002A	NPK001W	Lab Control Sample (LCS)
LCD1W	NPK001WC	1	NA	11/04/1414:01	11/03/1410:00	ZK04005A	ZK04002A	NPK001W	LCS Duplicate
201410290482	J225-01	1	NA	11/04/1415:08	11/03/1410:00	ZK04006A	ZK04002A	NPK001W	Field Sample
201410290483	J225-02	1.03	NA	11/04/1416:53	11/03/1410:00	ZK04009A	ZK04008A	NPK001W	Field Sample
201410290484	J225-03	0.93	NA	11/04/1417:28	11/03/1410:00	ZK04010A	ZK04008A	NPK001W	Field Sample

FN - Filename
% Moist - Percent Moisture

SAMPLE RESULTS

METHOD 3520C/8141A
ORGANOPHOSPHOROUS COMPOUNDS BY GC

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	10/29/14
Project	: 505701	Date Received:	10/31/14
Batch No.	: 14J225	Date Extracted:	11/03/14 10:00
Sample ID:	201410290482	Date Analyzed:	11/04/14 15:08
Lab Samp ID:	J225-01	Dilution Factor:	1
Lab File ID:	ZK04006A	Matrix	: WATER
Ext Btch ID:	NPK001W	% Moisture	: NA
Calib. Ref.:	ZK04002A	Instrument ID	: GCT012

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
DICHLORVOS	(ND)|ND	1.0	0.50|0.50
MEVINPHOS	(ND)|ND	1.0	0.50|0.50
DEMETON	(ND)|ND	1.0	0.50|0.50
ETHOPROP	(ND)|ND	1.0	0.50|0.50
PHORATE	(ND)|ND	1.0	0.50|0.50
NALED	(ND)|ND	1.0	0.50|0.50
DIAZINON	(ND)|ND	1.0	0.50|0.50
DISULFOTON	(ND)|ND	1.0	0.50|0.50
RONNEL	(ND)|ND	1.0	0.50|0.50
CHLORPYRIFOS	(ND)|ND	1.0	0.50|0.50
FENTHION	(ND)|ND	1.0	0.50|0.50
TRICHLORONATE	(ND)|ND	1.0	0.50|0.50
METHYL PARATHION	(ND)|ND	1.0	0.50|0.50
TOKUTHION	(ND)|ND	1.0	0.50|0.50
STIROPHOS	(ND)|ND	1.0	0.50|0.50
BOLSTAR	(ND)|ND	1.0	0.50|0.50
FENSULFOTHION	(ND)|ND	1.0	0.50|0.50
AZINPHOS-METHYL	(ND)|ND	1.0	0.50|0.50
COUMAPHOS	(ND)|ND	1.0	0.50|0.50

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TRIBUTYL PHOSPHATE	1.220|(1.584)	1.500	81.3|(106)	30-130
TRIPHENYL PHOSPHATE	1.354|(1.840)	1.500	90.3|(123)	50-130

METHOD 3520C/8141A
ORGANOPHOSPHOROUS COMPOUNDS BY GC

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	10/29/14
Project	: 505701	Date Received:	10/31/14
Batch No.	: 14J225	Date Extracted:	11/03/14 10:00
Sample ID:	201410290483	Date Analyzed:	11/04/14 16:53
Lab Samp ID:	J225-02	Dilution Factor:	1.03
Lab File ID:	ZK04009A	Matrix	: WATER
Ext Btch ID:	NPK001W	% Moisture	: NA
Calib. Ref.:	ZK04008A	Instrument ID	: GCT012

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
DICHLORVOS	(ND)|ND	1.0	0.52|0.52
MEVINPHOS	(ND)|ND	1.0	0.52|0.52
DEMETON	(ND)|ND	1.0	0.52|0.52
ETHOPROP	(ND)|ND	1.0	0.52|0.52
PHORATE	(ND)|ND	1.0	0.52|0.52
NALED	(ND)|ND	1.0	0.52|0.52
DIAZINON	(ND)|ND	1.0	0.52|0.52
DISULFOTON	(ND)|ND	1.0	0.52|0.52
RONNEL	(ND)|ND	1.0	0.52|0.52
CHLORPYRIFOS	(ND)|ND	1.0	0.52|0.52
FENTHION	(ND)|ND	1.0	0.52|0.52
TRICHLORONATE	(ND)|ND	1.0	0.52|0.52
METHYL PARATHION	(ND)|ND	1.0	0.52|0.52
TOKUTHION	(ND)|ND	1.0	0.52|0.52
STIROPHOS	(ND)|ND	1.0	0.52|0.52
BOLSTAR	(ND)|ND	1.0	0.52|0.52
FENSULFOTHION	(ND)|ND	1.0	0.52|0.52
AZINPHOS-METHYL	(ND)|ND	1.0	0.52|0.52
COUMAPHOS	(ND)|ND	1.0	0.52|0.52

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TRIBUTYL PHOSPHATE	(1.159)|1.084	1.545	(75.0)|70.1	30-130
TRIPHENYL PHOSPHATE	(1.269)|1.130	1.545	(82.1)|73.1	50-130

METHOD 3520C/8141A
ORGANOPHOSPHOROUS COMPOUNDS BY GC

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	10/29/14
Project	: 505701	Date Received:	10/31/14
Batch No.	: 14J225	Date Extracted:	11/03/14 10:00
Sample ID:	201410290484	Date Analyzed:	11/04/14 17:28
Lab Samp ID:	J225-03	Dilution Factor:	0.93
Lab File ID:	ZK04010A	Matrix	: WATER
Ext Btch ID:	NPK001W	% Moisture	: NA
Calib. Ref.:	ZK04008A	Instrument ID	: GCT012

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
DICHLORVOS	(ND)|ND	0.93	0.47|0.47
MEVINPHOS	(ND)|ND	0.93	0.47|0.47
DEMETON	(ND)|ND	0.93	0.47|0.47
ETHOPROP	(ND)|ND	0.93	0.47|0.47
PHORATE	(ND)|ND	0.93	0.47|0.47
NALED	(ND)|ND	0.93	0.47|0.47
DIAZINON	(ND)|ND	0.93	0.47|0.47
DISULFOTON	(ND)|ND	0.93	0.47|0.47
RONNEL	(ND)|ND	0.93	0.47|0.47
CHLORPYRIFOS	(ND)|ND	0.93	0.47|0.47
FENTHION	(ND)|ND	0.93	0.47|0.47
TRICHLORONATE	(ND)|ND	0.93	0.47|0.47
METHYL PARATHION	(ND)|ND	0.93	0.47|0.47
TOKUTHION	(ND)|ND	0.93	0.47|0.47
STIROPHOS	(ND)|ND	0.93	0.47|0.47
BOLSTAR	(ND)|ND	0.93	0.47|0.47
FENSULFOTHION	(ND)|ND	0.93	0.47|0.47
AZINPHOS-METHYL	(ND)|ND	0.93	0.47|0.47
COUMAPHOS	(ND)|ND	0.93	0.47|0.47

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TRIBUTYL PHOSPHATE	(1.246)|1.162	1.395	(89.3)|83.3	30-130
TRIPHENYL PHOSPHATE	(1.310)|1.242	1.395	(93.9)|89.0	50-130

QC SUMMARIES

METHOD 3520C/8141A
ORGANOPHOSPHOROUS COMPOUNDS BY GC

Client	: EUROFINS EATON ANALYTICAL	Date Collected:	NA
Project	: 505701	Date Received:	11/03/14
Batch No.	: 14J225	Date Extracted:	11/03/14 10:00
Sample ID:	MBLK1W	Date Analyzed:	11/04/14 12:51
Lab Samp ID:	NPK001WB	Dilution Factor:	1
Lab File ID:	ZK04003A	Matrix	: WATER
Ext Btch ID:	NPK001W	% Moisture	: NA
Calib. Ref.:	ZK04002A	Instrument ID	: GCT012

PARAMETERS	RESULTS (ug/L)	RL (ug/L)	MDL (ug/L)
DICHLORVOS	(ND)|ND	1.0	0.50|0.50
MEVINPHOS	(ND)|ND	1.0	0.50|0.50
DEMETON	(ND)|ND	1.0	0.50|0.50
ETHOPROP	(ND)|ND	1.0	0.50|0.50
PHORATE	(ND)|ND	1.0	0.50|0.50
NALED	(ND)|ND	1.0	0.50|0.50
DIAZINON	(ND)|ND	1.0	0.50|0.50
DISULFOTON	(ND)|ND	1.0	0.50|0.50
RONNEL	(ND)|ND	1.0	0.50|0.50
CHLORPYRIFOS	(ND)|ND	1.0	0.50|0.50
FENTHION	(ND)|ND	1.0	0.50|0.50
TRICHLORONATE	(ND)|ND	1.0	0.50|0.50
METHYL PARATHION	(ND)|ND	1.0	0.50|0.50
TOKUTHION	(ND)|ND	1.0	0.50|0.50
STIROPHOS	(ND)|ND	1.0	0.50|0.50
BOLSTAR	(ND)|ND	1.0	0.50|0.50
FENSULFOTHION	(ND)|ND	1.0	0.50|0.50
AZINPHOS-METHYL	(ND)|ND	1.0	0.50|0.50
COUMAPHOS	(ND)|ND	1.0	0.50|0.50

SURROGATE PARAMETERS	RESULTS	SPK_AMT	% RECOVERY	QC LIMIT
TRIBUTYL PHOSPHATE	1.075|(1.159)	1.500	71.7|(77.3)	30-130
TRIPHENYL PHOSPHATE	1.207|(1.347)	1.500	80.5|(89.8)	50-130

EMAX QUALITY CONTROL DATA
LCS/LCD ANALYSIS

CLIENT: EUROFINS EATON ANALYTICAL
PROJECT: 505701
BATCH NO.: 14J225
METHOD: METHOD 3520C/8141A

MATRIX:	WATER			% MOISTURE:	NA
DILUTION FACTOR:	1	1	1		
SAMPLE ID:	MBLK1W				
LAB SAMP ID:	NPK001WB	NPK001WL	NPK001WC		
LAB FILE ID:	ZK04003A	ZK04004A	ZK04005A		
DATE EXTRACTED:	11/03/1410:00	11/03/1410:00	11/03/1410:00	DATE COLLECTED:	NA
DATE ANALYZED:	11/04/1412:51	11/04/1413:26	11/04/1414:01	DATE RECEIVED:	11/03/14
PREP. BATCH:	NPK001W	NPK001W	NPK001W		
CALIB. REF:	ZK04002A	ZK04002A	ZK04002A		

