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Calero County Park Pond and Wetland Restoration Project— Year 5 (2021) Monitoring Report

Project # 3753-07

Prepared for:

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In collaboration with:
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Project Permits
USACE File No. 2012-00302S
Regional Water Quality Control Board CIWQS Place No. 824397 (bkw)
California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement No. 1600-2016-0140-R3

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Section A. General Project Information

The Calero County Park Pond and Wetland Restoration Project (project) is a priority for the implementation of the Conservation Strategy of the Santa Clara Valley Habitat Plan (VHP) (ICF 2012). The Santa Clara Valley Habitat Agency constructed the project in partnership with the Santa Clara County Parks and Recreation Department and is currently in the fifth and final year of the 5-year postconstruction monitoring and management period. The project was constructed to restore and establish pond and wetland habitats at two locations (the pond mitigation site and wetland mitigation site) in Calero County Park, located in the eastern foothills of the Santa Cruz Mountains in the Alamitos Creek watershed (Section E, Figures 1 and 2). Compensatory mitigation credits and project objectives are described in full in the *Calero County Park Pond and Wetland Restoration Project Mitigation and Monitoring Plan* (MMP) (H. T. Harvey & Associates 2016). The project's objectives are as follows:

Pond Mitigation Site—

- Restore breeding habitat for the California red-legged frog (*Rana draytonii*) and California tiger salamander (*Ambystoma californiense*) by deepening a 1,500 square foot portion of the pond, increasing seep water inflow, planting wetland vegetation, controlling aquatic predators, and excluding cattle from a portion of the pond. The deepened pond will also restore breeding habitat for common amphibians such as the Pacific tree frog (*Hyliola regilla* [formerly known as *Pseudacris sierra*]) and western toad (*Anaxyrus boreas*).
- Restore seasonal wetland and freshwater marsh habitats by excluding cattle from a portion of the pond and planting native wetland vegetation. These actions will restore multiple wetland functions, including sediment filtration, nutrient filtration, and erosion protection. In addition, this restoration will provide habitat for Mt. Hamilton thistle (*Cirsium fontinale* var. *campylon*), foraging and dispersal habitat for the California red-legged frog, and foraging habitat for seasonal wetland associated birds.
- Establish seasonal wetland habitat by converting upland habitat to wetlands to establish multiple wetland functions, including sediment filtration, nutrient filtration, erosion protection, provision of habitat for Mt. Hamilton thistle, breeding, foraging and dispersal habitat for the California red-legged frog, and foraging habitat for seasonal wetland associated birds.
- Establish functional basking habitat for the western pond turtle (*Actinemys marmorata*) by installing anchored basking logs in the deepened open water portion of the pond.
- Improve climate change resiliency of pond habitat by increasing the water storage capacity of the pond and by increasing the springbox/seep inflow rate to the pond.
- Continue to provide water for cattle that graze the surrounding Calero County Park.

Wetland Mitigation Site—

- Restore seasonal wetland and freshwater marsh habitats by removing sediment, planting native wetland vegetation, and excluding cattle. These actions will restore multiple wetland functions, including sediment filtration and nutrient filtration, and will provide foraging and dispersal habitat for the California red-legged frog, as well as foraging habitat for seasonal wetland associated birds.
- Establish seasonal wetland habitat by converting upland habitat to wetlands to establish multiple wetland functions including sediment filtration, nutrient filtration, and erosion protection. In addition, the establishment of this habitat will provide foraging and dispersal habitat for the California red-legged frog, and foraging habitat for seasonal wetland associated birds.
- Improve climate change resiliency of wetland habitat by increasing the water storage capacity of the wetland.
- Continue to provide water for cattle that graze the surrounding Calero County Park.

Project construction commenced on September 14, 2016, and was completed on December 14, 2016. The *Calero County Park Pond and Wetland Restoration Project As-built Notification Report* (H. T. Harvey & Associates 2017a) provides detailed information about project construction.

This report presents the results of the Year 5 (2021) monitoring in relation to the ecological performance standards outlined in the project's MMP. Year 5 is the final year of the planned short-term monitoring period. Monitoring results will also inform management activities to direct maintenance and potential remedial measures to ensure that the project's objectives are fulfilled. In accordance with the requirements of the MMP, this report was prepared in the format of the U.S. Army Corps of Engineers (USACE) South Pacific Division Mitigation Monitoring Report Form (USACE 2014).

A.1 Project Name

Calero County Park Pond and Wetland Restoration Project

A.2 DA File Number(s)

The project permit numbers are as follows:

- USACE File No. 2012-00302S
- Regional Water Quality Control Board, California Integrated Water Quality System (CIWQS) Place No. 824397 (bkw) and CIWQS Regulatory Measure No. 406031
- California Department of Fish and Wildlife (CDFW) Lake and Streambed Alteration Agreement No. 1600-2016-0140-R3
- CDFW Natural Community Conservation Plan Permit No. 2835-2012-002-03

- U.S. Fish and Wildlife Service (USFWS) Federal Fish and Wildlife Permit No. TE94345A-0
- Santa Clara Valley Water District Encroachment Permit File No. 33407
- County of Santa Clara License Agreement dated 9/6/16

A.3 Project Type

Permittee responsible mitigation

A.4 Permittee, Bank, or In-Lieu Fee Sponsor Name and Work Phone Number

Edmund Sullivan, Santa Clara Valley Habitat Agency
408.779.7261

A.5 Permittee, Bank, or In-Lieu Fee Sponsor Mailing Address

Edmund Sullivan, Santa Clara Valley Habitat Agency
535 Alkire Avenue, Suite 100
Morgan Hill, CA 95037

A.6 Permittee, Bank, or In-Lieu Fee Sponsor E-Mail Address

edmund.sullivan@scv-habitatagency.org

A.7 Agent Name and Work Phone Number

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408.458.3222

A.8 Agent Mailing Address

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983 University Avenue, Building D
Los Gatos, CA 95032

A.9 Agent E-Mail Address

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Section B. Notice of Commencement/Completion of Compensatory Mitigation Project

B.1 Commencement

Y: ☒ N: ☐

Project construction commenced on September 14, 2016. The *Calero County Park Pond and Wetland Restoration Project As-built Notification Report* (H. T. Harvey & Associates 2017a) describes the project timeline in greater detail.

B.2 Completion

Y: ☒ N: ☐

Project construction was completed on December 14, 2016. The *Calero County Park Pond and Wetland Restoration Project As-built Notification Report* (H. T. Harvey & Associates 2017a) describes the project timeline in greater detail.

B.3 Financial Assurance Remains in Place

Y: ☒ N: ☐

B.4 Requesting Release of a Financial Assurance?

Y: ☐ N: ☒

B.5 Name of Contractor (If Any)

D-Line Constructors and their subcontractor Confluence Restoration constructed the project and Confluence Restoration is performing ongoing maintenance.

B.6 Phone Number of Contractor (If Any)

Jeremy Steele, D-Line Constructors
510.251.6400

Ryan Yarbrough, Confluence Restoration
831.588.9738

Section C. Mitigation Monitoring Status

C.1 Final Monitoring Completed and Verification Requested?

Y: ☐ N: ☒

C.2 Date of Monitoring Reported

This monitoring report summarizes monitoring conducted during the calendar year 2021, which is Year 5 of the of the short-term (i.e., 5-year) postconstruction ecological monitoring period set forth in the MMP.

C.3 Monitoring Report Number

Monitoring report number 5. Monitoring reports were previously prepared in Years 1, 2, 3, and 4 (H. T. Harvey & Associates 2017b, 2018, 2019a, and 2020).

C.4 Management and Maintenance Activities Completed

The following is a list of the management and maintenance activities completed during Year 5 (2021) along with dates that each activity was conducted:

- Controlled weeds including purple star thistle (*Centaurea calcitrapa*), bull thistle (*Cirsium vulgare*), whitetop (*Lepidium draba*), and Himalayan blackberry (*Rubus armeniacus*) via hand removal, and Harding grass (*Phalaris aquatica*) and other nonnative grasses via mowing (February 9, April 23, and June 28, 2021)
- Temporarily repaired broken section of fence at pond site (June 28, 2021). The fence was fully repaired by the rancher later in the year.
- Trimmed vegetation upstream of weirs above the site to reduce debris inputs to the springbox and trough (June 28, 2021)
- Controlled weeds including stinkwort (*Dittrichia graveolens*), black mustard (*Brassica nigra*), and Himalayan blackberry by hand. Removed silt from spring inlet and trough (September 22, 2021)
- Opened pond outlet valve, cleared mud and screen, and replaced (September 30, 2021)

C.5 Adaptive Management Activities Completed

No additional adaptive management activities were completed this year.

C.6 Performance Standards

The project's MMP describes performance standards during the 5 years of short-term postconstruction ecological monitoring. Table 1 contains the Year 5 performance standards and an evaluation of whether Year 5 monitoring results met the performance standards. Section C.7 contains further discussion of the results relative to the performance standards.

Table 1. Year 5 Performance Standards and Results for Pond and Wetland Mitigation Sites

Performance Standard	Year 5 Goal	Goal Met in Year 5?	Year 5 Results
Target Hydrologic Regime	A portion of the pond mitigation site will be inundated by at least 2 feet of water through August 31, if average or above-average rainfall year. No quantifiable criteria apply for the wetland site.	NA	Year 5 was a below average water year and was the driest recorded water year in the last 30 years. Therefore, the target hydrologic regime performance standard does not apply to Year 5. The maximum pond water depth did not exceed 2 feet on August 31, 2020 (depth was 0 feet on August 31, 2020). The hydroperiod success criterion was met in monitoring Years 1 and 3, the only normal water years since monitoring began.
Sedimentation and Geomorphic Stability	The pond and wetland mitigation sites and springbox-seep water collection structures will demonstrate minimal sedimentation and geomorphic stability (includes cross-section surveys).	Yes	Minimal appreciable sedimentation occurred at the pond mitigation and wetland mitigation sites. Cattle grazing and maintenance of the outlet structure caused small, localized sedimentation in the pond mitigation site. Overall, the pond and wetland mitigation sites continued to show minimal sedimentation from Year 1 and were geomorphically stable.
California Red-legged Frog/ California Tiger Salamander/ Western Pond Turtle	At the pond mitigation site, successful breeding of California red-legged frog in at least one monitoring year; continued successful breeding of California tiger salamander; and continued occurrence of the western pond turtle (criteria do not apply to wetland site).	No (red-legged frog) Yes (tiger salamander) Yes (westernpond turtle)	California red-legged frogs have not been observed during Years 1–5. The target hydrologic regime for California red-legged frog was not achieved in Year 5 due to the very dry water year. California tiger salamander demonstrated successful breeding in Years 1-3 and 5, but successful breeding was not observed in Year 4. Failure to observe California tiger salamander breeding in Year 4 is likely the result of delayed sampling timing due to Covid-19 restrictions. Alternatively, breeding may not have occurred in 2020 due to the very dry water year. Western pond turtles continued to occur at the pond mitigation site in Years 1-5 including juveniles that were observed in Years 1, 2, 4, and 5.
Aquatic Predator	Abundance of bullfrogs and Louisiana red swamp crayfish will be below	Yes	The abundance of aquatic predators at the pond mitigation site in Year 5 was

Performance Standard	Year 5 Goal	Goal Met in Year 5?	Year 5 Results
Presence/ Absence	baseline conditions at the pond mitigation site and minimal predator occurrence at the wetland mitigation site (no management is required at the wetland mitigation site). In Year 1 (baseline), 27 adult bullfrogs, hundreds of bullfrog larvae, and thousands of Louisiana red swamp crayfish were observed at the pond mitigation site.		similar to or less than the baseline conditions set in Year 1. The pond dried out without draining during the summer, effectively controlling for aquatic predators without the need for additional action. Although not required, the upper pool at the wetland mitigation site was drained for bullfrog control on June 11, 2021.
Mt. Hamilton Thistle Abundance	A stable or increasing population of Mt. Hamilton thistle at the pond mitigation site (criterion does not apply to the wetland site).	Yes	The spatial extent of Mt. Hamilton thistle was similar in Year 5 to Year 1 and Year 5 percent cover of Mt. Hamilton thistle increased from Year 1 to Year 5. Mt. Hamilton thistle abundance decreased between Year 1 and Year 5. Based on these metrics the Mt. Hamilton thistle population is considered stable.
Wetland Vegetation Cover	70% in planting zones; less than 50% in open water pond habitat; at least three wetland species will be present.	No	The average percent cover of wetland vegetation was 39.8% at the pond mitigation site and 56.6% at the wetland mitigation site. Wetland vegetation percent cover decreased since Year 4 at both the pond and wetland mitigation sites, likely as a result of the very dry water year. No vegetation cover was observed in the open water portion of the pond mitigation site. More than three wetland species were present at each mitigation site.
Invasive Plant Cover	Less than 5%	Yes	Invasive plant cover was less than 5% at each mitigation site and across the mitigation sites combined. Some small patches of and individual invasive plants were observed at the pond mitigation site.
Wetland Delineation	**Pond Mitigation Site:** Restored jurisdictional wetlands ≥ 0.27 ac	Yes	Year 5 wetland delineation identified: **Pond Mitigation Site:** Restored jurisdictional wetlands = 0.27 ac
	Created jurisdictional wetlands ≥ 0.01	Yes	Created jurisdictional wetlands =0.01 ac Note that the total acreage of jurisdictional pond and wetland habitat decreased from 2016-2021, while restored wetlands area increased, due to conversion of pond habitat to wetland

Performance Standard	Year 5 Goal	Goal Met in Year 5?	Year 5 Results
			habitat. This was likely due to drought conditions.
	Wetland Mitigation Site: Restored jurisdictional wetlands ≥ 0.10 ac	No	**Wetland Mitigation Site:** Restored jurisdictional wetlands = 0.09 ac
	Created jurisdictional wetlands ≥ 0.02 ac	Yes	Created jurisdictional wetlands = 0.02 ac
Water for Cattle	Sufficient water to support the same grazing intensity of the Reserve lands as the existing conditions.	Yes	Water was available year-round for cattle via the spring-fed trough at the pond mitigation site and another spring away from the mitigation site; although water supplies at these sources were not sufficient to meet demands of the historic cattle stocking rate. Tank and secondary trough below pond were dry by mid-summer. Water connection from a large municipal tank is currently in development to help available water consistently keep up with cattle demand.

C.7 Short Statement on Whether the Performance Standards Are Being Met (Monitoring Methods, Results and Discussion, and Management Recommendations)

Monitoring methods, results and discussion, and recommended management activities are provided below for each performance standard.

C.7.1 Methods

Monitoring methods are discussed below for each performance standard and are in accordance with the project's MMP.

C.7.1.1 Target Hydrologic Regime

Hydrologic monitoring at the pond and wetland mitigation sites was conducted by cbec eco-engineering (cbec) by continuously measuring water levels, direct rainfall, and pond seep inflows. On January 27, 2017, cbec's hydrologists installed water level loggers at the pond outlet structure, the pond seep trough, the wetland weir, and the wetland upper pool. On November 12, 2019, Confluence Restoration installed a staff plate on the pond outlet structure at the pond mitigation site to assist in visual estimates of water levels. Additionally, cbec installed a barometer and a weather station at the pond outlet structure to record air temperature, relative humidity, and direct rainfall using a tipping bucket. This weather station failed during 2020 and the 2020 data were lost. To prevent future data losses, all the gages at the pond outlet structure were replaced with a telemetered weather station on December 23, 2020. Additionally, the wetland weir gage was set approximately 1.5 feet below the previous gage elevation on January 12, 2021, in order to capture both surface and subsurface water levels during

wetland drawdown. To define the relationship between seep trough water levels and seep trough outflow to the pond and estimate seep contributions to the pond throughout the monitoring year, cbec established a rating curve. Appendix B contains additional information on monitoring methods of the target hydrologic regime.

C.7.1.2 Sedimentation and Geomorphic Stability

cbec's hydrologists qualitatively observed sedimentation and geomorphic stability during monitoring and maintenance visits on March 15, May 11, and September 30, 2021. Additional details on monitoring methods for sedimentation and geomorphic stability are provided in Appendix B.

C.7.1.3 California Red-Legged Frog/California Tiger Salamander/Western Pond Turtle

H. T. Harvey & Associates' wildlife ecologists conducted surveys for special-status wildlife species at both the pond and wetland mitigation sites to evaluate the performance standards for the California red-legged frog, California tiger salamander, western pond turtle, and aquatic predator abundance. Surveys were conducted in accordance with the methods described in the MMP, which follow the most recent wildlife agency protocols (USFWS 2005, USFWS and CDFW 2003). In addition, Will Spangler of the Santa Clara Valley Habitat Agency conducted a visual western pond turtle survey during a site visit on March 18, 2021, and Ryan Yarbrough of Confluence Restoration conducted visual wildlife survey while conducting maintenance activities on March 25, 2021. The survey type, survey date, observer, and level of effort (where applicable) are presented in Table 2 in the Results and Discussion Section, below.

C.7.1.4 Aquatic Predator Abundance

The abundance of aquatic predators encountered during each of the special-status wildlife surveys and egg mass surveys was recorded. Any captured nonnative animals were dispatched.

C.7.1.5 Mt. Hamilton Thistle Abundance

H. T. Harvey & Associates' field biologist, Vicki Chang, conducted a survey for Mt. Hamilton thistle at both the pond and wetland mitigation sites on May 20, 2021, during the blooming period for this species. The survey was conducted in accordance with the methods described in the MMP and consisted of: (1) recording the total number of Mt. Hamilton thistle individuals; (2) counting the number of thistle individuals in flower at the time of monitoring (excluding individuals solely in bud); (3) mapping the spatial extent of the population using a Global Positioning System unit; (4) estimating the percent cover of Mt. Hamilton thistle within the area encompassed by the population using the quadrat sampling method (Bonham 1989); (5) qualitatively assessing the condition of Mt. Hamilton thistle individuals within the population; and (6) taking photographs to document onsite conditions.

C.7.1.6 Wetland Vegetation Percent Cover

H. T. Harvey & Associates' field biologists Vicki Chang and Andria Greene conducted wetland vegetation monitoring at the wetland and pond mitigation sites on May 20 and June 2, 2021. Percent cover of planted and

naturally recruited vegetation was determined by species using the quadrat sampling method (Bonham 1989) along permanent transects established within the pond and wetland mitigation sites (Section E, Figures 3 and 4). Quadrat sampling locations were selected by generating random numbers to dictate the distance along each transect and the perpendicular distance from that transect in alternating directions. The number of quadrats sampled was verified to be sufficient by examining the variability of vegetative cover relative to the number of quadrats sampled (Kershaw 1973) (Appendix A). Cover was estimated to the nearest whole percent. Average percent cover of vegetation was also recorded in the open water habitat at the pond mitigation site to determine if the vegetation cover exceeded the performance standard for open water. All species in quadrats were identified using the Jepson manual (Baldwin et al. 2012). Wetland species were defined as those having a wetland indicator status of obligate (OBL), facultative wetland (FACW), or facultative (FAC) based on the *National Wetland Plant List v3.3 Species Detail Tool* (USACE 2018), regardless of whether they were native or nonnative. The average percent wetland vegetation cover and number of wetland species observed at the pond and wetland mitigation sites were evaluated separately and collectively.

C.7.1.7 Invasive Plant Cover

H. T. Harvey & Associates restoration ecologist Zachery Gizicki conducted a focused visual survey for invasive plant species at the pond and wetland mitigation sites on June 2, 2021. As in previous monitoring years, plant species were considered invasive if they were rated as highly invasive by California Invasive Plant Council (Cal-IPC) or if they had a moderate Cal-IPC rating and were deemed by a qualified restoration ecologist to adversely affect habitat quality (Cal-IPC 2021). Per the MMP, the overall cover of invasive plant populations was visually estimated for the pond and wetland mitigation sites separately and collectively.

C.7.1.8 Wetland Delineation

The project's MMP requires that a wetland delineation be conducted at the end of Year 5 post-restoration to determine whether a minimum of 0.27 acres at the pond mitigation site and 0.10 acres at the wetland mitigation site of USACE/RWQCB jurisdictional pond, seasonal wetland, and freshwater marsh habitat (all habitat types combined) has been restored (H. T. Harvey & Associates 2016). Additionally, the MMP requires the creation/establishment of a minimum of 0.01 acres of wetland habitat at the pond mitigation site and 0.02 acres of wetland habitat at the wetland mitigation site. A portion of the wetland mitigation site (0.02 acres of wetland habitat) is set aside for use as off-site mitigation for the McKean project (H. T. Harvey & Associates 2019b).

On May 20 and June 2, 2021, H. T. Harvey & Associates restoration ecologists, Kate Drake and Zachery Gizicki conducted a formal wetland delineation at the pond and wetland mitigation sites (P1–P4 and W1–W4, Figures 5 and 6) to determine the acreage of jurisdictional habitats. The wetland delineation followed the guidelines of the *Corps of Engineers Wetlands Delineation Manual* (USACE Wetland Delineation Manual) (Environmental Training Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (Arid West regional supplement) (USACE 2008). These methods are discussed in detail below.

USACE Jurisdictional Wetland Determination—H. T. Harvey & Associates restoration ecologists reviewed United States Geological Survey topographical maps, aerial photos, Natural Resource Conservation Service (NRCS) soil mapping (NRCS 2021), regional climate information (PRISM Climate Group 2021), and National Wetland Inventory (NWI) maps of the mitigation site before conducting fieldwork for the delineation (NWI 2021). On May 20, 2021, we examined vegetation, soils, and hydrology of the pond mitigation site and the immediately surrounding areas. On June 2, 2021, we examined vegetation, soils, and hydrology of the wetland mitigation site and the immediately surrounding areas. We examined the mitigation sites for topographic features, drainages, alterations to site hydrology, and areas of significant recent disturbance. A determination was then made as to whether normal environmental conditions were present at the time of the field surveys. The delineation followed the guidelines outlined in Section D "Routine Determination Method" and Section F "Atypical Situations" of the USACE Wetland Delineation Manual as well as the updated forms, vegetation sampling methods, and hydric soil and hydrology indicators in the Arid West regional supplement (USACE 2008). Based on this process, it was determined that 4 sample sites were needed to represent typical conditions in each area: two sample sites in the pond mitigation site (Figure 5, P1 and P4) with a corresponding sample site for each point in the adjacent, upslope area (Figure 5, P2 and P3), and two sample sites in the wetland mitigation site (Figure 6, W1 and W3) with a corresponding sample site for each point in the adjacent, upslope area (Figure 6, W2 and W4).

