May 19, 2021
2018-047.030

Mr. Mark Gim
Los Angeles County Public Works
900 South Fremont Avenue, 9th Floor
Alhambra, California 91803

Re: Devil's Gate Reservoir Restoration Project – Phase 1 Restoration Qualitative Monitoring Conducted on May 17, 2021

1.0 INTRODUCTION

The purpose of this letter report is to document the results of qualitative monitoring conducted for the Devil's Gate Reservoir Restoration Project (Project), located in the City of Pasadena, Los Angeles County, California. The qualitative monitoring was conducted in the planted and or seeded portions of the Phase 1 mitigation areas including DG-1, DG-1 WOUS, DG-2A, DG-2B, DG-3A, DG-3B, DG-4, DG-4B, DG-4C, and DG-5. The monitoring is being conducted in accordance with the Final Habitat Restoration Plan for the Project (HRP). Active sediment removal is still occurring within the sediment removal areas for the Project and habitat restoration is being conducted onsite around the perimeter of the sediment removal areas.

ECORP is responsible for conducting qualitative monitoring and compliance review of restoration efforts in each of the mitigation areas. ECORP is also responsible for preparing monitoring reports, which typically include the following information:

- Overall health of container plants
- Observations and recommendations related to container plant establishment
- Germination of native plant species from seed application and natural recruitment
- Level of germination of nonnative plant species
- Soil condition
- Other observations and recommendations as appropriate

Qualitative monitoring was conducted by Carley Lancaster and Joshua Harris on May 17, 2021. Field data collected during the monitoring event is provided as Attachment A. This report documents the first quarterly qualitative monitoring visit for the Phase 1 mitigation areas.

1801 Park Court Place ● Santa Ana, CA 92701 ● Tel: (714) 648-0630 ● Fax: (714) 648-0935 ● Web: www.ecorpconsulting.com

2.0 QUALITATIVE MONITORING IN THE PHASE 1 MITIGATION AREAS

2.1 Brief Summary of Plant Installation

During the Phase I Installation effort, which was completed on February 13, 2020, a total of 10,276 one-gallon container plants, 52 five-gallon container plants, 18 fifteen-gallon container plants, 300 acorns, and 3,000 cuttings were installed in the DG-2A, DG-2B, DG-3A, DG-3B, DG-4, DG-4B, DG-4C, and DG-5 mitigation areas. Container plants were not installed in the DG-1 or DG-1 WOUS mitigation areas, but these areas were seeded with native plant species. Table 1 lists container plant species and the numbers installed in each of the Phase 1 mitigation areas.

Table 1. Phase 1 Container Plant Species and Numbers (DG-)

Species Name	2A	2B	3A (Oak Wood-land)	3A (Mule-fat Thickets)	4 (CSS*)	4 (Mulefat-Willow**)	4B	4C	5	TOTAL
Mulefat (Baccharis salicifolia)	25	95	—	—	—	1113	135	114	64	1546
Mulefat [cuttings] (Baccharis salicifolia)	—	—	—	84	—	916	—	—	—	1000
Fremont's cottonwood (Populus fremontii)	10	38	—	33	—	479	54	45	27	686
California blackberry (Rubus ursinus)	10	38	—	33	—	619	54	45	26	825
California rose (Rosa californica)	10	38	44	33	—	725	54	45	26	975
Black willow (Salix gooddingii)	20	76	—	—	—	876	108	90	52	1222
Black willow [cuttings] (Salix gooddingii)	—	—	—	67	—	933	—	—	—	1000
Red willow (Salix laevigata)	10	38	—	33	—	439	54	45	26	645
Arroyo willow (Salix lasiolepis)	10	38	—	—	—	438	54	45	26	611
Arroyo willow [cuttings] (Salix lasiolepis)	—	—	—	33	—	967	—	—	—	1000
Black elderberry (Sambucus nigra ssp. caerulea)	5	19	—	17	—	594	27	23	13	698
California melic (Melica imperfecta)	—	—	20	—	—	—	—	—	—	20
Coast live oak (Quercus agrifolia)	—	—	174	—	—	—	—	—	—	174