ACCESSION:

PARAMETER	BLNK RSLT (ug/L)	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	RPD (%)	QC LIMIT (%)	MAX RPD (%)
Phorate	(ND) | ND	1.50	0.896J | (1.02)	60 | (68)	1.50	0.805J | (0.906J)	54 | (60)	11 | (12)	10-130	30
Ronnel	(ND) | ND	1.50	1.21 | (1.30)	81 | (87)	1.50	1.11 | (1.15)	74 | (77)	9 | (12)	30-140	30
Chlorpyrifos	(ND) | ND	1.50	1.31 | (1.40)	87 | (93)	1.50	1.21 | (1.25)	81 | (83)	8 | (11)	40-140	30
Tokuthion	(ND) | ND	1.50	1.34 | (1.36)	89 | (91)	1.50	(1.24) | 1.24	(83) | 83	(8) | 9	40-130	30
Bolstar	(ND) | ND	1.50	(1.37) | 1.17	(91) | 78	1.50	(1.31) | 1.15	(87) | 77	(4) | 2	20-130	30

SURROGATE PARAMETER	SPIKE AMT (ug/L)	BS RSLT (ug/L)	BS % REC	SPIKE AMT (ug/L)	BSD RSLT (ug/L)	BSD % REC	QC LIMIT (%)
Tributyl Phosphate	1.500	1.213 | (1.427)	80.9 | (95.1)	1.500	1.022 | (1.121)	68.1 | (74.7)	30-130
Triphenyl Phosphate	1.500	(1.507) | 1.507	(100) | 100	1.500	1.255 | (1.471)	83.7 | (98.1)	50-130

APPENDIX H

Trails Maintenance and Monitoring Memos

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

May 27, 2014
(2014-003.003/006/6)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: First Phase Memorandum for the Trails Maintenance and Monitoring Site Visit (April 2014) at the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Yu:

This memorandum serves as documentation for the trails maintenance and monitoring site visit conducted at the Big Tujunga Wash Mitigation Area (Mitigation Area) in April 2014.

All trails within the Mitigation Area were surveyed on April 18, 2014 by ECORP Consulting, Inc. (ECORP) biologist Philip Wasz to identify any problem areas along the trail system at the Mitigation Area. The biologist surveyed for areas of erosion, fallen trees, poison oak overgrowth, and potential safety hazards present on and adjacent to the trails. The biologist noted any rock or debris dams observed in Haines Canyon Creek. The current condition of the trails and trail system was documented and representative site photographs were taken.

The popular picnic area (noted in previous memos) located near the South Wheatland entrance (North American Datum 1983 [NAD 83], Universal Transverse Mercator [UTM] 11 S 375185E, 3792577N) showed evidence of recent use including a small piece of wood that was added to the existing rope swing (Figure 1).

Trees along the trail at west of the Cottonwood Avenue entrance within the southern cottonwood-willow riparian habitat (NAD 83, UTM 11 S 375987E, 3792538N) were hanging low over the trail, making it difficult for people on horseback to pass safely. Overhanging trees were also observed east of the South Wheatland entrance (NAD 83, UTM 11 S 375578E, 37925505N) within the riparian habitat (Figure 2). They will be trimmed during the exotic plant removal effort planned for April and May, 2014.

Poison oak (*Toxicodendron diversilobum*) was observed encroaching on the trail east of the South Wheatland entrance (NAD 83, UTM 11 S 0375514E, 3792492N; Figure 3). The poison oak will be trimmed during the exotic plant removal effort planned for April and May, 2014.

Grasses were also observed encroaching on the trail north of Gibson Ranch (NAD 83, UTM 11 S 376534E, 3792452N) and north of the Cottonwood entrance (NAD 83, UTM 11 S 376193E, 3792674N; Figure 4). These grasses will be trimmed and/or sprayed during the exotic plant removal effort planned for April and May, 2014.

The biologist observed three native yucca (*Hesperoyucca* sp.) stalks that were cut and removed within the upland area adjacent to the wash (NAD 83, UTM 11S 375594E, 3792992N; Figure 5). Only one of the yucca stalks appeared to have been cut while the plant was alive and the flowers were blooming.

The biologist did not observe any rock dams, homeless encampments, or new unauthorized trails during the survey.

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED: Rebecca L Valdez DATE: May 27, 2014

Rebecca Valdez
Associate Biologist

Figure 1. Rope swing at the popular picnic area located near the South Wheatland entrance.

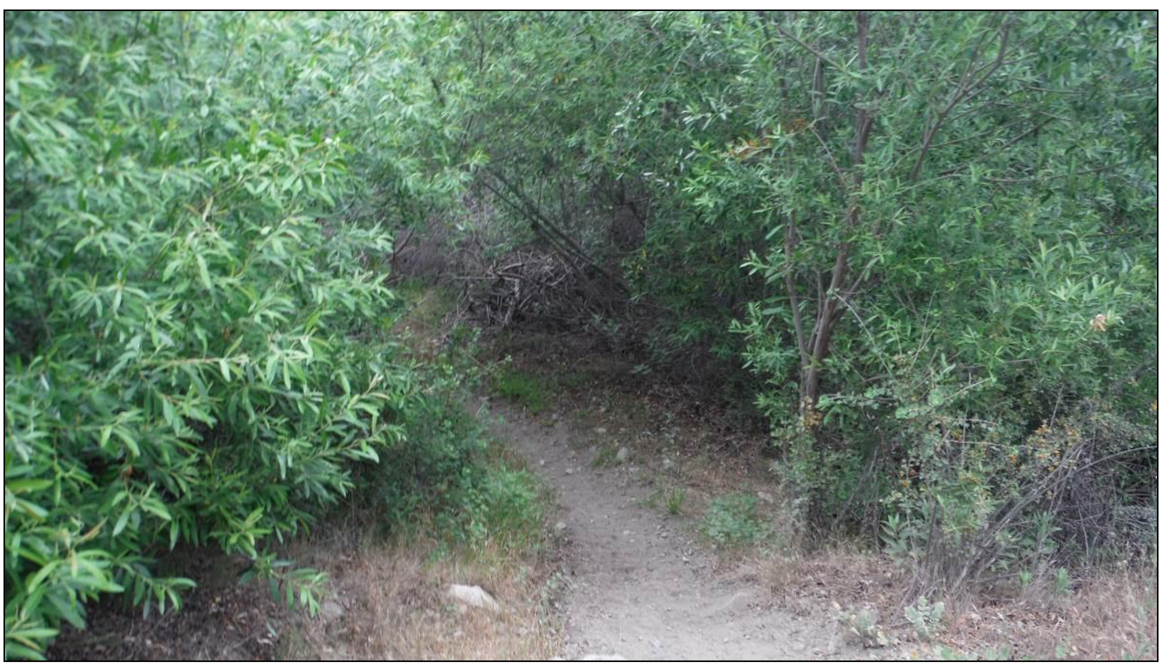

Figure 2. Low hanging branches above the trails near Haines Canyon Creek.


Figure 3. Poison oak encroaching the trail east of the South Wheatland entrance.


Figure 4. Grasses encroaching on the trail.


Figure 5. Yucca stalks removed in the wash.

June 19, 2014
(2014-003.003/006/6)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: Memorandum for the Trails Maintenance and Monitoring Site Visit (May 2014) at the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Yu:

This memorandum serves as documentation for the trails maintenance and monitoring site visit conducted at the Big Tujunga Wash Mitigation Area (Mitigation Area) in May 2014.

All trails within the Mitigation Area were surveyed on May 5, 2014 by ECORP Consulting, Inc. (ECORP) biologists Amy Trost and Terrance Wroblewski to identify any problem areas along the trail system at the Mitigation Area. The biologist surveyed for areas of erosion, fallen trees, poison oak overgrowth, and potential safety hazards present on and adjacent to the trails, including the placement of survey monuments. The biologist noted any rock or debris dams observed in Haines Canyon Creek. The current condition of the trails and trail system was documented and representative site photographs were taken.

Recently, the County of Los Angeles Department of Public Works (LACDPW) requested that a survey crew install property boundary markers/monuments along parcel boundaries throughout the Mitigation Area. The biologists surveyed the locations and potential locations of survey monuments and marker posts along the trail system in the Mitigation Area to determine if the marker posts could be potential safety hazards to recreational users of the site. Two marker posts were located near the Foothill Gate. One marker post was located in the juncture where several trails met (Figure 1; UTM 11S 376229E, 3792845N), the biologists did not feel that this was an immediate hazard but could potentially be unsafe if the bright paint wore away. The second marker post was located north of the first (Figure 2; UTM 11S 376217E, 3792894N). This marker post is adjacent to the trail and would only be a safety hazard if it fell over. Two locations where marker posts will be placed were deemed as potential hazards due to their proximity to the trail or location in the wash (UTM 11S 375224E, 3792670N and 11S 375601E, 3793035N). See attached map for a location of all potentially hazardous marker posts in the Mitigation Area.

The biologists met with Terry Kaiser to determine the location of undercut trails along the western border of the Mitigation Area, as called out in the Spring 2014 CAC Meeting. Mr. Kaiser was concerned with an area where the ground had eroded away on either side of the trail creating a peninsula 8 feet above the rest of the wash and approximately 12 feet wide (Figures

3 & 4; UTM 11S 375150, 3792701). Two trails are currently in use along this peninsula, both very close to the edge. This peninsula could be eroded during a particularly bad storm event. ECORP recommends continuing to monitor this area, particularly after storm events. Two smaller areas of erosion were also identified (Figures 5 & 6; UTM 11S 375386E, 3792866N and 11S 375384E, 3792866N). ECORP recommends filling these areas to prevent injury to pedestrians and equestrians caused by tripping or falling.

The trails in the riparian area of the Mitigation Area were walked to determine whether the recent high winds caused any hazards or blocked trails. Three fallen branches were observed blocking the trails. One fallen branch was north of Gibson Ranch along the trail that leads from Gibson Ranch to the Tujunga Ponds (Figure 7; UTM 11S 376520E, 3792410N). The second fallen branch was observed north of the Cottonwood Gate, after the trail enters the riparian area (Figure 8; UTM 11S 376160E, 3792669N). The branch was entirely blocking a trail that hikers used to cross Haines Canyon Creek. The third fallen branch was near the western edge of the Mitigation Area (Figure 9; UTM 11S 374992E, 3792530N). The Nature's Image crew that was conducting maintenance activities at the Mitigation Area at the time of the site visit was notified and will address these items. One rock dam was also observed in the popular picnicking area (Figure 10; UTM 11S 375181E, 3792579N). The biologist monitoring the Nature's Image crew was notified and the rock dam was removed shortly thereafter and is documented in the May Exotic Plant Removal Memo.