Vegetation—H. T. Harvey & Associates observed plants at each of the sample sites using the plot sizes defined for each stratum in the Arid West Regional Supplement. We then identified observed plants to species using *The Jepson Manual* (Baldwin et al. 2012), compiled a list of species for each sample site, and visually estimated percent cover of each plant species following guidance provided in the Arid West Regional Supplement. We obtained the wetland indicator status for all identified species from the 2016 National Wetland Plant List for the Arid West (Lichvar 2016). The regional wetland indicator status defines plants based on their estimated probability of the species occurring in wetlands or not in wetlands in the particular region. We used the collected data to identify dominant species and determine which of the sample sites supported wetland vegetation as described in the Arid West regional supplement (USACE 2008).

Soils—At each sample point, the top 16–18 inches of the soil profile were examined for hydric soil indicators by assessing soil color and texture in each distinct horizon. Diagnostic features of hydric soils include the numerous indicators defined and described by the National Technical Committee for Hydric Soils. These include the presence of organic soils (A1), histic epipedons (A2), depleted matrix (F3), redox depressions (F8), redox dark surface (F6), and mottling indicated by the presence of gleyed or bright spots of colors (in the former case, blue grays; in the latter case, orange red, or red brown) within the soil horizons observed, among other features (USACE 2008). All soil colors indicated in this report were taken under clear, sunny skies using moistened soil samples. The NRCS Custom Soil Resource Report was consulted to determine which soil types have been mapped on the mitigation project site (NRCS 2021).

Hydrology—Each of the sample sites were examined for positive field indicators (primary and secondary) of wetland hydrology following the guidance provided in the Arid West Regional Supplement. Examples of such indicators include visual observation of inundation (A1) and/or soil saturation (A3), watermarks (B1), drift lines

(B3), water-borne sediment deposits (B2), water-stained leaves (B9), and drainage patterns within wetlands (B10) (USACE 2008). Hydrology observations made during routine site visits between October 2017 and October 2021 as well as hydrologic monitoring conducted by cbec contributed to our understanding of site hydrology. Water level information from a water level logger mounted by cbec in a gage in the wetland site was used to confirm hydrology observations. A detailed report of cbec's hydrologic monitoring is provided in Appendix B.

Wetland Mitigation Area Acreage Determination—Based on the wetland delineation survey described above, H. T. Harvey & Associates restoration ecologists mapped the jurisdictional wetlands within the vicinity of the pond and wetland mitigation sites with a Trimble Geographic Positioning System (GPS). In the office, using ArcGIS 10, we added outlines indicating wetlands that were designated for the McKean Offsite Wetland Mitigation Project (H. T. Harvey & Associates 2019b). The remaining areas mapped as wetlands were identified as constituting the acreage of jurisdictional wetland at the Calero pond and wetland mitigation sites shown in Figures 5 and 6.

C.7.1.9 Water for Cattle

Water availability for cattle was determined on the basis of observations of water infrastructure and conversations with Clayton Koopman, the cattle rancher at the site.

C.7.1.10 Photodocumentation

Photodocumentation was conducted during wetland vegetation monitoring and Mt. Hamilton thistle abundance monitoring of the wetland mitigation site and of the pond mitigation site on May 20, and June 2, 2021, from permanent locations identified in the *Calero County Park Pond and Wetland Restoration Project As-built Notification Report* (H. T. Harvey & Associates 2017a). Mt. Hamilton thistle photodocumentation was conducted on May 20, 2021, from the locations established in the Year 1 monitoring report (H. T. Harvey & Associates 2017b). Additional photographs were taken throughout Year 5 to record observations and events that may affect the success of mitigation. Photographs are provided in Section D and the locations of the photodocumentation points are shown on Figures 3 and 4 in Section E.

C.7.2 Results and Discussion

Monitoring results are provided below for each performance standard. These results are also summarized above in Table 1.

C.7.2.1 Target Hydrologic Regime

Pond Mitigation Site—The hydrologic regime performance standard applies only to the pond mitigation site and calls for a depth of inundation of at least 2 feet through August 31 of each monitoring year that exhibits average or above average precipitation. This standard is intended to achieve the target hydrologic regime that supports high quality breeding habitat for the California red-legged frog and California tiger salamander. Water Year 2021 had below average precipitation; Year 5 was the driest water year in the past 30 years (Appendix B).

Because Year 5 was a below average water year, the performance standard for target hydrologic regime does not apply. There have been two normal water years since monitoring began, in monitoring Years 1 and 3. The target hydrologic regime was met in both of these years.

Water levels at the pond mitigation site did not reach maximum capacity (508.5 feet) in Year 5. Peak capacity of 508.1 feet was reached on January 30, 2021, which correlated with the only major precipitation event of the year and receded without interruption until going dry on May 15, 2021. The rate of draw down was increased throughout the year while cattle were drinking from the water trough. This year had the most noticeable cattle consumption of seep flows since the project was constructed. The maximum pond water depth did not exceed 2 feet on August 31, 2021 (water depth was 0 feet). Appendix B provides additional discussion of monitoring results for the target hydrologic regime.

Wetland Mitigation Site—Although there are no performance standards for hydrologic regime at the wetland mitigation site, water levels were monitored to inform management and track wetland habitat establishment. The constructed portion of the lower wetlands was dry by early April 2021. However, inundation near the outlet structure near the upper pool remained through at least May 11, 2021. Appendix B provides additional discussion of monitoring results for the target hydrologic regime.

C.7.2.2 Sedimentation and Geomorphic Stability

Little to no geomorphic changes were observed during Year 5 monitoring. Minor changes observed during monitoring included the lowering of the top of bank of the lower section of the pond compared to the 2019 survey. This is apparently due to additional cattle trampling during the very dry year, as cattle sought additional water, which left the soils more vulnerable. Additionally, soil cracks were observed at the top of bank in the lower wetland of the wetland mitigation site. The cracks were found to be only an aesthetic issue and do not compromise the ability of the lower wetland to hold water.

Overall, these observations demonstrate that the pond and wetland mitigation sites continued to show minimal sedimentation from Year 1 and are geomorphically stable. Additional discussion of monitoring results for sedimentation and geomorphic stability is provided in Appendix B.

C.7.2.3 California Red-Legged Frog/California Tiger Salamander/Western Pond Turtle

California Red-Legged Frog—No California red-legged frogs or egg masses were observed in either the pond or wetland mitigation sites during Year 5 monitoring (Table 2). There have been no documented observations of the California red-legged frog at the pond or wetland mitigation sites in Years 1–5. The closest known occurrence of the California red-legged frog at the time of project construction was approximately 1.4 miles south of the pond in Cherry Creek (H. T. Harvey & Associates 2016). The Santa Clara Valley Habitat Agency will continue annual monitoring for California red-legged frog after the end of the short-term monitoring period, as part of the project's Long Term Monitoring Plan.

California Tiger Salamander—California tiger salamander larvae were observed during the California tiger salamander larval surveys in the pond mitigation site in Year 5 (Table 2). California tiger salamander larvae were

also observed in Years 1–3, but not in Year 4. A lack of observed breeding in Year 4 may have been caused by either the very dry year inhibiting breeding or the timing of surveys. In Year 4, the second larval survey was delayed unto late in the year due to Covid-19 protocols, and California tiger salamander larvae may have metamorphosed and dispersed out of the wetland and pond sites by the time the survey was conducted. Thus, the lack of larval California tiger salamander larvae in Year 4 does not conclusively indicate a lack of their presence in Year 4.

Western Pond Turtle—The pond mitigation site continued to provide suitable western pond turtle habitat. Western pond turtles were observed at the pond mitigation during early season monitoring events (Table 2).

Wildlife results are further detailed in Table 2.

Comparison to Performance Standards—The MMP performance standards call for successful breeding of California red-legged frog at the pond mitigation site. The target hydrologic regime to support California red-legged frog breeding was not achieved at the pond mitigation site in Year 5 due to the very dry water year (see section C.7.2.1), and no California red-legged frogs were observed in Year 5. Furthermore, California red-legged frogs were not observed during Years 1–4. Therefore, the California red-legged frog performance standard has not been met.

Additionally, the MMP performance standards call for the continued successful breeding of California tiger salamander at the pond mitigation site and continued occurrence of the western pond turtle at the pond mitigation site. While the performance standard of continued successful breeding of California tiger salamander was not met in Year 4, possibly due to a mismatch in monitoring timing and California tiger salamander dispersal caused by Covid-19 protocols, California tiger salamander larvae were observed in Years 1-3 and Year 5. Thus, the California tiger salamander performance standard was met. Western pond turtles continued to be observed in Year 5 and therefore the western pond turtle performance standard was met.

C.7.2.4 Aquatic Predator Abundance

Aquatic predators were observed in both the pond and wetland mitigation sites during dipnet and seine surveys, and visual encounter surveys for special-status species (See Table 2).

The MMP performance standard for aquatic predators pertains only to the pond and requires draining the pond to control predators if annual monitoring determines an increase in bullfrog or Louisiana red swamp crayfish abundance relative to the previous year's monitoring. Predator abundance was less than what was observed during Years 1 – 4 of monitoring. Due to the very dry water year, the mitigation pond was completely dry by May 15, 2021, which effectively controlled for aquatic predators as though the pond had been drained. Some bullfrogs were captured and dispatched during California red legged frog and California tiger salamander seining in the pond and wetland mitigation sites (See Table 2). In addition, the upper pool in the wetland mitigation site was drained on June 11, 2021, to control for bullfrogs and hundreds of bullfrog tadpoles and three adult bullfrogs were dispatched.

Table 2. Wildlife and Aquatic Predator Surveys—Level of Effort and Results

Date	Survey Type	Observer	Pond Mitigation Site	Wetland Mitigation Site
February 5, 2021	California red-legged frog egg mass survey	Steve Carpenter	Results: 5 western pond turtle adults, 2 western pond turtle juveniles; 17 adult bullfrog adults; no California red-legged frog egg masses were observed	Results: 5 adult bullfrog adults, 4 bullfrog larvae; no California red-legged frog egg masses were observed
March 18, 2021	Visual wildlife survey	Will Spangler (SCVHA)	Results: 3 adult western pond turtles	Results: many bullfrogs
March 24, 2021	California red-legged frog survey	Steve Carpenter	Results: no California red-legged frog were observed	Results: some bullfrog juveniles; no California red-legged frog were observed
March 25, 2021	Visual wildlife survey	Ryan Yarbrough (Confluence Restoration)	Results: 2 western pond turtles; several adult bullfrogs	Results: 3 adult bullfrogs and several bullfrog tadpoles
May 3, 2021	California red-legged frog and California tiger salamander seine survey	Steve Carpenter and Zach Hampson	Results: 6 California tiger salamander larvae; 1 adult bullfrog captured and dispatched; 10 Louisiana red swamp crayfish captured and dispatched; no California red-legged frog were observed	Results: 10 bullfrog larvae captured and dispatched; no California red-legged frog or California tiger salamander were observed
May 11, 2021	California red-legged frog and California tiger salamander dipnet and seine survey	Stephen Peterson and Kim Briones	Results: 2 adult bullfrogs, 4 bullfrog larvae, 4 Louisiana red swamp crayfish; no California red-legged frog or California tiger salamander were observed	Results: 5 adult bullfrogs, 2 juvenile bullfrogs, 24 bullfrog larvae; no California red-legged frog or California tiger salamander were observed
May 18, 2021	Nocturnal visual encounter survey	Steve Carpenter and Jane Lien	Results: NA; pond was dry	Results: 8 adult bullfrogs, over 50 bullfrog larvae; no California red-legged frog or California tiger salamander were observed
May 19, 2021	Nocturnal visual encounter survey	Steve Carpenter and Elena Scott	Results: NA; pond was dry	Results: 14 adult bullfrogs, over 50 bullfrog larvae; no California red-legged frog or California tiger salamander were observed
June 11, 2021	Wetland pool non-native invasive predator control draining	Steve Carpenter and Zachery Gizicki	Results: NA; pond was dry	Results: Wetland pool was drained; 3 adult bullfrogs and over 100 bullfrog larvae culled

Comparison to Performance Standards—Aquatic predator performance standards at the pond mitigation site are based on the baseline of Year 1 survey results. Year 5 aquatic predator abundance must be below the Year 1 (baseline) survey results to meet the performance standard. The Year 1 survey results found a baseline of 27 adult bullfrogs, hundreds of bullfrog larvae, and thousands of Louisiana red swamp crayfish at the pond mitigation site. The abundance of aquatic predators at the pond mitigation site in Year 5 was less than what was observed in Year 1 and effective aquatic predator control was implemented. Thus, Year 5 aquatic predator abundance met the performance standard.

C.7.2.5 Mt. Hamilton Thistle Abundance

The abundance of Mt. Hamilton thistle in the seep wetland population at the pond mitigation site decreased from 96 individuals in Year 4 to 69 individuals in Year 5. Forty-two individuals were flowering during Year 5 monitoring (Section D, Photo 44) and others were in bud. The Mt. Hamilton thistle population decreased by 0.02 acre between Year 4 and Year 5 and encompassed approximately 0.03 acre (Section E; Figure 3). Within the Mt. Hamilton thistle population extent, Mt. Hamilton thistle average percent cover decreased from 37.0% in Year 4 to 25.3% in Year 5. Overall health and vigor of individuals in the population was good. The majority of plants were large, mature individuals, and approximately 10% of the population were seedlings. No Mt. Hamilton thistle were observed at the wetland mitigation site during Year 5 monitoring. Photodocumentation of the Mt. Hamilton thistle population is included in Section D.

Fluctuations in plant population abundance, extent, and percent cover is typical in naturally occurring populations, and the decline in the Mt. Hamilton thistle population between Years 4 and 5 is not expected to continue over the long-term. Intraspecific competition between large mature Mt. Hamilton thistle individuals as well as well-below average rainfall in the past two years likely led to the decrease in the Mt. Hamilton thistle population metrics. However, the Year 5 percent cover within the population extent (25.3%) remains higher than in Year 1 (19.5%) and the population extent in Year 5 (0.03 acre) remains identical to what was observed in Year 1 (0.03 acre). Additionally, the surviving individuals remained in good health, most individuals were reproductive, and seedlings were present within the population which foreshadows future plant establishment as older individuals die and space for future plants becomes available.

The Mt. Hamilton thistle population at the pond mitigation site was subjected to cattle grazing prior to this project. This population was protected during project construction and has been protected from cattle grazing since September 2016. The remaining potential threats to this population include competition with surrounding wetland vegetation, especially cattail (*Typha* sp.). Other potential plant competitors include native species including coyote brush (*Baccharis pilularis*), bifid sedge (*Carex serratodens*), and broadfruit bur reed (*Sparganium eurycarpum*), and nonnative species such as Himalayan blackberry (*Rubus armeniacus*), curly dock (*Rumex crispus*), and sow thistle (*Sonchus asper*), that were observed near the Mt. Hamilton seep wetland population at the pond mitigation site. Additionally, the hydrology of the portion of the seep wetland where the Mt. Hamilton thistle population is located is supported by inflow that is collected in a springbox and conveyed over the Almaden-Calero Canal in a steel pipe; maintenance of this water source is critical to supporting this population of Mt. Hamilton thistle.

Comparison to Performance Standards—The MMP calls for a stable or increasing population of Mt. Hamilton thistle at the pond mitigation site. Compared to Year 1, the Mt. Hamilton thistle percent thistle cover within the population footprint increased by a third (Year 1=19.5%; Year 5=25.3%), and the surface area remained identical (Year 1=0.03 acres; Year 5=0.03 acres). While Mt. Hamilton abundance decreased since Year 1 (Year 1=111 individuals; Year 5=69 individuals), this can be explained by the relative dominance of larger reproductive individuals in Year 5 and a possible reduction in seed germination due to two consecutive years with well-below average precipitation (see Section C.7.2.1). Based on the Year 5 monitoring metrics the Mt. Hamilton thistle population is considered stable. Therefore, the performance standard was met.

C.7.2.6 Wetland Vegetation Percent Cover

The average percent cover of wetland vegetation was 39.8% at the pond mitigation site, 56.6% at the wetland mitigation site, and 46.5% for the pond and wetland mitigation sites combined. The observed wetland vegetation cover decreased at both the pond mitigation site and the wetland mitigation site from Year 4 to Year 5, likely as a result of the second extremely dry water year in a row (Table 3; Appendix B). No vegetation was observed in the open water at the pond mitigation site. Both sites exhibited high plant species richness. Twenty-one wetland species were observed at the pond mitigation site, 17 wetland species were observed at the wetland mitigation site, and 28 wetland species were observed in total across the pond and wetland mitigation sites during quadrat sampling (Table 3).

Table 3. Wetland Vegetation Percent Cover and Number of Wetland Species

Year	Site	Wetland Vegetation Cover	Wetland Vegetation Cover Performance Standard	Number of Wetland Species[1]	Wetland Species Number Performance Standard
Year 1	Pond mitigation site	34.9%	15%	18	3
	Wetland mitigation site	57.0%	15%	17	3
Year 2	Pond mitigation site	60.9%	25%	19	3
	Wetland mitigation site	72.1%	25%	19	3
Year 3	Pond mitigation site	45.2%	40%	21	3
	Wetland mitigation site	75.8%	40%	19	3
Year 4	Pond mitigation site	60.2%	60%	24	3
	Wetland mitigation site	75.0%	60%	17	3
Year 5	Pond mitigation site	39.8%	70%	21	3
	Wetland mitigation site	56.6%	70%	17	3

[1] Wetland indicator status based on the *National Wetland Plant List v3.3 Species Detail Tool* (USACE 2018).

Upland species cover was low and wetland species were the dominant vegetation cover at the pond and wetland mitigation sites. Rabbitsfoot grass (*Polypogon monspeliensis*, FACW) provided the most wetland cover at the pond mitigation site (9.1%) and bog rush (*Juncus effusus*, FACW) provided the most wetland cover at the wetland mitigation site (16.6%). Complete vegetation monitoring results for each site, including species accumulation curves, are provided in Appendix A.

Comparison to Performance Standards—Wetland cover failed to meet the Year 5 wetland vegetation percent cover performance standard of 70% at both the pond and wetland restoration sites independently and when combined (Table 3). However, the percent cover of wetland vegetation at the pond mitigation site declined relative to Year 4. In addition, the percent cover of wetland vegetation at the wetland mitigation site was similar to what was observed in Year 1; thus, this Year 5 performance criterion of an increasing temporal trend of wetland vegetation was not met at the wetland mitigation site (Table 3). Prior to Year 5, both the pond and wetland mitigation sites were on a trajectory to meet the Year 5 performance criteria for percent wetland vegetation cover, and in fact the Year 5 criterion was exceeded in Years 2-4 at the wetland mitigation site. The reduction in wetland vegetation cover between Years 4 and 5 and failure to meet the Year 5 criterion are likely the result of two historically dry years in a row (Appendix B) creating a competitive advantage for upland species in these areas. No vegetation cover was observed in the open water portion of the pond mitigation site; therefore, the open water portion of the pond mitigation site met the Year 5 performance standard of vegetation cover of less than 50%. The number of wetland species observed at the pond and wetland mitigation sites achieved the Year 5 performance standard of having at least 3 wetland species present at each site (Table 3).

C.7.2.7 Invasive Plant Cover

Invasive plant cover was low at the pond and wetland mitigation sites during Year 5. Black mustard (Cal-IPC rating "moderate"), purple star-thistle (Cal-IPC rating "moderate"), whitetop (Cal-IPC rating "moderate") and Himalayan blackberry (Cal-IPC rating "high") were observed in low abundance at the pond mitigation site during the focused visual survey on June 2, 2021. The overall cover of these populations was visually estimated to be below the 5% cover performance standard for the pond mitigation site (Table 4). The majority of these species were present at the site prior to construction and were targeted during management and maintenance of nonnative plant species during Year 5 (see Section C.4). Minimal invasive plant cover was observed at the wetland mitigation site; therefore, no mapping was conducted at this site during the June 2, 2021, survey.

Table 4. Invasive Plant Cover

Site	Focused Visual Survey Cover Estimate[1,2]	Year 5 Invasive Plant Cover Performance Standard[1]
Pond mitigation site	<5%	
Wetland mitigation site	<5%	
Combined	<5%	<5%

[1] Species that were rated as highly invasive by California Invasive Plant Council (Cal-IPC) or species rated as moderately invasive and were deemed by a qualified restoration ecologist to adversely affect habitat quality were defined as invasive (Cal-IPC 2021).

[2] The overall cover of invasive plant populations was visually estimated during the focused visual survey and mapped in accordance with the MMP.

Comparison to Performance Standards—The cover of invasive plant species met the performance standard of less than the 5% total cover at the pond mitigation site and the wetland mitigation site (Table 4).

C.7.2.8 Wetland Delineation

The project's MMP requires that a wetland delineation be conducted at the end of Year 5 post-restoration to determine whether the minimum target acreages of restored and created wetlands were attained. Table 5 provides a comparison of the wetland delineation results relative to the MMP's acreage targets. Figures 5 and 6 show the wetland delineation mapping results for the pond and wetland, respectively.

Table 5. Comparison of Year 5 Surface Area of Restored and Created Wetlands to MMP Success Criteria.

Credit Type	Pond Mitigation Site		Wetland Mitigation Site	
	Success Criterion (acres)	Year 5 Delineation (acres)	Success Criterion (acres)	Year 5 Delineation (acres)
Wetland Restoration	≥0.27	0.27	≥0.10	0.09
Wetland Creation	≥0.01	0.01	≥0.02[1]	0.02

[1] 0.02 acres of wetland creation was set aside for the San Jose Water Company's McKean Tank project (H. T. Harvey & Associates 2019b)

The Year 5 wetland delineation determined that the restored wetland acreage met the requirements of the regulatory permits at the pond mitigation site but did not meet the requirements of the regulatory agency permits at the wetland mitigation site. In addition, we note the total acreage of USACE jurisdictional habitat decreased at the pond mitigation site over the course of the 5-year mitigation monitoring period, even though the success criteria for wetland acreage in the MMP were met. This is due to conversion of a portion of the existing pond to wetland, while portions of existing wetland in 2016 were mapped as upland in 2021 (Figure 5). Colonization of wetland vegetation in the pond was expected as a result of the restoration project and installation of fencing and provides habitat for California red-legged frog. In addition, the boundaries of establishing wetlands may expand and contract somewhat in response to hydrologic conditions. Therefore, the overall decline in jurisdictional acreage at the pond mitigation site, as well as the small deficiency in wetland acreage at the wetland mitigation site, relative to the Year 5 performance criterion (0.01 acre), are likely attributable to the very dry conditions in Years 4 and 5 (Appendix B). Therefore, we recommend that the wetland delineation be repeated in a normal precipitation year, to be better reflective of typical conditions at the site.