Table 1. Phase 1 Container Plant Species and Numbers (DG-)										
Species Name	**2A**	**2B**	**3A (Oak Wood-land)**	**3A (Mule-fat Thickets)**	**4 (CSS*)**	**4 (Mulefat-Willow**)**	**4B**	**4C**	**5**	**TOTAL**
Coast live oak [acorns] (*Quercus agrifolia*)	25	—	275	—	—	—	—	—	—	300
California gooseberry (*Ribes californicum*)	—	—	50	—	—	—	—	—	—	50
Mugwort (*Artemisia douglasiana*)	—	—	—	33	—	617	54	45	26	775
Wrinkled rush (*Juncus rugulosus*)	—	—	—	—	—	200	—	—	—	200
Basket rush (*Juncus textilis*)	—	—	—	—	—	100	—	—	—	100
California Sagebrush (*Artemisia californica*)	10	38	—	—	306	—	—	—	—	354
Coyote brush (*Baccharis pilularis*)	10	38	—	33		504	54	45	26	710
California brittlebush (*Encelia californica*)	—	—	—	—	102	—	—	—	—	102
California buckwheat (*Eriogonum fasciculatum*)	—	—	—	—	306	—	—	—	—	306
Menzies goldenbush (*Isocoma menziesii*)	—	—	—	—	41	—	—	—	—	41
Deerweed (*Acmispon glaber*)	—	—	—	—	102	—	—	—	—	102
Laurel sumac (*Malosma laurina*)	—	—	—	—	61	—	—	—	—	61
Coastal prickly pear (*Opuntia littoralis*)	—	—	—	—	41	—	—	—	—	41
Black sage (*Salvia mellifera*)	—	—	—	—	102	—	—	—	—	102
TOTAL	**145**	**456**	**563**	**399**	**1061**	**9520**	**648**	**542**	**312**	**13646**

*CSS = California Sagebrush – California Buckwheat Scrub
**Mulefat-Willow = Mulefat Thickets and Black Willow Thickets

All plants were installed according to the methods described in Section 4.11 of the HRP. Planting holes for all container plants, except oak trees, were dug to a width twice the size of the root ball and to a depth slightly deeper than the depth of the root ball so that the root crown was one inch below grade following installation. Oak trees were planted with the root crown 0.5 to one inch above grade following installation. Prior to installation, all plants were thoroughly watered in their containers and the soil in planting holes was wetted with at least one gallon of water. Planting holes were backfilled with native soil and irrigation

basins, approximately two feet in width, were formed around the base of each plant. Rocks greater than two inches in diameter were removed to the extent possible from the backfill soil. All container plants were irrigated with at least one gallon of water immediately following installation and basin creation.

2.2 Qualitative Monitoring Methods

Qualitative monitoring occurs monthly following the 120-day Plant Establishment Period (PEP) for the remainder of Year 1 (8 months). Following Year 1, qualitative monitoring will occur quarterly during Years 2 and 3 and twice per year during Years 4 through 10. The purpose of the qualitative monitoring is to assess container plant health and vigor and monitor the success of the mitigation areas.

During the May 17, 2021 visit, all Phase 1 mitigation areas were walked, the health and vigor of container plants were documented, germination from seeding and natural recruitment was noted, and the irrigation lines were inspected for functionality. In addition, the level of nonnative and invasive weed cover was estimated for each of the Phase 1 mitigation areas.

2.3 Qualitative Monitoring Results

2.3.1 DG-1 & DG-1 WOUS

Container plants were not installed in the DG-1 or DG-1 WOUS mitigation areas, but these areas were seeded with native plant species. Native plant growth was noted throughout the DG-1 and DG-1 WOUS mitigation areas, likely both from natural recruitment and from seeding; however, germination was observed to be very minimal in the majority of these mitigation areas. Portions of DG-1 WOUS were noted as being scoured during the previous wet season and had minimal plant growth. Native plants such as deerweed (*Acmispon glaber*), common sandaster (*Corethrogyne filaginifolia*), California buckwheat (*Eriogonum fasciculatum*), scale broom (*Lepidospartum squamatum*), caterpillar phacelia (*Phacelia cicutaria*), and ladies' tobacco (*Pseudognaphalium californicum*) were observed sprouting in the DG-1 and DG-1 WOUS mitigation areas. In addition, dodder (*Cuscuta sp.*) was observed growing on some of the shrubs in this mitigation area, which could lead to future decline of these shrubs. Photos 1 through 4 in Attachment B document the mitigation area during the monitoring visit.