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED: Amy Leigh Trost DATE: June 19, 2014

Amy Leigh Trost
Assistant Biologist

Figure 1. Marker post near Foothill Gate at juncture of trails.

Figure 2. Marker post near Foothill Gate adjacent to trail.

Figure 3. Eroded trail on peninsula near western border of Mitigation Area.

Figure 4. Side of peninsula along western border of Mitigation Area.

Figure 5. Small area of erosion next to trail along western border of Mitigation Area.

Figure 6. Second small area of erosion next to trail along western border of Mitigation Area.

Figure 7. Fallen branches blocking trail from Gibson Ranch.

Figure 8. Blocked trail north of Cottonwood Gate.


Figure 9. Blocked trail near western border of Mitigation Area.


Figure 10. Rock dam at popular picnicking area.

Location: Document Path: \\rocklin\mapping data\2010\2010-116 Big Tujunga Wash Mitigation Area\MAPS\Mitigation_Monitoring\Report_2014\Tujunga_Trail_Monuments_2014.mxd

Aerial Date: USGS Dec 2010
Map Date: 2012

Potential Hazard Marker Post Locations

2014-003.003 Big Tujunga Wash Mitigation Area

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

July 9, 2014
(2014-003.003/006/6)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: Third Phase Memorandum for the Trails Maintenance and Monitoring Site Visit (May 2014) at the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Yu:

This memorandum serves as documentation for the third phase trails maintenance and monitoring site visit conducted at the Big Tujunga Wash Mitigation Area (Mitigation Area) in May 2014.

All riparian trails including around the Tujunga Ponds within the Mitigation Area were surveyed on May 29, 2014 by ECORP Consulting, Inc. (ECORP) biologist Rebecca Valdez to identify any problem areas along the trail system at the Mitigation Area. The biologist conducted this extra trails site visit in preparation for the upcoming community hike sponsored by Los Angeles Council District 7 Councilmember Felipe Fuentes on Saturday, May 31, 2014. The biologist conducted the trails site visit in order to identify any safety concerns along the trails, areas of trash or debris, and other general trail concerns such as erosion, fallen trees, poison oak overgrowth and to identify any sensitive biological resources (such as bird nests because the timing of the event occurred during the breeding bird season).

The biologist walked throughout the Mitigation Area and documented any areas of concern or issues noted during the site visit. Active bird nests were not documented during the trail maintenance cleanup effort and sensitive resources were not observed. The biologist noted any rock or debris dams observed in Haines Canyon Creek. The current condition of the trails and trail system was documented and representative site photographs were taken.

The trail maintenance effort was conducted by ECORP's landscape contractor on May 29, 2014. Prior to any work, all members of the landscape contractor crew received an onsite orientation and instruction on the Mitigation Area's regulations and concerns related to the area's sensitive species and habitat by the qualified biological monitor. ECORP biologist Rebecca Valdez monitored the trail maintenance effort.

Trails maintenance activities (clearing existing trails, removing trash and debris, etc.) were conducted along the trails adjacent to Haines Canyon Creek, from Cottonwood Avenue to the Tujunga Ponds. The main areas of concern were fallen tree branches obstructing trails and posing a threat to equestrian users. The landscape contractor's crew used chainsaws and modified weed whackers to trim and/or remove trail obstructions.

The popular picnic area (noted in previous memos) located near the South Wheatland entrance (North American Datum 1983 [NAD 83], Universal Transverse Mercator [UTM] 11 S 375185E, 3792577N) showed evidence of recent use; a small piece of wood was added to the existing rope swing (Figure 1). The landscape contractor crews were unable to remove the rope and small piece of wood due to the height of the rope.

Five rock dams were marked by a bilingual biologist during public outreach site visits conducted over Labor Day weekend (May 24 through 26, 2014). The dams were located throughout the Mitigation Area: two at the popular picnic area near the South Wheatland entrance (UTM 11S 375180E, 3792586N and 375180E, 3792586N), two south of the ponds (UTM 11S 376409E, 3792662N and 376153E, 3792663N), and one southwest of the ponds (UTM 11S 376435E, 3792723N). One additional rock dam was observed during the maintenance effort (located at UTM 11S 376189E, 3792684N). All rock dams were removed by the landscape contractor (Figures 2 through 5).

One tree along the trail north of Gibson Ranch was observed blocking the trail at UTM 11S 376407E, 3792508N by the bilingual biologist during Labor Day weekend. A second tree was observed during the trail maintenance effort northeast of Cottonwood Avenue located at UTM 11S 376287E, 3792616N. Both trees were cleared from the trail using chainsaws (Figures 6 and 7).

Poison oak was observed encroaching on the trail east of the South Wheatland entrance (NAD 83, UTM 11 S 0375514E, 3792492N; Figure 8). The poison oak was trimmed using a weed whacker.

The biologist did not observe any homeless encampments or new unauthorized trails during the trail maintenance effort. No bird nests were discovered during the exotic plant removal effort.

During the maintenance effort the following protocols were conducted to minimize disturbance to sensitive habitat and species:

- Nesting bird surveys were conducted by the biological monitor in specific areas the crews planned to work in prior to the start of any maintenance activities.
- In the limited cases when the landscape contractor's crew members and ECORP biologists entered Haines Canyon Creek, crossings were made only at established creek crossings to minimize disturbance to sensitive habitat and species.

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED: Rebecca L Valdez   DATE: July 9, 2014

Rebecca Valdez
Associate Biologist

Figure 1. Rope swing at the popular picnic area located near the South Wheatland entrance.

Figure 2. Debris dam near the ponds before removal.

Figure 3. Debris dam near the ponds after removal.

Figure 4. Debris dam near Cottonwood Avenue before removal.

Figure 5. Debris dam near Cottonwood Avenue after removal.

Figure 6. Tree near Cottonwood Avenue blocking the trail.

Figure 7. Tree near Cottonwood Avenue cleared from the trail.

Figure 8. Poison oak trimmed along the trail.

December 3, 2014
(2014-003.003/006/6)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: Fourth Phase Memorandum for the Trails Maintenance and Monitoring Site Visit (December 2014) at the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Yu:

This memorandum serves as documentation for the fourth phase trails maintenance and monitoring site visit conducted at the Big Tujunga Wash Mitigation Area (Mitigation Area) in December 2014.

All riparian trails including around the Tujunga Ponds within the Mitigation Area were surveyed on December 1, 2014 by ECORP Consulting, Inc. (ECORP) biologist Carley Lancaster to identify any problem areas along the trail system at the Mitigation Area. The biologists conducted the trails site visit in order to identify any safety concerns along the trails, areas of trash or debris, areas of exotic plant growth, and other general trail concerns such as erosion, fallen trees, poison oak overgrowth, and to identify any sensitive biological resources.

The biologists walked throughout the Mitigation Area and documented any areas of concern or issues noted during the site visit with a global positioning system (GPS) unit (all coordinates are Universal Transverse Mercator [UTM], North American Datum 1983 [NAD 83] 11S). The current condition of the trails and trail system was documented and representative site photographs were taken. One area of erosion was observed near the northern end of Cottonwood Avenue (376152E, 3792652N) and poses a potential threat to equestrian and recreational users (Figure 1). This is the same location where erosion has been documented during previous trails monitoring surveys. The erosion was fixed by Flood Maintenance workers in spring of 2014 but it appears that the area is beginning to erode again.

One area of trail obstruction was observed near Wentworth Street and Mary Bell Avenue (376236E, 3792287N) and consisted of overhanging branches obstructing equestrian crossing signs and possibly posing a safety issue for equestrian and recreational users (Figure 2). This was addressed during the trail maintenance activities conducted on the site between December 4 and 15, 2014. One log dam (376446E, 3792725N) was discovered obstructing flow from the Tujunga Ponds into Haines Canyon Creek. The dam was promptly removed on December 1, 2014 during the trails maintenance and monitoring site visit (Figures 3 and 4). One potential homeless encampment was discovered during the site visit in the southwestern portion of the

Mitigation Area adjacent to Haines Canyon Creek and just east of the South Wheatland entrance (375477E, 3792529N) when biologists heard suspicious movement in the adjacent vegetation approximately 20 feet off the trail (please see attached reference map for location). Because this area has been problematic for homeless activity during previous site visits, it was determined that this could be a potential encampment. Due to safety concerns, no further investigation of the suspected encampment was conducted. One area of unauthorized dumping was observed just outside the Cottonwood Avenue entrance during the December 2014 trail maintenance effort (Figure 5). Materials dumped consisted of old tires. The biologists did not observe any new unauthorized trails during the trail maintenance effort.

During the most recent exotic wildlife removal effort conducted on November 17, 2014, ECORP's aquatic biologists documented unauthorized trash dumping in front of the Cottonwood Avenue entrance consisting of tires and old speaker equipment (Figure 6). The biologists also observed several unauthorized trails near Haines Canyon Creek and in the upland area north of Haines Canyon Creek. The biologists blocked these unauthorized trails and discouraged further recreational and equestrian use by placing branches, rocks, and vegetation at the entrances of the unauthorized trails (Figures 7 and 8).

Trail maintenance efforts to address these issues are scheduled to occur at the site on Thursday, December 4, 2014.

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED:________________________ DATE: December 3, 2014

Carley Lancaster
Associate Biologist

Figure 1. Trail erosion near northern end of Cottonwood Avenue.

Figure 2. Tree branch obstruction near Wentworth Street and Mary Bell Avenue.

Figure 3. Log dam near Tujunga Ponds before removal.

Figure 4. Log dam near Tujunga Ponds after removal.

Figure 5. Dumping near Cottonwood Avenue entrance 12-1-14.

Figure 6. Dumping near Cottonwood Avenue entrance 11-17-14.

Figure 7. Unauthorized trail north of Haines Canyon Creek after closure.

Figure 8. Unauthorized trail near Haines Canyon Creek after closure.

APPENDIX I

Stakeholder Mailing List

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APPENDIX J

Newsletters

Big T Wash Line

April 2014

A Publication of the
County of Los Angeles
Department of Public Works
(LACDPW)

Announcements

The Big T 2013 Annual Report is now available!