Wetland determination data forms documenting our observations of vegetation, soils, and hydrology specific to the sampling points shown in Figures 5 and 6 are provided in Appendix C.

Climate conditions in the study area include a 30-year average of approximately 28.3 inches of annual precipitation, and an average temperature range from 49ºF to 70ºF (PRISM Climate Group 2021). Relative to the 30-year climate normal, the study area experienced below-average precipitation during the 2020/2021 wet season prior to the May 20 and June 2, 2021, survey. From May 2020 through May 2021, the region received 14.13 inches of precipitation, which is approximately 49.9% of the 30-year average for this same period (PRISM Climate Group 2021). The 2019/2020 wet season was also unusually dry (Appendix B). Therefore, normal climate conditions were not present during the delineation and in the rain year leading up to the delineation.

During H. T. Harvey & Associates' wetland delineation survey, we observed indicators of hydrology, including water marks (B1) and surface soil cracks (B6) at sample points P1 and P4, surface soil cracks (B6) at sample point W1, and water marks (B1) and biotic crust (B12) at sample point W3. In addition, surface water (A1) was observed at both sample points regularly during routine maintenance monitoring visits over the course of the 5-year monitoring period.

In addition to these survey findings, water level information from a water level logger mounted by cbec on a gage in the wetland and pond mitigation sites was used to confirm hydrology observations for W1–W4 and P1–P4. Inundation was present during various intervals in 2021 (Appendix B). Therefore, wetland hydrology was present at the wetland and pond mitigation sites.

Our wetland delineation survey in Year 5 also found that the areas delineated as wetland habitat at the pond and wetland mitigation sites were dominated by wetland indicator species, including common spikerush (*Eleocharis macrostachya,* OBL), common rush, rabbitsfoot grass, and Italian ryegrass (*Festuca perennis*, FAC) (Appendix D, sample points P1, P4, W1, and W3).

During H. T. Harvey & Associates' wetland delineation survey, we observed indicators of hydric soils, including depleted below dark surface (A11) and thick dark surface (A12) at sample point P1. Indicators of hydric soils were not observed at the other sample points. At these locations, the soils were considered to be "naturally problematic" by virtue of the recent development of the wetland. As per guidance in the Arid West Regional Supplement for determining the status of problematic hydric soils that lack indicators, these soils may be considered hydric based on the following three criteria: 1) the presence of hydrophytic vegetation, 2) the presence of wetland hydrology, and 3) appropriate landscape setting to support wetlands. The first two of these parameters were met, as described above. In this case, the areas were also in an appropriate setting to support wetlands, based on them both being a concave surface in an area where groundwater discharges. Moreover, the wetland creation areas at both the pond and wetland mitigation sites were constructed with a buried restrictive clay layer (bentonite) within 24 inches of the surface. Based on hydrology observations, the soils are functionally operating as hydric in terms of duration of inundation and saturation during the growing season, based on the NRCS definition of a hydric soil being a soil that is saturated or inundated for at least 14 consecutive days of the growing season (USACE 2008).

C.7.2.9 Water for Cattle

Water was available year-round for cattle via the spring-fed trough at the pond mitigation site, while the tank and secondary trough below the pond were dry by mid-summer. However, due to drought conditions, the spring-fed trough combined with another spring located outside the mitigation site were insufficient to keep up with typical annual cattle stocking rate. Currently, an additional water connection from a large municipal tank is being developed with County Parks in order to ensure consistently sufficient available water to meet cattle demand, and to help better disperse cattle, which tend to congregate near and impact habitats at water sources.

C.7.2.10 Photodocumentation

Photographs from established photodocumentation points and additional locations taken throughout Year 5 monitoring are provided in Section D. Photodocumentation points are shown on Figures 3 and 4 in Section E.

C.7.3 Recommended Management Activities

Management recommendations for the upcoming monitoring year are provided below for relevant performance standards.

C.7.3.1 Target Hydrologic Regime and Sedimentation and Geomorphic Stability

cbec and H. T. Harvey & Associates prepared the following management recommendations for the target hydrologic regime and sedimentation/geomorphic stability:

- Sediment should continue to be removed from the springbox during and after the rainy season to optimize seep flow to the pond mitigation site.
- Debris and sediment should continue to be removed from the constructed log jams located just upstream of the springbox. While sedimentation rates are low at the log jams, we recommend annual cleanout work to ensure maximum spring water input to the pond.
- Accumulated silt should continue to be cleaned out of the seep troughs each fall. While sedimentation rates are low at the seep troughs, we recommend annual cleanout work to ensure maximum spring water input to the pond.
- Replace all wood check dams that are rotten to improve their longevity and continue to limit sedimentation in the springbox.
- Measures should be taken to reduce human impacts on the side slopes of the pond when soils are saturated. Disturbance may compromise the bentonite pond liner, which could result in increased permeability in the pond bed and potentially lower water levels. Pond maintenance and management personnel should be educated on the design of the pond liner and, if possible, should wear mud shoes (e.g., mudders available through Forestry Suppliers) or use plywood walking platforms when entering the pond to reduce impacts on the pond liner and side slopes. Personnel should continue to use the designated access location on the south side of the pond to limit impacts on the pond liner and side slopes.

In addition to the recommendations provided above, cbec and H. T. Harvey & Associates identified the following future considerations for target hydrologic regime and sedimentation and geomorphic stability:

- Erosion of the County Parks roadway/trail (upslope from the springbox) caused deposition throughout the drainage all the way downslope to the springbox during water year 2019. Although large deposition was not observed during water year 2021, conditions of the trail/roadway do not appear to have been improved in 2021. Continuing to clean out the trail gravel from upstream of the springbox is advised. Also, the Habitat Agency should consider requesting that the County implement best management practices on the

roadway/trail to minimize roadway erosion and deposition of trail gravel between the roadway/trail and the springbox.

- The abundance and extent of ground squirrel burrows should continue to be monitored along the berm at the pond mitigation site to confirm that berm integrity is not compromised.

C.7.3.2 Aquatic Predator Abundance

Over 5 years of monitoring, populations of invasive aquatic predators at the pond site (bullfrog and Louisiana red swamp crayfish) have remained approximately stable or decreased slightly due to drought conditions (see Section C.7.2.4). These populations are likely being replenished from outside, adjacent sources. The pond site is an open system that is adjacent to the Almaden-Calero Canal to Calero Reservoir and is at the upstream end of a tributary to Alamitos Creek, which likely act as sources for invasive aquatic predators (particularly bullfrogs) that can disperse short distances overland to the pond. Any effort to create a barrier between the mitigation site and these sources to prevent overland dispersal by these invasive aquatic predators would likely also become a barrier to dispersal for California red-legged frogs. Therefore, H. T. Harvey & Associates recommends ongoing maintenance to maintain populations of invasive aquatic predators at low enough levels that allow them to co-occur with California red-legged frog and California tiger salamander. This includes controlling the population of adult bullfrogs prior to their start of breeding in May-June via bullfrog removal and dispatching (i.e., gigging and/or shooting). It also includes managing water levels so that the pond completely dries out during each year that invasive aquatic predators are observed in the pond to further disrupt their breeding and reduce habitability of the pond. In Year 5, the pond dried out completely by May 15, 2021.

Although bullfrog egg masses were not detected during any surveys, bullfrog larvae were observed, indicating that breeding occurred. H. T. Harvey & Associates recommends that future bullfrog egg mass surveys be scheduled when surveys are most likely to detect bullfrog egg masses based on site conditions.

C.7.3.3 Mt. Hamilton Thistle Abundance

H. T. Harvey & Associates recommends that nonnative plant species, such as Himalayan blackberry, continue to be removed from the seep wetland area of the pond mitigation site to reduce competition between nonnative vegetation and the Mt. Hamilton thistle.

C.7.3.4 Invasive Plant Cover

H. T. Harvey & Associates recommends that the following species be considered invasive plant species and targeted for control or removal during vegetation management activities because their spread could compromise attainment of vegetation success criteria: black mustard, whitetop, yellow star-thistle, and purple star-thistle. Naturalized, nonnative species with a moderate invasiveness rating and which are commonly found in similar wetland and mesic California annual grassland habitats in the region (e.g., Bermuda grass, Italian ryegrass, hyssop loosestrife [*Lythrum hyssopifolia*], and Harding grass) should not be targeted for control or removal because the associated ground disturbance may be substantial and negatively affect wetland habitat functions.

The existing Himalayan blackberry patch at the pond site is a relatively small population and may have utility for wildlife habitat in its current location on the berm next to the pond. H. T. Harvey & Associates wildlife biologists have observed that Himalayan blackberry thickets can provide shaded shelter for California red-legged frog. In addition, we do not expect that this species would inhibit California tiger salamander reproduction in the pond unless it were to fully surround the pond, in which case it may affect dispersal of this species. We recommend that these factors be considered when making decisions about Himalayan blackberry removal.

The MMP describes that all species with a Cal-IPC rating of moderate or high will be considered invasive plant species. We continue to recommend that the monitoring methods for invasive plant cover be adjusted during future years as follows: include all species with a high Cal-IPC invasiveness rating; if species have a moderate Cal-IPC invasiveness rating, they should only be considered invasive if deemed by a qualified restoration ecologist to adversely affect habitat quality.

C.7.3.5 Water for Cattle

Compaction from cattle activity at the spring-fed concrete trough that is outside the cattle exclusion fencing at the pond mitigation site is undermining the trough; we recommend building up the area around the trough to prevent any long-term damage. In addition, we recommend that when water is not available from the trough at the wetland mitigation site, water be transported to this trough from troughs or the water storage tank at the pond mitigation site, rather than allowing cattle to access the wetland mitigation site.

C.8 Conclusions and Adaptive Management Activities Proposed

Year 5 was a very dry and below average water year. Therefore, the target hydraulic regime performance standards do not apply to Year 5 and the pond water depth did not exceed 2 feet on August 31, 2021. The pond and wetland mitigation sites continued to show minimal sedimentation from Year 1 and are geomorphically stable. Water was available year-round for cattle via the spring-fed trough at the pond mitigation site, albeit at a supply rate lower than desired by County Parks for the typical cattle stocking rate.

The Mt. Hamilton thistle population was stable and invasive plant species remained at low densities and below 5% across the pond and wetland mitigation sites, and thus these performance standards were met. However, the pond and wetland mitigation sites did not meet their percent wetland vegetation cover or wetland area performance standards. This appears to be attributable to consecutive extremely dry water years in Years 4 and 5 (Appendix B), rather than any deficiency in design. Both mitigation sites appear to be performing as intended and are expected to meet the performance criteria in an average or above average water year. Therefore, we recommend that an additional year of monitoring in occur in a typical hydrology year, including a repeated wetland delineation at both the wetland and pond mitigation sites.

All applicable wildlife performance standards were achieved, with the exception of the California red-legged frog standard which calls for documented successful breeding in at least one monitoring year and the California tiger salamander performance standard which requires continued successful breeding in each year. California

red-legged frogs have not been observed in Years 1-5. Because no individuals of this species have been recorded within 1.4 miles of the site (H. T. Harvey & Associates 2016), it is possible that the lack of California red-legged frog detections reflects the distance of the site from extant occurrences and failure of dispersants from those locations to have found this pond. In time, dispersing California red-legged frogs from other populations are likely to eventually find and colonize the pond. California tiger salamander breeding was observed in Years 1-3 and 5. No California tiger salamander breeding was observed in Year 4; however, this may have been due to delayed survey timing because of COVID restrictions and/or drought conditions (see Section C.7.2.3).

The MMP notes that the Habitat Agency will consult with the permitting agencies to develop remedial measures in the event that the performance standards and monitoring requirements are not met. H. T. Harvey & Associates does not recommend any adaptive management actions in response to the failure to meet final success criteria in Year 5 except continuing to conduct maintenance and mitigation monitoring in 2022. Based on our observations in Years 1-5, we anticipate that the pond and wetland mitigation sites will meet their respective wetland acreage and percent vegetation cover success criteria in an average rain year.

Recommended routine maintenance activities include continuing sediment removal from the springbox and constructed check dams at the pond mitigation site, replacing rotten check dams, repairing the cattle exclusion fence at the pond mitigation site (Appendix B, Figure 8) continuing aquatic predator control at the pond mitigation site, and continuing invasive and nonnative plant species control and removal at both the pond and wetland mitigation sites. Monitoring should continue as specified in the MMP including a revised wetland delineation if Year 6 is an average or above average rain year.

Section D. Photodocumentation

Photo 1. Year 1 Conditions at Photo Point 1a during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)

Photo 2. Year 5 Conditions at Photo Point 1a during Vegetation Monitoring at the Wetland Mitigation Site (May 20, 2021)

Photo 3. Year 1 Conditions at Photo Point 1b during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)

Photo 4. Year 5 Conditions Looking East from Photo Point 1b during Vegetation Monitoring at the Wetland Mitigation Site (May 20, 2021)

Photo 5. Year 1 Conditions at Photo Point 2 during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)

Photo 6. Year 5 Conditions at Photo Point 2 during Vegetation Monitoring at the Wetland Mitigation Site (June 2, 2021)

Photo 7. Year 1 Conditions at Photo Point 3 during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)

Photo 8. Year 5 Conditions at Photo Point 3 during Vegetation Monitoring at the Wetland Mitigation Site (June 2, 2021)

Photo 9. Year 1 Conditions at Photo Point 4 during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)

Photo 10. Year 5 Conditions at Photo Point 4 during Vegetation Monitoring at the Wetland Mitigation Site (June 2, 2021)

Photo 11. Year 1 Conditions at Photo Point 5 during Vegetation Monitoring at the Wetland Mitigation Site (August 8, 2017)

Photo 12. Year 5 Conditions at Photo Point 5 during Vegetation Monitoring at the Wetland Mitigation Site (June 2, 2021)

Photo 13. Year 1 Conditions at Photo Point 6 during Mt. Hamilton Thistle Abundance Monitoring at the Pond Mitigation Site (August 8, 2017)

Photo 14. Year 5 Conditions at Photo Point 6 during Mt. Hamilton Thistle Abundance Monitoring at the Pond Mitigation Site (May 20, 2021)

Photo 15. Year 1 Conditions at Photo Point 7a during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)

Photo 16. Year 5 Conditions at Photo Point 7a during Vegetation Monitoring at the Pond Mitigation Site (May 20, 2021)

Photo 17. Year 1 Conditions at Photo Point 7b during Vegetation Monitoring, Showing the Wetland Establishment Area at the Pond Mitigation Site (August 8, 2017)

Photo 18. Year 5 Conditions at Photo Point 7b during Vegetation Monitoring, Showing the Wetland Establishment Area at the Pond Mitigation Site (May 20, 2021)

Photo 19. Year 1 Conditions at Photo Point 7c during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)

Photo 20. Year 5 Conditions at Photo Point 7c during Vegetation Monitoring at the Pond Mitigation Site (May 20, 2021)

Photo 21. Year 1 Conditions at Photo Point 8 during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)

Photo 22. Year 5 Conditions at Photo Point 8 during Vegetation Monitoring at the Pond Mitigation Site (May 20, 2021)

Photo 23. Year 1 Conditions at Photo Point 9 during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)

Photo 24. Year 5 Conditions at Photo Point 9 during Vegetation Monitoring at the Pond Mitigation Site (May 20, 2021)

Photo 25. Year 1 Conditions at Photo Point 10 during Vegetation Monitoring at the Pond Mitigation Site (August 8, 2017)

Photo 26. Year 5 Conditions at Photo Point 10 during Vegetation Monitoring at the Pond Mitigation Site (May 20, 2021)

Photo 27. Year 1 Conditions at Photo Point 11 during Vegetation Monitoring, Where the Hillside Seep Collection Ditch was Enhanced in the Seep Collection Area (August 8, 2017)

Photo 28. Year 5 Conditions at Photo Point 11 during Vegetation Monitoring, Where the Hillside Seep Collection Ditch was Enhanced in the Seep Collection Area (May 20, 2021)

Photo 29. Year 1 Conditions at Photo Point 12 during Vegetation Monitoring, Where the Hillside Seep Collection Ditch was Enhanced in the Seep Collection Area (August 8, 2017)

Photo 30. Year 5 Conditions at Photo Point 12 during Vegetation Monitoring, Where the Hillside Seep Collection Ditch was Enhanced in the Seep Collection Area (May 20, 2021)

Photo 31. Year 1 Conditions at Photo Point 13 during Vegetation Monitoring, at an Existing Seep in the Seep Collection Area That Wasn't Disturbed during Construction (August 8, 2017)

Photo 32. Year 5 Conditions at Photo Point 13 during Vegetation Monitoring, at an Existing Seep in the Seep Collection Area That Wasn't Disturbed during Construction (May 20, 2021)

Photo 33. Year 1 Conditions at Photo Point 14 during Vegetation Monitoring, Where Debris Jams Were Installed in the Seep Collection Area (August 8, 2017)

Photo 34. Year 5 Conditions at Photo Point 14 during Vegetation Monitoring, Where Debris Jams Were Installed in the Seep Collection Area (May 20, 2021)

Photo 35. Year 1 Conditions at Photo Point 15 during Vegetation Monitoring, with a Log Debris Jam Installed in the Seep Collection Area (August 8, 2017)

Photo 36. Year 5 Conditions at Photo Point 15 during Vegetation Monitoring, with a Log Debris Jam Installed in the Seep Collection Area (May 20, 2021)

Photo 37. Year 1 Conditions at Photo Point 16 during Vegetation Monitoring, at an Existing Seep in the Seep Collection Area That Wasn't Disturbed during Construction (August 8, 2017)

Photo 38. Year 5 Conditions at Photo Point 16 during Vegetation Monitoring, at an Existing Seep in the Seep Collection Area That Wasn't Disturbed during Construction (May 20, 2021)

Photo 39. Year 1 Conditions at Photo Point 17 during Mt. Hamilton Thistle Abundance Monitoring at the Pond Mitigation Site (August 8, 2017)

Photo 40. Year 5 Conditions at Photo Point 17 during Mt. Hamilton Thistle Abundance Monitoring at the Pond Mitigation Site (May 20, 2021)

Photo 41. Year 1 Conditions at Photo Point 18 during Mt. Hamilton Thistle Abundance Monitoring at the Pond Mitigation Site (Note flowering Mt. Hamilton Thistle Individuals; August 8, 2017)

Photo 42. Year 5 Conditions at Photo Point 18 during Mt. Hamilton Thistle Abundance Monitoring at the Pond Mitigation Site (May 20, 2021)

Photo 43. Cattle Using Water Trough near the Mt. Hamilton Thistle Population (May 20, 2021)

Photo 44. Mt. Hamilton Thistle in Flower (May 20, 2021)

Photo 45. Mt. Hamilton Thistle Flower Head with a Bee (May 20, 2021)

Section E. Maps

Figures 1–6 are included below.

N:\Projects3700\3753-02\05\Reports\Year 3 Monitoring\Figure 1 Pond and Wetland Mitigation Sites Vicinity Map.mxd agibson

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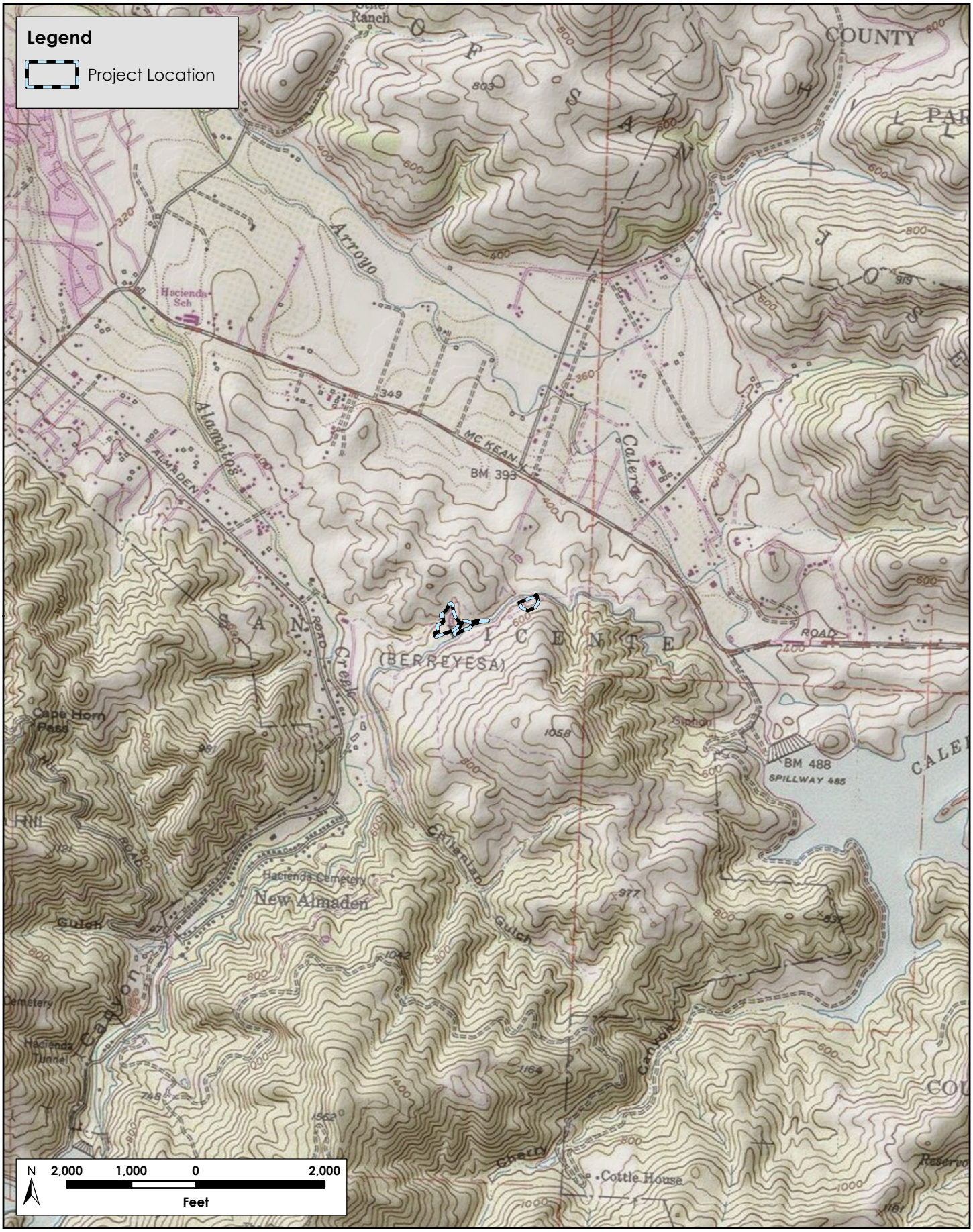
Figure 1. Pond and Wetland Mitigation Sites Vicinity Map

