



January 4, 2022
2018-047.030

Mr. Keith Hala
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 November 19, 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 on November 19, 2021. Field data collected during the monitoring event is provided as Attachment A. This report documents the third quarterly qualitative monitoring visit for the Phase 1 mitigation areas.

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.

Species Name	2A	2B	3A (Oak Wood- land)	3A (Mule-fat Thickets)	4 (CSS*)	4 (Mulefat- Willow**)	4B	4C	5	TOTAL
Mulefat (<i>Baccharis salicifolia</i>)	25	95	—	—	—	1113	135	114	64	1546
Mulefat [cuttings] (<i>Baccharis salicifolia</i>)	—	—	—	84	—	916	—	—	—	1000
Fremont's cottonwood (<i>Populus fremontii</i>)	10	38	—	33	—	479	54	45	27	686
California blackberry (<i>Rubus ursinus</i>)	10	38	—	33	—	619	54	45	26	825
California rose (<i>Rosa californica</i>)	10	38	44	33	—	725	54	45	26	975
Black willow (<i>Salix gooddingii</i>)	20	76	—	—	—	876	108	90	52	1222
Black willow [cuttings] (<i>Salix gooddingii</i>)	—	—	—	67	—	933	—	—	—	1000
Red willow (<i>Salix laevigata</i>)	10	38	—	33	—	439	54	45	26	645
Arroyo willow (<i>Salix lasiolepis</i>)	10	38	—	—	—	438	54	45	26	611
Arroyo willow [cuttings] (<i>Salix lasiolepis</i>)	—	—	—	33	—	967	—	—	—	1000
Black elderberry (<i>Sambucus nigra</i> ssp. <i>caerulea</i>)	5	19	—	17	—	594	27	23	13	698
California melic (<i>Melica imperfecta</i>)	—	—	20	—	—	—	—	—	—	20
Coast live oak (<i>Quercus agrifolia</i>)	—	—	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] (<i>Quercus agrifolia</i>)	25	—	275	—	—	—	—	—	—	300
California gooseberry (<i>Ribes californicum</i>)	—	—	50	—	—	—	—	—	—	50
Mugwort (<i>Artemisia douglasiana</i>)	—	—	—	33	—	617	54	45	26	775
Wrinkled rush (<i>Juncus rugulosus</i>)	—	—	—	—	—	200	—	—	—	200
Basket rush (<i>Juncus textilis</i>)	—	—	—	—	—	100	—	—	—	100
California Sagebrush (<i>Artemisia californica</i>)	10	38	—	—	306	—	—	—	—	354
Coyote brush (<i>Baccharis pilularis</i>)	10	38	—	33	—	504	54	45	26	710
California brittlebush (<i>Encelia californica</i>)	—	—	—	—	102	—	—	—	—	102
California buckwheat (<i>Eriogonum fasciculatum</i>)	—	—	—	—	306	—	—	—	—	306
Menzies goldenbush (<i>Isocoma menziesii</i>)	—	—	—	—	41	—	—	—	—	41
Deerweed (<i>Acmispon glaber</i>)	—	—	—	—	102	—	—	—	—	102
Laurel sumac (<i>Malosma laurina</i>)	—	—	—	—	61	—	—	—	—	61
Coastal prickly pear (<i>Opuntia littoralis</i>)	—	—	—	—	41	—	—	—	—	41
Black sage (<i>Salvia mellifera</i>)	—	—	—	—	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 November 19, 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 2020 wet season and had minimal plant growth. Native plants such as California buckwheat (*Eriogonum fasciculatum*), chaparral yucca (*Hesperoyucca whipplei*), caterpillar phacelia (*Phacelia cicutaria*), ladies' tobacco (*Pseudognaphalium californicum*), and scale broom (*Lepidospartum squamatum*) 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. Native cover for the DG-1 and DG-1 WOUS mitigation areas was estimated to be 55 to 60 percent with some areas having relatively dense cover and other areas being scoured and/or having minimal cover. Photos 1 through 4 in Attachment B document the mitigation area during the monitoring visit.