LACDPW implements several environmental programs to protect the unique plants and animals that call Big T home. The environmental programs conducted at Big T from January to December 2013 are summarized in the 2013 Annual Report which is now available on our website at:

www.dpw.lacounty.gov/wrd/projects/BTWMA

Brown-headed Cowbird Trapping

The annual brown-headed cowbird trapping program will be going on from April 1 through June 30. A biologist checks the traps daily and releases any native birds back into the Mitigation Area, so don't worry about the birds and let the traps be. If you see anyone vandalizing the traps, please immediately contact LACDPW at (626) 458-6139.

Someone's Swimming In The Ponds!

Don't be alarmed if you see some of our aquatics biologists in the waterways at Big T. They are working to remove many of the exotic aquatic species that make their way into Big T, such as largemouth bass, green sunfish, common carp, and red-eared slider. As you know, the native fish species thrive from the removal of these exotic fish species.

For the birds...

The breeding season for most birds has begun so make sure to save all of your tree trimming activities for the fall! Most bird species are protected by the Migratory Bird Treaty Act, a federal law that was established to protect birds, their nests, and their habitat. Violation of this law can lead to fines or even jail time, so do that hummingbird in your hibiscus a favor and wait until September or later.

Be Sure To Stop And Say *¡Hola!* To Our Bilingual Biologists This Summer!

Biligual biologists will be visiting Big T on weekends to talk with people about all things related to Big T. They'll be going over important topics including the special habitats and wildlife present at Big T as well as the approved and prohibited recreational activities at the site. The biologists are happy to talk with you and answer any biology questions you may have about the area.

Big T Has Its Own Email!

Feel free to contact **BTWMA@dpw.lacounty.gov** with any questions or concerns about Big T or any of the activities occurring within it.

ABOUT THE BIG TUJUNGA WASH MITIGATION AREA

Big T is a parcel of land located in the City of Los Angeles' Sunland area (see Page 4). Big T covers an area of approximately 210 acres of sensitive habitat. The site was purchased by LACDPW in 1998 for the purpose of compensating for habitat loss for other LACDPW projects.

LACDPW's implementation of the Master Mitigation Plan for the Big Tujunga Wash Mitigation Area (Big T) has been underway since April 2000.

Big T protects one of the most rapidly diminishing habitat types found in Southern California, willow riparian woodland. Big T is home to several protected species of fish (Santa Ana sucker, Santa Ana speckled dace, arroyo chub) and contains habitat for sensitive bird species (least Bell's vireo, southwestern willow flycatcher).

The purpose of this newsletter is to provide updates to ongoing programs and to explain upcoming enhancement measures that will be implemented on the site. Newsletters are published on a semi-annual basis (Spring and Fall).

More information can be found at

www.dpw.lacounty.gov/wrd/projects/BTWMA

Are You Thirsty? Because Big T Sure Is!

As the drought in California continues you may ask: What about Big T? What will happen to our friendly neighborhood recreation area?

Many plant species, particularly those found in arid areas, are referred to as "drought tolerant", meaning they are adapted to periods of very little or no water. There are many of these plants in the upland habitat located in the northern part of Big T. Other plants, however, are not as well adapted and will not do well in the coming months if we don't get more rainfall. In order for plants to convert sunlight into energy, in the process called photosynthesis, they need water. If plants don't get enough water they can't grow very much, some might not produce flowers or seeds, and many plants could die. Some annuals (plants which die each year after producing seeds) might not grow at all due to the lack of water. Invasive and non-native plant species take advantage of the fact that there are fewer native plants to compete with and can overrun Big T and other natural areas.

With fewer or less dense vegetation for animals to hide their nests or young in, many can be preyed upon by animals such as coyotes, hawks, and snakes. Animals that rely on the native plants at Big T for food will have a hard time finding enough food to keep themselves healthy and will give birth to fewer young or might not even have babies at all in years of intense drought. Also be aware that animals might start entering more urban areas, like your neighborhood, in search of food and water because they aren't finding enough in their natural habitats. If you see an animal in your backyard that doesn't belong there, like a bear, don't panic! Go inside and call your local animal control center.

The last thing to be aware of during this drought is that the increased levels of dead or dried plants and low levels of water in the soil could be just the right recipe for a wildfire to run rampant. For more information on wildfires check out the September 2013 edition of the Big T Wash Line.

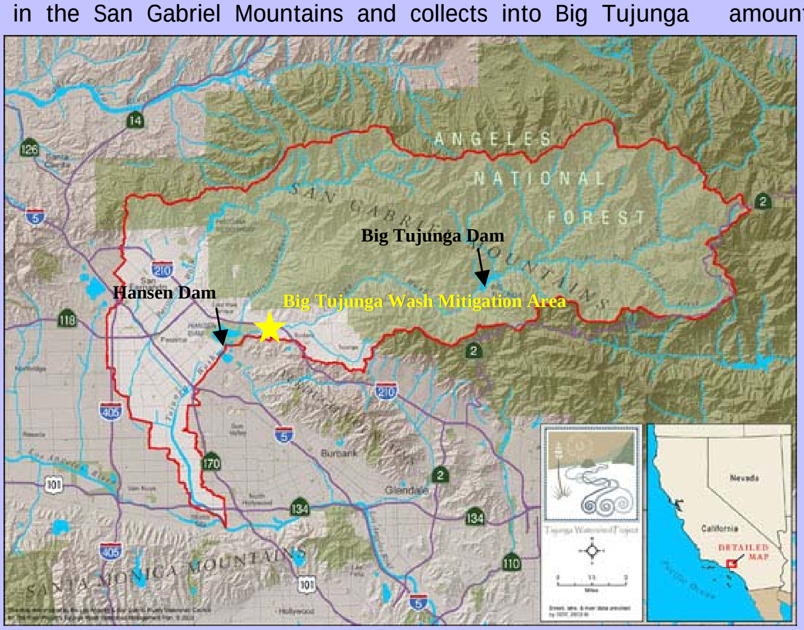
What can you do? Help out at home by reducing water usage – water your lawn less and plant drought-tolerant native plants instead of water-guzzling, non-native plants. To ensure that you and your home are safe from wildfires, be sure to clear any dry fire-inducing vegetation around your home. Help out at Big T by staying on designated trails so all of the plants at Big T get a chance to grow. Also, make sure to report any wildfires or campfires within Big T. Call 911 in an emergency or, for minor infractions, call the LA County Sheriff's Department at 1-800-834-0064. LACDPW cannot respond to emergencies, however please notify BTWMA@dpw.lacounty.gov of any incidents reported to law enforcement and we will gladly follow up.

Big T might look a bit different this year and in the years to come. But don't worry! This is only temporary and as soon as we see some rain Big T will come back looking as good as new!

From Snow To The City, Where Does The Water Come From?

Do you know where the water at Big T comes from? Sure, it comes from the Big Tujunga Wash, Haines Canyon Creek, and the Tujunga Ponds, but where does it really come from before getting to Big T?

The Big Tujunga Wash begins as rainfall runoff and snowmelt in the San Gabriel Mountains and collects into Big Tujunga Creek. From there, it flows through the Big Tujunga Dam, into the San Gabriel Valley, and into Big T!



Below the dam, Big Tujunga Creek changes its name to Big Tujunga Wash. It is called a "wash" because it is normally dry or at very low levels most of the year and only carries large amounts of water after heavy rains. The City of LA owns 100% of the water that flows down the Big Tujunga Creek and uses it for drinking water. In order to maximize water conservation, the Big Tujunga Dam regulates the amount of water released to Big T. Big T also gets water from Haines Canyon Creek and the Tujunga Ponds which are fueled by groundwater and runoff from neighboring areas.

After leaving Big T the Big Tujunga Wash meets up with Little Tujunga Wash and Haines Canyon Creek. The wash then flows into Hansen Dam and eventually ends up in the Los Angeles River.

This interconnected system of flowing water in a specific area is called a watershed. Now, when you see water anywhere at Big T, you can imagine its origin and the long trip it made to get to the site! But don't forget, this water will later be used as drinking water so be sure to keep the waterways clean and free of pollutants!

Species Highlight: Dragonflies

Male Red Rock Skimmer

Dragonflies are beautiful insects generally characterized by their very large eyes, elongated bodies, and flat transparent wings. They are commonly found around lakes, ponds, streams, wetlands, and even backyard pools. Dragonflies are usually found around bodies of water because most of them lay their eggs in fresh water, or in the plants found near fresh water. These eggs then hatch into larvae, known as nymphs, and continue to live and molt several times underwater. During their final stage as nymphs, dragonflies wait in shallow water until they can emerge onto dry land to morph into flies.

Dragonflies are carnivorous and normally eat other small insects. They are very important because they can control pesky and harmful insect species such as mosquitos. There are many different types and species of dragonflies. Some are easy to identify while others need to be caught and thoroughly analyzed in order to identify them. Different types of dragonflies have specific habitat needs and flight periods.

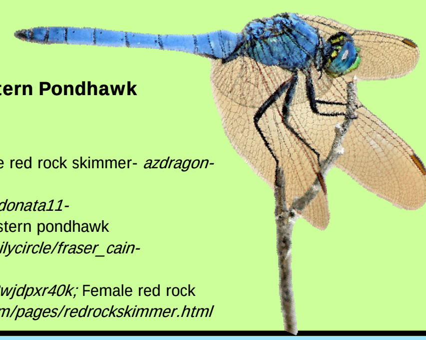
The Red Rock Skimmer is a fairly common dragonfly that can be found in rocky streambeds such as Haines Canyon Creek at Big T. The Red Rock Skimmer's flight period ranges from April to September. The males have a rusty orange color body with the same orange color found on the inner wings. The females have grey/brown bodies with intricate designs and no color on their wings. They are about 2 inches in size, with a wingspan of about 3.5 inches.

Female Red Rock Skimmer

You may come across a Western Pondhawk at the Tujunga Ponds. These dragonflies usually perch low on the ground or on floating vegetation near ponds or pools in creeks. A male Western Pondhawk is bright blue in color with a green face. The female is an emerald green color, with a thin dark line down the center of her body. Both the male and female have transparent wings. These dragonflies are about 1.5 inches in length, and have a wingspan of about 2.5 inches.

Female Western Pondhawk

Keep an eye out for these beautiful insects while enjoying the nature at Big T. Their large compound eyes make it so that dragonflies can see in many different directions at once, which make them very sensitive to movement. If you are observing a dragonfly, try to be very still and approach it from behind. If you are careful, you may even be able to snap a great photo!