Calero County Park Pond and Wetland Restoration Project
Year 5 Monitoring Report (3753-07)
January 2022



N:\Projects3700\3753-02\05\Reports\Year 3 Monitoring\Figure 2 USGS Topography Map.mxd aglbson

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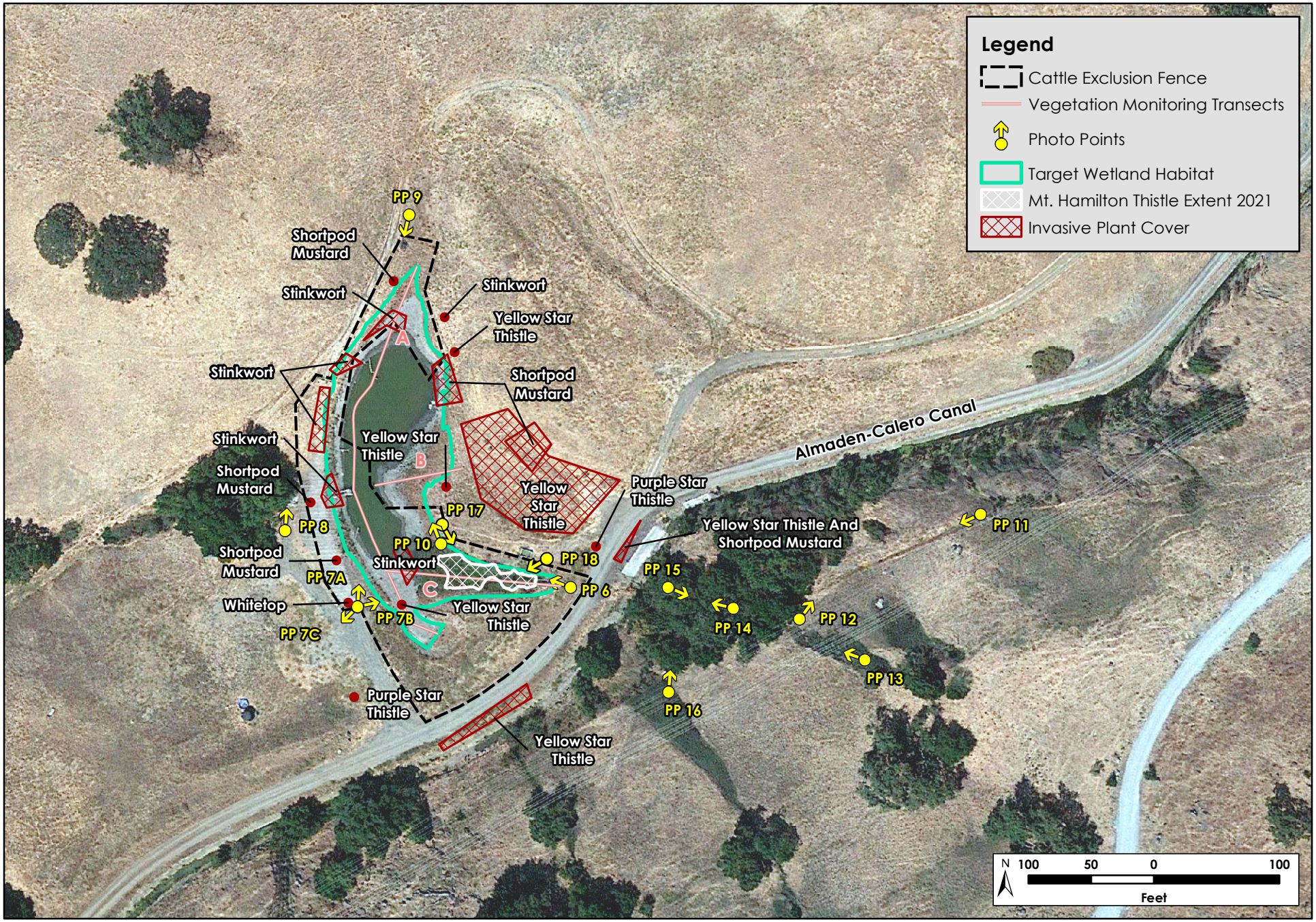
Figure 2. USGS Topography Map
Calero County Park Pond and Wetland Restoration Project
Year 5 Monitoring Report (3753-07)
January 2022



N:\Projects\3700\3753-02\07\Reports\2021 Report\Figure 3 Pond Mitigation Site.mxd

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Figure 3. Pond Mitigation Site
Calero County Park Pond and Wetland Restoration Project
Year 5 Monitoring Report (3753-07)
January 2022

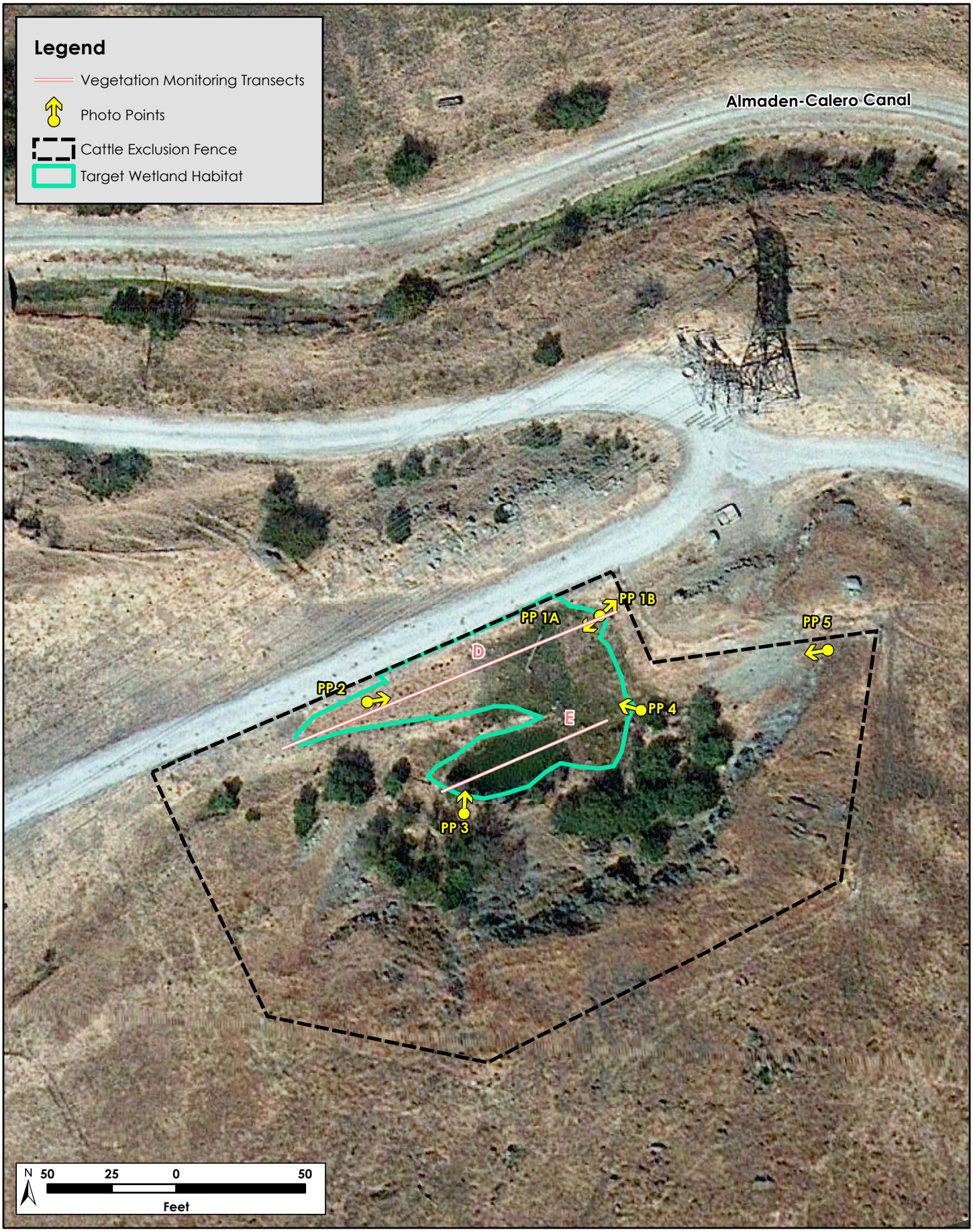

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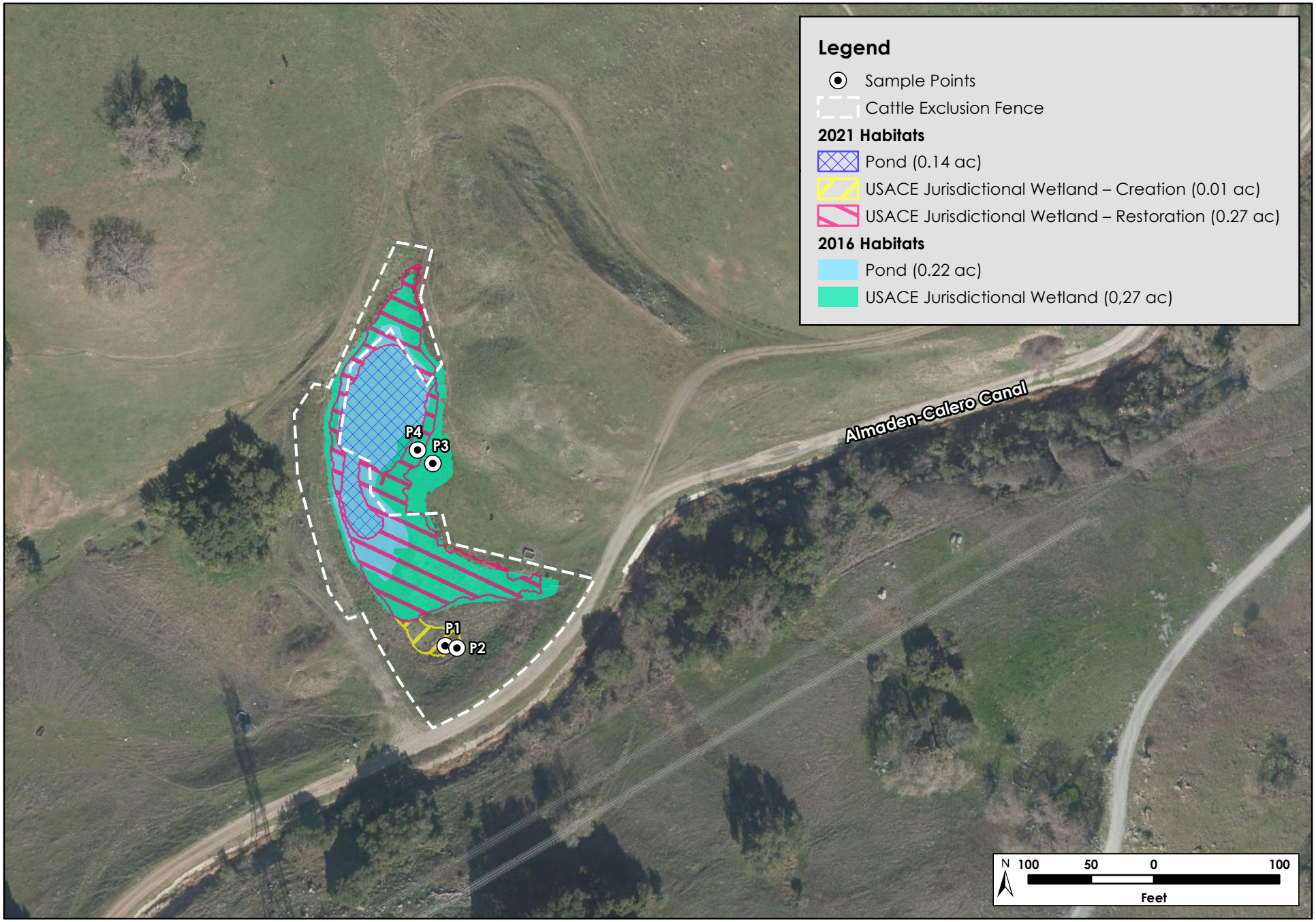
Figure 4. Wetland Mitigation Site
Calero County Park Pond and Wetland Restoration Project
Year 5 Monitoring Report (3753-07)
January 2022



N:\Projects3700\3753-02\07\Reports\2021 Report\Figure 5 Yr 5 Pond Mitigation Site.mxd

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Figure 5. Year 5 Wetland Delineation Results - Pond

Calero County Park Pond and Wetland Restoration Project (3753-07)

January 2022

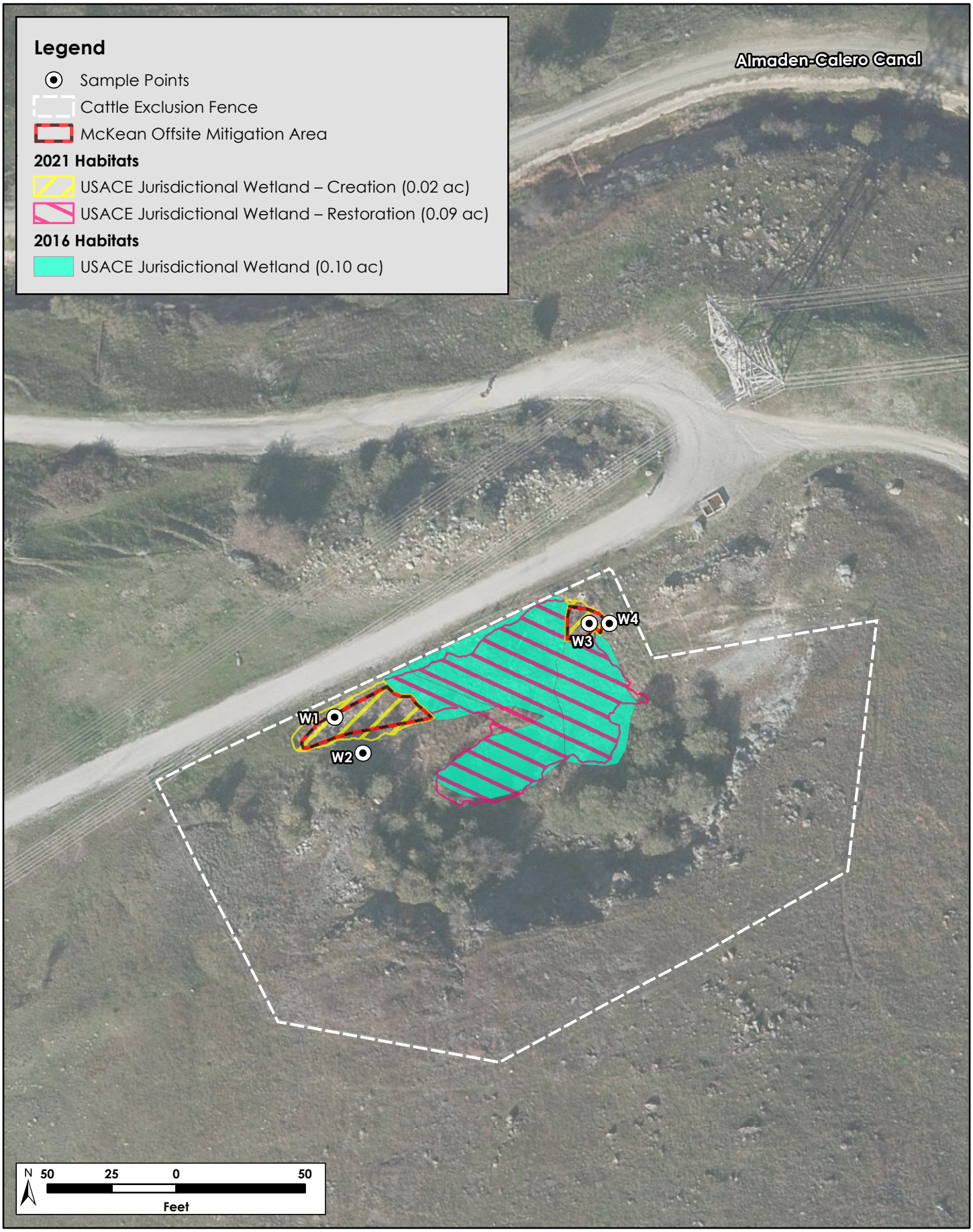

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Figure 6. Year 5 Wetland Delineation Results - Wetland
Calero County Park Pond and Wetland Restoration Project (3753-07)
January 2022

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Appendix A. Wetland Vegetation Monitoring Results

Plant Species Observed by Wetland Vegetation Monitoring Site

Scientific Name	Common Name	Native Status	Wetland Indicator Status[1]	Average Percent Cover	
				Pond	Wetland
Acmispon americanus	Spanish Clover	Native	UPL	0.1	-
Agrostis stolonifera	Creeping bentgrass	Nonnative	FACW	0.3	3.6
Avena fatua	Wild oat	Nonnative	UPL	0.2	-
Baccharis pilularis	Coyote brush	Native	UPL	-	0.6
Bromus carinatus	California brome	Native	UPL	<0.1	-
Bromus rubens	Red brome	Nonnative	UPL	0.3	-
Carduus pycnocephalus	Italian thistle	Nonnative	UPL	-	2.7
Carex barbarae	Santa barbara sedge	Native	FAC	0.3	-
Carex obnupta	Slough sedge	Native	OBL	-	0.1
Carex praegracilis	Clustered field sedge	Native	FACW	-	4.5
Carex serratodens	Two-tooth sedge	Native	FACW	0.7	1.4
Cirsium fontinale var. campylon	Mt. Hamilton thistle	Native	OBL	3.3	-
Convolvulus arvensis	Field bindweed	Nonnative	UPL	2.1	-
Croton setiger	Turkey-mullein	Native	UPL	-	0.2
Cynodon dactylon	Bermuda grass	Nonnative	FACU	-	0.3
Cyperus eragrostis	Tall cyperus	Native	FACW	2.6	3.6
Digitaria sanguinalis	Hairy crabgrass	Nonnative	FACU	1.1	-
Dittrichia graveolens	Stinkwort	Nonnative	UPL	0.2	0.1
Eleocharis macrostachya	Creeping spike rush	Native	OBL	-	1.8
Elymus glaucus	Blue wildrye	Native	FACU	0.2	-
Epilobium brachycarpum	Annual fireweed	Native	FAC	1.5	0.1
Epilobium ciliatum	Fringed willowherb	Native	FACW	0.2	0.1
Erythranthe guttata	Seep monkey flower	Native	OBL	-	4.2

Scientific Name	Common Name	Native Status	Wetland Indicator Status[1]	Average Percent Cover	
				Pond	Wetland
Festuca perennis	Italian rye grass	Nonnative	FAC	8.3	4.5
Frangula californica	California coffeeberry	Native	UPL	-	1.9
Geranium dissectum	Cutleaf geranium	Nonnative	UPL	0.2	-
Helenium puberulum	Sneezeweed	Native	FACW	0.4	-
Heliotropium curassavicum	Alkali heliotrope	Native	FACU	1.9	-
Hemizonia congesta	Hayfield tarweed	Native	UPL	0.6	-
Hordeum brachyantherum	Meadow barley	Native	FACW	0.6	-
Hordeum marinum	Seaside barley	Nonnative	FAC	<0.1	-
Hordeum murinum	Foxtail barley	Nonnative	FACU	1.6	-
Juncus effusus	Bog rush	Native	FACW	6.0	16.6
Juncus patens	Common rush	Native	FACW	1.5	3.6
Juncus xiphioides	Iris leaved rush	Native	OBL	-	6.7
Lactuca serriola	Prickly lettuce	Nonnative	FACU	<0.1	-
Lepidium draba	Whitetop	Nonnative	UPL	0.1	0.1
Leptosiphon liniflorus	Flax-flowered Linanthus	Native	UPL	-	0.1
Lysimachia arvensis	Scarlet pimpernel	Nonnative	FAC	0.2	0.3
Lythrum hyssopifolia	Hyssop loosestrife	Nonnative	OBL	0.1	-
Medicago polymorpha	California bur clover	Nonnative	FACU	0.2	-
Melica californica	California melic	Native	UPL	-	6.2
Melilotus indicus	Annual yellow sweetclover	Nonnative	FACU	0.5	0.3
Persicaria hydropiperoides	Water pepper	Native	OBL	0.1	-
Phalaris aquatica	Harding grass	Nonnative	FACU	1.3	-
Polypogon monspeliensis	Rabbitsfoot grass	Nonnative	FACW	9.2	3.4
Rubus armeniacus	Himalayan blackberry	Nonnative	FAC	0.4	-
Rumex pulcher	Fiddle dock	Nonnative	FAC	1.2	0.2

Scientific Name	Common Name	Native Status	Wetland Indicator Status[1]	Average Percent Cover	
				Pond	Wetland
Scirpus microcarpus	Panicled bulrush	Native	OBL	-	-
Sisyrinchium bellum	Western blue-eyed grass	Native	FACW	1.6	1.9
Sonchus asper	Spiny sowthistle	Nonnative	FAC	0.9	-
Stipa pulchra	Purple needle grass	Native	UPL	1.2	-
Toxicodendron diversilobum	Poison oak	Native	FACU	0.1	-
Trifolium hirtum	Rose clover	Nonnative	UPL	<0.1	-
Veronica anagallis-aquatica	Water speedwell	Nonnative	OBL	0.5	-

