

**Year 1 Annual Monitoring Report  
for the  
Devil's Gate Reservoir Restoration Project  
(Phase 2) Onsite Habitat Mitigation**

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**Pasadena, Los Angeles County, California**

**Prepared for:**

Los Angeles County Public Works

**Prepared by:**



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**TABLE OF CONTENTS**

1.0 INTRODUCTION ..... 1

    1.1 Project Location ..... 2

2.0 ONSITE HABITAT MITIGATION OVERVIEW ..... 2

    2.1 General Location of Mitigation Areas ..... 2

    2.2 Mitigation Requirements ..... 2

    2.3 Ownership Status ..... 7

    2.4 Mitigation for Impacts to Protected Trees ..... 7

3.0 SUMMARY OF ONSITE HABITAT MITIGATION ACTIVITIES ..... 7

    3.1 Site Preparation ..... 8

    3.2 Irrigation Strategy ..... 8

    3.3 Seeding ..... 8

    3.4 Container Plant Installation ..... 9

    3.5 Grading and Recontouring ..... 9

    3.6 Site Protection ..... 9

4.0 SUMMARY OF YEAR 1 MAINTENANCE ACTIVITIES ..... 12

    4.1 Maintenance of Onsite Habitat Mitigation Areas ..... 12

        4.1.1 Nonnative Weed Abatement ..... 12

        4.1.2 Supplemental Planting ..... 12

        4.1.3 Irrigation Maintenance ..... 12

        4.1.4 Pest Control ..... 13

        4.1.5 Erosion Control ..... 13

        4.1.6 Vandalism ..... 13

5.0 SUMMARY OF YEAR 1 MONITORING ACTIVITIES ..... 13

    5.1 Monitoring of Onsite Habitat Mitigation areas ..... 13

    5.2 Horticultural Monitoring Summary ..... 14

        5.2.1 Soil Moisture and Irrigation Functionality ..... 14

        5.2.2 Native Plant Germination ..... 14

        5.2.3 Container Plant Health ..... 14

        5.2.4 Nonnative and Invasive Plant Species ..... 15

        5.2.5 Herbivory, Plant Pests, and Plant Disease ..... 15

        5.2.6 Erosion Issues ..... 15

        5.2.7 Photo Documentation ..... 15

    5.3 Botanical Monitoring Summary ..... 16

        5.3.1 Botanical Monitoring Methods ..... 16

5.3.2	Botanical Monitoring Results.....	19
6.0	ACHIEVEMENT OF PERFORMANCE STANDARDS.....	27
6.1	Container Plant Survivorship .....	28
6.2	Native Plant Cover .....	28
6.3	Nonnative Plant Cover .....	28
6.4	Native Plant Species Richness.....	28
7.0	DISCUSSION .....	29
8.0	REFERENCES.....	30

**LIST OF FIGURES**

Figure 1.	Project Vicinity .....	4
Figure 2.	Project Location.....	5
Figure 3.	Onsite Habitat Mitigation areas.....	6
Figure 4.	Site Protection Boundaries .....	11
Figure 5.	Transect Locations Onsite Habitat Mitigation areas.....	17
Figure 6.	Transect Locations Reference Sites .....	18

**LIST OF TABLES**

Table 1.	Onsite Habitat Mitigation Site Monitoring Events.....	13
Table 2.	Container Plant Survivorship .....	19
Table 3.	Percent Native/Nonnative Cover Mitigation Areas .....	21
Table 4.	Percent Native/Nonnative Cover Reference Sites.....	24
Table 5.	Native Species Richness Mitigation Areas.....	25
Table 6.	Native Species Richness Reference Sites .....	25
Table 7.	City of Pasadena Groundwater Monitoring Results .....	26
Table 8.	Performance Standards for Onsite Mitigation Areas .....	27

**APPENDICES**

- Appendix A - Streambed Alteration Agreement Notification No. 1600-2015-0263-R5
- Appendix B - Year 1 Plant Species Compendium
- Appendix C - Year 1 Photo Documentation

## 1.0 INTRODUCTION

Los Angeles County Public Works (LACPW) completed Phase 2 of habitat restoration implementation for the Devil's Gate Reservoir Habitat Restoration Project (Project) on May 5, 2021. Habitat restoration is being implemented to comply with the compensatory mitigation requirements in Conditions 3.1, 3.2, and 3.5 of the Lake or Streambed Alteration Agreement (LSAA) (Notification No. 1600-2015-0263-R5 dated March 21, 2017) executed between the California Department of Fish and Wildlife (CDFW) and the Los Angeles County Flood Control District (LACFCD). Two amendments to the LSAA were issued by the CDFW in response to modifications to the boundaries of the Project (dated July 17, 2018) and to address the proposed offsite mitigation component (dated July 16, 2018). The LSAA and the LSAA amendment for the onsite mitigation are included in Appendix A. Implementation of habitat mitigation for Phase 2 was conducted in mitigation areas DG-W-1 (Johnson Field), DG-2, DG-2 New Channels, DG-2 WOUS, DG-W-2 (Mining Pit), DG-W-2 Outlet, DG-4 Sheet Flow (northern), and DG-SF-1. Other areas that were initially included in Phase 2 include DG-4 Sheet Flow (southern), DG-4 WOUS, DG-4 Drainage, and DG-SF-2; however, due to the dynamic nature of these areas and/or uncertainty of hydrologic conditions prior to the completion of sediment removal for the Project, these areas were not planted or seeded during Phase 2. These areas were included in the Phase 2 weed abatement activities and a portion of DG-4 WOUS was included in the Phase 2 grading and recontouring effort. It is anticipated that most, if not all, of these areas will be planted with willow (*Salix* sp.) and mulefat (*Baccharis salicifolia*) stakes during Phase 3 of the habitat restoration. For the purposes of this report, these areas were excluded from the Phase 2 botanical monitoring effort and will not be addressed in this report. Implementation of habitat mitigation was conducted according to the Final Habitat Restoration Plan (HRP) for the Project (dated November 2018), which addresses the impact areas associated with the Project and the onsite compensatory mitigation areas at the Project site (ECORP 2018). According to the HRP, onsite compensatory mitigation will include the creation, restoration, and enhancement of native habitats with the purpose of providing quality habitat for an abundance of wildlife including the least Bell's vireo (*Vireo bellii pusillus*), which is listed as endangered under the Federal Endangered Species Act (ESA) and the California Endangered Species Act (CESA) (CDFW 2018).

The Project, which includes an initial removal of an estimated 1.7 million cubic yards (cy) of sediment to establish a Permanent Maintenance Area (PMA), will restore flood capacity and establish a reservoir management system to maintain the flood control capacity of the reservoir. Subsequently, annual maintenance and episodic maintenance will be conducted in the established PMA to remove accumulated sediment and to ensure continued flood control capacity. Removal of sediment will not occur outside of the boundaries of the PMA.

This Year 1 Annual Monitoring Report has been prepared to address the onsite habitat mitigation requirements pursuant to the LSAA for the Project. This report documents the progress of onsite mitigation that the LACPW is responsible for implementing and maintaining for a period of five years for riparian habitats and ten years for upland habitat. Annual reports will be provided until established success criteria have been met and CDFW has deemed the mitigation successful.

## 1.1 Project Location

The Project is located in the City of Pasadena (City) in Los Angeles County on the Pasadena United States Geological Survey (USGS) California 7.5' topographic quadrangle (Figure 1). More specifically, the Project is located within the upper portion of the Arroyo Seco Watershed within the City's Hahamongna Watershed Park (Figure 2). The Project site is located along an approximately 4,754-foot linear section of the Arroyo Seco drainage and alluvial fan, which is an area subject to change and disturbance due to erosion, runoff, and sediment movement resulting from runoff that flows south from the Angeles National Forest. The elevation of the Project site ranges from approximately 985-feet above mean sea level (msl) behind the dam, to approximately 1,100-feet above msl at the northern end.

## 2.0 ONSITE HABITAT MITIGATION OVERVIEW

### 2.1 General Location of Mitigation Areas

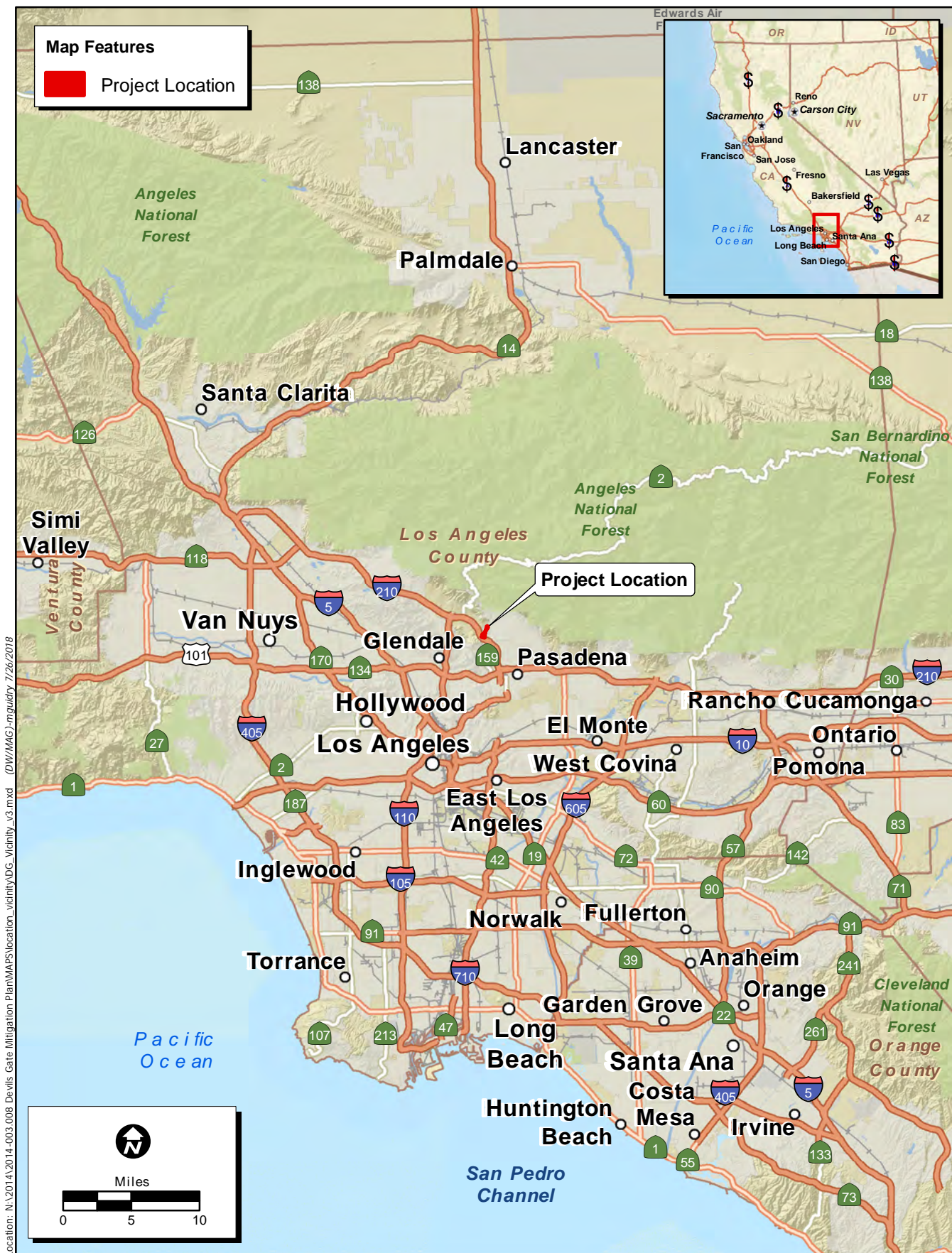
The Phase 2 onsite habitat mitigation areas (hereafter referred to as mitigation areas) are located to the east and west of the Devil's Gate Reservoir (Reservoir) just outside of the PMA for the Project (Figure 3). Mitigation areas DG-W-1 (Johnson Field), DG-2, DG-2 New Channels, and DG-2 WOUS, are located on the east side of the Reservoir and mitigation areas DG-W-2 (Mining Pit), DG-W-2 Outlet, DG-4 Sheet Flow (northern), and DG-SF-1 are located on the west side of the Reservoir. The mitigation areas are encompassed by the Hahamongna Watershed Park, which is heavily used for recreational activities, such as hiking, bird watching, horseback riding, and disc golf.

### 2.2 Mitigation Requirements

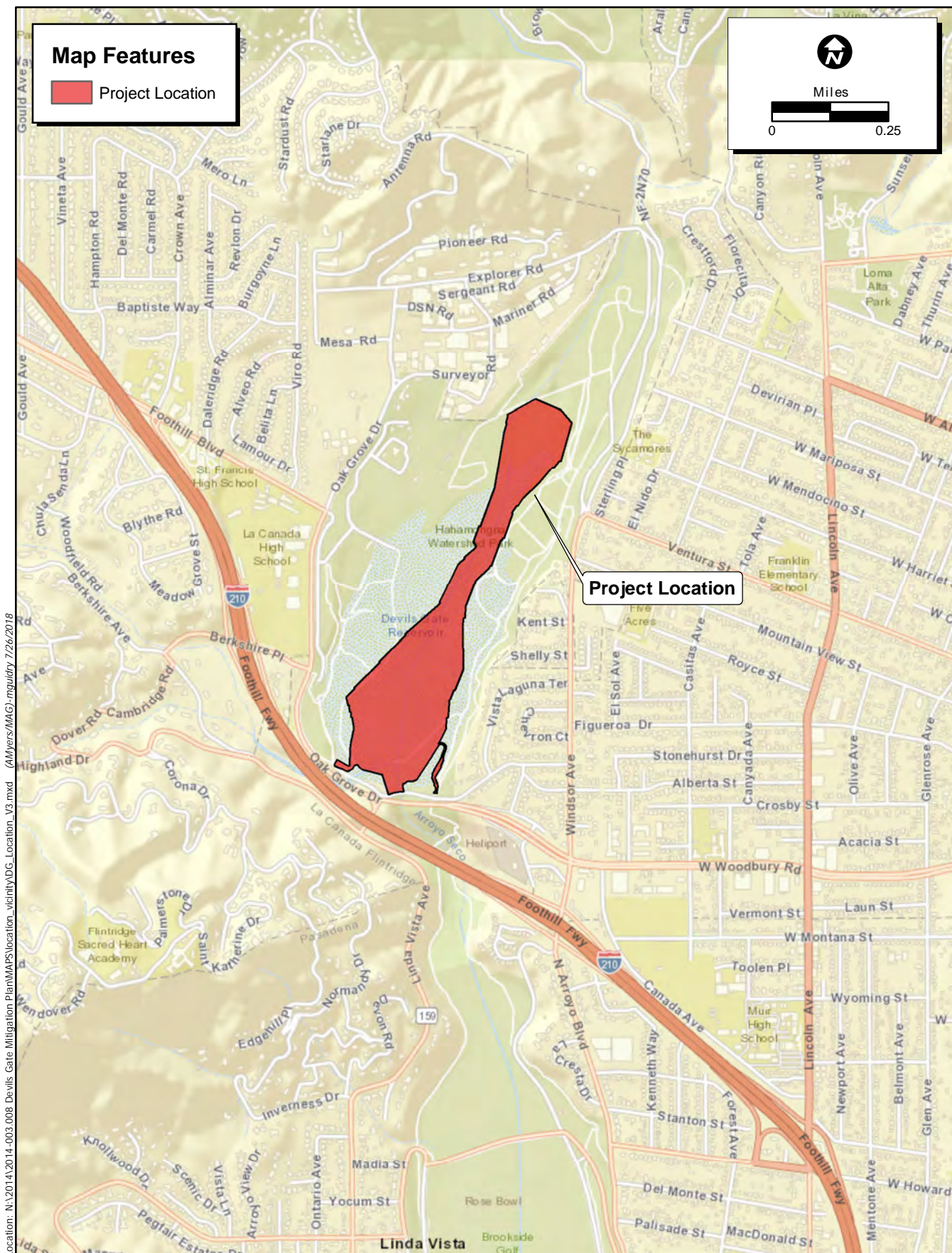
The LSAA issued by the CDFW for the Project on March 21, 2017, provided a breakdown of the required onsite and offsite compensatory mitigation for permanent impacts (Condition 3.1) as well as the mitigation required for the temporary impacts of the Project (Condition 3.2). The LSAA amendment issued on July 17, 2018, addressed a revision to the Project boundary that changed the overall impacts of the Project. In addition, the LSAA amendment included a revision to Condition 3.1, which addressed the changes in the required onsite mitigation. LACPW is currently in the process of preparing an LSAA amendment application that will account for changes to the permitted Project boundary resulting from clearing that occurred outside of the permitted Project boundary and in response to a legal settlement that was finalized. The conditions of the legal settlement resulted in minor changes to the Project boundary and a conversion of some permanent impact areas to temporary impacts. The HRP, which will be revised following the issuance of the amended LSAA, will incorporate all changes related to the legal settlement. Future annual reports will be based on the revised HRP requirements.