Nonnative weed cover in DG-1 and DG-1 WOUS was estimated at approximately 5 to 10 percent, if the dead annual weeds are excluded, which is approximately 5 percent lower than the level of weed cover that was observed during the previous qualitative monitoring event. Nonnative weeds are starting to germinate in some portions of DG-1. While most nonnative weeds were observed to be vegetative, some were observed to be in flower. Nonnative species observed germinating in DG-1 and DG-1 WOUS included black mustard (*Brassica nigra*), red brome (*Bromus madritensis ssp. rubens*), tocalote (*Centaurea melitensis*), red-stemmed filaree (*Erodium cicutarium*), and tree tobacco (*Nicotiana glauca*).

2.3.2 DG-2A

The overall health of the container plants in DG-2A was noted as being good. Only minimal stress was observed, and the majority of the remaining container plants are becoming well established. A negligible number of container plants appeared stressed, while approximately five percent were showing stress

during the previous qualitative monitoring event. Stress may be occurring as a result of 1) herbivory by rabbits or other wildlife, 2) competition from nonnative and invasive weeds, 3) misplaced emitters, or 4) recreational traffic through the mitigation areas. There were no additional container plants noted as being missing or dead. Formal mortality counts were taken for DG-2A during the 2020 quantitative monitoring and were included in the 2020 annual reporting. The willow species (*Salix sp*.) and Fremont's cottonwoods (*Populus fremontii*) in the mitigation areas were no longer showing signs of seasonal dieback. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of plants in the DG-2A mitigation area appears to have been completed successfully. The current issues identified during the monitoring visit are not expected to have an effect on the continued growth of the plants in the mitigation area. Photos 5 through 6 in Attachment B document the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-2A mitigation area, likely both from natural recruitment and from seeding. Native plants such as annual bursage (*Ambrosia acanthicarpa*), mugwort (*Artemisia douglasiana*), cobweb thistle (*Cirsium occidentale*), Canada horseweed (*Erigeron canadensis*), evening primrose (*Oenothera elata*), caterpillar phacelia, and ladies' tobacco were observed sprouting in the DG-2A mitigation area.

Nonnative weed cover in DG-2A was estimated at approximately 45 percent, which is approximately 30 percent higher than the level of weed cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-2A included black mustard, poison hemlock (*Conium maculatum*), red-stemmed filaree, perennial pepperweed (*Lepidium latifolium*), white horehound (*Marrubium vulgare*), and curly dock (*Rumex crispus*). Many of the nonnative weeds observed in this mitigation area are starting to flower and will soon go to seed. Weed abatement should be conducted for this mitigation area as soon as possible.

2.3.3 DG-2B

The overall health of the container plants in DG-2B was noted as being good. A negligible number of container plants appeared stressed, while approximately five percent were showing stress during the previous qualitative monitoring event. Stress was likely due to the same reasons as those described for DG-2A. In addition, insect galls were observed on several of the willow species. Formal mortality counts were taken for DG-2B during the 2020 quantitative monitoring and were included in the 2020 annual reporting. Similar to DG-2A, the willow species and Fremont's cottonwoods were no longer showing signs of seasonal dieback. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of the plants in the DG-2B mitigation area appears to have been successfully completed. The current issues identified during the monitoring visit are not expected to have an effect on the continued growth of plants in the mitigation area. Photos 7 through 10 in Attachment B document the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-2B mitigation area, likely both from natural recruitment and from seeding. Native plants such as annual bursage, Canada horseweed, California poppy (*Eschscholzia californica*), caterpillar phacelia, and ladies' tobacco were observed sprouting in the DG-2B

mitigation area. In addition, dodder was observed growing on some of the shrub and tree species in this mitigation area which could lead to future decline of these shrubs.