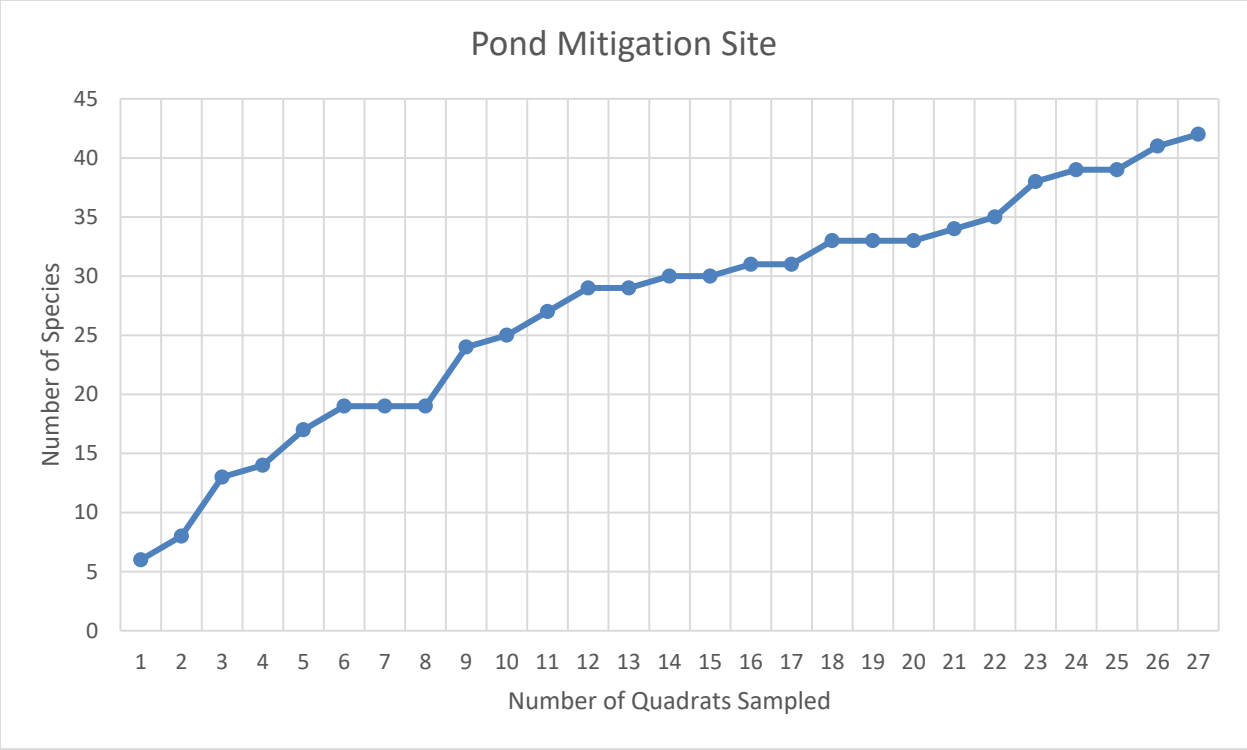


Figure A-1. Species Accumulation Curve for the Pond Mitigation Site

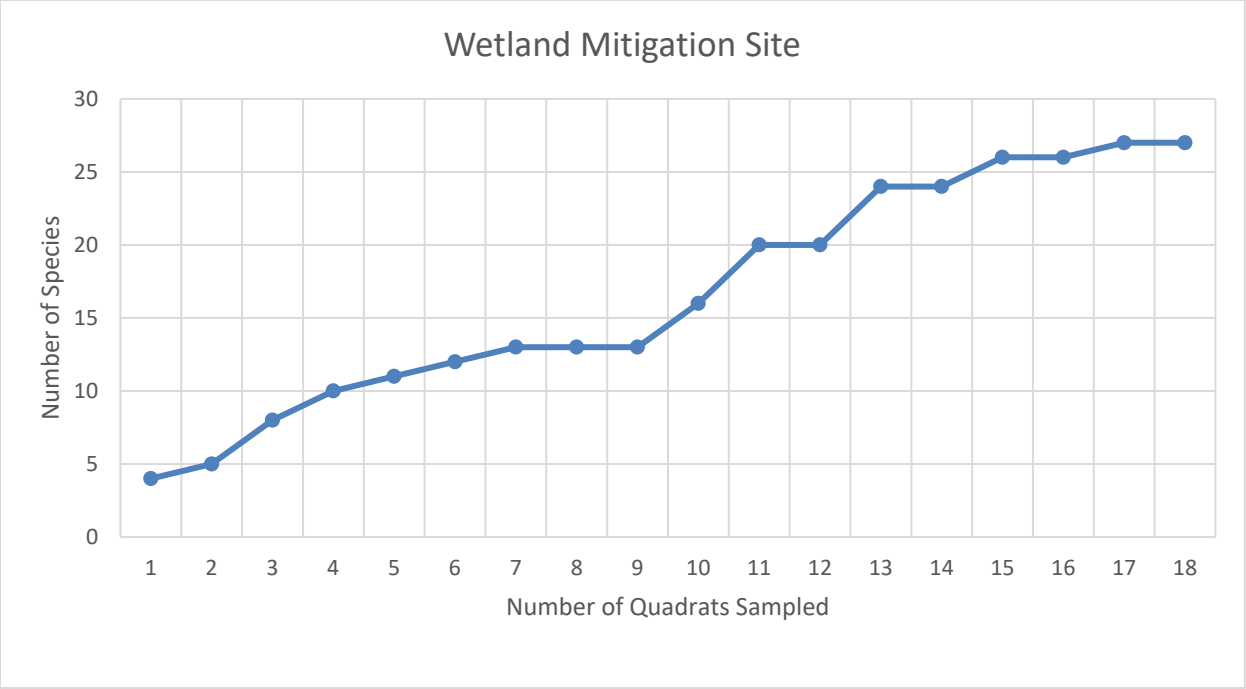


Figure A-2. Species Accumulation Curve for the Wetland Mitigation Site

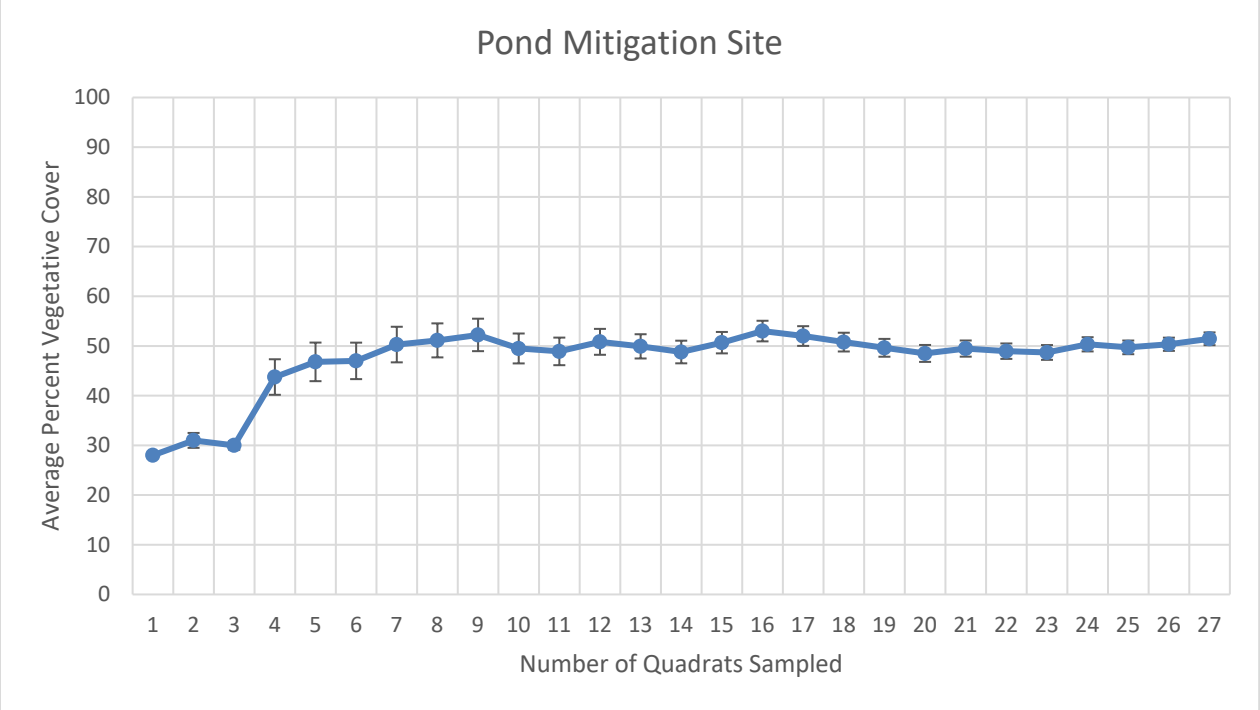


Figure A-3. Average Cover (± Standard Error of the Mean) as a Function of the Number of Quadrats Sampled at the Pond Mitigation Site

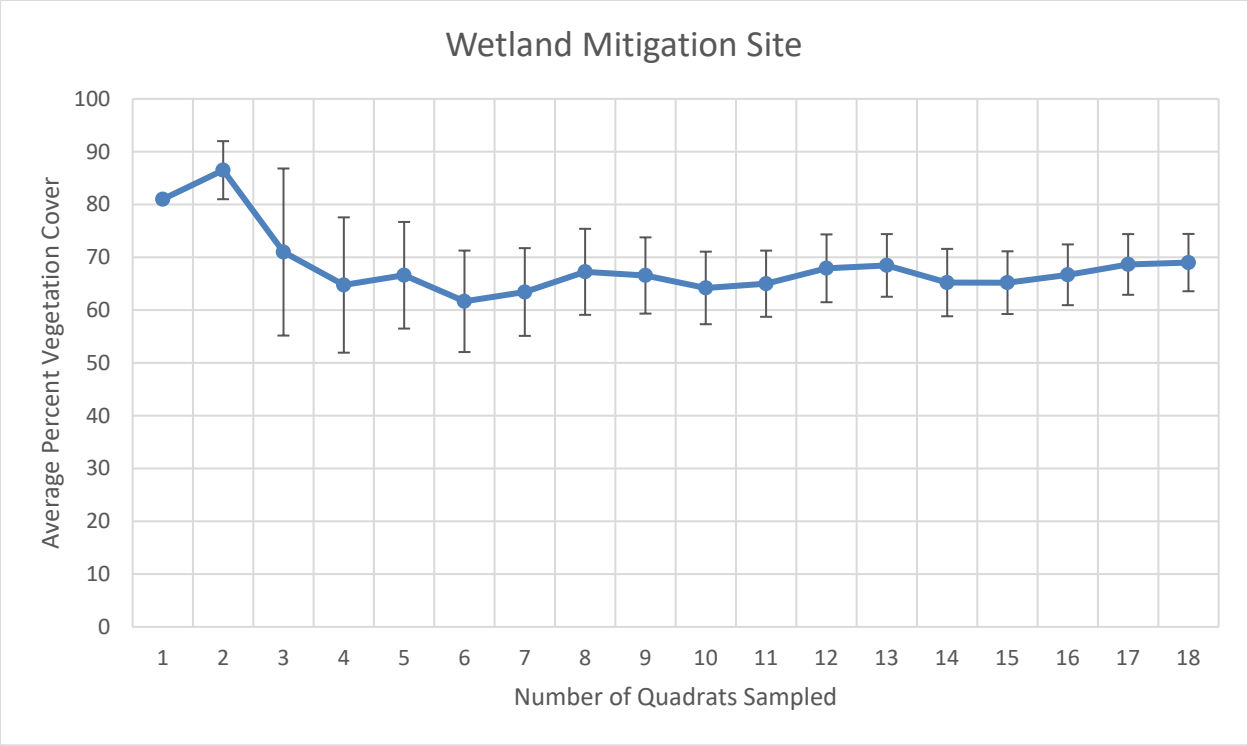


Figure A-4. Average Cover (± Standard Error of the Mean) as a Function of the Number of Quadrats Sampled at the Wetland Mitigation Site

Sampling intensity was determined to be sufficient for the pond and wetland mitigation sites by verifying that the average cover values were stable relative to the number of samples collected (Kershaw 1973). We concluded that the sampling effort was representative of the site and sufficient based on the stable average cover and low level of standard error in our results.

Appendix B. Year 5 Hydrologic Monitoring Report

cbec eco engineering

Hydrology | Hydraulics | Geomorphology | Design | Field Services

TECHNICAL MEMORANDUM

Date:	December 9, 2021
To:	Kate Drake, Max Busnardo (H. T. Harvey)
From:	Gavin Downs, Chris Campbell, Sam Diaz
Project:	15-1030-4 – Calero Mitigation Site Monitoring
Subject:	Year 5 Monitoring Report

1 INTRODUCTION

To support H. T. Harvey during the long-term and maintenance monitoring of the Calero County Park Pond and Wetland Restoration Project, cbec eco-engineering (cbec) provided ongoing hydrologic monitoring at the pond and wetland mitigation sites. This technical memorandum documents monitoring efforts through Year 5.

2 LONG-TERM MONITORING

cbec continuously measured pond and wetland water levels, direct rainfall, and pond seep inflows to monitor the hydrologic regime at the pond and wetland mitigation sites. Figure 1 shows the location of the gages and monitoring transects.

The hydrologic regime at both sites was monitored with the goal of observing water levels and inflows to understand if the hydrologic performance standards were being met. Those standards are: (1) at least two feet of water in the pond through August 31 in years with average to above average precipitation to support California red-legged frog and California tiger salamander breeding; and (2) minimal sedimentation at both mitigation sites documented through repeat topographic cross section surveys.

2.1 HYDROLOGIC REGIME

To monitor the hydrologic regime, water level loggers were installed at four locations: pond outlet structure (including a barometer); pond seep trough; wetland weir; and upper wetland. Additionally, a weather station installed at the top of the pond outlet structure recorded air temperature, relative humidity, and direct rainfall using a tipping bucket. Monitoring equipment were originally installed on January 27, 2017.

2.1.1 INFLOW TO POND SITE

A rating curve was previously established to define the relationship between seep trough water levels and seep trough outflow to the pond. This rating curve was used to estimate seep contributions to the pond throughout each monitoring year. Additional flow measurements have been collected to verify the rating curve.

Table 1. Seep inflow rating curve

Height (ft)*	WSE (ft)	Time (sec)	V (ml)	Rate (cfs)	Notes
0.6	518.70	15	0	0.0000	just below bottom of outlet
0.58	518.72	15	125	0.0003	
0.55**	518.75	15	700	0.0022	near bottom of outlet
0.53	518.77	15	2150	0.005	
0.5	518.80	15	3725	0.009	~middle of outlet
0.48	518.82	15	4750	0.011	
0.46	518.84	15	6700	0.016	just below top of outlet
0.44	518.86	15	9325	0.022	above top of outlet
0.35	518.95	15	12000	0.028	lip of trough

*measured from top of stilling well pipe

**average of three measurements

2.1.2 PRECIPITATION

To understand local water year (WY) conditions, precipitation data near Gilroy was tabulated for a continuous 63-year period of record for WYs 1958 through 2021 and scaled to the project site. Table 2 includes the most current data since WY 2010 and a comparison to local precipitation measured at the pond in WYs 2017, 2018, 2019, 2020, and 2021. In Year 1 (i.e., WY 2017), precipitation was above normal and classified as a wet WY type. In Year 2, (i.e., WY 2018), precipitation was well below normal and classified as a very dry WY type and was the second driest WY behind WY 2014. In Year 3, (i.e., WY 2019), precipitation was above normal and classified as a wet WY type; it was the wettest year since monitoring began post-construction. In Year 4 (i.e., WY 2020), the precipitation was classified as very dry and was the driest year of the last 30 years. This record was then broken in Year 5 (i.e. WY2021), which was again categorized as very dry with only 6.44 in of rain at the Gilroy gage.

Table 2. Annual precipitation totals by water year

Water Year	Gilroy COOP (inch)[1]	Gilroy Scaled (inch)[2]	Project Rain Gage (in)	Water Year Type[3]
2010	25.60	30.32	---	Wet
2011	22.08	26.15	---	Normal
2012	11.25	13.32	---	Dry
2013	14.69	17.40	---	Normal
2014	9.16	10.85	---	Very Dry

2015	14.69	17.40	---	Normal[8]
2016	17.96	21.27	---	Normal
2017	22.24	26.34	13.52[4]	Wet
2018	9.41	11.14	8.53[5]	Very Dry
2019	23.41[6]	27.72	29.67[7]	Wet
2020	8.21	9.72	NA[9]	Very Dry
2021	6.44[10]	7.63	7.77	Very Dry
30-Minimum	6.44	7.63	7.77	
30-Maximum	34.23	40.54	29.67	
30-Average	18.49	21.90	14.87	

Notes:
[1] Gilroy COOP (043417-4) precipitation for WYs 1958 through 2021 (i.e., 64 years)
[2] Gilroy precipitation scaled to project site based on PRISM (OSC, 2012) 30-year rainfall normal using a scaling factor of 1.1842
[3] WY type (very wet, wet, normal (average), dry, very dry) designated based on reasonable exceedance probabilities (<0.10, ≥0.10, ≥0.33, ≥0.67, ≥0.90)
[4] Precipitation for WY 2017 is under reported as project rain gage was installed on 1/27/2017
[5] Project rain gage failed on 5/26/2018 and was not fixed until 11/7/2018; rain gage was recalibrated upon redeployment
[6] Rainfall data was missing for the Gilroy COOP gage for the months of November, December, March, April, and May for WY 2019. To estimate the missing data, monthly values for prior years (2008 to 2018) were correlated to San Jose COOP (047821).
[7] Rainfall data was under reported as project rain gage failed 3/22/2019 and not fixed until 11/26/2019
[8] By addition of WY 2020 data, the WY type for WY 2015 was reclassified as this WY is within 0.01 inches of being classified as Dry.
[9] Project rain gage fully failed and data was not recoverable.
[10] Gilroy recorded an erroneous precipitation depth for the month of September. The value was confirmed erroneous by nearby gages and removed from the analysis.

2.1.3 FIELD VISITS AND INSTRUMENT MODIFICATIONS

The following field modifications have been made to the gages in previous monitoring years and are reflected in the data. In mid-July of WY 2017 (likely 7/17/2017), the water level logger cabling snapped in the upper wetland, sinking the water level logger to the bottom. Water levels were adjusted with a -0.05 ft offset to reflect the logger elevation change in mid-July. All water level gages were restrung with stainless steel wire on October 5, 2017. This caused a second datum shift in the upper wetland gage of +0.22 ft, which was confirmed by a manual measurement at the time of download and measured water levels were adjusted accordingly.

In Year 3, monitoring and maintenance visits were made on March 22, July 30, November 1, and November 26 of 2019. During the July 30, 2019 monitoring visit, the pond water level logger cap broke during recovery, where it fell down the conduit and was stuck in several inches of sediment. The pond

gage was not recovered until November 26, 2019 whereby it was verified that the pond gage was stuck in several inches of sediment. However, no datum correction was needed in the water level data. Due to the sedimentation in the stilling well, the slotted PVC well casing was replaced with new casing, wrapped in filter fabric to reduce sedimentation within the stilling well, and the pond gage was restrung on November 26, 2019. Further, the pond gage was exposed to moisture, which created artificial noise in the output, which was filtered by applying a moving average. Finally, a housing screen for the pond outlet valve and a staff plate were installed on the outlet structure by Confluence Restoration on November 12, 2019.

In Year 4, visits to monitor and maintain the project site were made on April 14 and October 9 of 2020. No further issues or corrections with the surface water gages were noted this year; however, the weather station that houses the rain and temperature gages failed. The data for these gages were lost upon attempts to recover the data due to issues with the microstation electronic board.

In Year 5, visits to monitor and maintain the project site were made on March 15, May 11, and September 30 of 2021. To address concerns from the prior year (cbec 2020), changes were made to the pond outlet structure gage and the wetland weir gage. On December 23, 2020, all the gages at the pond outlet structure were replaced with a telemetered weather station. The new weather station monitors pond water surface elevation and climatic conditions (i.e., precipitation and relative humidity). Additionally, the wetland weir gage was set approximately 1.5 ft below the previous gage elevation on January 12, 2021. This was to capture the surface and subsurface water levels during wetland drawdown.

2.1.4 POND MITIGATION SITE

During Year 1 (cbec, 2017), the pond maintained maximum capacity of 508.5 ft from January through early May when above normal (i.e., wet WY) precipitation and seep flows were contributing to the pond (Figure 2). The pond water levels drew down at a consistent rate starting in mid-May through mid-September, which correlates to the dry season when the seep inflow decreases. By September 19, 2017, the pond was emptied to manage for invasive species (crayfish and bullfrogs).

In Year 2, water levels in the pond reached the maximum capacity at the end of March and steadily drew down thereafter, but at an increased rate beginning in June due to the rancher pumping from the seep trough. Pond water levels fell below the two-foot depth target early on July 12, 2018, and eventually became dry on August 26, 2018. The combination of a very dry WY and the rancher pumping from the water trough likely contributed to the pond drying out earlier than the success criteria.

In Year 3, the pond maintained maximum capacity from January through mid-April when above normal (i.e., wet WY) precipitation and seep flows were contributing to the pond (Figure 2). The pond water levels drew down at a consistent rate starting in early May through early September, which correlates to the dry season when the seep inflow decreases. On September 9, 2019, seep flow was completely diverted away from the pond to the water storage tank, which caused a slightly sharper drop in water level. Then, on October 30, 2019, the pond was emptied to manage for invasive species (crayfish and bullfrogs).

In Year 4, the pond never reached maximum capacity, but the maximum water level was observed on April 7, 2020 at 506.9 ft (Figure 2). This peak occurred at the only time of the year when the seep flow

sustained maximum estimated flows. However, this is lowest peak water level since the start of monitoring due to recording the lowest annual rainfall depth in the past 30 years. Draw down of the pond started on a similar trajectory to that of Year 2, but again, the draw down rate increased with cattle access to the water trough. The seep flow was diverted on November 3, 2020 to control for invasive aquatic predators (i.e., crayfish), and restored on December 9, 2020. The pond completely dried out on July 26, 2020.

In Year 5, the pond site reached a maximum water level of 508.1 ft on January 30, 2021, which is below the full capacity elevation of 508.5 ft (Figure 2). The peak elevation was in response to the only major precipitation event of the year and receded without interruption until going dry on May 15, 2021. The seep flow remained directed toward the pond the entire year, but most of the water was likely intercepted by cattle drinking at the trough. The pond trough gage shows that the elevation fluctuations induced by cattle watering habits began as access to the pond diminished and the waterline receded out of their reach beyond the fenced-off section. This was the most notable period of cattle consumption of seep flows since the project construction.

Regarding hydrologic performance standards, the pond exceeded a target water depth of at least two feet (i.e., 4.8 feet) through the end of August in Year 1. In Year 2, the water depth fell below the hydrologic performance standard. The pond did not fill to capacity and did not meet the two-foot water depth target for the end of August. As shown by Figure 2, there was an increase in the draw down rate of the pond water level at the beginning of June that corresponds to the period of time that the rancher started pumping from the water trough to water cattle. In addition to this increase in draw down rate, the fact that Year 2 was a very dry WY or well below normal (average) conditions largely contributed to not meeting the two-foot water depth target at the end of August. Year 3 did meet the hydrologic performance standard (i.e., 2.49 ft on August 31, 2019). As shown by Figure 2, there was an increase in the draw down rate of the pond water level at the end of June that corresponds to the period of time that the rancher started pumping from the water trough to water cattle. Years 4 and 5 did not meet the hydrologic performance standards because they were both very dry WYs or well below normal (average) conditions. This is due to both water years having the lowest recorded rainfall total in the last 30 years.