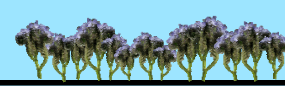


Male Western Pondhawk

Photos clockwise from top left: Male red rock skimmer- *azdragon-fly.net;* Female western pondhawk- *httpwww.thehibbitts.nettroyphotoodonata11-14_September_2010.htm;* Male western pondhawk *http://publiccircles.appspot.com/dailycircle/fraser_cain-super_science_circle/2013-07-28#z13juxfb4yn2wtkrv04cip2ozwf3wjdpxr40k;* Female red rock skimmer- *http://jimburnsphotos.com/pages/redrockskimmer.html*

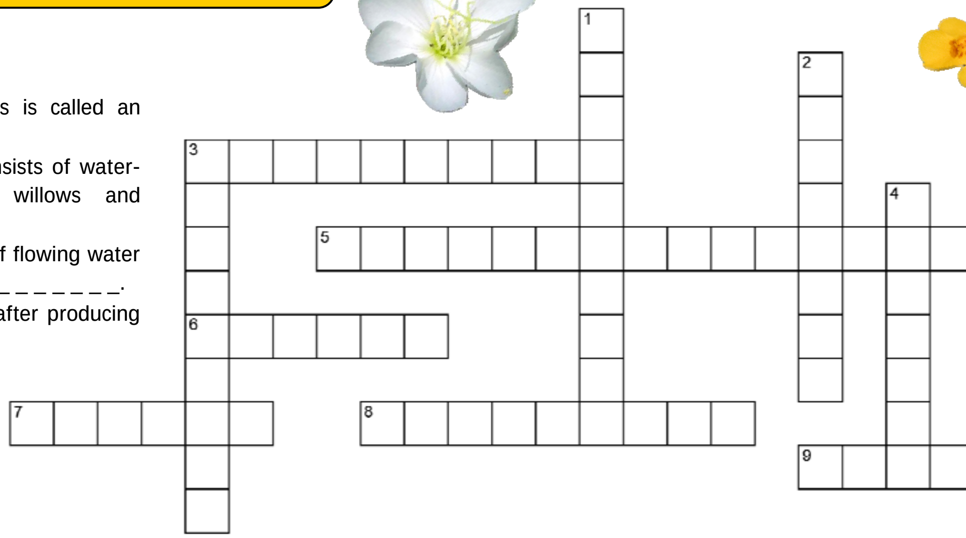
Mosey On Over…And Use The New Equestrian Crossings!

If you frequent Big T, you might have noticed the new equestrian crossing signs and flashing lights at Wheatland Avenue, Mary Bell, and Christy Drive. What a great improvement for equestrian safety! However, the installation of these lights can possibly provide a false sense of security. These signs were put up for your protection but please don't forget to continue to be vigilant and pay attention when you use the crossings! Motorists can't always see the lights and some don't stop even if they can see the lights. Don't assume they will stop just because of the signs and flashing lights! The lights were put up by Equestrian Trails, Inc. (one of the local equestrian groups) and aren't enforceable by law enforcement. Always be sure to look before crossing (even if the lights are flashing). Also, when traveling in a group, make sure multiple people press the "walk" button to keep the lights going. The last person in the group should always press the button before they cross. If you see that the signs or lights have become blocked by overgrown vegetation on the Big T side of the street, please call or email LACDPW so we can keep the lights clear for your safety.



Big Tujunga Crossword

Kid's Corner



DOWN

1) A person who rides horses is called an _ _ _ _ _ _ _ _ _ _.

2) _ _ _ _ _ _ _ _ _ habitat consists of water-loving vegetation such as willows and cottonwoods.

3) The interconnected system of flowing water in a specific area is called a _ _ _ _ _ _ _ _ _.

4) Plants which die each year after producing seeds are called _ _ _ _ _ _ _.

ACROSS

3) _ _ _ _ _ _ _ _ _ _ _ can be reduced by watering your lawn less and planting drought resistant native plants instead of water-guzzling non-native plants.

5) _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ plants are plants that have adapted to periods of very little to no water.

6) The Big Tujunga Wash begins as _ _ _ _ _ _ from snow and rain in the San Gabriel Mountains.

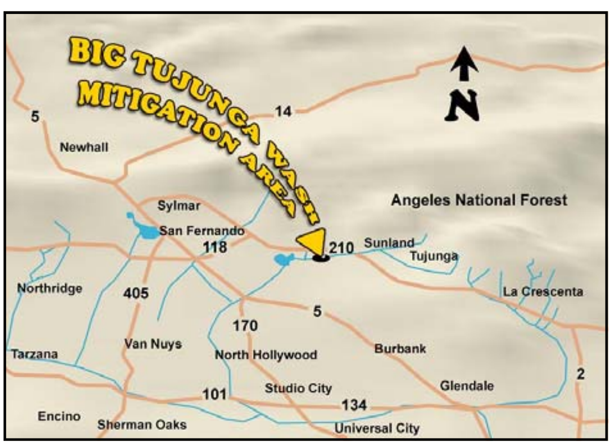
7) Dragonfly larvae is also known as _ _ _ _ _ _.

8) This is an insect with very large eyes, elongated bodies, and flat transparent wings.

9) A _ _ _ _ is normally dry or at very low levels most of the year and only carries large amounts of water after heavy rains.

Where is Big T?

Downstream of Big Tujunga Canyon, right in the heart of Sun Valley, south of the 210 freeway, you'll find a native riparian (water loving plant) natural area filled with cottonwoods, willows, and pools of water that support many native aquatic species. Check out the Big T website for more information at: www.dpw.lacounty.gov/wrd/projects/BTWMA.



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- Do not attempt to enforce regulations yourself; please allow law enforcement to handle the situation/incident.
- For emergency follow up or to report minor incidents, obtain information, or get questions answered during weekday work hours (8:00 a.m. to 5:00 p.m., Monday through Thursday), please contact:

Grace Yu, Water Resources Division
County of Los Angeles Department of Public Works
900 S. Fremont Avenue
Alhambra, CA 91803
Email: BTWMA@dpw.lacounty.gov
Phone: (626) 458-6139

Answers to crossword:
1) equestrian; 2) water usage; 3) watershed; 4) dragonfly; 5) nymphs;
6) wash; 7) runoff; 8) drought resistant; 9) annuals

Big T Wash Line

September 2014

A Publication of the
County of Los Angeles
Department of Public Works
(LACDPW)

Announcements

Report suspicious activity occurring in the Mitigation Area! If you see something occurring in the Mitigation Area that shouldn't be, call LA Sheriff's Department dispatch immediately to report it. LACDPW cannot respond to emergencies; however, please notify BTWMA@dpw.lacounty.gov of any incidents reported to law enforcement and we will gladly follow up. **LA Sheriff's Department Dispatch: 1-800-834-0064**

It's trimming time! You've waited patiently through the spring and summer and now it's finally time to trim your trees and shrubs! The breeding bird season is officially over and you can safely start pruning without fear of disturbing birds nesting in your yard. Most bird species are protected by the Migratory Bird Treaty Act, a federal law that was established to protect birds, their nests, and their habitat. Violation of this law can lead to fines or even jail time, so get your trimming needs taken care of this fall!

Fall CAC meeting deferred. Community Advisory Committee (CAC) meetings have been consolidated to convene on an annual basis in the spring. We will no longer hold fall meetings. The next CAC meeting is scheduled for April 30, 2015.

Big T has its own email! Feel free to contact **BTWMA@dpw.lacounty.gov** with any questions or concerns about Big T or any of the activities occurring within it.

Not native? Not welcome!

We sure have been busy this year! ECORP Consulting has conducted two exotic plant and two exotic wildlife removal efforts in 2014. Giant reed, castor bean, and other exotic plant species were removed during the two efforts and weeds were removed as part of the general upkeep of the existing trails system. The exotic wildlife removal efforts have been very successful! A total of 8 carp, 43 green sunfish, 17 bluegill, 421 largemouth bass, 1 Mozambique tilapia, 3 goldfish, 5 bullfrogs, 2 red-eared sliders, 1 southern painted turtle, and 358 crayfish have been removed from the Tujunga Ponds and Haines Canyon Creek since April! As you know, the native fish species thrive from the removal of these exotic fish species.

We've still got some more work to do before the end of the year, so be sure to keep an eye out for the crews!

A parasitic what? You heard right, a parasitic bird species occupies Big T. Brown-headed cowbirds are

nest parasites, meaning they do not build their own nests to lay their eggs. Instead, they lay eggs in nests of other unsuspecting, native bird species so they don't have to raise their own young. Trapping to remove these pesky birds is conducted each year to help our native bird species thrive. In 2014, a total of 75 brown-headed cowbirds were captured and removed from Big T!

Councilmember Fuentes Takes a Hike at Big T

On May 31st, 2014, the public was given the opportunity to hike the trails of Big T with Los Angeles City Councilmember Felipe Fuentes (District 7) and members of his staff. It was a bit of a surprise turnout with over 60 members of the public in attendance! The adventure began at the Cottonwood entrance early Saturday morning, where hikers were given maps and handouts explaining the history of Big T, its current uses, and much more. Hikers explored the ponds and riparian areas of Big T, and were given the opportunity to ask questions and discuss their concerns with Councilmember Fuentes and members of the event's support staff. The event had a great turnout and we hope more events like this will help to increase the public's awareness and appreciation of Big T.

ABOUT THE BIG TUJUNGA WASH MITIGATION AREA

Big T is a parcel of land located in the City of Los Angeles' Sunland area (see Page 4). Big T covers an area of approximately 210 acres of sensitive habitat. The site was purchased by LACDPW in 1998 for the purpose of compensating for habitat loss for other LACDPW projects.

LACDPW's implementation of the Master Mitigation Plan for the Big Tujunga Wash Mitigation Area (Big T) has been underway since April 2000.

Big T protects one of the most rapidly diminishing habitat types found in Southern California, willow riparian woodland. Big T is home to several protected species of fish (Santa Ana sucker, Santa Ana speckled dace, arroyo chub) and contains habitat for sensitive bird species (least Bell's vireo, southwestern willow flycatcher).

The purpose of this newsletter is to provide updates to ongoing programs and to explain upcoming enhancement measures that will be implemented on the site. Newsletters are published on a semi-annual basis (spring and fall).

More information can be found at

www.dpw.lacounty.gov/wrd/projects/BTWMA

Two-striped Garter Snake
photo credit: Chris Brown

Who You Gonna Call? Vector Control!

You may or may not know, but LACDPW works closely with the Greater Los Angeles County Vector Control District (Vector Control) to manage vector issues at Big T. Vectors are any organism that can transmit disease or cause human discomfort. They can be anything from fleas that carry plague to mosquitoes that carry malaria. Vector Control seeks to eliminate threats to human and animal health by getting rid of disease carrying pests and other pests that cause extreme human discomfort.

Mosquito- photo credit: Bob Dusek

Mosquitoes, ticks, and black flies are common pests found at Big T. Mosquitoes have the potential to carry deadly diseases such as West Nile virus, western equine encephalomyelitis, St. Louis encephalitis, malaria, dengue fever, and even canine heartworm. Ticks can potentially carry Lyme disease, relapsing fever, and tularemia. Black flies are considered nuisance insects and are not known to carry any diseases in this area. Midges are also found at Big T. They form swarms that are mostly harmless, but can cause alarm if they are mistaken for mosquitoes. Vector Control will generally focus treatment on mosquitoes at Big T, but will also address concerns with black fly infestations.

When and where might you come across these pests?

Mosquito season is generally between the months of May and October when they are most active. Mosquitoes tend to lay their eggs in stagnant water habitats, which makes Big T an attractive location to breed. During mosquito season, Vector Control conducts regular mosquito inspection and treatment once every 2 to 3 weeks at Big T. They focus their efforts on pooled areas along Haines Canyon Creek, the Tujunga Ponds, and areas around the Ponds. During the off season (November through April), Vector Control does not conduct regular treatments for mosquitoes unless they receive a call from residents reporting a problem. Regular treatments for black flies, occurring once every 10 days during the black fly season (typically March through November), are also conducted at Big T.

Black Fly- photo credit: USDA-*http://www.sel.barc.usda.gov/diptera/dips/simuli.htm*

What's the worst that can happen?

Because of Vector Control's efforts, risk of disease is severely decreased, but there are still some diseases of which you should be aware including West Nile virus, western equine encephalomyelitis, St. Louis encephalitis, and canine heartworm. All of these diseases can be transmitted to humans, horses, and other animals through mosquito bites. West Nile virus symptoms in humans usually mimic those of the flu and can potentially lead to death. West Nile symptoms in horses include fever, weakness, paralysis, and seizures. Fortunately, no West Nile virus activity has been reported in the Sunland-Tujunga area this year. Both western equine encephalomyelitis and St. Louis encephalitis attack the brain and can result in brain damage or death. Symptoms may include headache, nausea, and fever or can be as severe as swelling of the brain causing disorientation, delirium, and even coma. Western equine encephalomyelitis can also affect horses. Regionally available equine vaccinations for both West Nile virus and western equine encephalomyelitis exist, and you should inquire about them with your veterinarian. Lastly, canine heartworm can be transmitted to your dog or cat through mosquito bites. Illness is caused by heartworms in your pet's heart and lungs and can cause organ failure if left untreated. Preventative medications and treatments for this disease are also available from your veterinarian.

Deer Tick– photo credit: Soundwaves U.S.G.S

What You Can Do to Protect Yourself

To deter mosquitoes, black flies, and ticks from biting when you are out and about, wear long-sleeved shirts and pants and use an insect repellant that contains DEET, Picaridin, or oil of lemon eucalyptus between dusk and dawn when mosquitoes are active. Mosquito larvae can be found in areas in your own backyard, such as in buckets, old tires full of standing rainwater, or even in your horse trough. To prevent breeding mosquitoes at home, make sure to regularly empty any uncovered water sources and properly maintain ponds, swimming pools, and spas. Replace the water in your horse's trough at least weekly. Also check that all of the screens on your doors and windows are tight fitting and don't have any holes that allow mosquitoes to get through.

Mosquitoes are usually found near standing water. This ponded area at Big T is a good example of standing water.

Want to know more about vectors and vector control in LA County? Check out the Vector Control website at **www.glacvcd.org/.**

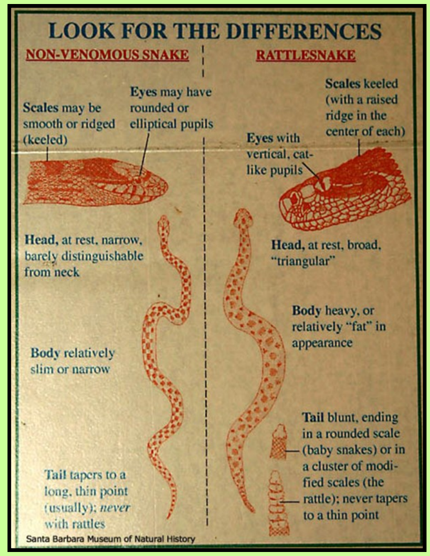
Getting mosquito bites at Big T? Contact Vector Control at **www.glacvcd.org/Contact/Service-Request.aspx**. Want to know when the next treatment is planned or which neighborhoods have reported West Nile virus activity? Sign up for the Vector Control newsletters and email alerts at **www.glacvcd.org/Contact/Newsletter.aspx.**

Species Highlight: Sneaky Snakes

Do you know how to tell the difference between a venomous snake and a non-venomous snake? If you plan on doing any hiking this fall, it might be a good time to learn so you can keep yourself, and others around you, safe. Did you know that there are seven species of rattlesnakes in California? Or that rattlesnakes are the only type of venomous snake in the state? There's only one species of rattlesnake that can be found out at Big T, the Southern Pacific rattlesnake. Some characteristics of rattlesnakes include bulky, triangular heads, thick or stocky bodies, eyes with slit pupils (much like a cat), and, of course…a rattle! Venomous snakes have obviously triangular-shaped (also described as heart-shaped) heads because they have venom glands located just behind their eyes that create an extra "lump" on either side of their head.

Species of non-venomous snakes that can be found at Big T include gopher snakes, California kingsnake, racers, and garter snakes. Characteristics of non-venomous snakes include narrow heads, thin bodies, eyes with rounded pupils, and tails that taper to a point.

Regardless of whether or not you think a snake is venomous, it's always a good idea to keep a safe distance. Some snakes have toxins in their saliva that are deadly to prey and can cause an unpleasant reaction in humans, but are not deadly. It is also important to never kill a snake just because you are afraid



of it or think it might be venomous. Trying to kill a rattlesnake could increase the risk of being bitten, so its best to leave them alone whenever possible. All snakes (venomous and non-venomous) play a vital role in ecosystems by keeping rodent and other small animal populations in check and removing them from an area can negatively impact the balance of the ecosystem. Furthermore, native snake species (and other wildlife species) are protected under the California Fish and Game Code.

Whenever hiking through areas where rattlesnakes could potentially occur, be cautious! Stay on the trails and watch where you, your dog, or your horse step, especially when stepping over rocks or fallen logs. If you happen to be bitten by a rattlesnake, try to remain calm and seek medical attention immediately.

Upper Left-Gopher Snake, **Lower Left-**Southern Pacific rattlesnake. Photo Credit: Photo by Chris Brown/U.S. Geological Survey. **Right-** MyNaturePlace.org

The Land Before Big T

Aggregate mine. Photo Credit: LA Public Library

Do you know what Big T was before it was a Mitigation Area?

Much of the land within the Big Tujunga Wash Watershed was mined for aggregates, such as sand and gravel (see the April 2014 newsletter for more information on the watershed). Aggregates are a key component of concrete and are the most mined material in the world! Mining in the area around Big T Wash began as far back as 1900 and continues today in limited areas.

Many of the old mining pits in the area have been converted into artificial ponds, including the nearby Hansen Lake and our own Tujunga Ponds! You can also see evidence of a mining facility near the Cottonwood Gate off of Wentworth Street. The foundations of several buildings are still present as well as an old track for mining carts that leads to the edge of a pit where aggregates were hauled up. The track is located in the northwestern corner of the concrete area, where one of the brown-headed cowbird traps is normally set up. Stop by and check it out sometime!

LACDPW acquired the Big T Mitigation Area in the late 1990s and has since conducted activities to restore and enhance habitat impacted by past mining activities.

Want to see what Big T looked like as far back as 1954? Check out **www.historicalaerials.com**. Be sure to put in the latitude and longitude coordinates for Big T as: 34.2656202291735, -118.34553057309.

View of one of the Tujunga Ponds as it looks today. These artificial ponds started as mining pits.

Big Tujunga Word Scramble

Kid's Corner

I	G	Y	P	Z	T	Z	F	S	H	S	O	D	T	R
B	N	R	G	G	O	H	D	A	P	O	H	A	G	G
I	O	V	A	C	P	E	H	N	T	R	T	R	R	L
G	T	I	A	V	A	T	H	T	B	I	J	O	Y	W
T	I	O	K	S	E	D	J	A	B	T	X	M	N	S
U	U	O	F	U	I	L	J	A	U	O	E	Q	G	E
J	Q	E	S	L	H	V	H	N	W	D	V	F	Y	T
U	S	Z	A	L	P	G	E	A	I	X	G	W	W	A
N	O	C	N	E	K	A	N	S	R	E	H	P	O	G
G	M	I	D	G	E	S	E	U	P	W	U	B	B	E
A	V	P	R	M	D	A	G	C	J	E	R	Y	Y	R
C	D	U	Y	T	S	M	W	K	L	E	C	Q	P	G
B	G	B	M	E	B	N	Q	E	D	L	S	I	H	G
Q	S	V	M	R	O	W	T	R	A	E	H	J	E	A
E	F	B	L	A	C	K	F	L	I	E	S	J	W	S

Search for these words used throughout the newsletter in the box to the left

AGGREGATES
BIG TUJUNGA
BLACK FLIES
GOPHER SNAKE
GRAVEL
HABITAT
HEARTWORM
INVASIVE SPECIES
LYME DISEASE

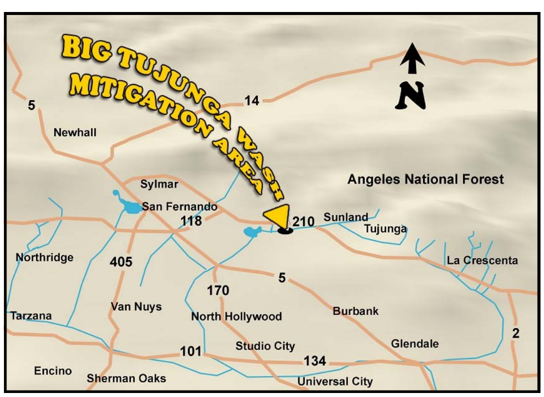
BONUS: SANTA ANA SUCKER

Connect the Dots

What kind of animal do you see? Color in the animal after you have connected the dots.

Where is Big T?