Nonnative weed cover in DG-2B was estimated at approximately 30 percent, which is approximately 10 to 15 percent more than what was observed during the previous qualitative monitoring event. Nonnative weeds are starting to germinate and proliferate in some portions of DG-2B. Nonnative species observed in DG-2B included black mustard, poison hemlock, red-stemmed filaree, perennial pepperweed, curly dock, and black nightshade (*Solanum nigrum*). Many of the nonnative weeds observed in this mitigation area are starting to flower and will soon go to seed. Weed abatement should be conducted for this mitigation area as soon as possible.

2.3.4 DG-3A

The overall health of the container plants in DG-3A was noted as being good. Approximately 10 percent of the container plants in the Coast Live Oak Woodland portions of DG-3A were noted as showing varied levels of stress, which is 5 percent less than the percentage of container plants that were showing stress during the previous qualitative monitoring event. In addition, several oaks were showing significant signs of decline and may not survive. The decline appears to be the result of erosion and misplaced emitters. Approximately 15 percent of the container plants in the Mulefat Thickets portions of DG-3A were noted as showing varied levels of stress, which is approximately 5 to 10 percent more than the percentage of container plants that were showing stress during the previous qualitative monitoring event. Formal mortality counts were taken for DG-3A during the 2020 quantitative monitoring and were included in the 2020 annual reporting. The types of stress the plants were exhibiting are the same as those described for the plants in DG-2A. However, erosion is also a problem in some areas of DG-3A. Some of the planting basins were observed to have varied levels of erosion and should be repaired. Similar to DG-2A, the container planted willow species and Fremont's cottonwoods were no longer exhibiting seasonal dieback and the willow and mulefat stakes were observed to be thriving. During the monitoring visit, the planted coast live oak (*Quercus agrifolia*) acorns were inspected for survivorship and health. Approximately 20 germinated coast live oak acorns appear to still be present in DG-3A. The majority of the germinated acorns appear to be in good health. During the monitoring, it was noted that an existing coast live oak tree (Tree Tag #39) was experiencing severe branch failure for multiple branches. The cause of the branch failure was unclear and further investigation should be conducted. The installation of the plants in the DG-3A mitigation area appears to have been completed successfully. The current issues noted during the monitoring are not expected to have a negative effect on the continued growth of the plants in the mitigation area. Photos 11 through 15 in Attachment B document the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-3A mitigation area, likely both from natural recruitment and from seeding. Native plants such as annual bursage, mugwort, mulefat (*Baccharis salicifolia*), cobweb thistle, tall flatsedge (*Cyperus eragrostis*), jimsonweed (*Datura wrightii*), beardless wild rye (*Elymus triticoides*), Canada horseweed, California poppy, caterpillar phacelia, ladies'and stinging nettle (*Urtica dioca*) were observed sprouting in the DG-3A mitigation area.

Nonnative weed cover in DG-3A was estimated at approximately 35 to 45 percent, which is approximately 20 to 25 percent more than the level of nonnative cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-3A included black mustard, poison hemlock, perennial pepperweed, annual yellow sweetclover (*Melilotus inducus*), tree tobacco, rabbitsfoot grass (*Polypogon monspeliensis*) and wild radish (*Raphanus sativus*). Many of the nonnative weeds observed in this mitigation area are starting to flower and will soon go to seed. Weed abatement should be conducted for this mitigation area as soon as possible.

2.3.5 DG-4

The overall health of the container plants in mitigation area DG-4 was noted as being good. Approximately 10 percent of container plants in the coastal sage scrub portions of DG-4 were showing varied levels of stress which is approximately the same as the percentage of plants showing stress during the previous qualitative monitoring event. Approximately 10 percent of container plants in the riparian portions of DG-4 were showing varied levels of stress, which is approximately the same as the percentage of plants showing stress during the previous qualitative monitoring event. The stress appears to be mostly due to the same reasons described in DG-2A. For most portions of DG-4, only a negligible number of container plants were noted as being missing or dead. Formal mortality counts were taken for DG-4 during the 2020 quantitative monitoring and were included in the 2020 annual reporting. The container planted willow species and Fremont's cottonwood were no longer showing signs of seasonal dieback and the willow and mulefat stakes were observed to be thriving. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of plants in the DG-4 mitigation area appears to have been completed successfully and the issues noted during the monitoring are not expected to have an impact on the continued growth of the plants. Photos 16 through 19 in Attachment B document the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-4 mitigation area, likely both from natural recruitment and from seeding. Native plants such as common yarrow (*Achillea millefolium*), deerweed, California sagebrush, tarragon (*Artemisia dracunculus*), mugwort, mulefat, cobweb thistle, California poppy, jimsonweed, telegraph weed (*Heterotheca grandiflora*),caterpillar phacelia, California bluebells (*Phacelia minor*), ladies' tobacco, California rose (*Rosa californica*), and stinging nettle were observed sprouting in the DG-4 mitigation area.

Nonnative weed cover in DG-4 was estimated at approximately 45 percent for most areas, which is approximately 20 to 25 percent more than what was observed during the previous qualitative monitoring event. It should be noted that portions of DG-4 that are adjacent to weed infested portions of Phase 2 (i.e., DG-4A) were observed to have new germination of perennial pepperweed. Nonnative species observed in DG-4 included black mustard, red brome, Italian thistle (*Carduus pycnocephalus*), tocalote, poison hemlock, red-stemmed filaree, perennial pepperweed, white horehound, chamomile (*Matricaria chamomilla*), annual yellow sweetclover, and curly dock. Nonnative weed cover, especially perennial pepperweed, is a significant problem in portions of the DG-4 mitigation area. 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. In

addition, many of the nonnative weeds observed in this mitigation area are starting to flower and will soon go to seed. Weed abatement should be conducted for this mitigation area as soon as possible.

2.3.6 DG-4B

The overall health of the container plants in mitigation area DG-4B was noted as being good and this mitigation area is becoming well established. A negligible number of container plants appeared stressed, while approximately five percent were showing stress during the previous qualitative monitoring event. The types of stress the plants were exhibiting are the same as those described for the plants in DG-2A. A negligible number of container plants were noted as being missing or dead. Formal mortality counts were taken for DG-4B during the 2020 quantitative monitoring and were included in the 2020 annual reporting. Similar to DG-4, the container planted willow species and Fremont's cottonwoods were no longer showing signs of seasonal dieback. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of plants in the DG-4B mitigation area appears to have been completed successfully and the issues noted during the monitoring are not expected to have an impact on the continued growth of the plants. Photos 20 and 21 in Attachment B document the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-4B mitigation area, likely both from natural recruitment and from seeding. Native plants such as mugwort, cobweb thistle, California poppy, caterpillar phacelia, California bluebells, and stinging nettle were observed sprouting in the DG-4B mitigation area.

Nonnative weed cover in DG-4B was estimated to be approximately 20 percent, which is approximately 5 percent more than the percentage of nonnative cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-4B included black mustard, poison hemlock, red-stemmed filaree, white horehound, and perennial pepperweed.

2.3.7 DG-4C

The overall health of the container plants in mitigation area DG-4C was noted as being good. Approximately 10 percent of all container plants were noted as showing minor levels of stress, which is approximately the same percentage of plants that were showing stress during the previous qualitative monitoring event. The types of stress the plants were exhibiting are the same as those described for the plants in DG-2A. A negligible number of container plants were noted as being missing or dead. Formal mortality counts were taken for DG-4C during the 2020 quantitative monitoring and were included in the 2020 annual reporting. Similar to DG-4, the container planted willow species and Fremont's cottonwood were no longer showing signs of seasonal dieback. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of plants in the DG-4C mitigation area appears to have been completed successfully and the issues noted during the monitoring are not expected to have an impact on the continued growth of the plants. Photos 22 and 23 in Attachment B document the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-4C mitigation area, likely both from natural recruitment and from seeding. Native plants such as annual bursage, mugwort, cobweb thistle, California

poppy, caterpillar phacelia, California bluebells, and stinging nettle were observed sprouting in the DG-4C mitigation area.