2.1.5 WETLAND MITIGATION SITE

During Year 1 at the wetland site (Figure 3), the lower wetland was at maximum capacity through May and water levels decreased thereafter as seep inflow and rainfall decreased in the dry season. Water levels were below the outlet sill invert elevation and no water was diverted from the lower wetland to the cattle trough from June 2017 for the remainder of Year 1.

In Year 2, the lower wetland water levels remained low and were responsive to two small rainfall events occurring in January and March/April. It should be noted that the lower wetland gage was reading dry for most of Year 2 (i.e., water levels below the gage). Despite the gage reading dry, moist soil conditions were still observed in portions of the lower wetland during dry season visits on October 3, 2018 and November 7, 2018. The moist conditions were in part created by flows over the upper wetland berm to the lower wetland. Even with the upper wetland water levels being consistently elevated throughout the first two years, the flows over the upper wetland berm were likely reduced in Year 2 due to the drier conditions,

and coupled with well below normal precipitation, the lower wetland was significantly drier than Year 1. It should be noted that seep flow downslope of the lower wetland has been repeatedly observed (including the 10/3/2018 field visit) on the exposed hillside on approach to the Almaden-Calero Canal. It is hypothesized that the inflow to the lower wetland during these drier conditions is being conveyed subsurface. A potential opportunity to enhance the hydroregime in the lower wetland would be to move the upper wetland berm spill location from the northeast side to the northwest to spill directly onto the portion of the expanded lower wetland underlain by bentonite. This has the potential to increase residence time in the lower wetland and improve vegetation response.

Observations from Year 3 revealed that the upper wetland pond generally maintained full capacity for the entire year. On October 16, 2018, the pond was drained for predator control but quickly refilled over the course of a month due to seep inflow. The lower wetland gage read dry outside of the time period between January 6, 2019 to April 9, 2019. However, moist soil conditions were still observed downstream of the pond spill over toward the weir on field visits as late as November 1, 2019. Also, seep flows that surface on the hillside approach to the Almaden-Calero Canal were still being observed. As stated above, the lower wetland hydroregime could be enhanced by moving the spill over location of the upper pond to the northwest.

In Year 4, the upper wetland pond remained above the berm spill over elevation until June 28, 2020, where it dropped below the berm elevation for the first time since monitoring started. However, the water level only dropped below the berm by no more than ~0.03 ft (Figure 3). The earthen outlet of the pond was still heavily saturated, which indicates water was likely still seeping into the adjacent lower wetland area. The constructed portion of the lower wetland was again reading dry for most of the year, with wet stints in December and April. Regardless, other areas of the lower wetland remained saturated without standing water as late as the field visit on October 9, 2020, despite the very dry water year conditions.

In Year 5, the upper wetland pond remained at or above the elevation of the spill over berm until June 11, 2021, when it was drained for control of invasive aquatic predators (i.e. bullfrogs) (Figure 3). The draining of the upper wetland pond can also be seen in the wetland weir gage record by the spike in water surface elevation on June 11, 2021. Because the year has been exceptionally dry, the upper wetland pond refilled slower than the previous drain in Year 3. The time to an equilibrium water level increased from approximately 1 month to approximately 3 months. Additionally, the resetting of the lower wetland weir gage captured more data on the hydroregime of the lower wetland. The data revealed that the lower wetland generally held groundwater at an elevation of 559.6 ft, which is approximately 0.3 ft below the ground elevation. This water level held until the lack of rain let the water table fall below the gage elevation of 558.5 ft on April 9, 2021. It is uncertain how previous years would have looked given the historically dry conditions in Year 5. While the lower wetland went dry in early April, there was still inundation near the outlet of the upper wetland pond as late as the field visit in May of 2021. This further demonstrates the potential for groundwater pathways to bypass the lower wetland from the upper pond during the dry season as hypothesized in Year 2 (cbec 2018).

2.2 SEDIMENTATION AND GEOMORPHIC STABILITY

In Year 1, cbec surveyed a total of 8 transects (i.e., six for the pond site and two for the wetland site) and compared these to the as-built surfaces to monitor sedimentation at both sites (Figures 4 to 7). The pond transects generally showed little to no change between the as-built survey and current conditions. The western side of the pond site outlet berm experienced slumping but was repaired prior to the survey (Figure 4). Additionally, a portion of the eastern part of the berm north of the outlet slumped (Figure 5). This section was left "as is" because it was assessed that vegetation would naturally stabilize this section. The wetland transects generally showed elevations 0.4 ft (4.8 inches) below as-built elevations, which were likely attributed to both cow and human disturbances within the wetland site and potential settlement of soils that were minimally compacted during construction.

In Year 2, cbec did not resurvey the 8 transects per the monitoring plan schedule. Rather, general observations are provided. At the pond, after it had dried out, potential sedimentation was observed at the lowest point of the pond adjacent to the gated culvert at the base of the outlet structure. The pond bed was approximately 0.7 feet above the invert of the gate. A sample hole showed that there was approximately 0.8 feet of soil on top of the bentonite layer. Considering that the bottom of the pond was designed to have 0.5 feet of soil placed over the bentonite, there has been approximately 0.1 feet of sedimentation accompanied by potential swelling of the bentonite. Given that this was the first year that cattle were allowed at the pond, the sedimentation in the deepest portions of the pond may be due to increased suspended sediment generated by the cattle at water's edge. Sedimentation will be confirmed in the Year 3 transect surveys.

In Year 3, cbec resurveyed the 8 transects from Year 1 (Figures 4 to 7). An effort to maintain the same stationing was made to accurately compare from year to year. Cross sections showed good agreement between Year 1 and Year 3. As observed in Year 2, the pond site did see minor sedimentation. Sedimentation up to 1.5 ft occurred on Alignment B (Figure 4) and was localized to the pond outlet structure, likely sourced from cattle and human activity in the wet, unvegetated portions of the pond. Additionally, there was minor slumping on Alignment B – North (Figure 5) in 2017; however, the slumping has since been stabilized by the emergence of vegetation on the slope. Alignment D (Figure 6) was changed since the as-built survey. The upper wetland site was generally unchanged but did see some sedimentation in the ponded portion (~0.6 ft compared to as-built survey).

In Year 4, cbec did not resurvey the 8 transects per the monitoring plan schedule. Similar to Year 2, general observations were made in regard to the geomorphic stability of the project. Sedimentation continues to gather in lowest sections of the pond near the outlet structure. Given the approximately 0.7 ft of sedimentation that was observed in Year 2 and the maximum of 1.5 ft that was observed in Year 3, there has been little to no appreciable sedimentation in Year 4 (cbec 2020). Contribution of sediment from cattle grazing has likely continued and maintenance of the outlet structure has also caused a small, localized pile of sediment (cbec 2020). Areas that previously experienced slumping have remained unchanged. No sources or evidence of sedimentation were noted in the pond of the upper wetland. Banks on the lower basin of the upper wetland were cracking due to the clay's expansion and contraction. This is an expected characteristic of the clay but will be continued to be monitored for signs of slumping.

In Year 5, cbec resurveyed the 8 transects from Years 1 and 3 (Figures 4 to 7). Similar to previous years, the same points and stationing were maintained to produce comparable datasets. While the cross section comparisons generally show little to no geomorphic changes from WY 2019 to WY 2021, the top of bank of the lowest section of the pond site was particularly vulnerable to cattle trampling this year. The top of bank of the lower section of the pond was lowered by an additional 0.8 ft on Alignment A (Figure 4), 0.4 ft on Alignment B – North (Figure 5), and 0.3 ft on Alignment C (Figure 6) compared to the 2019 survey. The top of bank of the lower pond section on Alignments B and C also coincides with the deepest extent to which cattle have access to the pond for watering. Given the low amount of rainfall this year, cattle were likely in this area at a higher density and for a longer portion of the wet season. Additionally, the excessively dry soil this year likely performed worse at the grade breaks on all three alignments because this is also the interface of the native soil and the bentonite layer, which is prone to cracking in these dry conditions. The sedimentation from these cattle induced changes appear to be a localized rebalancing of the soil resulting in a flattening of the lower pond slope. As a result of the reduction of anchoring sediment or shallow embedment depth, one "T" post supporting the cattle exclusion fence was no longer imbedded in the soil (Figure 8). While these changes are localized and do not significantly affect the storage and surface area characteristics of the lower pond, they are expected considering the frequency that cattle pressure these areas. Additionally in wetter conditions, this helps generate the turbid conditions that CRLF need for cover. Alignment B also shows deviation on the dry side of the outlet levee; however, this is due to a difference in survey point location as the RTK could no longer locate satellites under the expansion of the tree canopy. Finally, no changes were noted on Alignments E and F (Figures 7).

During the September 2021 field visit, cbec also observed soil cracks at the top of bank in the lower wetland (Figure 9). While surveying the alignments at the wetland site, representative cross sections of the crack were also surveyed. This revealed that the cracks were no deeper than 0.5 ft deep, which corresponds to the depth of native soil filled on top of the bentonite layer used to seal the lower wetland at the transition back to existing grade. Therefore, it was assessed that the cracks are an aesthetic issue that does not compromise the ability of the lower wetland to hold water.

Overall, these results demonstrate that the pond and wetland mitigation sites continued to show minimal sedimentation since Year 1 and are geomorphically stable.

3 MAINTENANCE MONITORING

On a quarterly basis, cbec conducted qualitative observations and photo documentation of site conditions. In Year 1, maintenance items included repairing the slumped western slope of the pond berm north of the outlet culvert and increasing the weir elevation of the pond outlet structure to match the design; both repairs were observed to be in good condition in Year 2. Also, in Year 1, a portion of the pond bank slope slumped just north of the pond outlet structure on Alignment B – North with the decision to leave as-is; it appears to be revegetating.

Based on observations from Year 1 through Year 5, cbec suggests the following annual maintenance and monitoring considerations:

- Annual maintenance:
    - Clean debris from logjams before rainy season and check that flow is not undermining the logs. Repair if necessary.
    - Clean out the spring box and uphill seep channels to optimize seep flow to the pond.
    - Clean out the pond troughs once a year in the Fall to reduce accumulated silt.
    - Reduce human impacts to pond side slopes and bentonite liner during invasive species removal while pond soils are saturated.
- Monitoring considerations:
    - Erosion of the roadway / trail upslope from the springbox caused deposition throughout the drainage all the way downslope to the springbox during WY 2019 and has continued in smaller amounts through WY 2020. Continuing to clean out the trail gravel from the site upstream of the springbox would be advised. Also, consider suggesting best management practices and roadway construction techniques to County Parks on the roadway / trail to minimize roadway erosion and subsequent sedimentation of road base into the wetlands leading to the springbox.
    - The constructed portion of the lower wetland has only been heavily saturated along its length in the "wet" Years 1 and 3. Consider redirecting the upper wetland spill-over location to the northwest corner of the upper wetland so the water has a longer flow path through the lower wetland to enhance the hydroregime and vegetation response for drier years. Given that Year 4 and 5 were very dry conditions, this consideration should be re-evaluated after Year 6 inundation and vegetation response.
    - Ground squirrel burrowing activities should continue to be monitored along the pond berm and lower wetland slopes, especially in drier WYs when pond water levels are lower, to confirm that hydrologic integrity is not being compromised.
    - Tighten the barbed wire fence at the pond by anchoring taller "T" posts with spades deeper and reconnecting the barb wire, which should better resist upward tension and cattle pressure.
    - Monitor integrity of log-jams as their decay becomes more apparent and replace as needed. In Year 4, the outer layer of the logs (bark) started to split and were worse in Year 5 (Figure 10).
    - If possible, and desirable to accomplish habitat management goals, when draining the upper wetland pond in dry years, refill the pond with the water that was pumped out to rapidly restore its hydrologic conditions. Consider pumping into a portable water bladder.
    - Monitor gage battery life during downloads and expect to replace all gages every 5 years. The gages can have varying lifespans, but all gages should be replaced at the first sign of malfunction from a single gage to prevent data loss.
    - During the September 2021 field visit, the upper wetland pond gage alerted that the battery was low. This gage, the wetland weir gage, and the pond trough gage will all be replaced because they were all deployed at the same time.

REFERENCES

cbec. 2017. Calero Mitigation Site Monitoring: Year 1 Monitoring Report.

cbec. 2018. Calero Mitigation Site Monitoring: Year 2 Monitoring Report.

cbec. 2019. Calero Mitigation Site Monitoring: Year 3: Monitoring Report.

cbec 2020. Calero Mitigation Site Monitoring: Year 4 Monitoring Report.

[OCS] Oregon Climate Services at Oregon State University. 2012. Average Monthly or Annual Precipitation 1981-2010.

FIGURES

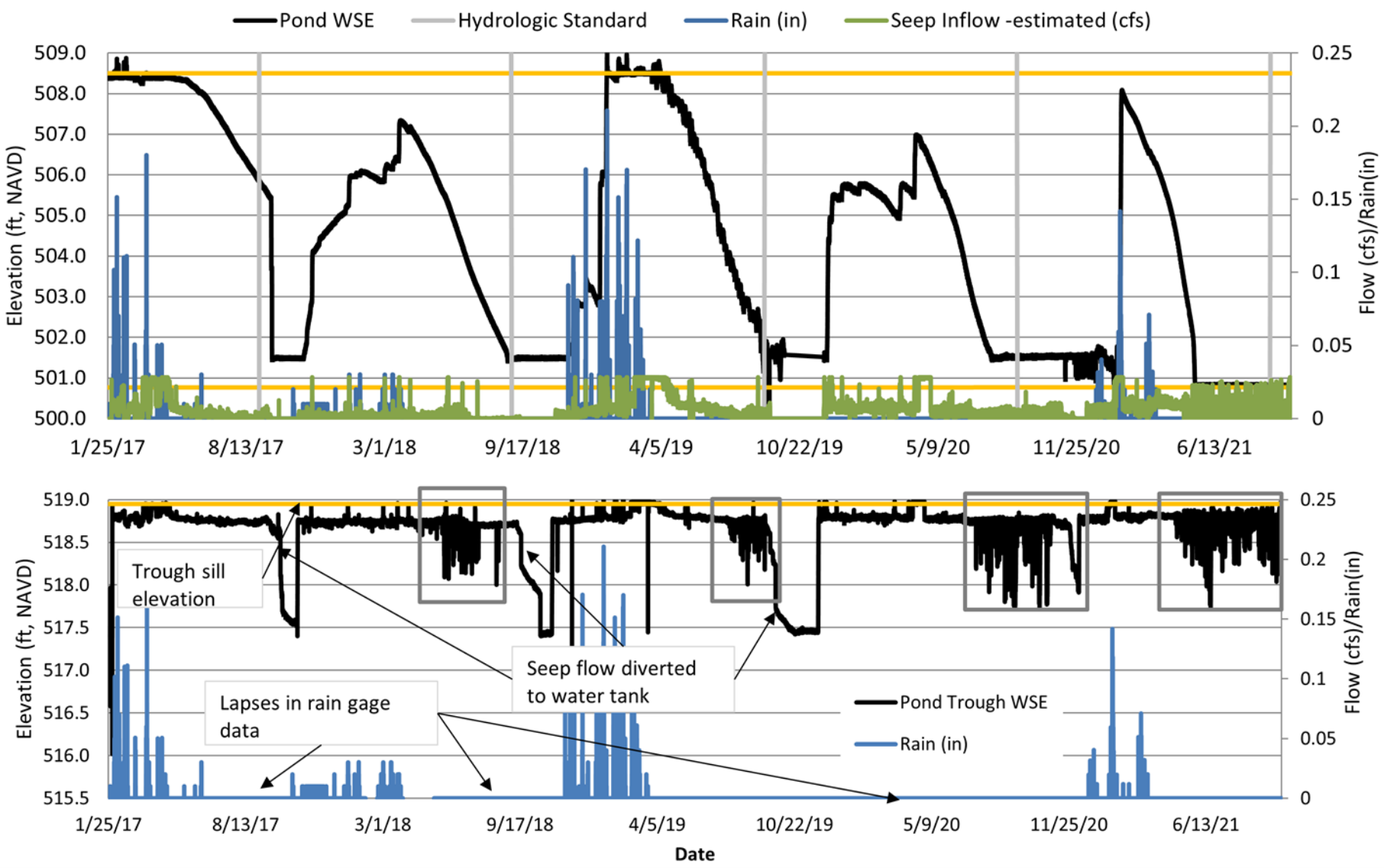
Notes:

Calero Mitigation Site Monitoring

Monitoring locations

Project No. 15-1030-5	Created By: DT	**Figure 1**

Fig1_ProjectSite.docx
11/19/2021



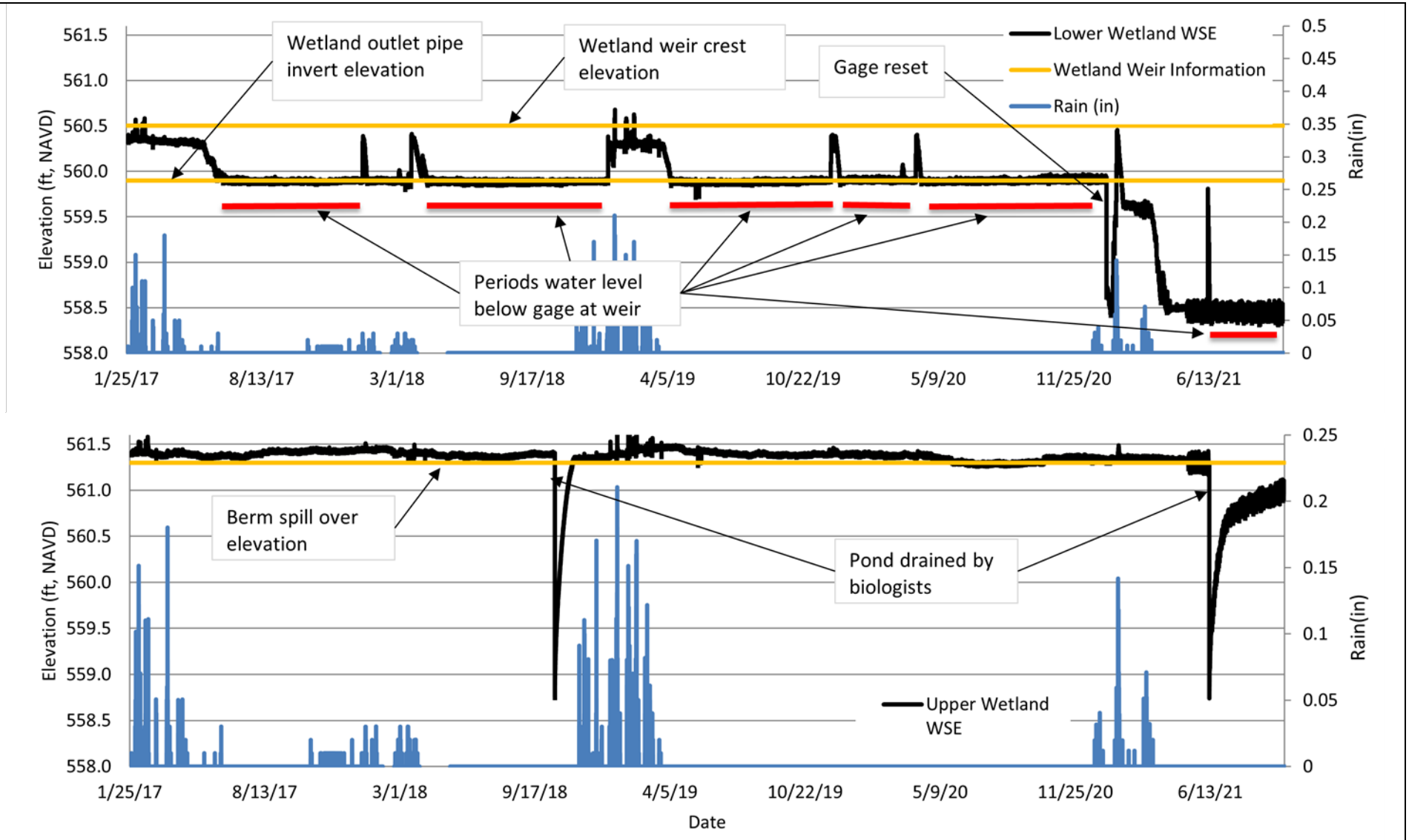
Notes: Gray boxes denote periods where cattle used the trough as a water source. Seep inflows are estimated using rating curve established by measuring trough water levels and outflows. When the trough was full the highest recorded seep inflow was 0.028 cfs. In reality, seep inflows can be greater than 0.028 cfs when the trough capacity is exceeded.

cbec eco engineering

Calero Mitigation Site Monitoring

Pond water levels

Project No. 15-1030-5	Created By: GD	**Figure 2**



Notes: 7/17/2017 and 10/4/2018– Estimated dates when level logger cable was changed for the wetland pond gage, water levels adjusted to account for elevation change of logger. Wetland weir gage was reset lower on 1/12/2021.