Downstream of Big Tujunga Canyon, right in the heart of Sun Valley, south of the 210 freeway, you'll find a native riparian (water loving plant) natural area filled with cottonwoods, willows, and pools of water that support many native aquatic species. Check out the Big T website for more information at: www.dpw.lacounty.gov/wrd/projects/BTWMA.



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Phone: (626) 458-6139

APPENDIX K

Community Advisory Committee Meeting Agendas and Minutes

Big Tujunga Wash Mitigation Area Project
Community Advisory Committee
2014 Spring Meeting Minutes
April 24, 2014

I. Welcome/Introduction

Meeting attendance sign-in sheet attached.

II. Review of Meeting Agenda

Melanie Morita (County of Los Angeles Department of Public Works [LACDPW]) reviewed the meeting agenda.

III. Discussion of Action Items from the September 26, 2013 Meeting

Action items from the last meeting were reviewed. Each action item is listed followed by the discussion about each item. New action items generated from the discussions are listed in Section VII.

1. **Grace Yu (LACDPW) will contact Wesly Hernandez (Assistant to Councilmember Felipe Fuentes) to advertise Trail Cleanup Day.** The 2013 Trail Cleanup Day was cancelled due to high winds and not rescheduled. *This action item is now complete.*

2. **Terry Kaiser will contact Grace Yu about areas that should be focused on during the upcoming Trail Cleanup Day.** The 2013 Trail Cleanup Day was cancelled due to high winds and not rescheduled. Instead, Terry Kaiser (ETI) met with ECORP biologists on April 18, 2014 to show which areas of the trail system need the most maintenance. *This action item is now complete.*

3. **ECORP will update the incident map prior to the next CAC meeting.** An incident map for incidents reported in the Mitigation Area between October 2013 and April 2014 was provided. ECORP will continue to provide updated incident maps at each CAC meeting. *This action is now complete.*

4. **Grace Yu will contact the Flood Maintenance Division about clearing vegetation between the Mary Bell entrance and Gibson Ranch on Mitigation Area side of Wentworth Avenue.** Terry Kaiser met with the Flood Maintenance Division and the overgrown vegetation issue was addressed. *This action item is now complete.*

5. **ECORP will research the maintenance required for fish screens in case LACDPW decides to pursue the installation of screens at the outlet of the West Pond to prevent tilapia from entering Haines Canyon Creek.** Information on fish screen installation and maintenance was provided to LACDPW concerning tilapia entering Haines Canyon Creek. *This action item is now complete.*

IV. Ongoing and New Discussion Items

1. Trail Cleanup Day

The 2013 Trail Cleanup Day, originally scheduled for October 5, 2013, was cancelled because of high winds. Due to drought conditions and an increase in organized community cleanup events throughout the year, it was determined that the Mitigation Area was fairly clear of trash and debris. Therefore, this event was not rescheduled. Terry Kaiser suggested that a summer Trail Cleanup Day might be a better option. The event could possibly be held in July or August, towards the end of the breeding bird season. LACDPW will discuss this further with ECORP Consulting (ECORP).

2. Mitigation Area Email Address

The Mitigation Area now has its own email address, BTWMA@dpw.lacounty.gov, for site users to report issues at the site. Both Grace Yu and Melanie Morita (LACDPW) currently have access to this email as will any future LACDPW project managers. Visitors of the Mitigation Area are encouraged to use this email to report incidents.

3. Councilmember Fuentes Visit to the Mitigation Area

The community walk with Councilmember Fuentes in April 2014 was postponed and will be rescheduled later in the year.

4. Site and Security Issues

- A map of the incidents that have occurred in the Mitigation Area since the last CAC meeting was distributed. This map will continue to be updated prior to each CAC meeting and distributed at the meeting to inform the community about homeless encampments and other site issues within the Mitigation Area.

- Two homeless encampments were found this past week during exotic plant removal activities. ECORP will map the locations of both encampments and send them to LACDPW to address. One homeless camp was located north of Gibson Ranch in approximately the same location that one was reported in late 2013.

- Two fishermen were noticed on site in the past few weeks. Fishermen have been typically observed in the mornings near the ponds. The two fishermen were reported to be complaining that they weren't catching anything.

- Terry Kaiser reported that a trail adjacent to Big Tujunga Wash along the western boundary of the Mitigation Area is being eroded away, which has resulted in the trail being undercut. ECORP will send biologists out to the Mitigation Area to locate and assess the undercut trail.

- ECORP biologists noted yucca stalks being cut in the upland area again this year. ECORP will find out from their biologists if the stalks were cut while the plant was in bloom or if the stalk was already dried up when severed.

- The CAC was advised to call 911 for emergencies at the Mitigation Area. If a minor incident is observed, then the Sheriff's Department should be contacted.

Once the incident has been reported to the Sheriff's Department then LACDPW should be notified so they can conduct follow up on the incident.

5. **Streambed Alteration Agreement Renewal**
The Streambed Alteration Agreement expired on March 31, 2014. LACDPW is working with CDFW on the renewal requirements.

6. **Equine Advisory Committee**
The Equine Advisory Committee received a grant from the National Parks group to conduct a Geographic Information Systems (GIS) mapping effort of trails associated with the area north and east of Foothill Blvd. Mary Benson requested GIS data of the trails within the Mitigation Area from LACDPW. LACDPW will work with Mary Benson to obtain the requested files.

7. **Community Cavalry**
Officer Don Boon, who organized the Community Cavalry in the past, is no longer the Senior Lead Officer for the Mitigation Area. A new lead has not yet been appointed. Captain Malinowski, with the Foothill Community Police Station, has taken over the Community Cavalry for the time being, and is the best person to contact regarding the cavalry. The Community Cavalry is under the wing of Los Angeles Police Department.

The Foothill Mounted Patrol has been officially adopted by the Los Angeles Fire Department. Los Angeles Police Department could no longer provide insurance for the Foothill Mounted Patrol, but because they are now under the Fire Department they are covered by the City of Los Angeles' insurance plan. Rene Herrera would be the contact for the Foothill Mounted Patrol.

8. **Future CAC meetings**
CAC meetings will now occur on a yearly basis instead of semi-annually. Meetings will be held in the spring of each year. Newsletters will continue to be produced twice a year. If the CAC has any items that need to be addressed, they should contact LACDPW using the new Mitigation Area email address.

V. Current Status of Programs

1. **Exotic Plant Eradication Program**
One effort is currently being conducted for April 2014; work began on April 21 and will continue through April 29, 2014. The last exotic plant removal effort was conducted December 16 through 18, 2013. The next effort is scheduled for mid-July 2014. Trail maintenance will also be conducted at this time.

2. **Water Lettuce Control/Monitoring**
Water lettuce has not been observed in the ponds since the previous CAC meeting. ECORP is continuing to monitor the ponds for presence of water lettuce.

3. **Exotic Wildlife Removal/Monitoring**
The first of four efforts was conducted April 7 through 9, 2014. The second effort will occur April 29 through May 2, 2014 to avoid algal blooms that affect visibility in

the ponds during the summer months. Tilapia were not observed during the first removal effort in April 2014. ECORP is continuing to monitor the ponds for presence of tilapia.

4. **Water Quality Monitoring**
   Results were normal for 2013 water quality sampling on site. The next water quality monitoring will be conducted in November 2014.

5. **Focused Surveys**
   Focused wildlife surveys have not been scheduled for 2014.

6. **Brown-headed cowbird Trapping**
   The trapping for 2014 began on April 1 and will continue through June 30. Four traps were placed in the same locations as previous years throughout the Mitigation Area.

7. **Trails Restoration/Maintenance**
   A site visit was conducted on February 19, 2014 to assess damage made to the Mitigation Area by a small fire near the Mary Bell entrance. The fire broke out over President's Day weekend (February 15 through 17, 2014) and the cause was unknown. The biologists mapped the burn area and documented the plant species affected. The area will be monitored for exotic plant growth.

   A trails assessment site visit was conducted on April 18, 2014. Problem areas identified included poison oak encroachment on trails and narrowed trails from vegetation overgrowth. ECORP biologists are currently working with their landscape contractor to clear blocked trails and trim back poison oak from trails during the exotic plant removal effort currently underway.

8. **Public Outreach Program**
   The public outreach program will begin Memorial Day weekend (May 24 through 26, 2014). ECORP's bilingual biologists will conduct site visits to speak with equestrian and non-equestrian site users on weekends, including holidays.

VI. Schedule Next CAC Meeting

The next CAC meeting is scheduled for Thursday, April 30, 2015, from 6:30 p.m. to 8:30 p.m. at Hansen Yard, 10179 Glen Oaks Boulevard, Sun Valley, California 91352

VII. New Action Items

1. LACDPW will discuss the possibility of moving the Trail Cleanup Day to a late summer date with ECORP.

2. ECORP will send the locations and coordinates of the homeless encampments found in the Mitigation Area to LACDPW.

3. LACDPW will work with ECORP and CDFW to renew the Streambed Alteration Agreement.

4. Grace Yu will inform the CAC of the rescheduled community walk with Councilmember Felipe Fuentes.

5. ECORP will schedule a trails visit in the coming weeks to assess the undercut trail in near the South Wheatland Entrance. They will contact Terry Kaiser to confirm the exact location of the issue.

6. LACDPW will work with Mary Benson to provide GIS data for the trail system at the Mitigation Area.

7. ECORP will confirm with its biologists if yucca stalks are being cut before they flower or after they have dried up.

Big Tujunga Wash Mitigation Area Community Advisory Committee Meeting

April 24, 2014

	Attendees	Organization	Phone	Email
1	Debbie Pepe	LACo. Parks & Rec	661-944 2743	dpepe@parks.lacounty.gov
2	ELEKTRA KRUGER	HDPAB, FTDNC	818-352-6220	KALKRUGERS@earthlink.net
3	GERHARD KRUGER	SHPOA	818-352 6220	" " "
4	MARY BENSON	LAEAC	818.720.7062	~~t~~ c-marybe msn.com
5	Mari Quillman	ECORP	714 648-0630	mquillman@ecorpconsulting.com
6	Randy Hammock	ETI	818 612 7421	rhammock.hur@gmail.com
7	TERRY KAISER	ETI HANSEN DAME ADV. COM.	818-2620315	HOCONCERNS@CA.RR.COM
8	Kristen (Mobraaten) Wasz	ECORP	714 721-3793	KWASZ@ECORPCONSULTING.COM
9	Melanie Morita	LACDPW	(626)458-6196	mmorita@dpw.lacounty.gov
10	GRACE YU	LACDPW	(626)458-6139	gyu@dpw.lacounty.gov
11				
12				
13				
14				

APPENDIX L

Public Outreach Memo

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

September 24, 2014
(2014-003.003/008/8)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: Public Outreach for May through September 2014 for the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Yu:

In an ongoing effort to enhance and protect the existing habitat at the Big Tujunga Wash Mitigation Area (Mitigation Area) for native wildlife species, ECORP Consulting, Inc. (ECORP) has continued its public outreach efforts to non-equestrian and equestrian user-groups who regularly visit the Mitigation Area for recreational purposes.

Outreach Efforts

On site interviews and education about the Mitigation Area were conducted by ECORP biologists Alfredo Aguirre and Jerry Aguirre on twelve different occasions. Outreach efforts took place on May 25 and 26, June 8, 15, and 22, July 5, 6, and 27, August 10, 23, and 31, and September 1, 2014. All outreach efforts took place during the peak hours of 10:00 AM to 3:00 PM.

ECORP biologists walked the established trails system and popular swimming/wading locations in the Haines Canyon Creek and Tujunga Ponds areas and spoke with visitors they encountered. Visitors that were interviewed fell into one of two groups: non-equestrian user groups or equestrian user groups.

During these twelve outreach visits, all non-equestrian and equestrian visitors encountered were offered an educational brochure outlining the County of Los Angeles Department of Public Works (LACDPW) conservation goals for the Mitigation Area. The educational brochure contained the Mitigation Area's rules and regulations, as well as a list of the sensitive species found on the site. During each outreach event, ECORP biologists provided information on why specific activities are prohibited in the Mitigation Area and the extent of their impact on the sensitive species. Most outreach events consisted of informal interviews and short question and answer sessions. Questions from the visitors were primarily about the purpose of the Mitigation Area's rules and regulations and the types of sensitive resources found in the Mitigation Area. In addition to these questions, social media awareness of the outreach efforts was a topic discussed frequently amongst the equestrian users. Most equestrian and non-equestrian users were responsive to the public outreach efforts.

Non-Equestrian Family Groups

A total of 40 non-equestrian site users were encountered during the twelve outreach visits. Most of these individuals were situated along the Haines Canyon Creek and the Tujunga Ponds. The larger family groups were observed arriving on the site with the intent to picnic, swim, and fish. All site users were offered an informational brochure about the site, informed about activities that are prohibited in the Mitigation Area, and asked if they had any questions on any of the information presented. Some of the issues observed included alcohol consumption, rock dams in the creek, swimming in the creek, littering, fishing, and dogs off leash (Figures 1 through 5).

All of the groups and individuals that were encountered were mostly receptive after being educated on the resources and rules within the Mitigation Area. One encounter with an intoxicated male occurred during the site visit conducted on June 15, 2014. The man was observed carrying beer into the Mitigation Area and was given a brochure. Many of the people on the site agreed to not use grills, start fires, smoke cigarettes, fish, or litter, but many continued to swim and wade in the creek even after being told that swimming was not permitted.

Effects on Sensitive Habitat by Non-Equestrian Family Groups

The largest impacts on sensitive habitat by non-equestrian family groups were caused by swimming and rock dam construction within Haines Canyon Creek. There are a few unauthorized swimming areas that have become popular spots for non-equestrian family groups to congregate, picnic, and swim. The most popular location for picnickers and swimmers is the unauthorized swimming area situated approximately 1,000 feet west of the South Wheatland Avenue entrance. During the outreach site visit conducted on August 31, 2014, it was noted that this area had a large accumulation of trash and discarded clothing.

One of the most detrimental activities associated with the popular swimming hole is the creation of rock dams designed to make the swimming areas deeper. The construction of these rock dams has persisted despite the outreach efforts and constant removal of the dams. The dams in this area consist of large dead branches, boulders, debris, trash, and plastic placed across a narrow portion of the creek that reduced the natural flow and created a buildup of water. The changes to the natural flow of the creek can be detrimental to the sensitive species of fish within the creek. The rock dams reduce the flow of the creek and create large pools of water that are favorable habitat for the exotic, invasive aquatic species, such as the red swamp crayfish (*Procambarus clarkii*) and American bullfrog (*Lithobates catesbeianus*), that prey on native species such as the federally listed (threatened) Santa Ana Sucker (*Catostomus santaanae*). These pools reduce suitable breeding habitat for sensitive fish species as well.

In an effort to reduce these effects, non-equestrian family groups were approached and educated during the outreach site visits. All rock dams were documented and reported for prompt removal. During the outreach site visit conducted on July 5, 2014 a woman was identified by an equestrian user as being the community member responsible for posting bilingual signage asking the site users to pick up after themselves before leaving the site.

Equestrian User Groups

Equestrians were approached and interviewed along the established trails, in the upland areas of the Mitigation Area, and near the Tujunga Ponds (Figure 6). Equestrians were offered the bilingual brochure and informed about many of the unique aspects of the Mitigation Area. Outreach events with equestrians were usually brief with most of the equestrian site visitors being receptive to the outreach efforts. Most questions to the ECORP biologists were about the conservation and trail maintenance efforts taking place at the Mitigation Area. Several riders, including an equestrian site activist, stated that they were interested in establishing connections through social media to communicate scheduling information for various activities and conservation efforts conducted at the Mitigation Area by ECORP, LACDPW, and various equestrian groups. Some of the issues observed from equestrian users included alcohol consumption and dogs off leashes.

Riders were reminded to cross the creek single file to minimize erosion along the banks, and to stay on the established trails. Additional awareness education was provided to the riders regarding their horses leaving excrement in the waterways and the effects this has on the sensitive habitat. Riders were asked to call LACDPW if they notice any suspicious activity in the Mitigation Area.

Effects on Sensitive Habitat by Equestrian Site Visitors

Equestrian site visitors can affect sensitive terrestrial habitat by traveling off of the established trail systems and disturb sensitive aquatic habitat when traveling through Haines Creek. Several equestrian riders were observed consuming alcohol during one of the outreach site visits, which could contribute to litter accumulation if not properly disposed of. The creation of new trails and traveling off of the established trails can be avoided with continued trail maintenance and equestrian site visitor education.

I hereby certify that the statements furnished above present the data and information required for this memo, and that the facts, statements, and information presented are true and correct to the best of my knowledge and belief.

SIGNED: ____________________________ DATE: September 24, 2014

Carley Lancaster
Assistant Biologist

Figure 1. Debris obstruction blocking the natural flow of Haines Canyon Creek on May 25, 2014.

Figure 2. A large rock dam present at the popular swimming area near the South Wheatland entrance on August 31, 2014 (Labor Day Weekend).

Figure 3. Trash present at the popular swimming area near the South Wheatland entrance on August 31, 2014 (Labor Day Weekend).

Figure 4. Beer can on the trail to Tujunga Ponds on June 15, 2014.

Figure 5. Trail obstruction on trail to Tujunga Ponds May 25, 2014.

Figure 6. Equestrian user on trail in the upland area on July 6, 2014.

APPENDIX M

Special Assessment Memo

March 3, 2014
(2010-116.010/009/9)

Grace Yu
Water Resources Division
County of Los Angeles, Department of Public Works
900 S. Fremont Ave.
Alhambra, CA 91803-1331

SUBJECT: Memorandum for Post-fire Damage Assessment (February 2014) in the Big Tujunga Wash Mitigation Area, Los Angeles County, California

Dear Ms. Yu:

This memorandum serves as a damage assessment of a fire that burned in the Big Tujunga Wash Mitigation Area (Mitigation Area) on February 17, 2014 near the Mary Bell Entrance. The fire occurred on the Monday of a holiday weekend when pedestrian and equestrian traffic inside the Mitigation Area was likely increased.

The site visit was conducted by ECORP Consulting, Inc (ECORP) biologists Kristen Mobraaten and Amy Trost on February 19, 2014. Fire damage was restricted to a small area approximately 300 feet from the Mary Bell Entrance (Figures 1 through 3). Plants burned include California buckwheat (*Eriogonum fasciculatum*), white sage (*Salvia apiana*), an American sycamore (*Plantanus occidentalis*), and a coast live oak (*Quercus agrifolia*). The oak appeared to have been either unhealthy prior to the fire or already dead before it was burned from the fire. The American sycamore was mostly intact, only a small portion of the canopy was burned (Figure 4). There was no evidence of a campfire or other obvious cause of fire in the area. ECORP recommends that no action needs to be taken; the burned area will likely recover naturally.

After the damage assessment the biologists conducted a general site visit of the Mitigation Area. During the site visit, several mountain bike tracks were observed in the upland area near the Cottonwood gate (Figure 5). Erosion on the trail leading from the upland area to the trail adjacent to Haines Canyon Creek was also observed (Figure 6). This issue has previously been documented but a recent photo was included to update the status of the erosion. Also during the site visit, a dam comprised of branches and other woody debris was observed near the popular picnic area (North American Datum 1983 [NAD 83], Universal Transverse Mercator [UTM] 11S 375184E, 3792580N) and was removed by the biologists during the site visit (Figures 7 and 8). A downed tree was also observed blocking the trail that runs parallel to Haines Canyon Creek and will need to be removed during the next trail maintenance site visit (NAD 83, UTM 11S 421888E, 3734782N; Figure 9).

I hereby certify that the statements furnished above present the data and information required for this memorandum, and that the facts, statements, and information are true and correct to the best of my knowledge and belief.

SIGNED: Amy Leigh Trost DATE: March 3, 2014

Amy Leigh Trost
Assistant Biologist

Location: \\vrocklin\mapping data\2010\2010-116 Big Tujunga Wash Mitigation Area\MAPS\Meeting_Maps_and_Analysis\2014-02-21 Fire\Tujunga_Fire_2014.mxd (EKeethe; JSwager; DWagnon; MGuidry, 2/21/2014)

Aerial Source: NAIP 2012
Map Date: 2/21/2014

Fire Incident February 17, 2014

2010-116 Big Tujunga Wash Mitigation Area

ECORP Consulting, Inc.
ENVIRONMENTAL CONSULTANTS

Figure 2. Area damaged by fire on February 17, 2014.

Figure 3. Area near the Mary Bell entrance damaged by fire.

Figure 4. American sycamore canopy partly burned.

Figure 5. Mountain bike tracks observed near Cottonwood gate.

Figure 6. Erosion on trail leading to Haines Canyon Creek.

Figure 7. Dam near popular picnic area.

Figure 8. Haines Canyon Creek after dam removal.

Figure 9. Tree blocking trail near Haines Canyon Creek.