The original design of the onsite mitigation for the Project, which is what this annual report is based upon, included the creation, restoration, and enhancement of 69.94 acres subject to CDFW jurisdiction located outside of the PMA. The 69.94 acres of mitigation is required to compensate for permanent impacts to 41.98 acres of CDFW jurisdiction. The LSAA also requires mitigation for temporary impacts to 16.17 acres by delaying the impacts to these areas until the third year of sediment removal and replanting them within 24 months of the impacts. In addition, the Episodic Maintenance Area (EMA), or side slopes of the

PMA, which encompasses 7.34 acres according to the original design, will be replanted with native vegetation, including shrub and annual species associated with riparian scrub and alluvial scrub vegetation communities. Allowing the side slopes of the Annual Maintenance Area (AMA) to support native vegetation will provide additional compensatory mitigation by creating a riparian scrub buffer habitat between the areas that are actively managed in the annual maintenance area and the compensatory mitigation areas. The side slopes may be periodically affected by re-contouring if large



**Figure 1. Project Vicinity**



**Figure 2. Project Location**



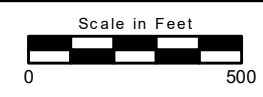
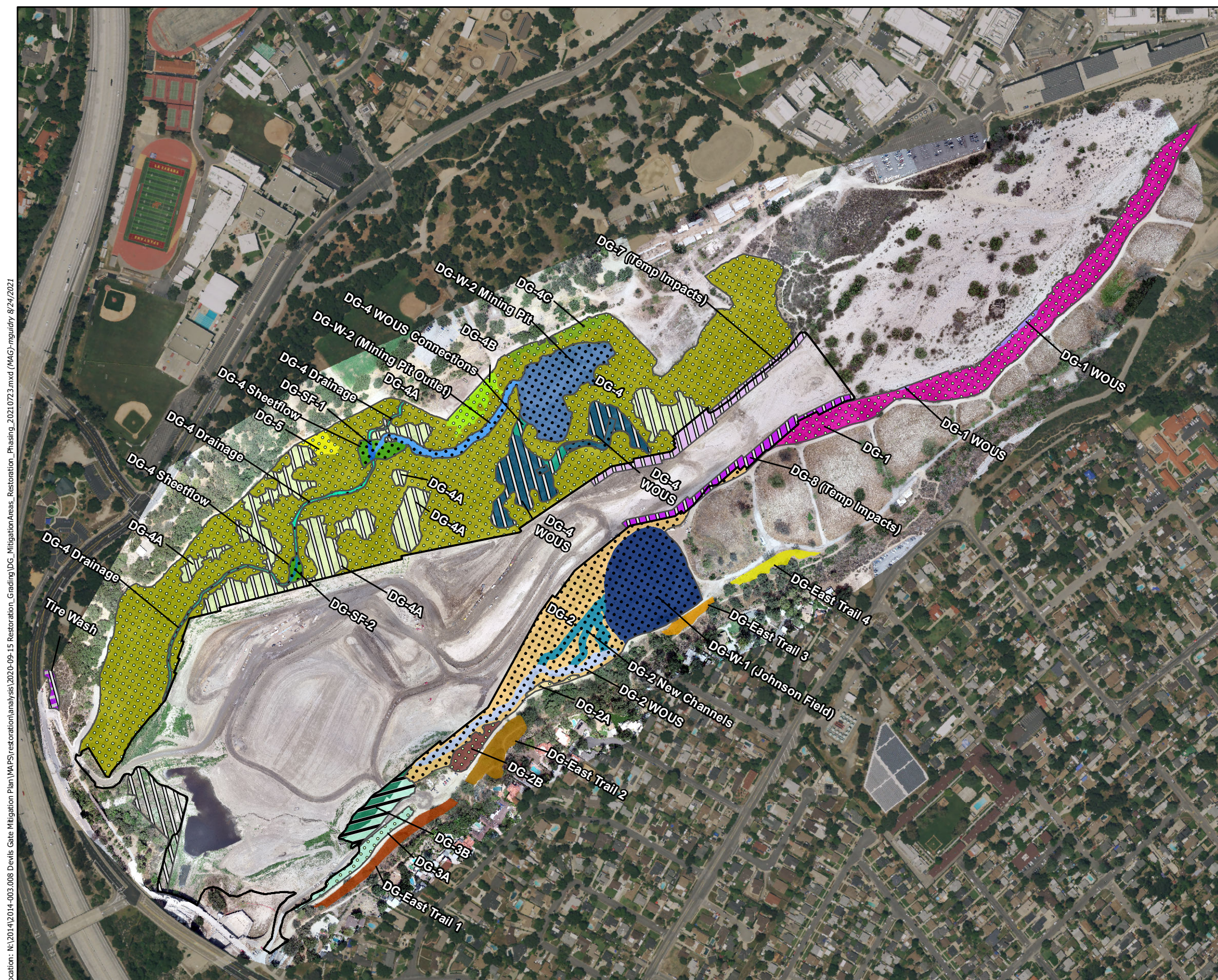
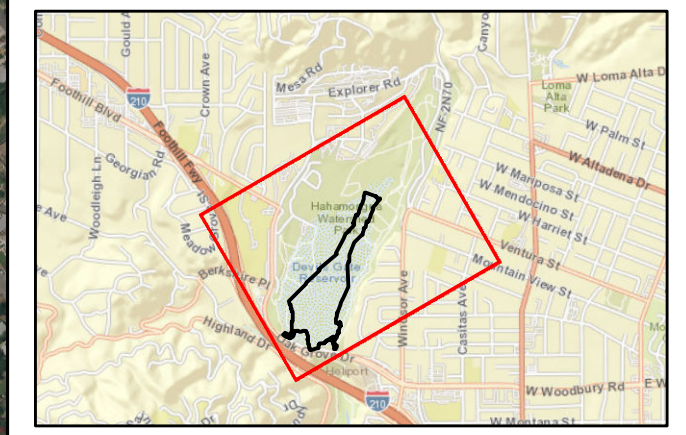
Location: N:\2014\2014-003.008 Devils Gate Mitigation Plan\WPS\restoration\analysis\2020-09-15 Restoration\_Grading\DG\_MitigationAreas\_Restoration\_Phasing\_20210723.mxd (MAG) mguldry, 8/24/2021

**Figure 3.**  
**Onsite Habitat Mitigation Areas**

**Map Features**

	Final Design Boundary		DG-4 WOUS
<b>Restoration Phasing</b>			
	Phase 1 - Completed		DG-4 WOUS Connections
	Phase 2 - Completed		DG-4A
	Future Phase 3		DG-4B
	Future Phase 4		DG-4C
<b>Mitigation Areas</b>			
	DG-1		DG-7 (Temp Impacts)
	DG-1 WOUS		DG-8 (Temp Impacts)
	DG-2		DG-East Trail 1
	DG-2 New Channels		DG-East Trail 2
	DG-2 WOUS		DG-East Trail 3
	DG-2A		DG-East Trail 4
	DG-2B		DG-SF-1
	DG-3A		DG-SF-2
	DG-3B		DG-W-1 (Johnson Field)
	DG-4		DG-W-2 (Mining Pit)
	DG-4 Drainage		DG-W-2 (Mining Pit Outlet)
	DG-4 Sheetflow		Tire Wash

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



sediment deposits bury portions of the side slopes. In this case, the sediment will be removed, and the side slopes will be re-contoured and allowed to naturally revegetate.

Onsite compensatory mitigation will include invasive and nonnative weed abatement, planting with native container stock, planting pole cuttings for specific species, seeding with native seed material, and maintaining and monitoring each mitigation area for a period of five years for riparian areas and ten years for upland areas, or until all success criteria have been met.

## 2.3 Ownership Status

The mitigation areas are located on land owned by the City of Pasadena.

## 2.4 Mitigation for Impacts to Protected Trees

During the course of construction for the Project, unavoidable impacts to trees protected under the City of Pasadena City Trees and Tree Protection Ordinance and/or the County of Los Angeles Oak Tree Ordinance occurred. A total of 0.606 acre of direct and indirect impacts to native tree canopy protected under the City of Pasadena City Trees and Tree Protection Ordinance, including 0.025 acre of impacts to western sycamore (*Platanus racemosa*), 0.159 acre of impacts to Fremont's cottonwood (*Populus fremontii*), and 0.421 acre of impacts to coast live oak (*Quercus agrifolia*), occurred as a result of the clearing in the Initial Sediment Removal Area (ISRA) and access road construction. In addition, impacts to coast live oak canopy that occurred during construction activities are also protected under the County of Los Angeles Oak Tree Ordinance. Per Condition 2.11 of the LSAA and Mitigation Measure BIO-7 (MM-BIO-7) of the Revised Final Environmental Impact Report (ECORP 2017), protected trees impacted during construction activities will be replaced at a 1:1 ratio by canopy acreage. During Phase 1 of restoration activities, a total of 686 Fremont's cottonwoods (1-gal containers) and 474 coast live oaks (300 acorns and 174 1-gallon containers) were planted. Due to concerns with the polyphagous shot hole borer beetle (*Euwallacea* sp.) infestations in populations of western sycamore, this species was not planted during Phase 1 of restoration activities. If conditions allow, this species will be planted during future phases of restoration.

## 3.0 SUMMARY OF ONSITE HABITAT MITIGATION ACTIVITIES

Habitat restoration implementation was conducted by Natures Image and Griffith Company (Griffith), with oversight by Carley Lancaster (Restoration Ecologist, ECORP Consulting, Inc. [ECORP]), Josh Corona-Bennett (Senior Restoration Ecologist, ECORP), Mari Quillman (Biological Resources Program Manager, ECORP), Margie Pfeffer (Biologist, Stillwater Sciences [Stillwater]), and Wendy Katagi (Senior Manager, Watershed & Ecosystem Restoration Services, Stillwater). Natures Image is a subcontractor to Stillwater and Griffith, Stillwater, and ECORP are contractors to LACPW. Implementation of habitat restoration for Phase 2 was conducted in mitigation areas DG-W-1 (Johnson Field), DG-2, DG-2 New Channels, DG-2 WOUS, DG-W-2 (Mining Pit), DG-W-2 Outlet, DG-4 Sheet Flow (northern), and DG-SF-1. A total of two vegetation communities were included in the Phase 2 habitat restoration effort including Mulefat Thickets (*Baccharis salicifolia* Shrubland Alliance) and Black Willow Thickets (*Salix gooddingii* Woodland Alliance). It should be noted that all of the Phase 2 mitigation areas are considered part of the least Bell's vireo (LBVI)

habitat mitigation and therefore must adhere to the LBVI habitat performance standards. Habitat restoration implementation commenced on November 19, 2018 and included nonnative and invasive plant removal and follow-up weed abatement efforts. Following the weed abatement efforts, grading and re-contouring was conducted for several of the Phase 2 mitigation areas. Following weed abatement efforts and grading/re-contouring, container plant installation and seed application commenced in all of the Phase 2 mitigation areas. Implementation for Phase 2 was completed on May 5, 2021. A brief description of the habitat restoration implementation is provided in the following sections.

### **3.1 Site Preparation**

Site preparation activities primarily consisted of nonnative weed removal. Initial nonnative weed abatement activities commenced on November 19, 2018 and were completed on February 20, 2019. Follow-up weed abatement efforts commenced immediately following the completion of the initial weed abatement effort and have been ongoing for the Phase 2 mitigation areas. Pre-planting nonnative and invasive plant removal was conducted using a combination of hand-pulling, weed whips, and hula hoes. During the pre-planting weed removal efforts, all nonnative and invasive plant species that had gone to flower or seed were removed by hand or by using hand tools, placed on tarps, and disposed of in an onsite dumpster. Onsite dumpsters were picked up regularly and the nonnative and invasive plant materials were disposed of at an appropriate facility located outside of the Project site.

Species targeted during the initial nonnative and invasive plant removal included wild oat (*Avena fatua*), black mustard (*Brassica nigra*), red brome (*Bromus madritensis* ssp. *rubens*), poison hemlock (*Conium maculatum*), red-stemmed filaree (*Erodium cicutarium*), eucalyptus (*Eucalyptus* sp.), foxtail barley (*Hordeum murinum*), perennial pepperweed (*Lepidium latifolium*), and horehound (*Marrubium vulgare*). Even though these plant species were targeted for removal, all species of nonnative or invasive plants listed in the HRP were removed if they were encountered.