During the monitoring visit, tracks from heavy machinery were observed within the Southern California Edison (SCE) easement portion of DG-1; however, no damage to native plants were observed. The heavy machinery tracks are likely from the recent pole work conducted by SCE within their easement.

Nonnative weed cover in DG-1 and DG-1 WOUS was estimated at approximately five percent, if the dead annual weeds are excluded, which is approximately 5 percent higher than the level of weed cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-1 and DG-1 WOUS included black mustard (*Brassica nigra*), red-stemmed filaree (*Erodium cicutarium*), and Mediterranean grass (*Schismus barbatus*). All nonnative weeds were just starting to germinate and had not gone to flower or seed.

2.3.2 DG-2A

The overall health of the container plants in DG-2A was noted as being good. Approximately 5 percent of the container plants in DG-2A were noted as showing varied levels of stress, which is approximately 10 percent less than the percentage of container plants that 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. Seasonal dieback was noted for the willows (*Salix* sp.) and the Fremont's cottonwoods (*Populus fremontii*). 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*), Canada horseweed (*Erigeron canadensis*), telegraph weed (*Heterotheca grandiflora*), and stinging nettle (*Urtica dioica*) were observed sprouting in the DG-2A mitigation area. Native cover for the DG-2A mitigation area was estimated to be 60 to 65 percent.

Nonnative weed cover in DG-2A was estimated at approximately less than five percent, which is approximately the same level of weed cover that was observed during the previous qualitative monitoring event. This site was noted as being actively weeded during the monitoring visit. Nonnative species observed in DG-2A included wild oat (*Avena fatua*), black mustard, poison hemlock (*Conium maculatum*), and perennial pepperweed (*Lepidium latifolium*). All nonnative weeds were just starting to germinate and had not gone to flower or seed.

2.3.3 DG-2B

The overall health of the container plants in DG-2B was noted as being good. Approximately less than five percent of the container plants in DG-2B were noted as showing varied levels of stress, which is approximately the same percentage of container plants that 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, some of the willows and Fremont's cottonwoods were 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, caterpillar phacelia and stinging nettle were observed sprouting in the DG-2B mitigation area. Native cover for the DG-2B mitigation area was estimated to be 65 to 70 percent.

Nonnative weed cover in DG-2B was estimated at approximately less than one percent, which is approximately five percent less than what was observed during the previous qualitative monitoring event. Nonnative species observed in DG-2B included black mustard and red-stemmed filaree. All nonnative weeds were just starting to germinate and had not gone to flower or seed. In addition, evidence of recent weeding was observed in the DG-2B mitigation area.

2.3.4 DG-3A

The overall health of the container plants in DG-3A was noted as being good. Approximately five 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 approximately five 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 five percent of the container plants in the Mulefat Thickets portions of DG-3A were noted as showing varied levels of stress, which is approximately the same 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. The willow and mulefat stakes were observed to be thriving in this mitigation area. 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 is being 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, California sagebrush (*Artemisia californica*), mugwort, mulefat, Canada horseweed, California poppy (*Eschscholzia californica*), and stinging nettle were observed sprouting in the DG-3A mitigation area. Native cover for the DG-3A mitigation area was estimated to be approximately 70 percent in the mulefat thickets portion of the mitigation area and 50 percent in the coast live oak woodland portion (60 percent overall).

Nonnative weed cover in DG-3A was estimated at approximately 10 percent, which is approximately 5 percent more than the level of nonnative cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-3A included wild oat, black mustard, flax-leaved horseweed (*Erigeron bonariensis*), red-stemmed filaree, and perennial pepperweed. All nonnative weeds were just starting to germinate and had not gone to flower or seed. In addition, evidence of recent weeding was observed in the DG-2B mitigation area.

2.3.5 DG-4

The overall health of the container plants in mitigation area DG-4 was noted as being good. Approximately five percent of container plants in the coastal sage scrub portions of DG-4 were showing varied levels of stress which is approximately the same percentage of plants showing stress during the previous qualitative monitoring event. Approximately five percent of container plants in the riparian portions of DG-4 were showing varied levels of stress, which is approximately five percent less than 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 willow and mulefat stakes were observed to be thriving in this mitigation area. 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 mugwort, mulefat, California poppy, telegraph weed, Canada horseweed, California buckwheat (*Eriogonum fasciculatum*), salt heliotrope (*Heliotropium curassavicum*), caterpillar phacelia, and stinging nettle were observed sprouting in the DG-4 mitigation area. Native cover for the DG-4 mitigation area was estimated to be approximately 65 to 75 percent in the riparian portion of the mitigation area and 50 to 55 percent in the coastal sage scrub portion.

Nonnative weed cover in DG-4 was estimated at approximately 10 percent for most areas, which is approximately the same percentage of nonnative cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-4 included black mustard, poison hemlock, perennial pepperweed, and white horehound (*Marrubium vulgare*). 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. All nonnative weeds were just starting to germinate and had not gone to flower or seed. In addition, evidence of recent weeding was observed in the DG-2B mitigation area.

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. Approximately less than five percent of container plants were showing stress which is approximately the same percent of plants that were stressed 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. 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, tarragon (*Artemisia dracunculus*), mulefat, caterpillar phacelia, and stinging nettle were observed sprouting in the DG-4B mitigation area. Native cover for the DG-4B mitigation area was estimated to be approximately 70 to 75 percent.

Nonnative weed cover in DG-4B was estimated to be approximately less than five percent, which is approximately the same percentage of nonnative cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-4B included black mustard, poison hemlock, and perennial pepperweed. All nonnative weeds were just starting to germinate and had not gone to flower or seed.

2.3.7 DG-4C

The overall health of the container plants in mitigation area DG-4C was noted as being good. Approximately five percent of all container plants were noted as showing minor levels of stress, which is approximately five percent less than 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. 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 to 24 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 Canada horseweed, telegraph weed, and caterpillar phacelia were observed sprouting in the DG-4C mitigation area. Native cover for the DG-4C mitigation area was estimated to be approximately 55 percent.

Nonnative weed cover in DG-4C was estimated at approximately less than five percent, which is approximately the same as the level of nonnative cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-4C included black mustard, poison hemlock, and perennial pepperweed. All nonnative weeds were just starting to germinate and had not gone to flower or seed

2.3.8 DG-5

The overall health of the container plants in the DG-5 mitigation area was noted as being good. Approximately less than five percent of all container plants were noted as showing varied levels of stress, which is approximately the same as the percentage of plants that were showing stress during the previous qualitative monitoring event. Formal mortality counts were taken for DG-5 during the 2020 quantitative monitoring and were included in the 2020 annual reporting. 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 25 and 26 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 mugwort, mulefat, Canada horseweed, caterpillar phacelia, and stinging nettle were observed sprouting in the DG-5 mitigation area. Native cover for the DG-5 mitigation area was estimated to be approximately 75 to 80 percent and the site is thriving.

Nonnative weed cover in DG-5 was estimated at approximately less than five percent, which is approximately the same percentage of nonnative weed cover that was observed during the previous qualitative monitoring event. Nonnative species observed in DG-5 included black mustard, poison hemlock, and perennial pepperweed. All nonnative weeds were just starting to germinate and had not gone to flower or seed

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 least Bell's vireo nest buffer to enhance the habitat in this area.

3.2 Nonnative Plant Control

Nonnative weed cover ranged from approximately <1 percent to 10 percent in the various mitigation areas and it was obvious that weed abatement activities had recently taken place for a number of the mitigation areas. It should be noted that many of the annual nonnative weeds in these areas were dead for the season. In addition, nearly all nonnative weeds observed during the monitoring were just starting to germinate and had not gone to flower or seed. 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

DE- Qual phase 1

11/19/21

C. Lancaster

DE-1 / DE-1 WOUS

- Native germ: PHACIC, HESWIT1
- Pseudognaphalium sp., ERIFAS ~ 55-60%
- Nonnative germ: BRANIG, EROIC, SAGRO
- Some Cuscuta growing on shrubs
- Traces from heavy eq. obs
- @ SCE easement - no damage to veg obs.
- Oak tree healthy w/ full canopy
- ~ 5% NN cover - just starting to germ

DE-2A

1 new mort. ~ 50% stressed

- Cont. plants healthy → those noted as stressed are recovering
- Native germ: ERICAN, ARTOUR, PHACIC, AMBPSI, URTOUR, HETGRA, OXYE
- Nonnative germ: CONMAC, BRANIG, LEPLAT, AVEXAT, * < 5%
- Some seasonal dieback in Sed: + POPYRE
- Crew actively weeding
- Native cover ~ 60-65%

DE-2B

- Cont plants very healthy & well est. 45% stressed

72 DG-2B Cont.

- Native germ: PHALIC, URTICACEA
AMBACIA ~ 70% cover ERICACEA
- Nonnative germ: ~~SOCOTRA~~, EROICA
BRANKIA
C1% area recently weeded

DG-3A Altadena Drain

- Cont. plants healthy & well est.
C5% stressed → some seasonal dieback
- Native germ: ARTICIA, AMBACIA,
ARTICIA ~ 70% cover BALSAL
- Nonnative germ: CEPHALA, BRANKIA
C1% area recently weeded
- Some Cuscuta obs.

DG-3A Dark woodland

- Cont. plants mostly healthy
~ 5% stressed ~ 50% cover
- Native germ: ESCCAL, URTICACEA
- Nonnative germ: AVICARIA, ERIBON
EROCICA ~ 10%

- Oak in this area continues to decline w/ lg branch failure
- Main irrigation line needs repair @ S end → need more rebar

DG-4 CSS

C5% stressed

- Cont plants mostly healthy → some being taken over by BALSAL

DE-4 CSS cont. ~ 55% cover 73

- Native germ: BACSAL, ERICAN, HETGRA, PHACIC, ESCCAL, ERIFAS
- Nonnative germ: LEPLAT, BRANIG, MARVUL ^{10%} ~~20%~~ starting to blanket in sections

DE-4 Riparian

- Cont. plants mostly healthy < 5%. Stressed
- Willow/BACSAL stakes are thriving → some over 20' tall
- Native germ: ERICAN, ARTDOL, URTURE, PHACIC ~ 65-70%
- Nonnative germ: BRANIG, LEPLAT, CONMAC

DE-4L

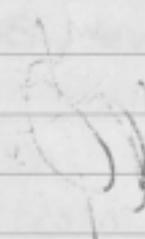
- Cont. plants mostly healthy & well est. ~ 5% stressed
- Native germ: ERICAN, PHACIC, HETGRA ~ 55% cover
- Nonnative germ: LEPLAT, CONMAC, BRANIG 5% cover

DE-5

- Cont. plants thriving - ~~10%~~ < 5% stressed
 - Native germ: ARTDOL, BACSAL, ERICAN, URTURE, PHACIC ~ 75-80%
 - Nonnative: CONMAC, LEPLAT, HORMAURE
- ~ 5% cover

DG-4B

- Cont. plants healthy & well est. 5% stressed BRASA
- Native germ: ARTDRA, ARTDRA, PHAZIC, WRT ~~WRT~~ ~ 70-75%
- Nonnative: LOPLAT, CONMAC, BRANIC ~~CON~~ ~ 5%



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 WOUS



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-4C



Photo 25: Overview Mitigation Area DG-5



Photo 26: Overview Mitigation Area DG-5