Nonnative weed cover in DG-4C was estimated at approximately 25 percent, which is approximately 5 percent higher than the level of nonnative cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-4C included black mustard, red brome, red-stemmed filaree, foxtail barley (*Hordeum murinum*), perennial pepperweed, white horehound, annual yellow sweetclover.

2.3.8 DG-5

The overall health of the container plants in the DG-5 mitigation area was noted as being good. Approximately 10 percent of all container plants were noted as showing varied levels of stress, which is approximately the same percentage of plants that were showing stress during the previous qualitative monitoring event. Gopher herbivory, which has been aa significant problem in DG-5 during past monitoring visits, was not observed; however, this may have been due to the high level of weed proliferation creating a visual buffer. Formal mortality counts were taken for DG-5 during the 2020 quantitative monitoring and were included in the 2020 annual reporting. Similar to DG-4, the container planted willow species and Fremont's cottonwoods were no longer showing signs of seasonal dieback. Some of the planting basins were observed to have minor erosion and should be repaired. The installation of plants in the DG-5 mitigation area appears to have been completed successfully and the issues noted during the monitoring are not expected to have a negative impact on the continued growth of the plants. Photos 24 and 25 in Attachment B document the mitigation area during the monitoring visit.

Native plant growth was noted throughout the DG-5 mitigation area, likely both from natural recruitment and from seeding. Native plants such as Canada horseweed, California poppy, caterpillar phacelia, California bluebells, and stinging nettle were observed sprouting in the DG-5 mitigation area.

Nonnative weed cover in DG-5 was estimated at approximately 45 percent, which is approximately 10 percent lower than the percent of nonnative weed cover that was observed during the previous qualitative monitoring event; however, many of the nonnative weeds observed have gone to flower and will produce seed soon. Nonnative weeds are beginning to proliferate throughout this mitigation area. Nonnative species observed in DG-5 included black mustard, Italian thistle, poison hemlock, perennial pepperweed, annual yellow sweetclover, curly doc, and London rocket (*Sisymbrium irio*).

3.0 RECOMMENDATIONS

3.1 Container Plant Replacement

Container Plants that were noted as being dead during both the qualitative and quantitative monitoring events should be replaced during the fall/winter of 2021/2022. Replacement of dead container plants will help to increase native cover and help the restoration sites move toward achieving their success criteria.

Container plant loss was most problematic in areas prone to erosion, areas with higher levels of herbivory, and areas within the least Bell's vireo nest buffer where nonnative weed proliferation occurred during the

active nesting period in the spring of 2020. Special attention should be taken to replace the container plants that were lost in the lest Bell's vireo nest buffer to enhance the habitat in this area.

3.2 Nonnative Plant Control

Nonnative weed cover ranged from approximately 5 percent to 45 percent in the various mitigation areas and was most problematic in theDG-3A, DG-4, and DG-5 mitigation areas. It should be noted that many of the nonnative weeds in these areas are currently flowering and will go to seed soon. Regular maintenance and removal of nonnative weeds is of the highest priority for all of the mitigation areas to reduce competition between native and nonnative plants. In addition, eucalyptus stumps that are starting to re-sprout should be trimmed back frequently. A focus should be placed on removing the weeds and nonnatives from the basins of each of the container plants and cuttings; however, nonnative weeds just outside of the planting areas can migrate into the planting areas via seed dispersal. Outside of the nesting bird season, a focus should also be made to remove nonnative weeds in areas where least Bell's vireos are likely to nest during the breeding season (i.e. in the vicinity of the least Bell's vireo nest that was active in 2020). Nonnative plants and weeds that have gone to seed should be bagged and removed from the mitigation area. Without the use of herbicides, control of the nonnatives will be extremely difficult so the frequency and level of effort will need to be increased to provide control until the native plants and seedlings have a chance to grow and outcompete the nonnatives. In particular, it is important to maintain long-term perennial pepperweed management to reduce competition and allow for native plants to germinate. In addition, dodder should be removed from container plants in the mitigation areas. 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.

3.3 Irrigation

The irrigation system was inspected for functionality and appeared to be properly installed. Irrigation was actively occurring during the monitoring visit and the soil for most container plants was found to be moist at and below the surface. Some of the emitters were observed to be outside of the container plant basins, likely due to erosion, water flow, and/or public interference. Twice weekly watering events should be conducted for the container plants unless adequate rainfall occurs. After watering, the container plant basins should have at least 0.5 inch of saturation depth. Continual maintenance of the irrigation system should be conducted to ensure all plants are evenly watered and the tube emitters are placed at the base of the container plants. Watering of the seeded only areas is not recommended.

3.4 Herbivory

Rabbit herbivory of container plants was observed in the Phase 1 mitigation areas. California rose, California buckwheat, and basket rush (*Juncus textilis*) appeared to be the most affected by herbivory. Minor herbivory generally will not kill the plants, but continued monitoring should be conducted during future visits to determine the level of the herbivory isn't such that plants are dying. As the plants become more established, they will be less susceptible to the effects of herbivory. If browsing by rabbits or other animals begins to worsen, caging around affected and/or favored container plants may be warranted.

3.5 Erosion

Minor erosion to planting basins was observed throughout the Phase 1 mitigation areas, likely from recent storm events. In addition, severe erosion in DG-3A near Altadena Drain was observed. Recent rainfall has created a channel that flows to the south of Altadena Drain before connecting to the reservoir where severe berm erosion has occurred. Erosion to the upper slope in DG-3A was also observed. Due to the steepness of the slope in the Coast Live Oak Woodland portion of the DG-3A mitigation area, erosion will likely continue to be somewhat of an issue in this area; however, jute nettings are currently in place on the slope and will help to lessen the severity of erosion issues. As native cover increases in this area, erosion issues should lessen. The severity of the erosion should continue to be monitored in all planted areas and if warranted, erosion Best Management Practices (BMPs) should be installed in appropriate areas. This may only require the installation of straw wattles at select sites to prevent existing rills from becoming larger. However, until more native perennial plants become established in these areas, there is the potential that intense rainfall may create additional erosion problems.

If you have any questions about the information presented in this letter, please contact me at CLancaster@ecorpconsulting.com or (714) 648-0630.

Sincerely,

Carley Lancaster
Staff Biologist

ATTACHMENT A

Field Notes

Devil's Gate 5/17/21
C. Lancaster J. Harris
Quarterly Qual Monitoring
Phase 1

DG-1 / DG-1 WOUS

- Very little change from previous monitoring visit
- Nonnative germ: BRANIG, EROCIC BROMAD, NICGLA, CENMEL ~5-10% cover
- Cuscuta taking over in some areas → cut back / remove
- Minimal native germ: ERIFAS, ACMGLA, PSECAL, PHACIL, LEPSOL, CORFIL

DG-2A

- Cont. plants well established w/ minimal stress
- Nonnatives starting to proliferate and many in flower going to seed soon CONMAC, BRANIG, EROCIC, MARVUL, RUMCRI, LEPLAT, CARPYC, BROMAD ~45% cover
- Native germ: PHACIC, PSECAL, CIROCC AMBACA, ERICAN, OENELA, ARTDOU
- Site needs to be weeded ASAP

DG-2B

- Cont. plants well est. w/ minimal stress
- Nonnatives starting to proliferate in some portions of DG 2B BRANIG, CONMAC, EROCIC, RUMCRI, SOLNIG ~30% cover overall
- Native germ: ERICAN, PHACIC, AMBACA, PSECAL, ESCCAL

DG-3A Altadena Drain

- Cont. plants showing minor stress (~15%)
- Willow & mulefat stakes doing very well
- Nonnatives proliferating: NICGLA, RUMCRI, CONMAC, BRANIG, RAPSAT, MELIND, LEPLAT, POLMON → many in flower going to seed soon ~35% cover
- Native Germ: ERICAN, ARTDOU, CYPERA, URTDIO, BACSAL

DG-3A Oak Woodland

- ~10% of remaining oaks appear stressed
- Tree 39 from oak tree inventory experienced additional branch failure → exact cause unk.

- Nonnatives proliferating BRANIG, RAPSAT, BRODIA, LEPLAT, CONMAC, CARPYC, NICGLA, MELIND ~45% cover

DG-4 CSS

- Most cont. plants well est. N/O% showing minor stress
- Nonnatives proliferating CONMAC, BRANIG, CARPYC, BROMAD, EROCIC, HORMUR, MELIND, CENMEL, LEPLAT, MARVUL, ANA ARV, MATCHA → many in flower ~45% cover
- Native germ. ESCCAL, PHACIC, HETGRA, PSECAL, CIROCC, ACHMIL
- Disc golfers cont. to be an issue in this area.

DG-4 Riparian

- Northern section w/ ↑ level of weed proliferation
- Portions of mid section w/ weed proliferation
- Southern section the same as the northern
- Many weeds in flower going to seed → weed ASAP
- Nonnative germ: CONMAC, BRANIG, EROCIC, CENMEL, LEPLAT, CARPYC, RUMCRI

~45% cover

- Cont. plants mostly healthy in all sections ~10%. w/ minor stress
- Native germ: URTDIO, ESCCAL, PHACIC, BACSAL, ARTDOU, HETGRA, ROSCAL, PSECAL, PHAMIN, DATWRI, CIROCC, ARTDRA

DG-4B

- Cont. plants very healthy & well est → negligable stress
- Nonnative germ: BRANIG, LEPLAT, EROCIC, MARVUL, CONMAC ~20% → not too bad @ this site
- Native germ: ESCCAL, PHACIC, CIROCC, ARTDOU, AMBACA, URTDIO, PHAMIN

DG-4C

- Cont. plants mostly healthy & well est ~10%. w/ minor stress
- Nonnative germ: MARVUL, BRANIG, EROCIC, BRODIA, MELIND, CENMEL, HORMUR ~25% cover
- Native germ: ESCCAL, PHACIC, CIROCC, ARTDOU, AMBACA, URTDIO, PHAMIN,

DG-5

- Cont. plants mostly healthy & well est - ~10% stressed
- Nonnative weeds proliferating RUMCRI, CONMAC, SISIRI MELIND, LEPLAT, BRANIG, CARPYC ~45% cover → weed ASAP
- Native germ: PHAMIN, PHACIC, ESCCAL, URTDIO, ERICAN

General Site Notes Phase I

- Irrigation appeared to be functioning properly @ all sites
- Minor ~~[illegible]~~ irrigation emitter misplacement
- Nonnative weeds are currently proliferating in a # of Phase I mitigation areas

ATTACHMENT B

Photo Documentation

Photo 1: Overview Mitigation Area DG-1

Photo 2: Overview Mitigation Area DG-1

Photo 3: Overview Mitigation Area DG-1

Photo 4: Overview Mitigation Area DG-1

Photo 5: Overview Mitigation Area DG-2A

Photo 6: Overview Mitigation Area DG-2A

Photo 7: Overview Mitigation Area DG-2B

Photo 8: Overview Mitigation Area DG-2B

Photo 9: Overview Mitigation Area DG-2B

Photo 10: Overview Mitigation Area DG-2B

Photo 11: Overview Mitigation Area DG-3A Altadena Drain

Photo 12: Overview Mitigation Area DG-3A Altadena Drain

Photo 13: Overview Mitigation Area DG-3A Oak Woodland

Photo 14: Overview Mitigation Area DG-3A Oak Woodland

Photo 15: Overview Mitigation Area DG-3A Oak Woodland

Photo 16: Overview Mitigation Area DG-4

Photo 17: Overview Mitigation Area DG-4

Photo 18: Overview Mitigation Area DG-4

Photo 19: Overview Mitigation Area DG-4

Photo 20: Overview Mitigation Area DG-4B

Photo 21: Overview Mitigation Area DG-4B

Photo 22: Overview Mitigation Area DG-4C

Photo 23: Overview Mitigation Area DG-4C

Photo 24: Overview Mitigation Area DG-5

Photo 25: Overview Mitigation Area DG-5