### **3.2 Irrigation Strategy**

A temporary aboveground poly-tube irrigation system with drip emitters was installed for all of the Phase 2 mitigation areas. The irrigation system was installed and inspected prior to the planting of container plants and pole cuttings. The irrigation system is currently connected to a municipal water source and was fitted with a meter, pressure regulator, and back-flow preventer. Emitters were positioned within the planting basins of each container plant and pole cutting and according to the HRP, supplemental irrigation will continue to be applied for a period of no more than three years. However, if the mitigation areas need to be irrigated for a longer period of time to meet the success standards, then irrigation will continue. Irrigation and irrigation maintenance have been occurring at the rate specified in Table 8 of the HRP.

### **3.3 Seeding**

Upon completion of the initial weed abatement effort and ongoing follow-up weed abatement efforts, the seeding process, which consisted of broadcast seeding, commenced on January 15, 2021. Seed used for the Project was procured from S&S Seeds Inc. and only seed materials collected within the acceptable

geographic regions described in Section 4.9 of the HRP was used. Broadcast seeding was completed using hand-crank spreaders or it was simply spread by-hand. Seed was applied evenly throughout each mitigation area and incorporated into the soil to a depth of approximately 0.5 inch using bow rakes. To the extent possible, seed was applied during the winter or other periods when sufficient rainfall was expected to occur.

### **3.4 Container Plant Installation**

The container plant installation process commenced on January 25, 2021, after completion of the initial weed abatement effort and ongoing follow-up weed abatement efforts. Container plants used for the Project were procured from Tree of Life Nursery and Hahamongna Native Plant Nursery and only container plants grown from seed collected within the acceptable geographic regions described in Section 4.9 of the HRP were used. Prior to installation, all plant material was inspected by the Restoration Ecologist (RE) to ensure that container stock was healthy and did not show signs of having pests or disease. Container stock determined to be in poor condition was rejected by the RE.

Container plant installation followed the methods described in Section 4.11 of the HRP. Container plants were planted using standard horticultural practices. Planting holes for all container plants were dug to a width twice the size of the root ball and to a depth slightly deeper than the depth of root ball so that the root crown was one inch below grade following installation. Prior to installation, all plants were thoroughly watered in their containers and the soil in each of the planting holes was wetted with a minimum of one gallon of water. Planting holes were backfilled with native soil and irrigation basins were formed around the base of each planting. Basins were constructed to be a minimum of two feet wide and with a ridge no less than four inches. Rocks greater than two inches in diameter were removed to the extent possible from the backfill soil. Fertilizer was not added to backfill. Soil was tamped-in by hand to collapse air pockets in the backfill. All container plants were irrigated with a minimum of one gallon of water immediately following installation and basin creation. Container plants were planted in ecologically appropriate locations throughout the site and as directed by the RE.

### **3.5 Grading and Recontouring**

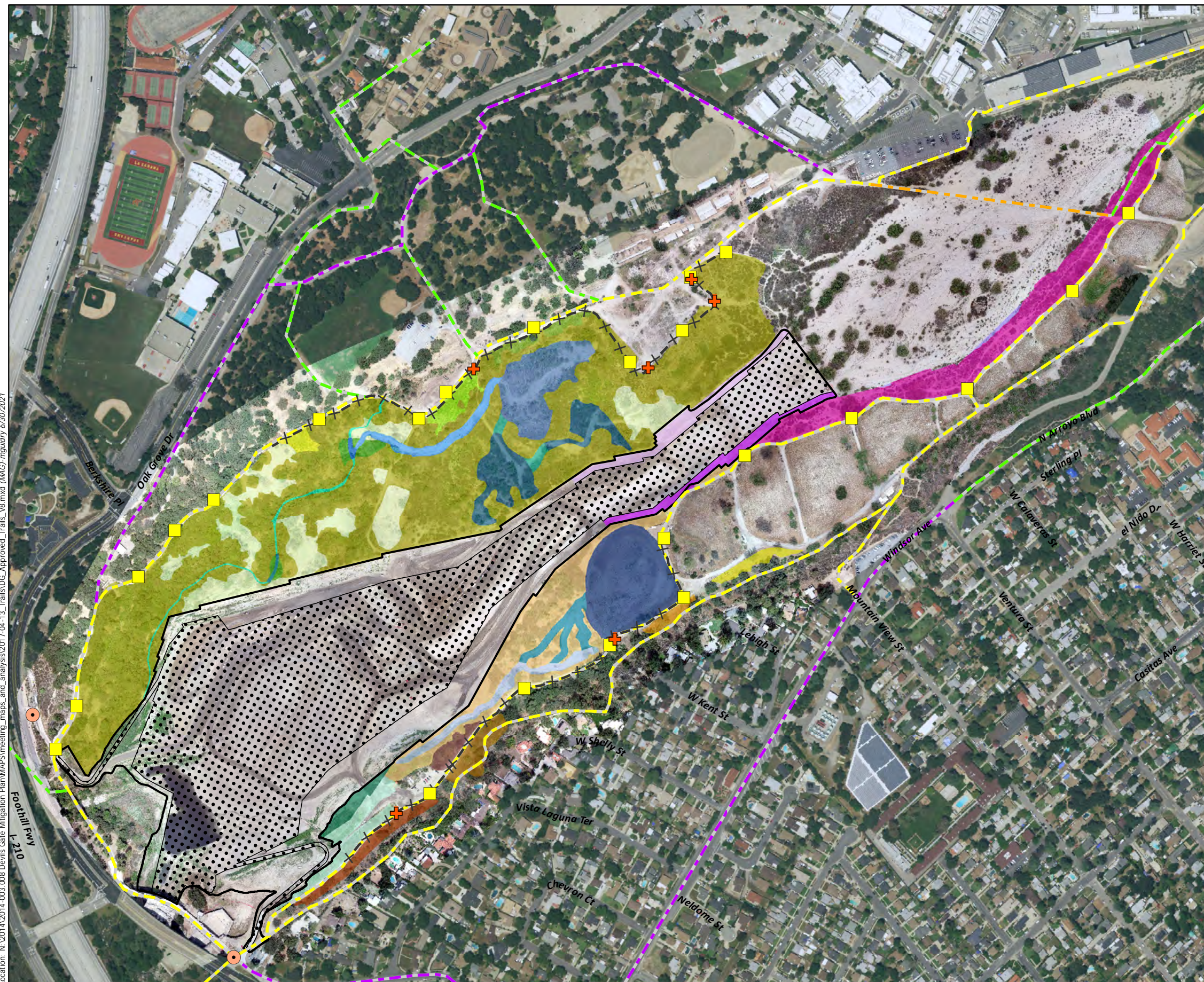
Grading and recontouring for Phase 2 was conducted by Griffith in the DG-W-1 (Johnson Field), DG-W-2 (Mining Pit), DG-W-2 Outlet, DG-2 New Channels, DG-2 WOUS, and DG-4 WOUS mitigation areas. The activities were conducted according to the Final Design Plans for the Project (Design Plans) dated September 29, 2020 (ECORP 2020). The purpose of the grading and recontouring was to create new low flowing channels and topography to support the hydrology needed to sustain riparian habitats. Equipment used during grading included excavators, backhoes, bulldozers, water trucks, and various hand tools. Biological monitors were present during all grading and recontouring activities to ensure the Design Plans were followed and to minimize disturbance to biological resources.

### **3.6 Site Protection**

To delineate the site and deter trespassers from entering the mitigation areas, Environmentally Sensitive Area (ESA) signs were installed and in 2021, wooden post fencing connected with cables was installed

along the boundaries of the mitigation areas (Figure 4). In addition, public outreach to recreational users of the area was conducted to educate the public on the restoration efforts. Lastly, stinging and thorny vegetation, including California blackberry (*Rubus ursinus*), California wild rose (*Rosa californica*), and stinging nettle (*Urtica dioica*), were planted in the mitigation areas to further deter entry.

### Figure 4. Proposed Trails & Site Protection Map



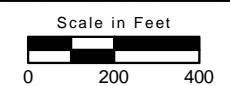
**Map Features**

- Final Design Boundary
- Routine Annual Maintenance Area
- Arroyo Seco Trail
- Seasonal Trail
- Bike Trail
- Other Trail
- Proposed Park Access Sign Location
- Proposed ESA Sign Location
- Quick Release Maintenance Vehicle Access
- Proposed Site Protection Fencing (5,030 ft.)

**Mitigation Areas**

DG-1	DG-4A
DG-1 WOUS	DG-4B
DG-2	DG-4C
DG-2 New Channels	DG-5
DG-2 WOUS	DG-7 (Temp Impacts)
DG-2A	DG-8 (Temp Impacts)
DG-2B	DG-East Trail 1
DG-3A	DG-East Trail 2
DG-3B	DG-East Trail 3
DG-4	DG-East Trail 4
DG-4 Drainage	DG-SF-1
DG-4 Sheetflow	DG-SF-2
DG-4 WOUS	DG-W-1 (Johnson Field)
DG-4 WOUS Connections	DG-W-2 (Mining Pit)
	DG-W-2 (Mining Pit Outlet)

Location: N:\2014\2014-003\_008 Devils Gate Mitigation Plan\Map\Meeting\_maps\_and\_analysis\2017-04-13\_Trails\DC\_Approved\_Trails\_V8.mxd (MAG)mguidry 6/30/2021



## **4.0 SUMMARY OF YEAR 1 MAINTENANCE ACTIVITIES**

### **4.1 Maintenance of Onsite Habitat Mitigation Areas**

Maintenance activities during Year 1 focused mainly on nonnative weed abatement, native plant survival, and irrigation system maintenance. In addition, maintenance was performed for minor pest control, erosion control, and vandalism during Year 1.

#### **4.1.1 Nonnative Weed Abatement**

Prior to the commencement of restoration activities, many of the mitigation areas showed high levels of nonnative weed infestation (e.g., DG-4). Maintenance in the form of nonnative weed abatement commenced immediately following the initial weed abatement effort and has been ongoing for all of Year 1. Nonnative plant species controlled during Year 1 included wild oat, black mustard, red brome, poison hemlock, red-stemmed filaree, foxtail barely, perennial pepperweed, and horehound. Nonnative weed cover, especially perennial pepperweed, is a significant problem in portions of the mitigation areas. Because perennial pepperweed can produce dense colonies through seed germination and underground rhizomes (rhizomatous roots), removal of this species without the use of systemic herbicide is very difficult. A full list of nonnative plant species that have been detected within the mitigation areas is included in Appendix B.

During the Year 1 maintenance period, nonnative plant species were removed from mitigation areas with hand tools. If weeds had formed flowers or seeds prior to removal, the maintenance crew carefully contained the removed material to reduce the spread of seeds. Herbicide application was employed for a brief period between February 22 and March 18, 2019 (during the initial weed abatement effort); however, herbicide application was suspended due to public concerns and the Los Angeles County Board of Supervisors subsequently placed a moratorium on use of glyphosate at all County facilities until further notice. During the brief period of herbicide application, only herbicide registered for aquatic use and approved for use in wetland habitat restoration by the regulatory agencies (i.e. Roundup Custom™) was used. A blue marking dye was added to allow for the identification of areas sprayed. In addition, following the suspension of herbicide use, a hot water vapor machine was used to treat nonnative weeds in areas where native growth was minimal.

#### **4.1.2 Supplemental Planting**

Supplemental planting for the mitigation areas did not occur during Year 1 of restoration activities. Formal mortality counts were taken during the Year 1 botanical monitoring event and supplemental planting will occur during Phase 3 of restoration.

#### **4.1.3 Irrigation Maintenance**

During Year 1, the irrigation system was inspected for functionality on a regular basis by Natures Image during routine maintenance activities to ensure the system was operating efficiently and that container plants were receiving adequate water. During the irrigation system inspections, the soil around the container plants was inspected to ensure proper saturation was occurring and emitters were inspected to

maintain proper placement within the planting basins. Wildlife damage to irrigation lines was repaired on an as-needed basis.

#### 4.1.4 Pest Control

Minor herbivory of container plants was observed in the mitigation areas during Year 1. Metal cages were installed around plant species that were most targeted for herbivory.

#### 4.1.5 Erosion Control

Only minor erosion control for the mitigation areas was necessary during Year 1. Maintenance of the container plant basins was conducted on an as-needed basis.

#### 4.1.6 Vandalism

Vandalism to the mitigation areas and the irrigation system was observed during Year 1. The vandalism observed consisted mostly of stolen parts of the irrigation system and intentionally damaged container plants. Stolen parts of the irrigation system were replaced on an as-needed basis and public outreach was conducted to educate the public about the mitigation areas. Container plants lost due to vandalism will be replaced during Phase 3 of restoration.

## 5.0 SUMMARY OF YEAR 1 MONITORING ACTIVITIES

### 5.1 Monitoring of Onsite Habitat Mitigation areas

Monitoring activities during Year 1 included both horticultural monitoring and botanical monitoring. Horticultural monitoring was performed monthly during the 120-day Plant Establishment Period (PEP) and for the remainder of Year 1. Horticultural monitoring included monitoring soil moisture, irrigation system function, native plant germination, container plant health, nonnative plant species presence, invasive plant species presence, herbivory/pests/disease, erosion issues, and site damage. Photodocumentation of the mitigation areas occurred as necessary. In addition to horticultural monitoring, botanical monitoring was conducted in the summer of Year 1 following the completion of planting and seeding. Monitoring events that occurred during Year 1 are listed in Table 1 below.

<b>Date</b>	<b>Monitoring Type</b>
5/17/21	PEP Monitoring
5/20/21	Botanical Monitoring
5/21/21	Botanical Monitoring
5/24/21	Botanical Monitoring
6/17/21	PEP Monitoring
7/15/21	PEP Monitoring



<b>Table 1. Onsite Habitat Mitigation Site Monitoring Events</b>	
<b>Date</b>	<b>Monitoring Type</b>
7/30/21	Botanical Monitoring
8/26/21	PEP Monitoring
9/29/21	Horticultural Monitoring
10/20/21	Horticultural Monitoring

## 5.2 Horticultural Monitoring Summary

### 5.2.1 Soil Moisture and Irrigation Functionality

Soil moisture levels were assessed throughout the mitigation areas during the PEP and horticultural monitoring visits. Soil moisture depth was typically determined using a handheld garden trowel to dig below the surface. In addition to assessing soil moisture, irrigation lines were inspected for functionality. Minor issues with the irrigation system, including misplaced emitters, animal damage to the irrigation line, and vandalism were observed during Year 1. These issues were immediately brought to the attention of Natures Image and were resolved in a timely manner. Soil moisture depth varied throughout the year and provided insight into the water-holding capacity of the soil. Soils at the mitigation areas were draining sufficiently, but some areas drained more slowly than others.