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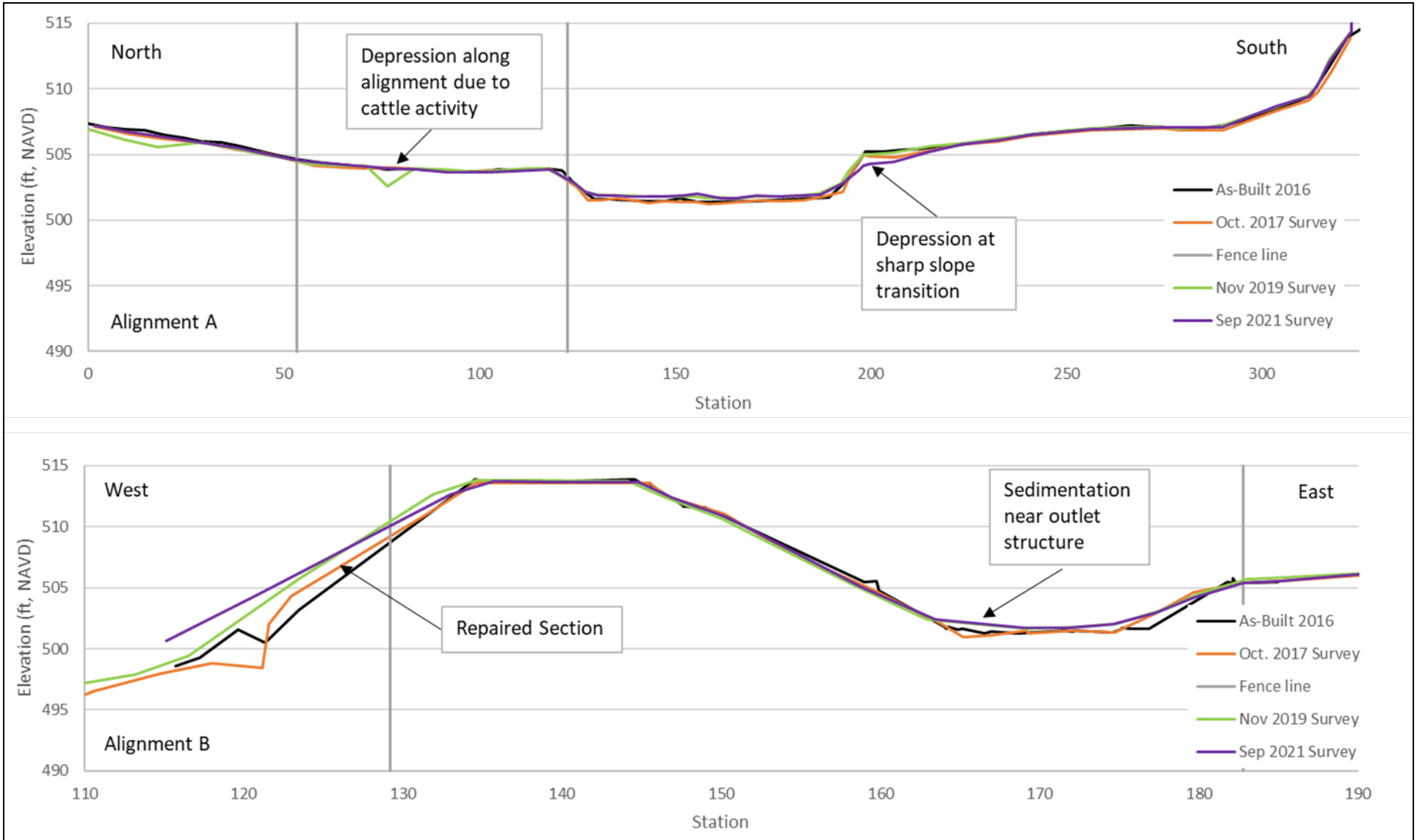
Calero Mitigation Site Monitoring

Wetland water levels

Project No. 15-1030-5	Created By: GD	**Figure 3**

Fig3_WetlandWaterLevels_Year5_20211014_i1.docx
11/19/2021



Notes: As-built elevations (black line) derived from as-built surface. Berm slump fixed after Year 1 at stations 115-123. Maximum sedimentation occurs on Alignment B at station 165. Maximum erosion on Alignment A occurs at station 200.

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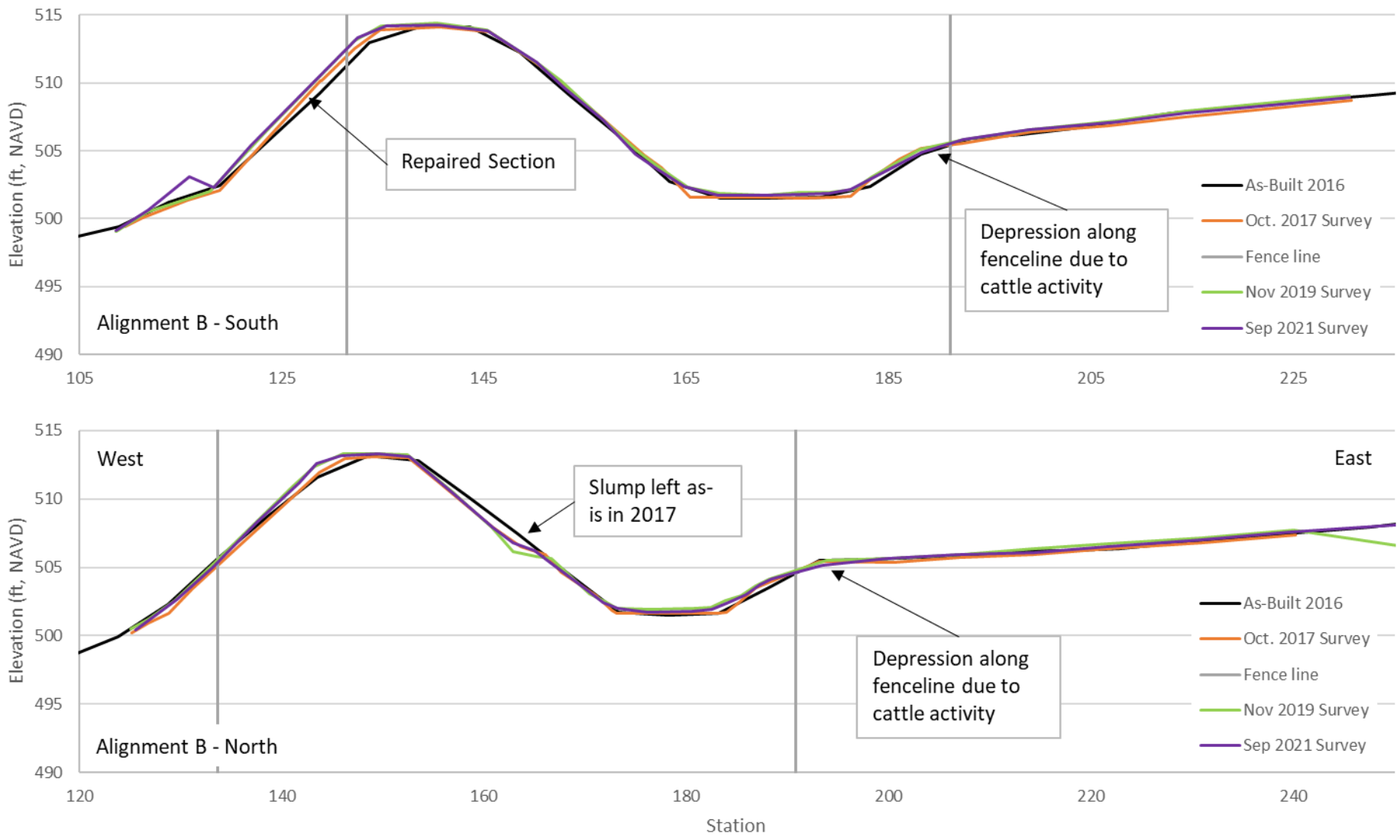
Calero Mitigation Site Monitoring

Alignment A and B

Project No. 15-1030-5 | Created By: GD | **Figure 4**

Fig4_AlignmentAnB_20211014_i1.docx
11/19/2021



Notes: As-built elevations (black line) derived from as-built surface. Minor bank slump on Alignment B – North at station 165.

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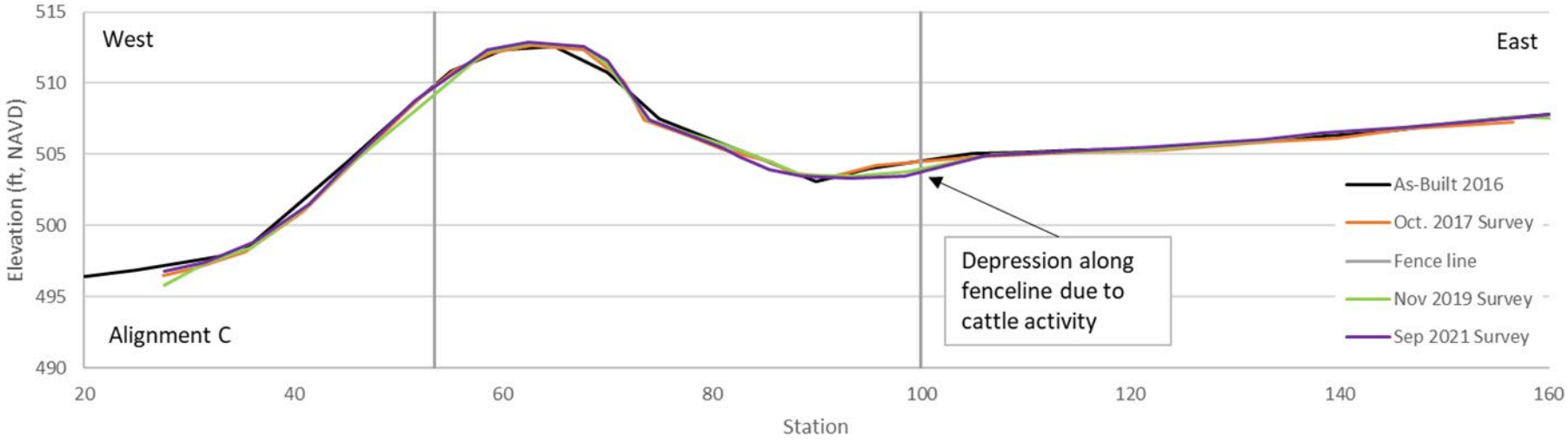
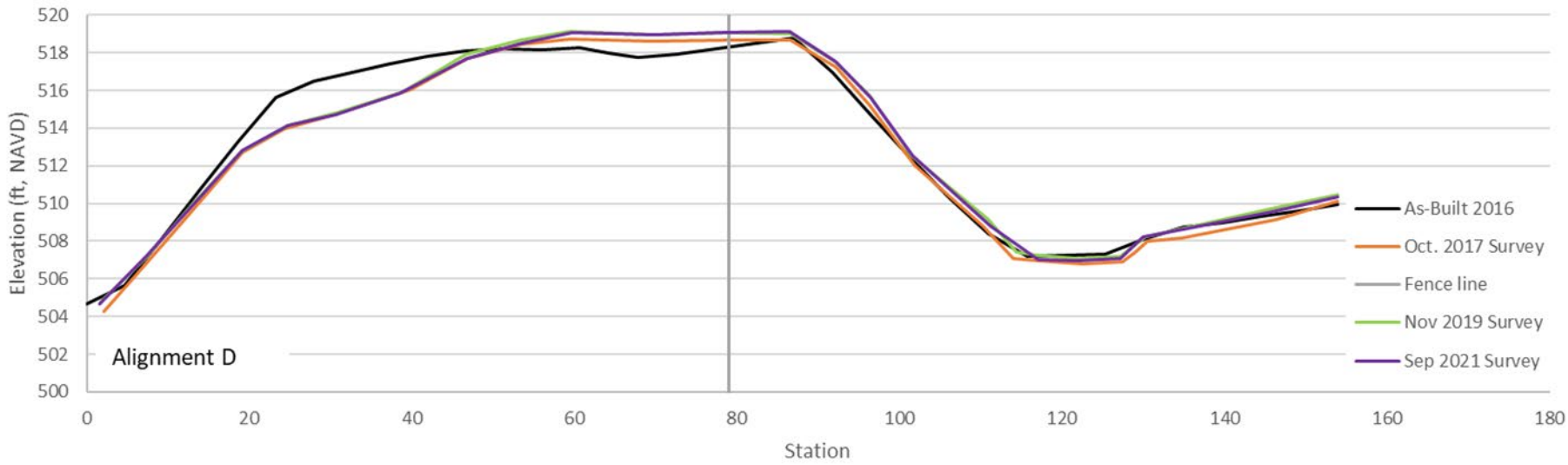
Calero Mitigation Site Monitoring

Alignment B North and South

Project No. 15-1030-5	Created By: GD	**Figure 5**

Fig5_AlignmentBsouthNorth_20211014_i1.docx
11/19/2021





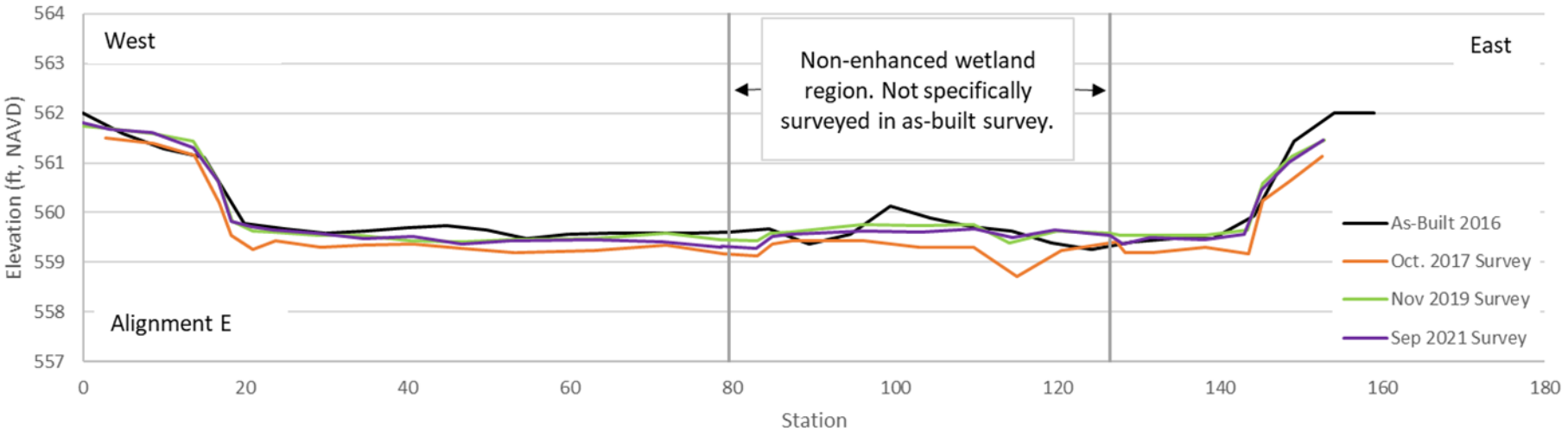
Notes: As-built elevations (black line) derived from as-built surface. Change on Alignment D stations 20-45.

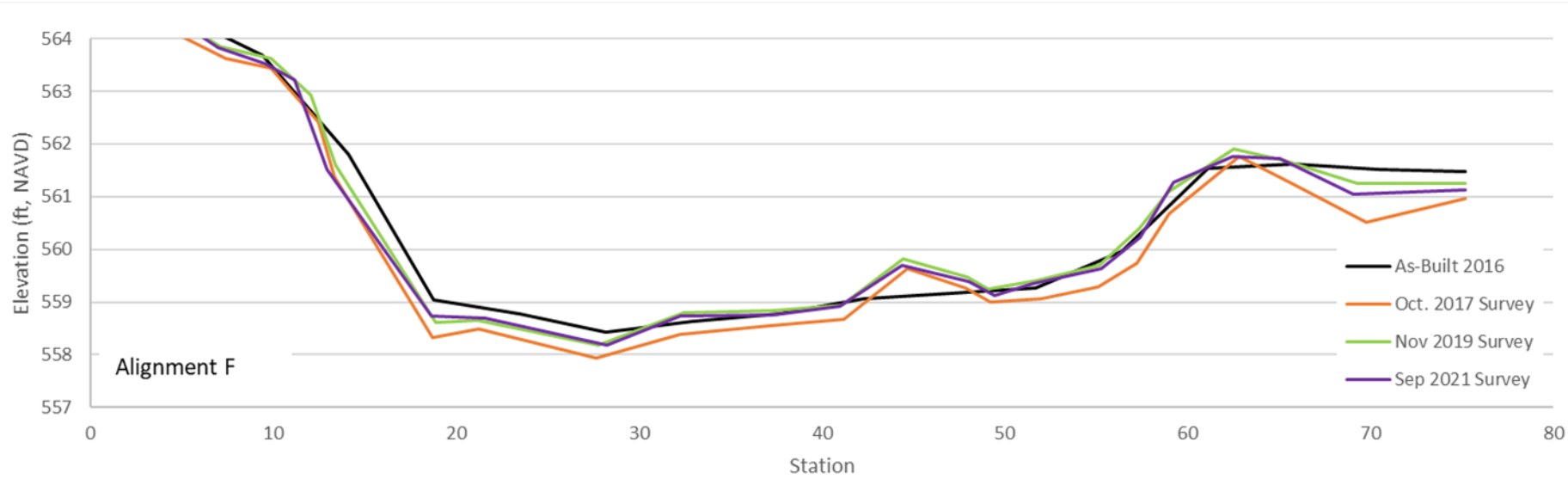
cbec eco engineering

Calero Mitigation Site Monitoring

Alignment C and D

Project No. 15-1030- | Created By: GD | **Figure 6**





Notes: As-built elevations (black line) derived from as-built surface. Sedimentation in upper pond on Alignment F at station 45.

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Calero Mitigation Site Monitoring

Alignment E and F

Project No. 15-1030-5 | Created By: GD | **Figure 7**

Fig7_AlignmentEandF_20211014_i1.docx
11/19/2021

Notes:

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Calero Mitigation Site Monitoring

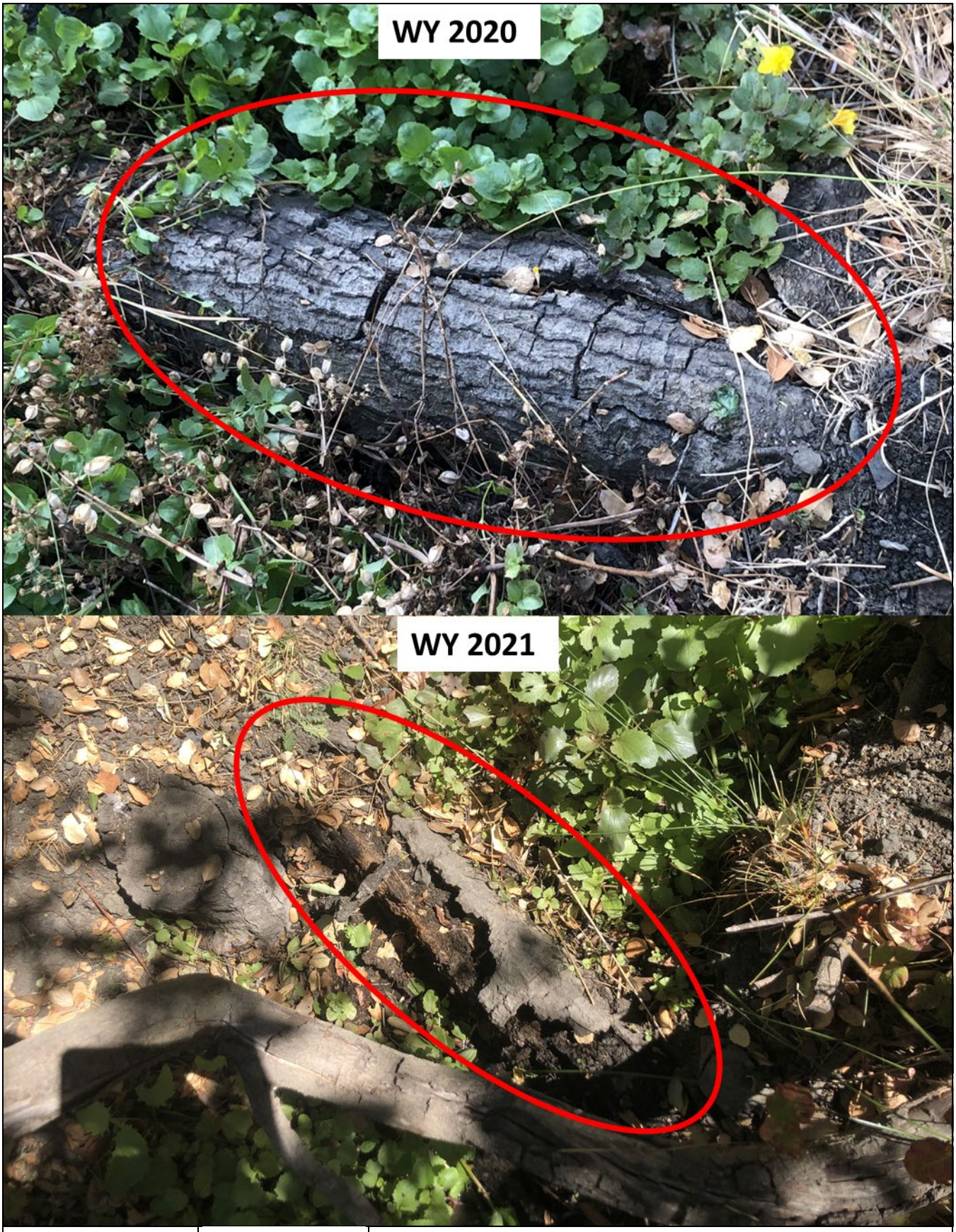
Fence line damage

Project No. 15-1030-5	Created By: GD	**Figure 8**

Fig8_Fenceline_20211014_i1.docx
11/19/2021

Notes:	cbec eco engineering	*Calero Mitigation Site Monitoring* **Lower Wetland crack**		
		Project No. 15-1030-5	Created By: GD	**Figure 8**

D:\15_1030_Calero_Ponds\Figures\WY_2021\Word_Docs\Fig9_Wetland_Crack_20211014_i1.docx
11/19/2021



Notes:	cbec eco engineering	*Calero Mitigation Site Monitoring* **Logjam decay**		
		Project No. 15-1030-5	Created By: GD	**Figure 10**

D:\15_1030_Calero_Ponds\Figures\WY_2021\Word_Docs\Fig10_Maintenance_Logjams_20211014_i1.docx
11/19/2021

APPENDIX A

cbec
eco engineering

Hydrology | Hydraulics | Geomorphology | Design | Field Services

GAGE DOWNLOADS AND MONITORING OBSERVATIONS

Date:	3/15/21
Monitor:	GD
Project:	15-1030-5 - Calero Ponds Monitoring
Subject:	

TASK 2 - LONG-TERM MONITORING

TARGET HYDROLOGIC REGIME

cbec's hydrologist will monitor the hydroperiod at the pond and wetland mitigation sites. Instrumentation will be downloaded on a quarterly basis to coincide with habitat inspections: (1) monitoring at the pond site will include continuous measurements of water levels at the outlet structure, direct rainfall, and outflow from the pond springbox in Year 1; and (2) monitoring at the wetland site will include continuous measurements of water levels in the upper and lower pools.

GAGE DOWNLOADS

12:37

GAGE	WL (FT)	WL TIME	DOWNLOAD TIME	RELAUNCH TIME	NOTES
C1	2.15	12:39	~~12:29pm~~	1:00pm	New WLM used
C2	6.31	1:31	—	—	Telemetred New WLM used
C3	0.45	12:32	12:29pm	1:00pm	New WLM used
C4	0.4	1:17	1:12pm	1:30pm	New WLM used
Baro	—	—	1:25pm		

Pond staff: 5.66 ft @ 12:51pm

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SEEP FLOW MEASUREMENT

TIME	WL (FT)	TIME (SEC)	VOLUME ~~(GAL)~~	V-TOTAL ~~(GAL)~~	NOTES
1:20	.4	7.80	500ml		
1:20	↓	7.62	↓		
1:22	↓	7.35	↓		
			↓		
Average Flow:					

RAIN GAGE

GAGE	DOWNLOAD TIME	RELAUNCH TIME	NOTES
Rain			Telemitered now
Temp/RH			" "

SEDIMENTATION AND GEOMORPHIC STABILITY

cbec's hydrologist will conduct sedimentation monitoring of the pond and wetland mitigation sites. Elevation information will be collected once per year with an RTK GPS by wading or canoe for comparison to the Notification Memorandum cross sections.