### 5.2.2 Native Plant Germination

Multiple native plant species were observed to be germinating in the mitigation areas during Year 1. Native plant germination appeared to be from both the seed mix and natural recruitment. Native plant species observed germinating in the mitigation areas during the Year 1 monitoring included common yarrow (*Achillea millefolium*), annual bursage (*Ambrosia acanthicarpa*), mugwort (*Artemisia douglasiana*), mulefat (*Baccharis salicifolia*), tall flatsedge (*Cyperus eragrostis*), jimsonweed (*Datura wrightii*), Canada horseweed (*Erigeron canadensis*), California buckwheat (*Eriogonum fasciculatum*), cardinal monkey flower (*Erythranthe cardinalis*), California poppy (*Eschscholzia californica*), telegraph weed (*Heterotheca grandiflora*), evening primrose (*Oenothera elata*), caterpillar phacelia (*Phacelia cicutaria*), giant flowered phacelia (*Phacelia grandiflora*), California bluebells (*Phacelia minor*), California everlasting (*Pseudognaphalium californicum*), stinging nettle (*Urtica dioica*), and rough cocklebur (*Xanthium strumarium*).

### 5.2.3 Container Plant Health

Container plant health varied throughout the year, with spring and summer showing the most prolific growth. Following planting, some plantings exhibited signs of stress due to transplant shock. During the PEP monitoring visits, in addition to transplant shock, stress to the container plants appeared to be occurring as a result of small mammal herbivory and competition from nonnative and invasive plant species. Seasonal dieback of the willow species (*Salix* sp.) was observed during both the PEP and

horticultural monitoring visits during the fall months. Only minor drought stress was observed during the Year 1 monitoring, typically during the summer months. Overall, the container plants appeared healthy during Year 1 monitoring activities and are becoming well established.

#### **5.2.4 Nonnative and Invasive Plant Species**

Nonnative plant species presence within the mitigation areas varied during Year 1 and was most abundant during the spring. Perennial pepperweed is very dense and established in some of the mitigation areas, especially portions of DG-2, DG-2 New Channels, DG-2 WOUS, DG-W-2 (Mining Pit), DG-W-2 Outlet, and DG-4 Sheet FlowDG. Because perennial pepperweed can produce dense colonies through seed germination and underground rhizomes (rhizomatous roots), removal of this species without the use of systemic herbicide is very difficult. Nonnative plant species encountered within the mitigation areas during Year 1 were removed using hand tools, including hula hoes and weed whips. In addition, a hot water vapor machine was used to treat nonnative weeds in areas where native growth was minimal. All planting basins were hand-weeded to avoid damage from hand tools and/or hot water vapor.

#### **5.2.5 Herbivory, Plant Pests, and Plant Disease**

Herbivory of container plants was observed within the mitigation areas during Year 1. The species most affected by herbivory was California rose. Following observations of herbivory, protective cages were installed around this species and individuals of other species that also had signs of herbivory.

In addition to herbivory, dodder (*Cuscuta* sp.) was observed to be an issue in several of the mitigation areas. Species most affected by dodder included willows and blue elderberry (*Sambucus nigra* ssp. *caerulea*). Although many species of dodder are native, this parasitic plant can be harmful to younger shrubs and trees that are not yet established and can even cause mortality. Following observations of dodder within the mitigation areas, removal of this species from affected plants was implemented during weed abatement efforts.

#### **5.2.6 Erosion Issues**

Only minor erosion issues were observed within the mitigation areas during Year 1 and mostly consisted of erosion to planting basins. Repairs to irrigation line and plant basins were conducted during Year 1 on an as-needed basis.

#### **5.2.7 Photo Documentation**

Photo documentation occurred throughout Year 1 during the PEP monitoring, horticultural monitoring, and botanical monitoring. Permanent photo points were established during the botanical monitoring and will be used during subsequent monitoring years to document to progress of the mitigation areas. Photo documentation completed during botanical monitoring is included as Appendix C.

## 5.3 Botanical Monitoring Summary

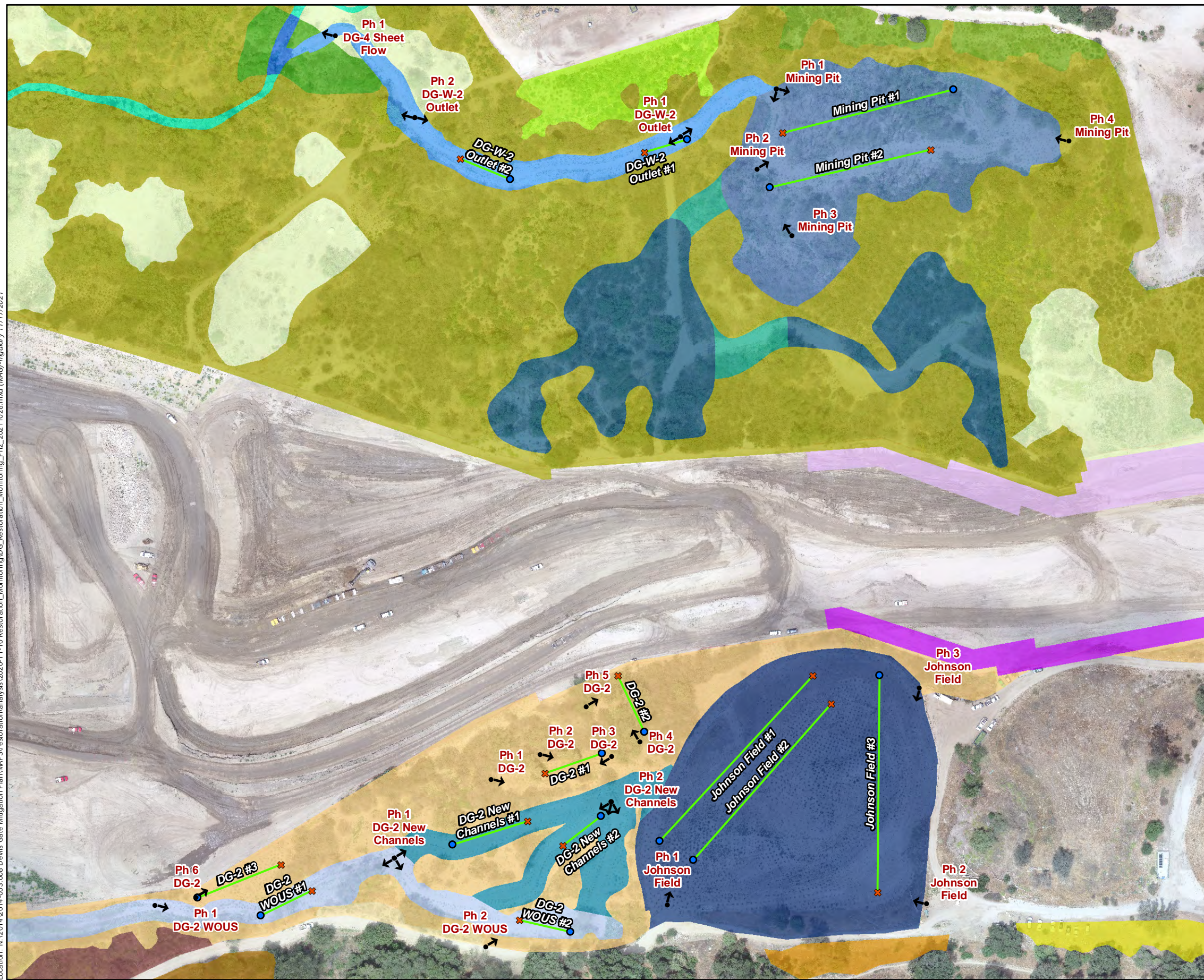
### 5.3.1 Botanical Monitoring Methods

Botanical monitoring for Year 1 was conducted during the spring and summer following the completion of planting and seeding. Container plant survival was determined by counting all container plants that were dead, missing, or in a condition unlikely to survive. If a volunteer or recruit of the same species originally planted was determined to be growing within the planting basin (or within one meter of that basin) of a dead container plant, then that plant was counted toward the survival total. Native and nonnative plant cover was determined using a modified point-line intercept method along established transect lines (Elzinga et al. 2001). A total of 14 transect lines were established randomly throughout the mitigation areas (Figure 5). In addition, a total of 4 transect lines were established in undisturbed reference sites with similar vegetation communities as the mitigation areas (Figure 6). The start and end of each transect line was marked with steel rebar and a plastic orange cap and Global Positioning System (GPS) coordinates were recorded using an iPad equipped with ArcGIS software to document the start and end locations of each transect. The number of transects and the length of transects established in each mitigation area followed the guidance provided in Section 7.1.2 of the HRP.

Reference sites were established during the Year 1 botanical monitoring for the Phase 1 areas for riparian scrub, riparian woodland, and LBVI habitats. Reference sites were relatively undisturbed and had vegetation composition similar to the goal vegetation communities for the mitigation areas. The reference site for the LBVI habitat was selected in undisturbed riparian habitat with mature riparian trees and a well-established understory. In addition, the reference site for LBVI habitat was selected in occupied habitat where the species has been known to be present for the past several years. Data for the reference sites was not collected during Year 1 for Phase 2 and the data from Year 1 for Phase 1 will be used for comparison.

Data was collected along each transect at every 0.5 m (sampling location), starting at 0.5 m. Each plant species that intersected the transect tape at each sampling location was recorded. A sampling dowel was used to assist in determining which plant species intersected the transect tape at each sampling location. In situations where the canopy of a plant intersected the transect tape at a sampling location, that species

Location: N:\2014\2014-003\_008 Devils Gate Mitigation Plan\WAP\Strestorationanalysis\2020-11-10 Restoration\_Monitoring\DC\_Restoration\_Monitoring\_Ph2\_20211028.mxd (MAG) - rgrudry 11/17/2021



**Figure 5. Transect Locations Mitigation Areas**

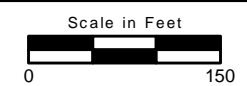
**Map Features**

- Photo Location and Direction
- Transect Start
- Transect End
- Restoration Transect

**Mitigation Areas**

	DG-2		DG-4B
	DG-2 New Channels		DG-4C
	DG-2 WOUS		DG-7 (Temp Impacts)
	DG-2A		DG-8 (Temp Impacts)
	DG-2B		DG-East Trail 2
	DG-4		DG-East Trail 3
	DG-4 Drainage		DG-East Trail 4
	DG-4 Sheetflow		DG-SF-1
	DG-4 WOUS		DG-W-1 (Johnson Field)
	DG-4 WOUS Connections		DG-W-2 (Mining Pit)
	DG-4A		DG-W-2 (Mining Pit Outlet)

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



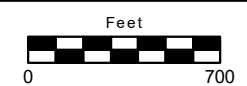
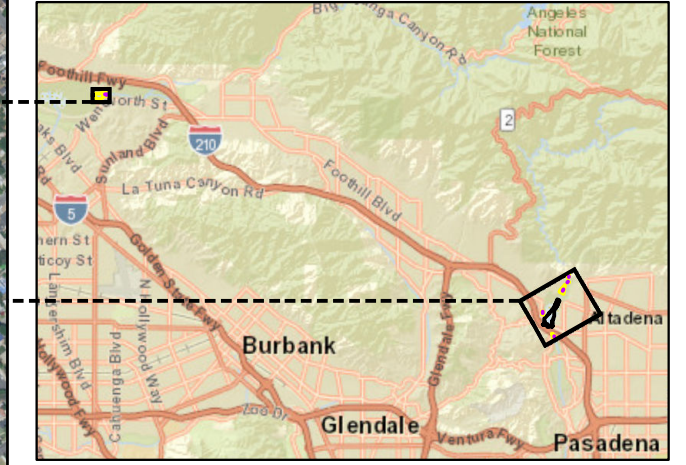
Location: N:\2014\2014-003.008 Devil's Gate Mitigation Plan\MapS\restoration\analysis\2020-11-10 Restoration\_Monitoring\DC\_Reference\_Transects\_20201106.mxd (MAG)-mguidry 11/18/2020



**Figure 6.**  
**Transect Locations Reference Sites**

- Map Features**
- Final Design Boundary <sup>1</sup>
  - Reference Site
  - Reference Transect
  - Transect Start
  - ✦ Transect End

Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community



was also recorded; this included tree species with an overhead canopy. If only one plant species intersected the transect tape at any sampling location, that species received one tally mark. In situations where multiple plant species intersected the transect tape at a sampling location, those plant species received a fraction of a tally mark dependent on the number of species that intersected the transect tape at that sampling location.

Bare ground, rock, and litter were also recorded along each transect in areas that had no plant overlap. Species occurrence along each transect line was totaled and divided by the number of sampling points and multiplied by 100 to derive the percent cover (total cover) along each transect. Species richness was determined for each mitigation area and reference site by documenting all of the native species that occurred within a belt transect. The belt transects extended one meter to the left and right of each of the 14 transects within the mitigation areas, and the 4 transects within the reference sites.

Per the requirements of Section 7.1.4 in the HRP, groundwater data collected by the City of Pasadena and the Jet Propulsion Laboratory (JPL) was provided to ECORP for the 2021 monitoring year. Data provided by the City of Pasadena was collected at three wells on the east side of the Devil’s Gate Reservoir towards the northern portion of the Project area. This data was collected on October 12, 2021 (Year 1) and includes the depth in feet from the reference elevation to the static water surface (i.e., static water level [SWL]). Data provided by JPL was collected at 26 wells to the north, east, and west of the Devil’s Gate Reservoir. This data was collected on March 19, 2021, May 17, 2021, and July 16, 2021 (Year 1) and includes water level data in feet above msl.

**5.3.2 Botanical Monitoring Results**

The botanical monitoring included determining results for survivorship of the container plantings, percent native and nonnative cover, and species richness in the mitigation areas and at the reference sites. The results are included in the following sections. In addition, groundwater data was obtained from the City of Pasadena. The results are included in the following sections.

**5.3.2.1 Container Plant Survivorship**

Year 1 survival counts were conducted during the annual botanical monitoring. Overall, plant mortality for Year 1 was found to be low with survivorship ranging from 98.7 to 100 percent in the mitigation areas. The overall survivorship percentage for container plants in the Phase 1 restoration areas was 99.0 percent. The container plant survival data is listed in Table 2.

<b>Table 2. Container Plant Survivorship</b>						
<b>Mitigation Area</b>	<b>Container Plants</b>	<b>Year 1</b>	<b>Year 2<sup>1</sup></b>	<b>Year 3<sup>1</sup></b>	<b>Year 4<sup>1</sup></b>	<b>Year 5<sup>1</sup></b>
DG-2/DG-2 WOUS/DG-2 New Channels	Number Planted	4,646				
	Number of Mortalities	65				
	Survivorship (%) <sup>1</sup>	98.7				

<b>Table 2. Container Plant Survivorship</b>						
<b>Mitigation Area</b>	<b>Container Plants</b>	<b>Year 1</b>	<b>Year 2<sup>1</sup></b>	<b>Year 3<sup>1</sup></b>	<b>Year 4<sup>1</sup></b>	<b>Year 5<sup>1</sup></b>
DG-W-1 (Johnson Field)	Number Planted	3,989				
	Number of Mortalities	22				
	Survivorship (%) <sup>1</sup>	99.4				
DG-W-2 (Mining Pit)	Number Planted	1,958				
	Number of Mortalities	25				
	Survivorship (%) <sup>1</sup>	98.7				
DG-W-2 Outlet	Number Planted	525				
	Number of Mortalities	4				
	Survivorship (%) <sup>1</sup>	99.2				
DG-4 Sheet Flow/DG-SF-1	Number Planted	322				
	Number of Mortalities	0				
	Survivorship (%) <sup>1</sup>	100				
Overall	Number Planted	11,440				
	Number of Mortalities	116				
	Survivorship (%) <sup>1</sup>	99.0				

<sup>1</sup>If a volunteer or recruit of the same species originally planted was determined to be growing within the planting basin (or within one meter of that basin) of a dead container plant, then that plant was counted toward the survival total.

### **5.3.2.2 Percent Native and Nonnative Cover – Mitigation Areas**

Native cover for the Phase 1 mitigation areas showed improvements during Year 1. Nonnative cover during Year 1 tended to be low; however, certain mitigation areas that were heavily infested with nonnative weeds prior to restoration implementation showed higher levels of nonnative infestation during Year 1. As native cover increases and nonnative seed banks are depleted from continual weed abatement, it is expected that nonnative weed cover will decrease during future monitoring years.

Table 3 presents a summary of Year 1 native (perennial/annual) and nonnative cover data for the Phase 2 mitigation areas. The average overall native perennial cover in the Phase 2 mitigation areas (all considered

part of LBVI habitat restoration) was 24.9 percent, the native annual cover was 6.8 percent, and the percent cover of nonnative and invasive plant species was 0.8 and 1.9 percent, respectively.

<b>Table 3. Percent Native/Nonnative Cover Mitigation Areas</b>						
<b>Transect and Transect Length</b>	<b>Vegetation Type</b>	<b>Year 1 (%)</b>	<b>Year 2<sup>1</sup></b>	<b>Year 3<sup>1</sup></b>	<b>Year 4<sup>1</sup></b>	<b>Year 5<sup>1</sup></b>
<b>Least Bell's Vireo (LBVI)</b>						
DG-W-1 (Johnson Field) Transect 1 (100 m)	Perennial	6.5				
	Annual	3.5				
	Nonnative	1.5				
	Invasive <sup>2</sup>	0.0				
DG-W-1 (Johnson Field) Transect 2 (100 m)	Perennial	8.8				
	Annual	1.0				
	Nonnative	2.7				
	Invasive <sup>2</sup>	0.0				
DG-W-1 (Johnson Field) Transect 3 (100 m)	Perennial	8.5				
	Annual	5.5				
	Nonnative	2.0				
	Invasive <sup>2</sup>	0.0				
DG-2 Transect 1 (30 m)	Perennial	99.3				
	Annual	0.0				
	Nonnative	0.0				
	Invasive <sup>2</sup>	3.3				
DG-2 Transect 2 (25 m)	Perennial	29.3				
	Annual	4.0				
	Nonnative	0.0				
	Invasive <sup>2</sup>	0.7				



<b>Table 3. Percent Native/Nonnative Cover Mitigation Areas</b>						
<b>Transect and Transect Length</b>	<b>Vegetation Type</b>	<b>Year 1 (%)</b>	<b>Year 2<sup>1</sup></b>	<b>Year 3<sup>1</sup></b>	<b>Year 4<sup>1</sup></b>	<b>Year 5<sup>1</sup></b>
DG-2 Transect 3 (40 m)	Perennial	5.6				
	Annual	11.9				
	Nonnative	1.2				
	Invasive <sup>2</sup>	6.2				
DG-2 New Channels Transect 1 (35 m)	Perennial	24.3				
	Annual	7.1				
	Nonnative	0.0				
	Invasive <sup>2</sup>	2.9				
DG-2 New Channels Transect 2 (25 m)	Perennial	15.3				
	Annual	12.0				
	Nonnative	2.7				
	Invasive <sup>2</sup>	0.0				
DG-2 WOUS Transect 1 (25 m)	Perennial	17.0				
	Annual	41.0				
	Nonnative	0.0				
	Invasive <sup>2</sup>	8.0				
DG-2 WOUS Transect 2 (25 m)	Perennial	11.0				
	Annual	9.0				
	Nonnative	0.0				
	Invasive <sup>2</sup>	4.0				
DG-W-2 (Mining Pit) Transect 1 (80 m)	Perennial	29.3				
	Annual	4.0				
	Nonnative	0.0				

<b>Table 3. Percent Native/Nonnative Cover Mitigation Areas</b>						
<b>Transect and Transect Length</b>	<b>Vegetation Type</b>	<b>Year 1 (%)</b>	<b>Year 2<sup>1</sup></b>	<b>Year 3<sup>1</sup></b>	<b>Year 4<sup>1</sup></b>	<b>Year 5<sup>1</sup></b>
	Invasive <sup>2</sup>	0.0				
DG-W-2 (Mining Pit) Transect 2 (75 m)	Perennial	29.3				
	Annual	4.0				
	Nonnative	0.0				
	Invasive <sup>2</sup>	0.0				
DG-W-2 Outlet Transect 1 (25 m)	Perennial	42.0				
	Annual	0.0				
	Nonnative	0.0				
	Invasive <sup>2</sup>	0.0				
DG-W-2 Outlet Transect 2 (25 m)	Perennial	23.0				
	Annual	0.0				
	Nonnative	0.0				
	Invasive <sup>2</sup>	1.0				
<b>LBVI Overall<sup>3</sup></b>	<b>Perennial</b>	<b>24.9</b>				
	<b>Annual</b>	<b>6.8</b>				
	<b>Nonnative</b>	<b>0.8</b>				
	<b>Invasive<sup>2</sup></b>	<b>1.9</b>				

<sup>1</sup>To be determined.

<sup>2</sup>Invasive designation refers to nonnative plant species that have a Cal-IPC invasive plant rating of Moderate or High threat to wildlands.

<sup>3</sup>Average of all transects.

**5.3.2.3 Percent Native and Nonnative Cover – Reference Sites**

Table 4 presents a summary of the native and nonnative cover data for the reference sites. It should be noted that this data was collected during Year 1 for the Phase 1 mitigation areas. For the riparian reference sites, the average overall native perennial cover was 75.4 percent, the native annual cover was 1.5 percent, and the percent cover of nonnative/invasive plants was 19.0. For the LBVI reference sites, the

average overall native perennial cover of 93.9 percent, the native annual cover was 1.9 percent, and the percent cover of nonnative/invasive plants was 1.3 percent.

<b>Table 4. Percent Native/Nonnative Cover Reference Sites</b>						
<b>Transect</b>	<b>Vegetation Type</b>	<b>Year 1<sup>2</sup> (%)</b>	<b>Year 2<sup>1</sup></b>	<b>Year 3<sup>1</sup></b>	<b>Year 4<sup>1</sup></b>	<b>Year 5<sup>1</sup></b>
<b>Riparian</b>						
<b>Riparian Scrub Reference</b>	Perennial	92.0				
	Annual	2.5				
	Nonnative	3.5				
<b>Riparian Woodland Reference</b>	Perennial	58.8				
	Annual	0.5				
	Nonnative	34.4				
<b>Riparian Overall<sup>1</sup></b>	<b>Perennial</b>	<b>75.4</b>				
	<b>Annual</b>	<b>1.5</b>				
	<b>Nonnative</b>	<b>19.0</b>				
<b>Least Bell's Vireo (LBVI)</b>						
<b>LBVI Reference 1</b>	Perennial	96.5				
	Annual	1.5				
	Nonnative	1.0				
<b>LBVI Reference 2</b>	Perennial	91.3				
	Annual	2.3				
	Nonnative	1.5				
<b>LBVI Overall<sup>1</sup></b>	<b>Perennial</b>	<b>93.9</b>				
	<b>Annual</b>	<b>1.9</b>				
	<b>Nonnative</b>	<b>1.3</b>				

<sup>1</sup>To Be Determined.

<sup>2</sup>Data collected during Year 1 for Phase 1.

#### **5.3.2.4 Native Species Richness – Mitigation Areas**

Native species richness was determined for each mitigation area during the Year 1 botanical monitoring event and included all germinating native plants and natural recruits. Native species richness was relatively high for the mitigation areas during Year 1 due to a high diversity of germination and natural recruitment.

Table 5 shows the native species richness for the mitigation areas. Native species richness was found to be 41 for the Phase 2 mitigation areas.

<b>Table 5. Native Species Richness Mitigation Areas</b>					
<b>Mitigation Area</b>	<b>Year 1<sup>1</sup></b>	<b>Year 2<sup>1</sup></b>	<b>Year 3<sup>1</sup></b>	<b>Year 4<sup>1</sup></b>	<b>Year 5<sup>1</sup></b>
<b>Least Bell's Vireo (LBVI)</b>					
DG-W-1 (Johnson Field)	27				
DG-2	20				
DG-2 New Channels	21				
DG-2 WOUS	20				
DG-W-2 (Mining Pit)	20				
DG-W-2 Outlet	11				
DG-4 Sheet Flow/DG-SF-1	14				
<b>LBVI Overall<sup>2</sup></b>	<b>41</b>				

<sup>1</sup>To be determined.

<sup>2</sup>Total native species observed across all mitigation areas.

### 5.3.2.5 Native Species Richness – Reference Sites

Table 6 shows the native species richness for the reference sites. Native species richness was found to be 20 for the riparian reference site and 22 in the LBVI reference sites.

<b>Table 6. Native Species Richness Reference Sites</b>					
<b>Reference Site</b>	<b>Year 1<sup>1</sup></b>	<b>Year 2<sup>2</sup></b>	<b>Year 3<sup>2</sup></b>	<b>Year 4<sup>2</sup></b>	<b>Year 5<sup>2</sup></b>
Riparian	20				
Least Bell's Vireo (LBVI)	22				

<sup>1</sup>Data collected during Year 1 for Phase 1.

<sup>2</sup>To be determined.

### 5.3.2.6 Groundwater Data

Groundwater data collected by the City of Pasadena on October 12, 2021 (Year 1) is presented in Table 7 below. Groundwater data collected by JPL on March 19, 2021, May 17, 2021, and July 16, 2021 (Year 1) is presented in Table 8.

<b>Table 7. City of Pasadena Groundwater Monitoring Results</b>						
<b>Well Name</b>	<b>Reference Elevation (ft)</b>	<b>SWL (ft)</b>				
		<b>Year 1</b>	<b>Year 2<sup>1</sup></b>	<b>Year 3<sup>1</sup></b>	<b>Year 4<sup>1</sup></b>	<b>Year 5<sup>1</sup></b>
Arroyo	1,092.71	182				
52	1,076.76	165				
Ventura	1,069.82	163				

<sup>1</sup>Years 2 through 5 to be determined.

<b>Table 8. JPL Groundwater Monitoring Results</b>				
<b>Well Name</b>	<b>Datum (ft above msl)</b>	<b>Year 1<sup>1</sup></b>		
		<b>March 2021</b>	<b>May 2021</b>	<b>July 2021</b>
MW-1	1116.70	1091.48	1091.74	1084.42
MW-3	1100.34	933.83	933.44	932.15
MW-4	1082.84	924.74	923.19	919.32
MW-5	1071.60	DRY	DRY	DRY
MW-6	1188.52	DRY	DRY	DRY
MW-7	1212.88	DRY	DRY	DRY
MW-8	1139.53	DRY	DRY	DRY
MW-9	1106.02	1086.57	1086.80	1079.67
MW-10	1087.71	DRY	DRY	DRY
MW-11	1139.30	1007.51	1011.25	1007.35
MW-12	1102.14	925.77	925.47	921.78
MW-13	1183.47	DRY	DRY	DRY
MW-14	1173.47	944.73	941.71	935.85
MW-15	1120.66	1089.72	1089.82	1083.16
MW-16	1236.27	952.63	DRY	DRY
MW-17	1191.21	917.07	914.21	912.98
MW-18	1225.41	955.73	918.25	916.10
MW-19	1142.94	920.50	918.91	916.30

<b>Table 8. JPL Groundwater Monitoring Results</b>				
<b>Well Name</b>	<b>Datum (ft above msl)</b>	<b>Year 1<sup>1</sup></b>		
		<b>March 2021</b>	<b>May 2021</b>	<b>July 2021</b>
MW-20	1165.05	904.13	902.45	903.60
MW-21	1059.10	940.55	937.64	932.73
MW-22	1176.98	936.76	934.70	932.62
MW-23	1108.84	932.70	930.81	926.47
MW-24	1200.94	931.08	933.77	930.11
MW-25	934.52	688.73	689.29	689.86
MW-26	1059.08	924.38	915.78	914.17

<sup>1</sup>Years 2 through 5 to be determined.

## 6.0 ACHIEVEMENT OF PERFORMANCE STANDARDS

The performance standards for the Phase 2 mitigation areas, as listed in the approved HRP, are provided in Table 8 for reference. Based on the results of the botanical monitoring, all of the Year 1 performance standards for the Phase 2 mitigation areas have been met. The performance standards for structural patch richness, sediment/topographic stability, and wildlife use monitoring were not required to be assessed during Year 1.

<b>Table 9. Performance Standards for Onsite Mitigation Areas</b>			
<b>Category</b>	<b>Performance Standard</b>	<b>Description (Year 1)</b>	<b>Achieved</b>
Flora-1	Survivorship	Tree, shrub, and herb strata container plants will have the following survival requirements: <ul style="list-style-type: none"> <li>Year 1: 90% Survival</li> </ul>	YES <sup>1</sup>
Flora-2	Native Plant Cover	Combined tree, shrub, and herb strata container plants will have the following native plant cover requirements: <u>Least Bell's Vireo (LBVI) Habitat</u> <ul style="list-style-type: none"> <li>Year 1: 20%</li> <li></li> </ul>	<u>LBVI Habitat:</u> YES
Flora-3	Nonnative Plant Cover	Combined tree, shrub, and herb strata container plants will have the following native plant cover requirements: <u>LBVI Habitat:</u> <ul style="list-style-type: none"> <li>Year 1: Not more than 5%</li> <li></li> </ul>	<u>LBVI Habitat:</u> YES

<b>Category</b>	<b>Performance Standard</b>	<b>Description (Year 1)</b>	<b>Achieved</b>
Flora-4	Native Plant Species Richness	By Year 5 mitigation areas must have 100% of the species richness present in the respective reference sites.	<u>LBVI Habitat:</u> YES

<sup>1</sup> If including volunteer or recruits of the same species growing within the dead plant's basin (or within one meter of that basin), this criterion has been achieved.

## **6.1 Container Plant Survivorship**

Container plant survival is required to be a minimum of 90 percent at the end of Year 1. Out of the 11,440 container plants installed during Phase 2 of restoration activities, approximately 11,324 container plants survived during Year 1. This is a 99.0 percent survivorship, which is approximately 9.0 percent higher than the performance standard. In addition, container plants lost during Year 1 will be replaced during Phase 3 of restoration activities.

## **6.2 Native Plant Cover**

At the end of Year 1, native plant cover is required to be at least 20 percent for LBVI habitat mitigation areas (i.e., all of Phase 2 mitigation areas). The Year 1 performance standard for native plant cover was achieved for the Phase 2 mitigation areas with 31.7 percent native cover overall.

## **6.3 Nonnative Plant Cover**

Nonnative plant cover during Year 1 is required to be less than 5 percent in LBVI habitat mitigation areas. The overall nonnative and invasive cover for the Phase 2 areas during Year 1 was approximately 2.7 percent, which is approximately 2.3 percent below the performance standard of less than 5 percent. Therefore, this performance standard was met for Year 1. Ongoing weed abatement efforts in the mitigation areas continues to decrease the level of nonnative and invasive plant species; however, eradication of problematic invasive weeds, such as perennial pepperweed, over large areas can be very difficult without the use of systemic herbicides.

## **6.4 Native Plant Species Richness**

Native plant species richness is required to be 100 percent of the species richness present in the respective reference sites by the end of Year 5. While there is no Year 1 performance standard, this criterion is required to be assessed every year to ensure the mitigation areas are trending towards meeting the Year 5 performance standard. The Year 5 performance standard for native plant species richness has already been met for the Phase 2 mitigation areas.

## **7.0 DISCUSSION**

The habitat mitigation areas have performed well during Year 1. Minor issues with the irrigation system, vandalism, pests, and herbivory were observed during the Year 1 monitoring efforts; however, these issues were minor and should not impeded the success of the mitigation areas. Maintenance activities including weed abatement, irrigation repair, and basin repair were conducted on a regular basis during Year 1. Replacement of dead container plants in the Phase 2 mitigation areas will occur during the Phase 3 planting effort (fall/winter 2021/2022) and will help to increase the level of native cover in the mitigation areas. In addition, continued weed abatement efforts will continue to reduce competition from nonnative and invasive weeds.

The Phase 2 mitigation areas have met all of the Year 1 performance standards including container plant survivorship, native plant cover, and nonnative plant cover. There is no Year 1 performance standard for native plant species richness; however, the Phase 2 mitigation areas have already met the Year 5 performance standard. The performance standards for structural patch richness, sediment/topographic stability, and wildlife use monitoring were not required to be assessed during Year 1 and these standards will be assessed during future monitoring events.



## 8.0 REFERENCES

- California Invasive Plant Council (Cal-IPC). 2020. California Invasive Plant Inventory. Cal-IPC Publication 2006-02. California Invasive Plant Council: Berkeley, CA. Available: <https://www.cal-ipc.org/plants/profiles/> (Accessed: November 10, 2020).
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- California Department of Fish and Wildlife (CDFW). 2018. Amendment of Lake or Streambed Alteration Agreement for the Devil's Gate Sediment Removal and Management Project (Notification No. 1600-2015-0263-R5). Permittee: Los Angeles County Department of Public Works. July 17, 2018.
- \_\_\_\_\_. 2017. Lake or Streambed Alteration Agreement for the Devil's Gate Sediment Removal and Management Project (Notification No. 1600-2015-0263-R5). Permittee: Los Angeles County Department of Public Works. March 21, 2017.
- City of Pasadena. 2018. Pasadena, California, Code of Ordinances. Available at: [https://library.municode.com/ca/pasadena/codes/code\\_of\\_ordinances?nodeId=PASADENA\\_CALIFORNIA](https://library.municode.com/ca/pasadena/codes/code_of_ordinances?nodeId=PASADENA_CALIFORNIA). Accessed November 10, 2020.
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- Elzinga, C.L., D.W. Salzer, J.W. Willoughby, J.P. Gibbs. 2001. Monitoring Plant and Animal Populations. Blackwell Science, Inc., Malden, Massachusetts.
- Los Angeles County. 2018. Code of Ordinances. Available at: [https://www.municode.com/library/ca/los\\_angeles\\_county/codes/code\\_of\\_ordinances?nodeId=TIT22PLZO\\_DIV1PLZO\\_CH22.46SPPL\\_PT4UNSTSPPL\\_22.46.2100OATRRE](https://www.municode.com/library/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT22PLZO_DIV1PLZO_CH22.46SPPL_PT4UNSTSPPL_22.46.2100OATRRE). Accessed: November 10, 2020.

## **LIST OF ATTACHMENTS**

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Appendix A - Streambed Alteration Agreement Notification No. 1600-2015-0263-R5

Appendix B - Year 1 Plant Species Compendium

Appendix C - Year 1 Photo Documentation

**APPENDIX A**

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Streambed Alteration Agreement Notification No. 1600-2015-0263-R5



MARK PESTRELLA, Director

# COUNTY OF LOS ANGELES

## DEPARTMENT OF PUBLIC WORKS

*"To Enrich Lives Through Effective and Caring Service"*

900 SOUTH FREMONT AVENUE  
ALHAMBRA, CALIFORNIA 91803-1331  
Telephone: (626) 458-5100  
<http://dpw.lacounty.gov>

ADDRESS ALL CORRESPONDENCE TO:  
P.O. BOX 1460  
ALHAMBRA, CALIFORNIA 91802-1460

July 17, 2018

IN REPLY PLEASE  
REFER TO FILE: **SWE-5**

Mr. Ed Pert, Regional Manager  
Streambed Alteration Program  
California Department of Fish and Wildlife, Region 5  
4665 Lampson Avenue, Suite C  
Los Alamitos, CA 90720

Attention Ms. Erinn Wilson

Dear Mr. Pert:

**DEVIL'S GATE RESERVOIR SEDIMENT REMOVAL AND MANAGEMENT PROJECT  
AMENDMENT OF STREAMBED ALTERATION AGREEMENT  
NOTIFICATION NO. 1600-2015-0263-R5**

Enclosed are two original signed copies of the Amendment of Lake or Streambed Alteration Agreement. We appreciate your collaboration on this important project and look forward to continued work with you.

If you have any questions, please contact Mr. George De La O at (626) 458-7155 or [gdelao@dpw.lacounty.gov](mailto:gdelao@dpw.lacounty.gov).

Very truly yours,

MARK PESTRELLA  
Director of Public Works

CHRISTOPHER STONE  
Assistant Deputy Director  
Stormwater Engineering Division

VM:vt

P:\word\SEDIMENT\PROJECTS\RESERVOIRS\DEVIL'S GATE\Permits\CDFW\CDFW SAA Amend 2 Letter 20180713.doc

Enc.

Handwritten initials: JG, CCF, SC



State of California – Natural Resources Agency  
DEPARTMENT OF FISH AND WILDLIFE

South Coast Region  
3883 Ruffin Road  
San Diego, CA 92123  
(858) 636-3160  
[www.wildlife.ca.gov](http://www.wildlife.ca.gov)

*EDMUND G. BROWN, Jr., Governor*  
*CHARLTON H. BONHAM, Director*



July 17, 2018

Christopher Stone  
Los Angeles County Flood Control District  
900 S. Fremont Ave.  
Alhambra, CA 91803  
[CSTONE@dpw.lacounty.gov](mailto:CSTONE@dpw.lacounty.gov)

Dear Mr. Stone:

**Amendment of Lake or Streambed Alteration, Notification No. 1600-2015-0263-R5,  
Devil's Gate Dam Sediment Removal and Management Project**

On March 21, 2017 the California Department of Fish and Wildlife (CDFW) executed the Final Streambed Alteration Agreement 1600-2015-0263-R5 (Agreement) for the Devil's Gate Sediment Removal and Management Project (Project). On May 17, 2017 a Peremptory Writ of Mandate was issued by the California Superior Court (Los Angeles County) regarding the environmental impact report relied upon by the Los Angeles County Flood Control District (Lead Agency) under California Environmental Quality Act (CEQA, SCH 2011091084) and a Recirculated Final Environmental Impact Report (RFEIR) was required by the court. CDFW, as a CEQA responsible agency, relied on the Lead Agency's environmental impact report to issue the Agreement. The Recirculated portions of the RFEIR was circulated for public and agency review and comment from July 24, 2017 to September 18, 2017 and recertified by Lead Agency on November 7, 2017. The CDFW received notice on December 6, 2017 of the Order Discharging Peremptory Writ of Mandate (Discharged Writ) for the matters before the Los Angeles County Superior Court related to the RFEIR.

The Discharged Writ was issued because the Court found that the RFEIR disclosure, analysis, and revision of mitigation measures complied with the Peremptory Writ of Mandate that the Final EIR for the Project, for Alternative 3, Configuration D (Approved Project), and for Alternative 5 (Haul Route Alternative) related to: 1) the 1:1 mitigation ratios in Mitigation Measures BIO-6, -7, and -8; 2) the imposition of Mitigation Measures BIO-1 through 8 on the proposed Devil's Gate Water Conservation Project, should such a project go forward, to reduce potential cumulative impacts for this Project; and 3) the requirement, in Mitigation Measure AQ-1, that sediment removal dump trucks meet Environmental Protection Agency's emission standards for Model Year 2010 or later.

The CDFW under its sole discretion has decided to amend the Agreement (see page 39 "Amendment") to reflect changes to the environmental impact report that appear in the RFEIR. CDFW hereby amends the Agreement with addition and revision of the

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following conditions (insertions in **bold underline**, deletions in ~~red-strikeout~~ type face). All other conditions in the Agreement remain in effect unless otherwise noted herein

### Page 3 of 49

**Initial Sediment Removal Area.** The ~~68.63~~ **65.56** acre area where the initial excavation of sediment and debris will occur.

**Permanent Maintenance Area.** The ~~51.78~~ **49.39** acre area to be maintained for flood capacity. This includes the Routine Annual Maintenance Area and the Episodic Maintenance Area.

**Routine Annual Maintenance Area.** The ~~40.8~~ **42.05** acre area where annual maintenance of the facility will occur (see Exhibit B).

**Episodic Maintenance Area.** The ~~10.98~~ **7.34** acre area side slope proposed at 3:1 (V:H) grade (see Exhibit B). where occasional maintenance will occur. This area is within the Permanent Maintenance Area, abuts Routine Annual Maintenance Area and forms transitional habitat with Habitat Restoration Area.

**Habitat Restoration Area.** The 77.01 acre area in the reservoir subject to minor land alteration, vegetation management, and planting of native plants. This area is outside the Permanent Maintenance Area (See Exhibit E).

### Sediment Removal Program

This phase of project is limited to the restoration of a public facility, through excavation within the ~~68.63~~ **65.56**-acre Initial Sediment Removal Area (see Exhibit B, Work Plan Map) and transition to long term Permanent Maintenance Area, composed of a total of ~~51.78~~ **49.39** acres that consists of ~~40.8~~ **42.05** acres for Routine Annual Maintenance, and ~~10.98~~ **7.34** acres for Episodic Maintenance Areas for the term of this Agreement. Sediment removal will not involve expansion of use beyond that of the designed facility. The proposed initial excavation is to mechanically remove ~~2.417~~ **2.417** Million Cubic Yards (MCY) of post-fire debris from the Initial Sediment Removal Area within Devil's Gate Reservoir. The location of the Initial Sediment Removal Area was selected to maximize the efficient removal of post-fire debris while at the same time, avoid and minimize sensitive habitats and sensitive species impacts. Sediment levels behind Devil's Gate Dam will be brought down to 986 feet above mean sea level (msl) to eliminate the threat to the dam outlet works and comply with standards as set by the State Water Resources Division of Safety of Dams (DSOD). The Initial Sediment Removal Area will then slope upwards to ~~995~~ **1,000** feet above msl where the basin will constrict and increase in elevation to 1,040 feet above msl, and widen again to meet final elevation of 1,060 feet above msl approximately ~~4,700~~ **4,788** linear feet upstream from the dam. Devil's Gate Reservoir is routinely drained after every storm; therefore, it will not be

necessary to drain the facility for non-routine activities.

**Page 4 of 49, 4<sup>th</sup> paragraph**

The ~~2-4~~ 1.7 MCY of sediment and debris in the ~~68-63~~65.56-acres Initial Sediment Removal Area includes established native and non-native vegetation that will be removed. Vegetation and organic debris will be separated from the sediment and hauled to Scholl Canyon Landfill in the City of Glendale. Project Start is estimated to take place in the Fall of ~~2017~~2018. In subsequent years of sediment removal, vegetation and organic debris will be hauled to Scholl Canyon Landfill.

**Page 4 of 49, 6<sup>th</sup> paragraph**

**Permanent Maintenance Program**

Once excavation is complete for this project, annual maintenance of the facility will occur within the ~~40-80~~ 42.05 acre Routine Annual Maintenance Area (see Exhibit B). Vegetation management and sediment removal within the ~~40-80~~ 42.05 acre Routine Annual Maintenance Area will occur for the life of this Agreement. Excavation over the lifetime of the project within the ~~40-80~~ 42.05 acre Routine Annual Maintenance Area will be hauled to disposal sites previously authorized by Permittee (see Figures 2.5-2,-3-4 from Final Environmental Impact Report). Trucks hauling sediment will access the reservoir from an existing maintenance road east of Devil's Gate Dam and exit via a proposed upgraded access road on the western edge of Devil's Gate Dam that will exit on to Oak Grove Drive (see Exhibit A). Vegetation within the Routine Annual Maintenance Area will be mowed or grubbed annually over a 2 to 12 week period in late summer or early fall.

**Page 5 of 49, 2<sup>nd</sup> paragraph**

Episodic Maintenance within the ~~10-98~~ 7.34 acre (horizontal projection) Episodic Maintenance Area will initially include planting with appropriate native plants and thereafter annual undesirable plant control (using herbicides, hand tools, and mechanically operated hand tools (i.e., chainsaws and motor powered winches). In the event of a large debris flow or hyper concentrated flood<sup>3</sup> Episodic Maintenance would involve the need for sediment excavation/trucking off site. The types of equipment involved in excavation may include those similar to the initial sediment removal phase including, but not limited to, front loaders with four-yard buckets, bulldozers, excavator, grader, water truck, and tender trucks. Vehicles expected to be used for sediment

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<sup>3</sup> **Debris flow:** A mix of water and debris, which may include particles ranging in size from clay to boulders and may contain woody debris and other materials, that flows down a stream channel or steep slope, sometimes at great velocity, and contains more than 60 percent debris (less than 40 percent water) by volume. **Hyper-concentrated flood:** A moving mixture of sediment and water containing between 20 and 60 percent sediment by volume.

hauling include double dump trucks with an 18 cubic yard (CY) capacity or equivalent.

**Page 5 of 49, 3<sup>rd</sup> paragraph**

After Episodic Maintenance the side slopes would be returned to the proposed 3:1 (V:H) grade, and the ~~10-98~~ **7 34** acre area will be subject to the continuing annual undesirable plant control. Because this area is restricted from a general right of public access, and will be subject to undesirable plant control, it is anticipated to be revegetated naturally after periodic large debris flow or hyper concentrated floods.

**Page 6 of 49, 6<sup>th</sup> paragraph**

**Native Plants:** Nevin's barberry (*Berberis nevinii*), Plummer's mariposa lily (*Calochortus plummerae*), Greata's aster (*Symphyotrichum gretae*), Parry's spineflower (*Chorizanthe parryi* var. *parryi*), slenderhorned spineflower (*Dodecahema leptoceras*), mesa horkelia (*Horkelia cuneata* ssp. *puberula*), white rabbit-tobacco (*Pseudognaphalium leucocephalum*), Parish's gooseberry (*Ribes divaricatum* var. *parishii*), black willow thickets, mulefat thickets, riparian herbaceous, coast live oak woodland, scale broom scrub, 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 document(s): "Devil's Gate Reservoir Sediment Removal and Management Project Final Environmental Impact Report " dated October 2014, prepared for Los Angeles County of Department of Public Works by Chambers Group; **Biological Technical Report (November 2010), Final Sediment Transport Capacity Analysis (January 2013), and the Noise and Traffic Reports (September & October 2013, respectively), Recirculated EIR for the Project and response to comments (July and October 2017, respectively), Revised Board Motion (November 7, 2017), Notice of Determination for Recirculated Final Environmental Impact Report, Order Discharging Peremptory Writ of Mandate (December 5, 2017),** " Lake and Streambed Alteration Notification Package - Devil's Gate Dam and Reservoir Sediment Removal Project" dated December 11, 2015, prepared for CDFW by Permittee complete with all attachments and exhibits, Revised vegetation mapping and impact analysis for Devil's Gate Dam and Sediment Removal Project dated May 19, 2016 by ECORP Consulting, Inc., revised assessment of temporary impact areas and incorporation of Episodic Maintenance area dated May 5, 2016.

**Page 7 of 49, 1<sup>st</sup> paragraph**

**Project Impacts**

The adverse effects the project could have on the fish or wildlife resources identified above include a total of ~~68-63~~ **65.56** acres subject to Department jurisdiction to implement the Initial Sediment Removal After Initial Sediment Removal ~~51-78~~ **49.39** acres will be maintained for flood capacity through Routine Annual Maintenance and Episodic Maintenance (see above). Additionally, in order to implement compensatory



mitigation for the project, 77.01 acres subject to the Department's jurisdiction outside the Permanent Maintenance Area, will be subject to minor surface alteration of the land, vegetation management, and application of herbicides. The following impacts would occur to vegetation communities within the ~~68.63~~ **65.56** acres necessary for Initial Sediment Removal.

**Page 7 of 49, 2<sup>nd</sup> paragraph**

**Total Permanent Project Impacts**

Permanent impacts to ~~40.80~~ **42.05** acres of vegetation communities and land cover classifications from initial sediment removal include the removal of ~~16.27~~ **15.64** acres of *Salix gooddingii* Alliance (black willow thickets), ~~1.82~~ **1.97** acres *Lepidospartum squamatum* Alliance (Scalebroom scrub), ~~8.03~~ **7.1** acres *Baccharis salicifolia* shrubland Alliance (mulefat thickets), ~~9.88~~ **10.24** acre *Lepidium latifolium-Conium maculatum* herbaceous semi-natural stand, ~~2.45~~ **2.61** acre *Conium maculatum* herbaceous semi-natural stand, ~~2.33~~ **1.80** acres non-native or disturbed (including ~~1.00~~ **0.67** acre *Xanthium strumarium* herbaceous stand, ~~1.33~~ **1.13** acres disturbed (trails/barren/IMP Area)), ~~0.02~~ **0.01** acre *Artemisia californica-Eriogonum fasciculatum* California sagebrush-California buckwheat scrub. Additionally, there are expected permanent impacts to individual California live oak trees (*Quercus agrifolia*) **in an area of approximately 0.06 acre. The impacts that** vary from direct impacts, resulting in complete removal to a limited number of individual trees, and indirect impacts to individual **trees that are located in close proximity to areas where direct impacts will occur. The** indirect impacts are undetermined at this time because the area's hilly topography may not result in any significant effect or project disturbances may be avoided all-together based on project design modifications, ~~made from incorporating~~ **Measures to avoidance impacts to** of oak trees **will be identified following the completion of the in-tree monitoring-report survey that is** required prior to **the start of the** Project ~~start~~

**Page 7 of 49, 3<sup>rd</sup> paragraph**

**Total Temporary Project Impacts**

Temporary impacts to ~~27.83~~ **23.52** acres subject to Department jurisdiction consisting of vegetation communities and land cover classifications will occur from Initial Sediment Removal, worksite access, and installation of side-slopes in Episodic Maintenance Area. These areas contain ~~12.70~~ **13.16** acres *Lepidospartum squamatum* Alliance (Scalebroom scrub), ~~5.89~~ **4.65** acres of *Salix gooddingii* Alliance (black willow thickets), ~~3.41~~ **2.11** acres *Baccharis salicifolia* shrubland Alliance (mulefat thickets), ~~1.97~~ **0.06** acres disturbed (trails/barren/IMP Area), ~~1.24~~ **0.72** acre *Lepidium latifolium-Conium maculatum* herbaceous semi-natural stand, ~~1.70~~ **1.19** acres *Conium maculatum* herbaceous semi-natural stand, 0.507 acre *Xanthium strumarium* herbaceous stand, 0.207 acre *Quercus agrifolia* coast live oak (trees), ~~0.07 acre Eucalyptus (globulus, camaldulensis)~~ **Semi-natural stand**, 0 ~~08~~ **12** acre *Artemisia californica-Eriogonum fasciculatum* California sagebrush-California buckwheat scrub.

The following Conditions have been added or amended:

**1.11 The Permittee shall fully implement all mitigation measures identified in the Final Environmental Impact Report (FEIR) and as revised by Recirculated FEIR (RFEIR). All Conditions, Studies, and mitigation measures relating to biological resources identified in the FEIR and RFEIR shall be enforceable by CDFW as terms of this Agreement.**

2.1 Work Period. Initial Vegetation Removal work within the Initial Sediment Removal Area shall be confined to the period starting September 15 to February 1, in the year(s) of ~~2017~~**2018** to ~~2019~~ **2020**, unless otherwise requested by Permittee and approved by CDFW in writing. Excavation shall be confined to April 15 to December 31 Monday through Friday from 0700 to 1800 hours Standard Time (1900 hours during Daylight Savings Time), and on Saturday between 0800 to 1700 hours during Standard and Daylight Savings Time. Routine Annual Maintenance or Episodic Maintenance work involving vegetation management and/or excavation is specifically addressed in Conditions 2.40 to 2.72 below.

2.41 Permittee shall implement Routine Annual and Episodic Maintenance in conformance with the Project Description and the following Conditions in this Agreement. The Permittee shall remove all human generated debris, such as cuttings, garbage and trash. The Permittee shall remove washed out culverts, and other construction materials, that the Permittee places within, or where they may enter the stream. Routine Annual Maintenance activities shall be limited to the inspection, routine maintenance (e.g., fence repair, minor maintenance of access roads, graffiti removal, trash removal, weed abatement, etc.) sediment removal, and vegetation management (annually) within the approved Routine Annual Maintenance Area (~~40.80~~ **42.05** acres) footprint. Vegetation may be mowed annually and when necessary for capacity reasons the root zone may be grubbed. Sediment removal may be implemented by: 1) sediment excavation and hauling off site; and 2) Flow-Assisted Sediment Transport (FAST). Episodic Maintenance within the ~~40.98~~ **7 34** acre (horizontal projection) side slope area may include annual undesirable plant control (including herbicides, hand tools, and mechanically operated hand tools (e.g., chainsaws and motor powered winches), and in the event of a large debris flow or hyper concentrated flood sediment excavation/trucking off site. If additional major maintenance/repair work is required a separate Agreement is required for said repairs.

2.42 Work Period. Vegetation Management work shall be confined to September 15 to February 1 starting approximately in ~~2023~~**2024** until ~~2037~~ **2038**. The general days and hours of the week that Permittee should conduct Routine Annual Maintenance is Monday through Friday from 0700 to 1800 hours Standard Time (1900 hours during Daylight Savings Time), and on Saturday between 0800 to 1700 hours during Standard and Daylight Savings Time.

Table 3.0 Compensatory Mitigation [Permanent] Requirements for Creation and Restoration

IMPACTS TO VEGETATION COMMUNITIES	COMPENSATORY MITIGATION REQUIREMENT			
	PERMANENT IMPACTS	Creation	Restoration	Total
<i>Salix gooddingii</i> Woodland Alliance	<del>16.27</del> 15.64	<del>16.27</del> 15.64	<del>22.34</del> 21.44	<del>38.58</del> 37.08
<i>Baccharis saltifolia</i> Shrubland Alliance	<del>8.03</del> 9.71	<del>8.03</del> 9.71	<del>4.83</del> 5.84	<del>12.86</del> 15.55
<i>Lepidospartum squamatum</i> Shrubland Alliance	<del>1.82</del> 1.97	<del>1.82</del> 1.97	<del>7.28</del> 7.88	<del>9.19</del> 8.5
<i>Artemisia californica</i> - <i>Eriogonum fasciculatum</i> Shrubland Alliance	<del>0.02</del> 0.01	<del>0.02</del> 0.01	<del>0.04</del> 0.02	<del>0.06</del> 0.03
<i>Conium maculatum</i> Herbaceous Semi-Natural Alliance*	<del>2.45</del> 2.61	0.00	<del>1.23</del> 1.31	<del>1.23</del> 1.31
<i>Lepidium latifolium</i> - <i>Conium maculatum</i> Herbaceous Semi-Natural Alliance*	<del>9.88</del> 10.24	0.00	<del>4.94</del> 5.12	<del>4.94</del> 5.12
<i>Xanthium strumarium</i> Herbaceous Alliance (Unofficial Alliance)	<del>1.00</del> 0.67	0.00	<del>1.50</del> 1.00	<del>1.50</del> 1.00
Disturbed/Developed	<del>1.33</del> 1.13	0.00	0.00	0.00
TOTAL COMPENSATORY MITIGATION REQUIRED		<del>26.14</del> 27.33	<del>42.13</del> 42.61	<del>68.27</del> 69.94
<b>TOTAL PERMANENT IMPACTS</b>	<b>40.80</b> <del>41.98</del>			

3.2 Mitigation for Temporary Impacts. The total of ~~27.83~~ **23.52** acres of temporary impacts, described in detail in the Project Description, shall be established and maintained pursuant to the following requirements:

a. The Permittee shall mitigate the temporary impacts to ~~16.85~~**17** acres of vegetation and habitat communities located in restoration areas designated (DG3B, DG 7, DG 8, DG 9, See Exhibit E) by delaying impacts to temporary impact areas until 3<sup>rd</sup> year of sediment removal project and implement restoration pursuant to Habitat Restoration Plan (see Condition 3.9, below) with 24 months of impacts (see Condition 3.5), and maintained pursuant to Habitat Management Plan (see Condition 3.10).

b. The ~~10.98~~ **7.34** acre (horizontal projection, see Exhibit B) Episodic Maintenance Area will include initially planting with appropriate native plants and thereafter annual undesirable plant control (including herbicides, hand tools, and mechanically operated hand tools (i.e., chainsaws and motor powered winches), and in the event of a large debris flow or hyper concentrated flood Episodic Maintenance would involve the need for sediment excavation/trucking offsite. After Episodic Maintenance the side slopes would be returned to proposed 3:1 (V:H) grade, and the ~~10.98~~ **7.34** acre area will be subject to the continuing annual undesirable plant control.

3.4 Establish Permanent Cross-Section. Permittee shall establish single cross section, established by monument, at upstream limit of Permanent Maintenance Area to document condition and be comparable overtime. The annual monitoring of cross section should be conducted immediately following the high flow season

Mr. Christopher Stone  
July 17, 2018  
Page 8 of 9

and include the physical measurements of the site, photos from a fixed photographic station, and if applicable results from interviews with local persons, Permittee, or Permittee's assignees that had important observations. The cross-section and photographic station shall be monitored and reported to CDFW according to the following sub-measures.

- a. Initial Monitoring. Permittee shall monitor cross section annually for the first 5 years following Initial Sediment Removal, estimated at ~~24~~ 17 mcy plus any additional annual deposits, and as soon as feasible after the first major high flow event. If major high flow event occurs in the first 5 years of monitoring then frequency of future monitoring will be adjusted by CDFW based on consultation with Permittee. Monitoring frequency adjustments shall be based on results of annual monitoring and high flow observations.
- b. Long-term Monitoring. Permittee shall monitor cross section every once every 5 years and immediately after a major high flow event for the duration of this Agreement.

**Page 36 of 49**

## **TERM**

This Agreement shall expire on ~~March 31, 2037~~ **June 31, 2038**, unless it is terminated or extended before then. All provisions in the Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after the Agreement expires or is terminated, as FGC section 1605(a)(2) requires.

Please sign and return two copies of this letter to acknowledge the amendment. The amendment becomes valid once the letter is signed by CDFW. Copies of the Agreement and this amendment must be readily available at project worksites and must be presented when requested by a CDFW representative or agency with inspection authority.

If you have any questions regarding this letter, please contact Steve Gibson, Senior Environmental Scientist (Specialist) at (562) 342-2106 or by email at [steve.gibson@wildlife.ca.gov](mailto:steve.gibson@wildlife.ca.gov).

Mr. Christopher Stone  
July 17, 2018  
Page 9 of 9

Sincerely,

Erinn Wilson, Environmental Program Manager

ec: Veronica Mardis, LACFCD [vmardis@dpw.lacounty.gov](mailto:vmardis@dpw.lacounty.gov)

**ACKNOWLEDGEMENT**

I hereby agree to the above-referenced amendment.

Print Name: Christopher Stone

Date: July 17, 2018

Signature: Christopher Stone



**Devil's Gate Reservoir  
Restoration Project**

**LACPW/ECORP**

**Phase 2 2021 PLANT SPECIES COMPENDIUM**

Scientific Name	Common Name	Mitigation Areas	Reference Sites
<b>VASCULAR PLANTS</b>			
<b>PTERIDOPHYTES</b>			
<b>EQUISETACEAE</b>	<b>HORSETAIL FAMILY</b>		
<i>Equisetum ssp.</i>	horsetail		X
<b>ANGIOSPERMS (EUDICOTS)</b>			
<b>ADOXACEAE</b>	<b>MUSKROOT FAMILY</b>		
<i>Sambucus nigra ssp. caerulea</i>	blue elderberry	X	X
<b>AMARANTHACEAE</b>	<b>AMARANTH FAMILY</b>		
<i>Amaranthus albus*</i>	pigweed amaranth	X	
<b>ANACARDIACEA</b>	<b>CASHEW AND SUMAC FAMILY</b>		
<i>Toxicodendron diversilobum</i>	poison oak		X
<b>APIACEAE</b>	<b>CARROT FAMILY</b>		
<i>Conium maculatum*</i>	poison hemlock	X	
<b>ASTERACEAE</b>	<b>SUNFLOWER FAMILY</b>		
<i>Achillea millefolium</i>	common yarrow	X	
<i>Ambrosia acanthicarpa</i>	annual bursage	X	
<i>Ambrosia psilostachya</i>	western ragweed		X
<i>Artemisia californica</i>	California sagebrush	X	X
<i>Artemisia douglasiana</i>	mugwort	X	X
<i>Artemisia dracunculus</i>	taragon	X	
<i>Baccharis pilularis</i>	coyote brush	X	
<i>Baccharis salicifolia</i>	mulefat	X	X
<i>Carduus pycnocephalus*</i>	Italian thistle	X	X
<i>Centaurea melitensis*</i>	toçalote		X
<i>Corethrogyne filaginifolia</i>	common sand aster		X
<i>Erigeron canadensis</i>	Canada horseweed	X	X
<i>Eriophyllum confertiflorum</i>	golden yarrow		X
<i>Helianthus annuus</i>	Hairy leaved sunflower	X	
<i>Heterotheca grandiflora</i>	telegraph weed	X	X
<i>Isocoma menziesii</i>	Menzies' goldenbush		X
<i>Lactuca serriola*</i>	prickly lettuce		X
<i>Lepidospartum squamatum</i>	scalebroom		X
<i>Matricaria chamomilla*</i>	German chamomile	X	
<i>Pseudognaphalium biolettii</i>	Two-color rabbit-tobacco	X	
<i>Pseudognaphalium californicum</i>	ladie's tobacco	X	X
<i>Sonchus asper*</i>	prickly sow-thistle		X
<i>Xanthium strumarium</i>	rough cocklebur	X	
<b>BETULACEAE</b>	<b>BIRCH FAMILY</b>		
<i>Alnus rhombifolia</i>	white alder		X

Scientific Name	Common Name	Mitigation Areas	Reference Sites
<b>BORAGINACEAE</b>	<b>BORAGE FAMILY</b>		
<i>Eriodictyon crassifolium</i>	thick leaved yerba santa		X
<i>Heliotropium curassavicum</i>	salt heliotrope	X	
<i>Phacelia cicutaria</i>	caterpillar phacelia	X	X
<i>Phacelia minor</i>	California bluebells	X	
<i>Phacelia distans</i>	Common phacelia	X	
<i>Phacelia grandiflora</i>	Giant flowered phacelia	X	
<i>Phacelia paryi</i>	Parry's phacelia	X	
<b>BRASSICACEAE</b>	<b>MUSTARD FAMILY</b>		
<i>Brassica nigra</i> *	black mustard	X	X
<i>Lepidium latifolium</i> *	perennial pepperweed	X	
<i>Raphanus sativus</i> *	wild radish	X	
<b>CARYOPHYLLACEAE</b>	<b>CARNATION FAMILY</b>		
<i>Spergularia rubra</i> *	Purple sand spurry	X	
<b>CHENOPODIACEAE</b>	<b>GOOSEFOOT FAMILY</b>		
<i>Chenopodium album</i> *	lamb's quarters	X	
<i>Chenopodium californicum</i>	California goosefoot	X	
<b>CONVOLVULACEAE</b>	<b>MORNING GLORY FAMILY</b>		
<i>Cuscuta californica</i>	dodder	X	
<b>CUCURBITACEAE</b>	<b>GROUND FAMILY</b>		
<i>Marah macrocarpus</i>	Southern wild cucumber	X	
<b>EUPHORBIACEAE</b>	<b>SPURGE FAMILY</b>		
<i>Ricinus communis</i> *	castor bean	X	X
<b>FABACEAE</b>	<b>LEGUME FAMILY</b>		
<i>Acmispon glaber</i>	deerweed		X
<i>Acmispon strigosus</i>	Strigose lotus	X	
<i>Lupinus bicolor</i>	annual lupine	X	
<i>Melilotus indicus</i> *	annual yellow sweetclover	X	
<i>Spartium junceum</i> *	Spanish broom		X
<b>FAGACEAE</b>	<b>OAK FAMILY</b>		
<i>Quercus agrifolia</i>	coast live oak	X	X
<b>GERANIACEAE</b>	<b>GERANIUM FAMILY</b>		
<i>Erodium cicutarium</i> *	red-stemmed filaree	X	
<i>Geranium molle</i> *	crane's bill geranium		X
<b>LAMIACEAE</b>	<b>MINT FAMILY</b>		
<i>Marrubium vulgare</i> *	white horehound		X
<i>Salvia mellifera</i>	black sage		X
<b>MORACEAE</b>	<b>FIG FAMILY</b>		
<i>Ficus carica</i> *	common fig		X
<b>MYRSINACEAE</b>	<b>MYRSINE FAMILY</b>		
<i>Lysimachia arvensis</i> *	scarlet pimpernel	X	
<b>OLEACEAE</b>	<b>OLIVE FAMILY</b>		
<i>Fraxinus uhdei</i> *	Shamel ash		X
<b>ORNAGRACEAE</b>	<b>EVENING PRIMROSE FAMILY</b>		
<i>Camissoniopsis micrantha</i>	Spencer primrose	X	
<i>Oenothera elata</i>	evening primrose		X



Scientific Name	Common Name	Mitigation Areas	Reference Sites
<b>PAPAVERACEAE</b>	<b>POPPY FAMILY</b>		
<i>Argemone munita</i>	Prickly poppy	X	
<i>Eschscholzia californica</i>	California poppy	X	
<b>PLATANACEAE</b>	<b>PLANE-TREE FAMILY</b>		
<i>Platanus racemosa</i>	western sycamore		X
<b>POLYGONACEAE</b>	<b>BUCKWHEAT FAMILY</b>		
<i>Eriogonum fasciculatum</i>	California buckwheat		X
<i>Eriogonum gracile</i>	slender buckwheat	X	
<i>Rumex crispus</i> *	curly dock	X	
<b>RHAMNACEA</b>	<b>BUCKTHORN FAMILY</b>		
<i>Rhamnus crocea</i>	redberry buckthorn		X
<b>ROSACEAE</b>	<b>ROSE FAMILY</b>		
<i>Prunus ilicifolia</i>	hollyleaf cherry		X
<i>Rosa californica</i>	California rose	X	
<i>Rubus americanus</i> *	Himalayan blackberry		X
<i>Rubus ursinus</i>	California blackberry	X	X
<b>RUBIACEAE</b>	<b>BEDSTRAW FAMILY</b>		
<i>Galium aparine</i>	common bedstraw		X
<b>SALICACEAE</b>	<b>WILLOW FAMILY</b>		
<i>Populus fremontii</i>	Fremont's cottonwood	X	X
<i>Salix exigua</i>	narrow leaved willow		X
<i>Salix gooddingii</i>	black willow	X	X
<i>Salix laevigata</i>	red willow	X	X
<i>Salix lasiolepis</i>	arroyo willow	X	X
<b>SAPINDACEAE</b>	<b>SOAPBERRY FAMILY</b>		
<i>Acer negundo</i>	boxelder		X
<b>SOLANACEAE</b>	<b>NIGHTSHADE FAMILY</b>		
<i>Datura wrightii</i>	jimson weed	X	X
<i>Nicotiana glauca</i> *	tree tobacco	X	
<i>Solanum douglasii</i>	Douglas' nightshade	X	
<i>Solanum nigrum</i> *	black nightshade	X	
<b>ULMACEAE</b>	<b>ELM FAMILY</b>		
<i>Elm ssp.</i> *	elm		X
<b>URTICACEAE</b>	<b>NETTLE FAMILY</b>		
<i>Urtica dioica</i>	stinging nettle	X	
<b>VITACEAE</b>	<b>GRAPE FAMILY</b>		
<i>Vitis californica</i>	California grape		X
<b>ANGIOSPERMS (MONOCOTS)</b>			
<b>AGAVACEAE</b>	<b>CENTURY PLANT FAMILY</b>		
<i>Hesperoyucca whipplei</i>	chaparral yucca		X
<b>CYPERACEAE</b>	<b>SEDGE FAMILY</b>		
<i>Cyperus eragrostis</i>	tall flatsedge	X	

Scientific Name	Common Name	Mitigation Areas	Reference Sites
<b>POACEAE</b>	<b>GRASS FAMILY</b>		
<i>Arundo donax</i> *	giant reed		X
<i>Avena fatua</i> *	wild oat		X
<i>Bromus madritensis ssp. rubens</i> *	red brome	X	X
<i>Hordeum murinum</i>	Farmers Foxtail	X	
<i>Schismus barbatus</i> *	Mediterranean grass		X
<i>Stipa miliacea</i> *	smilo grass		X
<b>TYPHACEAE</b>	<b>CATTAIL FAMILY</b>		
<i>Typha ssp.</i>	cattail		X

\* - Nonnative species.

**CNPS Rare Plant Listing Status:**

List 1B.1 Rare, threatened, or endangered in California and elsewhere. Seriously

List 1B.2 Rare, threatened, or endangered in California and elsewhere.

List 2B.2 Rare, threatened or endangered in California, but more common

List 4.2 Limited distribution (Watch List). Moderately endangered in California

## **APPENDIX C**

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Year 1 Photo Documentation



**Photo 2: Mitigation Area DG-W-1 Transect #1 End**



**Photo 3: Mitigation Area DG-W-1 Transect #2 Start**



**Photo 4: Mitigation Area DG-W-1 Transect #2 End**



**Photo 5: Mitigation Area DG-W-1 Transect #3 Start**



**Photo 6: Mitigation Area DG-W-1 Transect #3 End**



**Photo 7: Mitigation Area DG-2 Transect #1 Start**



**Photo 8: Mitigation Area DG-2 Transect #1 End**



**Photo 9: Mitigation Area DG-2 Transect #2 Start**



**Photo 10: Mitigation Area DG-2 Transect #2 End**





**Photo 11: Mitigation Area DG-2 Transect #3 Start**



**Photo 12: Mitigation Area DG-2 Transect #3 End**



**Photo 13: Mitigation Area DG-2 New Channels Transect #1 Start**



**Photo 14: Mitigation Area DG-2 New Channels Transect #1 End**



**Photo 15: Mitigation Area DG-2 New Channels Transect #2 Start**



**Photo 16: Mitigation Area DG-2 New Channels Transect #2 End**



**Photo 17: Mitigation Area DG-2 WOUS Transect #1 Start**



**Photo 18: Mitigation Area DG-2 WOUS Transect #1 End**



**Photo 19: Mitigation Area DG-2 WOUS Transect #2 Start**



**Photo 20: Mitigation Area DG-2 WOUS Transect #2 End**



**Photo 21: Mitigation Area DG-W-2 Transect #1 Start**



**Photo 22: Mitigation Area DG-W-2 Transect #1 End**



**Photo 23: Mitigation Area DG-W-2 Transect #2 Start**



**Photo 24: Mitigation Area DG-W-2 Transect #2 End**



**Photo 25: Mitigation Area DG-W-2 Outlet Transect #1 Start**







**Photo 27: Mitigation Area DG-W-2 Outlet Transect #2 Start**



**Photo 28: Mitigation Area DG-W-2 Outlet Transect #2 End**



**Photo 29: Mitigation Area DG-W-1 Photo Point #1, Facing NW**



**Photo 30: Mitigation Area DG-W-1 Photo Point #2, Facing SW**



**Photo 31: Mitigation Area DG- W-1 Photo Point #3, Facing SE**



**Photo 32: Mitigation Area DG-2 Photo Point #1, Facing NE**



**Photo 33: Mitigation Area DG-2 Photo Point #2, Facing NE**



**Photo 34: Mitigation Area DG-2 Photo Point #3, Facing S**



**Photo 35: Mitigation Area DG-2 Photo Point #4, Facing W**



**Photo 36: Mitigation Area DG-2 Photo Point #5, Facing N**



**Photo 37: Mitigation Area DG-2 Photo Point #6, Facing N**



**Photo 38: Mitigation Area DG-2 New Channels Photo Point #1, Facing E**



**Photo 39: Mitigation Area DG-2 New Channels Photo Point #1, Facing N**



**Photo 40: Mitigation Area DG-2 New Channels Photo Point #1, Facing S**



**Photo 41: Mitigation Area DG-2 New Channels Photo Point #2, Facing E**



**Photo 42: Mitigation Area DG-2 New Channels Photo Point #2, Facing S**





**Photo 43: Mitigation Area DG-2 New Channels Photo Point #2, Facing SE**



**Photo 44: Mitigation Area DG-2 WOUS Photo Point #1, Facing N**



**Photo 45: Mitigation Area DG-2 WOUS Photo Point #2, Facing NE**



**Photo 46: Mitigation Area DG-W-2 Photo Point #1, Facing NE**



**Photo 47: Mitigation Area DG-W-2 Photo Point #1, Facing SE**



**Photo 48: Mitigation Area DG-W-2 Photo Point #2, Facing N**



**Photo 49: Mitigation Area DG-W-2 Photo Point #3, Facing W**



**Photo 50: Mitigation Area DG-W-2 Photo Point #4, Facing SW**



**Photo 51: Mitigation Area DG-W-2 Outlet Photo Point #1, Facing N**



**Photo 52: Mitigation Area DG-W-2 Outlet Photo Point #1, Facing S**



**Photo 53: Mitigation Area DG-W-2 Outlet Photo Point #2, Facing NE**



**Photo 54: Mitigation Area DG-W-2 Outlet Photo Point #2, Facing SW**



**Photo 55: Mitigation Area DG-4 Sheet flow Photo Point #1, Facing S**



Photo 56: Riparian Scrub Reference Transect Start



Photo 57: Riparian Scrub Reference Transect End





Photo 58: Riparian Woodland Reference Transect Start



Photo 59: Riparian Woodland Reference Transect End



Photo 60: LBVI Reference Transect #1 Start



Photo 61: LBVI Reference Transect #1 End



Photo 62: LBVI Reference Transect #2 Start



Photo 63: LBVI Reference Transect #2 End



Photo 124: Overview LBVI Reference Site



Photo 125: Overview LBVI Reference Site



Photo 126: Overview LBVI Reference Site



Photo 127: Overview LBVI Reference Site



Photo 128: Overview LBVI Reference Site



Photo 129: Overview LBVI Reference Site