XS SURVEY	NOTES
Fall	

GENERAL QUARTERLY OBSERVATIONS		
• Water in trough • water in lower wetland but not standing except near weir	• Bull frogs noises • more fresh sediment from trail down slope	• Standing water near weir
• Pond up to 5.66ft • small drainage backside of outlet	• Fenceline broken • bbb pan sediment in log jams	• jams catching sed • troughs filled • seep draining to pond • Noticed frogs

TASK 3 - MAINTENANCE MONITORING

Infrastructure (biannually officially, however informal observations will be made during the quarterly habitat inspections): (1)Pond and wetland outlet structures; (2) Seep inflow collection and delivery system; and (3) Cattle water infrastructure and delivery system

OBSERVATIONS

STRUCUTRE	OBSERVATIONS/NOTES
Pond outlet structure	check seal; there is small trickle draining
Pond seep pipe and springbox	Springbox nearly filled w/ sediment
Pond troughs	• Algea • lots of sediment
Pond water delivery system/tank	N/A
Wetland trough	in working condition, water observed in trough
Wetland weir	working condition / minimal vegetation in grate

MAINTENANCE ITEMS

STRUCUTRE	MAINTENANCE ITEMS
Pond outlet structure	check seal
Pond seep pipe and springbox	clear sed in Springbox
Pond troughs	clear sed at bottom
Pond water delivery system/tank	NA
Wetland troughs	NA
Wetland weir	NA
Fenceline	broken posts (burned?)
Misc.	NA

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Hydrology | Hydraulics | Geomorphology | Design | Field Services

GAGE DOWNLOADS AND MONITORING OBSERVATIONS

Date:	5/11/21
Monitor:	GD
Project:	15-1030-5 - Calero Ponds Monitoring
Subject:	Monitoring Visit

TASK 2 - LONG-TERM MONITORING

TARGET HYDROLOGIC REGIME

cbec's hydrologist will monitor the hydroperiod at the pond and wetland mitigation sites. Instrumentation will be downloaded on a quarterly basis to coincide with habitat inspections: (1) monitoring at the pond site will include continuous measurements of water levels at the outlet structure, direct rainfall, and outflow from the pond springbox in Year 1; and (2) monitoring at the wetland site will include continuous measurements of water levels in the upper and lower pools.

GAGE DOWNLOADS

GAGE	WL (FT)	WL TIME	DOWNLOAD TIME	RELAUNCH TIME	NOTES
~~C3~~	~~1.86~~	11:20	11:18am	~~12:00~~	Dry
C2	~~Downloaded~~		11:53	10:53	Download Online
~~C4~~	1.95	11:26	11:24	12:00	
C4	0.55	11:39	11:39	12:00	
Baro	N/A	N/A	11:41	12:00	

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SEEP FLOW MEASUREMENT

TIME	WL (FT)	TIME (SEC)	VOLUME ~~(GAL)~~	V-TOTAL (GAL)	NOTES
11:43	0.55	11.99	561mL		
11:45	0.55	13.29	561mL		
11:47	0.55	12.93	561mL		
Average Flow:					

RAIN GAGE

GAGE	DOWNLOAD TIME	RELAUNCH TIME	NOTES
Rain			online download
Temp/RH			online download

SEDIMENTATION AND GEOMORPHIC STABILITY

cbec's hydrologist will conduct sedimentation monitoring of the pond and wetland mitigation sites. Elevation information will be collected once per year with an RTK GPS by wading or canoe for comparison to the Notification Memorandum cross sections.

XS SURVEY	NOTES

GENERAL QUARTERLY OBSERVATIONS	
• Bull frogs in wetland pond • lower wetland dry • water full wetland pond inundation @ outlet of upper pond 5 of weir	
• mixed ponded water • Staff @ 1.44	• Potential cow track causing slump by NW end

TASK 3 - MAINTENANCE MONITORING

Infrastructure (biannually officially, however informal observations will be made during the quarterly habitat inspections): (1)Pond and wetland outlet structures; (2) Seep inflow collection and delivery system; and (3) Cattle water infrastructure and delivery system

OBSERVATIONS

STRUCUTRE	OBSERVATIONS/NOTES
Pond outlet structure	No leaks w/ standing water
Pond seep pipe and springbox	water present, sedimentation
Pond troughs	both filled
Pond water delivery system/tank	Valve draining to pond
Wetland trough	in good conditions / Dry
Wetland weir	in good condition, no flanking, Dry

MAINTENANCE ITEMS

STRUCUTRE	MAINTENANCE ITEMS
Pond outlet structure	N/A
Pond seep pipe and springbox	sediment build up
Pond troughs	algae
Pond water delivery system/tank	Valve to pond
Wetland troughs	N/A
Wetland weir	N/A
Fenceline	minor slumps near wetland Fenceline Potentially new channel at broken fence downhill
Misc.	~~N/A~~ channel main From Valley water

* Pond Slope slumps ~~(cows?)~~ potentially (cows?)
* means to design/down solution for road erosion

cbec eco engineering

Hydrology | Hydraulics | Geomorphology | Design | Field Services

GAGE DOWNLOADS AND MONITORING OBSERVATIONS

Date:	9/30/21
Monitor:	GD
Project:	15-1030-5 - Calero Ponds Monitoring
Subject:	

TASK 2 - LONG-TERM MONITORING

TARGET HYDROLOGIC REGIME

cbec's hydrologist will monitor the hydroperiod at the pond and wetland mitigation sites. Instrumentation will be downloaded on a quarterly basis to coincide with habitat inspections: (1) monitoring at the pond site will include continuous measurements of water levels at the outlet structure, direct rainfall, and outflow from the pond springbox in Year 1; and (2) monitoring at the wetland site will include continuous measurements of water levels in the upper and lower pools.

GAGE DOWNLOADS

GAGE	WL (FT)	WL TIME	DOWNLOAD TIME	RELAUNCH TIME	NOTES
C1	2.42	10:13	10:11am	10:15	Battery low
C2	—	Online		—	
C3	1.79	10:07	10:02am	10:15	Dry
C4	0.35	10:28	10:26am	10:45	Trough Full
Baro	—	—	Online	—	

2544 Industrial Blvd, West Sacramento, CA 95691 USA
T/F 916.231.6052
www.cbecoeng.com

SEEP FLOW MEASUREMENT

TIME	WL (FT)	TIME (SEC)	VOLUME (GAL)	~~TOTAL~~ (~~GAL~~)	NOTES
10:30	0.35	15,66	16 oz	.979	
10:31	↓	15,03	↓	.939	
10:32	↓	15,40	↓	.963	
Average Flow:			.960 oz/s		

oz/s

RAIN GAGE

GAGE	DOWNLOAD TIME	RELAUNCH TIME	NOTES
Rain		Online	
Temp/RH			

SEDIMENTATION AND GEOMORPHIC STABILITY

cbec's hydrologist will conduct sedimentation monitoring of the pond and wetland mitigation sites. Elevation information will be collected once per year with an RTK GPS by wading or canoe for comparison to the Notification Memorandum cross sections.

XS SURVEY	NOTES
wetland	2 XS bank slumping
Pond	6 XS erosion at fenceline
	8 XS total

GENERAL QUARTERLY OBSERVATIONS		
Wetland	• Crack likely geotech fail • ground squirrel activity	• No turtles • Pond filled mostly back • little to no inundation at road outlet
Pond	• Functional • Fenceline slumping/falling	• Dry • delivery good through seep

TASK 3 - MAINTENANCE MONITORING

Infrastructure (biannually officially, however informal observations will be made during the quarterly habitat inspections): (1)Pond and wetland outlet structures; (2) Seep inflow collection and delivery system; and (3) Cattle water infrastructure and delivery system

OBSERVATIONS

STRUCUTRE	OBSERVATIONS/NOTES
Pond outlet structure	Sed at invert but only small amount more compared to first year
Pond seep pipe and springbox	functional but sed filled
Pond troughs	Sed cleared out Functional
Pond water delivery system/tank	Still toward troughs
Wetland trough	Dry
Wetland weir	functional

MAINTENANCE ITEMS

STRUCUTRE	MAINTENANCE ITEMS
Pond outlet structure	Sedimentation from digging at outlet. twist to clear rust
Pond seep pipe and springbox	half full w/sed; clear out seasonally
Pond troughs	Clear of sed periodically
Pond water delivery system/tank	N/A
Wetland troughs	N/A
Wetland weir	N/A
Fenceline	re-string barbed wire and fix slumping
Misc.	olog jams deteriorating

Appendix C. Wetland Delineation Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calero County Park Pond/Wetland Restoration City/County: San Jose/Santa Clara Sampling Date: 5/20/2021

Applicant/Owner: Santa Clara Valley Habitat Agency State: CA Sampling Point: P1

Investigator(s): Kate Drake, Zachery Gizicki Section, Township, Range: NA

Landform (hillslope, terrace, etc.): pond edge Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): C-15 Lat: Long: Datum:

Soil Map Unit Name: Alumrock-Zeppelin complex, 9 to 15 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No ✓ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

Are Vegetation ____, Soil ✓, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ____
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Drought year

Recently restored wetland (Y5)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. NA			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. NA			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ____)			
1. Juncus effusus	15%	D	FACW
2. Festuca perennis	48%	D	FAC
3. Sonchus asper	10%		
4. Rumex crispus	5%		
5. Bromus hordeaceus	2%		
6. Polygon monspeliensis	4%		
7. ? Carex serratogens	1%		
8. Hordeum murinum	2%		
NA Bromus madritensis	2%		
Herb Hyparrhenia congesta	10%		
Woody Vine Stratum (Plot size: ____)	= Total Cover		
1. Herb Italian thistle	1%		
2. Cont'd	total 100%		
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12"	10YR/2/1	98	10YR/5/6	2	C	M	clay loam mostly matrix, small amount PL	gravelly / clay
12-18"	10YR/3/2	93	10YR/7/6	2	C	M	"	"
			10YR/7/2	5	D	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- X Depleted Below Dark Surface (A11)
- X Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**) see notes
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

* ask cbec how high water comes

Remarks:

- Previous observations of ponding would indicate saturation to this point during wet season
- crayfish ~70' away
- water mark @ pond
- soil cracks viewed ~25' towards pond ~~center~~ center of pond - point placed @ edge of wetland

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calero County Park Pond/Wetland Restoration City/County: San Jose/Santa Clara Sampling Date: 5/20/2021

Applicant/Owner: Santa Clara Valley Habitat Agency State: CA Sampling Point: P2

Investigator(s): Kate Drake, Zachery Gizicki Section, Township, Range: NA

Landform (hillslope, terrace, etc.): slope Local relief (concave, convex, none): concave Slope (%): 30+

Subregion (LRR): C-15 Lat: Long: Datum:

Soil Map Unit Name: Alumrock-Zeppelin complex, 9 to 15 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No ____
Hydric Soil Present?	Yes ____ No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: Drought year
recently restored wetland (yr 5)

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1. Ø			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Ø			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 10 ft radius)			
1. Bromus madritensis	20	✓	UPL
2. Festuca perennis	50	✓	FAC
3. Bromus diandrus	6		
4. Bromus hordeaceous	4		
5. Avena fatua	2		
6. Epilobium brachycarpum	1		
7. Geranium dissectum	1		
8. Hemizonia congesta	2		
Rumex crispus	2		
Continued below	28	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1. Ø			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

49 = 50
17.6 = 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species ____	x 1 =	____
FACW species ____	x 2 =	____
FAC species ____	x 3 =	____
FACU species ____	x 4 =	____
UPL species ____	x 5 =	____
Column Totals: ____ (A)		____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ____

Remarks: Herb strata continued

Hordeum murinum 2%
Sonchus asper 4%
Cardamine pycnocephalus 1%
Juncus effusus 3%

Ground squirrel burrow 4ft away

SOIL

Sampling Point: P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR 2/1	96	2.5Y 6/3	4	C	M	CL	very gravelly in upper 5in

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: ground squirrel burrow in plot

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calero County Park Pond/Wetland Restoration City/County: San Jose/Santa Clara Sampling Date: 5/20/2021

Applicant/Owner: Santa Clara Valley Habitat Agency State: CA Sampling Point: P3

Investigator(s): Kate Drake, Zachery Gizicki Section, Township, Range: NA

Landform (hillslope, terrace, etc.): gentle slope @ pond edge Local relief (concave, convex, none): concave Slope (%): 3

Subregion (LRR): C-15 Lat: Long: Datum:

Soil Map Unit Name: Alumrock-Zeppelin complex, 9 to 15 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: Drought yr
Recently restored wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' r)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 30' r)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 10' r)			
1. Hordeum murinum	50%	D	FACU
2. Festuca perennis	60%	D	FAC
3. Juncus effusus	7%		FACW
4. Phalaris aquatica	3%		FACU
5.			
6.			
7.			
8.			
	120 = Total Cover		
Woody Vine Stratum (Plot size: 30' r)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)

Total Number of Dominant Species Across All Strata: ____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species 7	x 2 =	14
FAC species 60	x 3 =	180
FACU species 53	x 4 =	212
UPL species	x 5 =	
Column Totals: 120 (A)		406 (B)

Prevalence Index = B/A = 3.4

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:
area grazed by cattle

SOIL

Sampling Point: P3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR/2/1	98	10YR/6/6	2		M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No _____ Depth (inches): _____

Water Table Present? Yes _____ No _____ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No _____ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

none observed, adjacent waterline below this point topographically

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calero County Park Pond/Wetland Restoration City/County: San Jose/Santa Clara Sampling Date: 5/20/2021

Applicant/Owner: Santa Clara Valley Habitat Agency State: CA Sampling Point: P4

Investigator(s): Kate Drake, Zachery Gizicki Section, Township, Range: NA

Landform (hillslope, terrace, etc.): gentle slope @ pond edge Local relief (concave, convex, none): _____ Slope (%): 2

Subregion (LRR): C-15 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: Alumrock-Zeppelin complex, 9 to 15 percent slopes NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____
Hydric Soil Present?	Yes _____ No _____	
Wetland Hydrology Present?	Yes _____ No _____	

Remarks:
Drought
Recently restored wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2. Ø			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2. Ø			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: ~6's, representative area)			
1. Polypogon monspeliensis	60%		FACW
2. Hordeum murinum (stunted)	30%	D	FACU
3. Festuca perennis	20%	D	FAC
4. Juncus effusus	40%	D	FACW
5. Pholaris aquatica	2%		FACU
6. Lythrum hyssopifolia	1%		
7.			
8.			
	99% = Total Cover		49.5 19.8
Woody Vine Stratum (Plot size: _____)			
1. Ø			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No _____

Remarks:
area grazed by cattle - very stunted

SOIL

Sampling Point: PL4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18"	10YR 2/1	98	10YR 5/8	2	C	M	clay loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Water marks on nearby rocks & fence post

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calero County Park Pond/Wetland Restoration City/County: San Jose/Santa Clara Sampling Date: 5/20/2021

Applicant/Owner: Santa Clara Valley Habitat Agency State: CA Sampling Point: WC1

Investigator(s): Kate Drake, Zachery Gizicki Section, Township, Range: NA

Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): _____ Slope (%): _____

Subregion (LRR): C-15 Lat: _____ Long: _____ Datum: _____

Soil Map Unit Name: ~~Alumrock-Zeppelin complex, 9 to 15 percent slopes~~ NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____ Hydric Soil Present? Yes _____ No _____ Wetland Hydrology Present? Yes _____ No _____	**Is the Sampled Area within a Wetland?** Yes _____ No _____

Remarks:

Drought conditions

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: _____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5x10)			
1. Polypogon monspeliensis	60		
2. Festuca perennis	15		
3. Eleocharis macrostachya	5		
4. Juncus patens	10		
5. Bromus hordeaceus	1		
6.			
7.			
8.			
	= Total Cover		
Woody Vine Stratum (Plot size: _____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: _____ (A)

Total Number of Dominant Species Across All Strata: _____ (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: _____ (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No _____

Remarks:

SOIL

Sampling Point: W1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 2/1	98	10YR 5/8	2	C	M	CL	very gravelly

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bentonite

Depth (inches): 14

Hydric Soil Present? Yes _____ No _____

Remarks:

Hit bentonite layer at 14" - didn't want to puncture bentonite layer

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

In a depression

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calero County Park Pond/Wetland Restoration City/County: San Jose/Santa Clara Sampling Date: ~~5/20/2021~~ 6/2/2021

Applicant/Owner: Santa Clara Valley Habitat Agency State: CA Sampling Point: W2

Investigator(s): Kate Drake, Zachery Gizicki Section, Township, Range: NA

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave Slope (%): 3-1.

Subregion (LRR): C-15 Lat: Long: Datum:

Soil Map Unit Name: ~~Alumrock-Zeppelin complex, 9 to 15 percent slopes~~ NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No ____	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No ____	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: drought year; recently restored wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: r = 5')			
1. Bromus hordeaceous	30	✓	FACU
2. Sisyrinchium bellum	8		FACW
3. Festuca perennis	3		FAC
4. Festuca sp. (myuros)	40	✓	UPL
5. Juncus effusus	4		FACW
6. Rumex crispus	1		FAC
7. Epilobium ciliatum	2		FACW
8. Elymus triticoides	1		FAC
Continued ↓	94	= Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust ____

47 = 50%
18.8 = 20%
20 of 20

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Continued

Rosa californica	1	?
Eschscholzia californica	1	UPL
Acmispon americanus	1	UPL
Carex obnupta	1	OBL
Hordeum murinum	1	FACU

sample point placed outside depression of wetland

SOIL

Sampling Point: W2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-18	2.5Y 3/2	100					Loamy sand	really rocky/gravelly
								C serpentine
								OM 0-2 inches

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: some minimal cracking but due to slope vs. hydrology

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calero County Park Pond/Wetland Restoration City/County: San Jose/Santa Clara Sampling Date: ~~5/20/2021~~ 6/2/2021

Applicant/Owner: Santa Clara Valley Habitat Agency State: CA Sampling Point: W3

Investigator(s): Kate Drake, Zachery Gizicki Section, Township, Range: NA

Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): convex Slope (%): 0-4%

Subregion (LRR): C-15 Lat: Long: Datum:

Soil Map Unit Name: ~~Alumrock-Zeppelin complex, 9 to 15 percent slopes~~ NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ____ No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ✓	No ____	**Is the Sampled Area within a Wetland?** Yes ✓ No ____
Hydric Soil Present?	Yes ____	No ____	
Wetland Hydrology Present?	Yes ✓	No ____	

Remarks: Drought
recently restored wetland

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. ~~Ø~~			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 30)			
1. ~~Ø~~			
2.			
3.			
4.			
5.			
	= Total Cover		
Herb Stratum (Plot size: 5' r)			
1. Eleocharis macrostachya	50	D	OBL
2. Sidyrachira bellum	10		
3. Sparganium eurycarpum	12		
4. ~~Hordeum stress~~ out			
5. carex barbarae	12		
6. Juncus effusus	2		
7. Festuca perennis	2		
8. Flax	1		
	89 = Total Cover		44.5 17.8
Woody Vine Stratum (Plot size: 5' r)			
1. ~~Ø~~			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 5 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: W3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16"	10YR 2/1	98	10YR 6/2	2	D	M		root/bm = more moisture 6-8"
								Bentonite layer @ 16"

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bentonite

Depth (inches): 16 inches

Hydric Soil Present? Yes _____ No _____

Remarks:

Rocky soil

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- X Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- X Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ✓ Depth (inches): _____

Water Table Present? Yes _____ No ✓ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✓ Depth (inches): _____

Wetland Hydrology Present? Yes X No _____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Topographic depression

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Calero County Park Pond/Wetland Restoration City/County: San Jose/Santa Clara Sampling Date: ~~5/20/2021~~ 6/2/2021

Applicant/Owner: Santa Clara Valley Habitat Agency State: CA Sampling Point: W4

Investigator(s): Kate Drake, Zachery Gizicki Section, Township, Range: NA

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): ~~concave~~ none Slope (%): 2

Subregion (LRR): C-15 Lat: Long: Datum:

Soil Map Unit Name: ~~Alumrock-Zeppelin complex, 9 to 15 percent slopes~~ NWI classification: UPL

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil X, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____ No X	**Is the Sampled Area within a Wetland?** Yes ____ No X
Hydric Soil Present?	Yes ____ No X	
Wetland Hydrology Present?	Yes ____ No X	

Remarks: drought
recently restored wetlands

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30)	Absolute % Cover	Dominant Species?	Indicator Status
1. ~~Ø~~			
2.			
3.			
4.			
	= Total Cover		
Sapling/Shrub Stratum (Plot size: 30')			
1. BAPI	10	D	
2. Frangula californica	2		
3.			
4.			
5.			
	12 = Total Cover		
Herb Stratum (Plot size: 5')			
1. cal. poppy	2		
2. Epilobium ssp.	15	D	UPL
3. → Flax - Leptosiphon liniflorus	1		
4. Phalaris aquatica	3		
5. Bromus hordeaceus	20	D	FACU
6. Juncus effusus	4		
7. Agrostis exarata	3		
8. → Festuca sp. (correction) Hordeum murinum	15 / 1	D	
	= Total Cover 80	40 / 16	
Woody Vine Stratum (Plot size: 5')			
1. ~~Ø~~			
2.			
	= Total Cover		

% Bare Ground in Herb Stratum 7 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No X

Remarks:

Sisyrinchium bellum	8
Eleocharis macrostachya	5
Festuca perennis	2
Avena fatua	1

SOIL

Sampling Point: WS4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y 3/2	100					sandy loam	very high rock/gravel serpentine

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) (**LRR C**)
- ___ 1 cm Muck (A9) (**LRR D**)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) (**Nonriverine**)
- ___ Sediment Deposits (B2) (**Nonriverine**)
- ___ Drift Deposits (B3) (**Nonriverine**)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres along Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water Marks (B1) (**Riverine**)
- ___ Sediment Deposits (B2) (**Riverine**)
- ___ Drift Deposits (B3) (**Riverine**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No X Depth (inches): _____

Water Table Present? Yes _____ No X Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No X Depth (inches): _____

Wetland Hydrology Present? Yes _____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: