Tilden Nature Area Sediment Basin Excavation and Pond Restoration

Final Initial Study / Mitigated Negative Declaration

Prepared For:
East Bay Regional Park District
2950 Peralta Oaks Court
Oakland, CA 94605

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Date:
November 2016

NCE Project Number:
567.06.55
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1.0 BACKGROUND

1. Project Title: Tilden Nature Area Sediment Basin Excavation and Pond Restoration

2. Project Location: Tilden Nature Area - Contra Costa County, CA

3. Lead Agency Name and Address: East Bay Regional Park District (EBRPD) 2950 Peralta Oaks Court Oakland, CA 94605

4. Project Sponsor’s Name and Address: East Bay Regional Park District Joe Sullivan, Fisheries Program Manager 2950 Peralta Oaks Court Oakland, CA 94605

5. General Plan Designations: Parks and Recreation (Contra Costa County General Plan 2020)

6. Zoning: Forestry Recreation District (F-R) (Contra Costa County)

7. Description of Project: The project would complete maintenance to improve a sediment basin, and enhance aquatic and upland habitats

8. Other Agencies Whose Approval May Be Required:
   - US Army Corps of Engineers
   - San Francisco Regional Water Quality Control Board
   - California Department of Fish and Wildlife
   - U.S. Fish and Wildlife Service
   - State Historic Preservation Office
   - Contra Costa County
2.0 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the environmental checklist (Section 5.0).

<table>
<thead>
<tr>
<th>Aesthetics</th>
<th>Agricultural and Forestry Resources</th>
<th>X</th>
<th>Air Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>X Biological Resources</td>
<td>X Cultural Resources</td>
<td>X</td>
<td>X Geology/Soils</td>
</tr>
<tr>
<td>Hazards and Hazardous Materials</td>
<td>X Hydrology/Water Quality</td>
<td></td>
<td>Land Use/Planning</td>
</tr>
<tr>
<td>Mineral Resources</td>
<td>Noise</td>
<td></td>
<td>Population/Housing</td>
</tr>
<tr>
<td>Public Services</td>
<td>Recreation</td>
<td></td>
<td>Transportation/Traffic</td>
</tr>
<tr>
<td>Utilities/Service Systems</td>
<td>Greenhouse Gas Emissions</td>
<td>X</td>
<td>Mandatory Findings of Significance</td>
</tr>
</tbody>
</table>

3.0 LEAD AGENCY DETERMINATION

On the basis of this initial evaluation:

__ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

X I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

__ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

__ I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

__ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.
4.0 PROJECT SUMMARY

4.1 Project Location

The project is located within the Tilden Nature Area which is part of Tilden Regional Park in Contra Costa County. Tilden Regional Park is located between the San Pablo Ridge to the east and the City of Berkeley to the west (Figure 1). The project is located in T.01N, R.04W, sections 23 and 26 in unincorporated Contra Costa County within the Tilden Nature Area in Tilden Regional Park. The EBRPD owns and operates the land in the project area which is located within assessor’s parcel number (APN) 573-070-003. The project consists of two areas: an interpretive area with isolated man-made ponds, located in an upland area south of Jewel Lake; and a sediment basin in Wildcat Creek just south of the Environmental Education Center (Figure 2). Both of these areas are located within the Tilden Nature Area preserve.

4.2 Project Background

Tilden Regional Park is located within the headwaters of the Wildcat Creek Watershed. The Wildcat Creek Watershed drains from the East Bay Hills to San Pablo Bay and includes portions of the cities of Oakland, Berkeley, El Cerrito, San Pablo, and Richmond. The upper portion of the watershed is mostly contained within EBRPD property and consists of open space, recreational and residential land uses; while the lower portion of the watershed is urban with residential, commercial and industrial land uses. Much of the land owned by EBRPD is in the headwaters of the watershed and thus they protect and manage important watershed functions including habitat, flood control, erosion control, and also provide environmental education opportunities.

The Wildcat Creek watershed upstream of Jewel Lake Dam experiences high erosion rates, and excess sedimentation which degrades habitat throughout Wildcat Creek. In addition to habitat degradation, the excess sedimentation causes localized flooding in the upper reaches of the watershed from the Lake Anza outlet to Jewel Lake. To reduce the impacts of excess sedimentation, the EBRPD manages a sediment basin within Wildcat Creek downstream of Lake Anza outlet and upstream of Jewel Lake, and near the Environmental Education Center. The sediment basin was last dredged in 2009 and since that time has accumulated excess sediment. This has led to erosion along the streambanks in the basin, reduced aquatic habitat, and may contribute to some localized flooding downstream. In addition, due in part to capacity issues in the sediment basin, Jewel Lake and downstream habitats have been impacted by sedimentation further reducing habitat and impacting resident fish populations.

The interpretive area consists of three man-made ponds and an unimproved dirt path. The ponds are used for EBPRD interpretive programs. Currently, the ponds fill with overland flow from the adjacent hillside and in the past were supplemented with East Bay Municipal Utility District (EBMUD) water from a nearby water line. The ponds have no overflow or outlet and there is no surface flow connection to Wildcat Creek. Habitat enhancement is proposed at the interpretive area to to enhance aquatic and upland habitat for California red-legged frog (CRLF) (Rana draytonii) and Alameda whipsnake (AWS) (Masticophis lateralis).
4.3 **PROJECT DESCRIPTION**

The EBRPD proposes to: excavate sediment to restore the capacity of an in-stream sediment basin, make improvements to the interpretive area to enhance user experience, and conduct site grading and re-vegetation at the interpretive area to enhance habitat.

The project area is approximately 6.64 acres and includes a sediment basin, an interpretive area, and staging areas. Suitable habitat for the federally threatened CRLF exists within the project area and vicinity. The project also occurs within Designated Critical Habitat for Alameda whipsnake (*Masticophis lateralis*).

Specific project activities will include:
- Excavating approximately 700-900 cubic yards of sediment from a sediment basin in Wildcat Creek
- Improvements to the sediment basin wood weir
- Enhancing habitat for CRLF and AWS at existing man-made ponds in the interpretive area
- Constructing a new pond water augmentation system to efficiently supplement the ponds in the interpretive area
- Constructing a trail system comprised of a boardwalk and natural materials to enhance user experience while protecting aquatic and upland habitats in the interpretive area

The sediment basin is located along Wildcat Creek downstream of Lake Anza and upstream of Jewel Lake. Elevation near the sediment basin ranges from 525 to 550 feet. The sediment basin is an approximately 0.12 acre area within Wildcat Creek that provides suitable non-breeding habitat for CRLF. The EBRPD has a Routine Maintenance Agreement (RMA) with the California Department of Fish and Wildlife (CDFW), a Regional General Permit for routine maintenance activities from the Army Corps of Engineers (ACOE), and Waste Discharge Requirements/Water Quality Certification for routine maintenance from the Regional Water Quality Control Board (RWQCB). The RWQCB permit allows removal of up to 200 cubic yards of sediment from the basin annually. Currently, more sediment has accumulated than what can be removed per the District’s maintenance permits and the EBRPD is interested in restoring capacity of the sediment basin to improve creek function and protect downstream habitats including Jewel Lake from excess sedimentation.

Material will be excavated from the basin within the channel using an excavator and loader. Vegetation that has established on the sediment within the channel will be removed. The excavated material will be dried and stockpiled on site to later be re-used to maintain existing facilities within EBRPD property, or disposed of at an upland disposal area within Tilden Regional Park that has been previously used for sediment placement during dredging of Jewel Lake. Once the excavation is complete, the streambanks will be stabilized by re-establishing riparian vegetation.

A wood weir is located at the downstream end of the sediment basin. The wood weir is currently not level and has created some scour around the weir, particularly on the left bank. Minor improvements will be made to the weir to concentrate flows to the middle of the channel, either
by leveling the top surface elevation of the weir or installing a notch, or both. Existing rip rap occurs downstream across the length of the weir. If necessary, additional rip rap would be installed. Currently, rainbow trout (*Oncorhynchus mykiss*) can pass the wood weir in high flows.

The interpretive area is approximately 950 feet northeast from the sediment basin on the eastern side of the dirt road through the Tilden Nature Area. The interpretive area is approximately 1.25 acres and consists of three man-made ponds and an unimproved dirt path. A quail “guzzler” sits near the entrance to the interpretive area and is considered a potentially eligible cultural resource. No improvements or work will occur directly to the guzzler structure. Decomposed granite materials would be installed in the area surrounding the guzzler.

The three man-made ponds and surrounding area will be excavated and re-graded to expand and enhance aquatic habitat for CRLF, and facilitate public access and interpretation. Elevation around the ponds ranges from 450 to 500 feet. The current surface area of the three ponds is approximately 0.01, 0.06, and 0.07 acres. The ponds fill with overland flow during rain events and in the past had been supplemented with EBMUD water from a nearby water line. The ponds have no overflow or outlet and there is no surface flow connection to Wildcat Creek.

The pond excavation and grading work will re-contour the ponds to create enhanced sinuous edges, variable elevations within the ponds, and add undulations on the pond slopes. The two southern ponds will be combined into a larger pond to enhance CRLF breeding habitat and facilitate interpretation. The grading design will be tailored to specific needs for the CRLF including shallow tadpole development areas, areas of refugia consisting of vegetative cover, basking areas, and open water.

Non-native exotic vegetation species removal will occur in and around the ponds, and throughout the area. Non-native exotic vegetation removal methods will include hand-pulling, and spot applications of herbicide as needed. Currently the ponds are dominated by cattails which will be removed before grading the site. In addition, native herbaceous plug plants will be salvaged before pond grading, for reinstallation during the revegetation efforts. Non-native exotic plants, including some eucalyptus trees will be removed; native-to-the-region revegetation will be implemented to enhance wetland, meadow and upland ecotones for the site. The revegetation will be watered using temporary irrigation to facilitate plant establishment.

Improvements will be made to an existing trail which begins at the quail guzzler, traverses through the interpretive area and north to Jewel Lake. The current trail through the interpretive area will be enhanced by installing a natural material, such as decomposed granite where the existing paths are found, installing a boardwalk crossing over a ditch to comply with ADA requirements, and adding a boardwalk deck to provide views of aquatic habitats. In addition, a small scale seating area constructed with logs or similar material will be added just north of the deck area at the southern ponds for the interpretive programs. Vegetation buffers, split rail fencing, and logs will be used to control public access, protect the wetlands, and direct the interpretation of the ponds.

The pond water augmentation system which previously supplemented the pond water levels will be replaced with a combination of underground water lines and open channel flow features,
fed by the adjacent EBMUD water line. A filter will be added to pond water augmentation inflows to insure removal of chloramines before water enters the pond.

Construction is anticipated to occur in 2017 from late summer to October.

4.4 **Surrounding Land Uses and Setting**

General Land Use Designations in the project area include Parks and Recreation, Watershed, Delta Recreation (Contra Costa County General Plan, 2020), and Residential Units (City of Berkeley General Plan, 2003). Current and surrounding land uses include residential housing, UC Berkeley Campus, open space, watershed, parks and recreation. The site is accessed from Canon Drive via Spruce Street from the City of Berkeley. The Tilden Regional Park setting includes Wildcat Canyon and surrounding hills above the City of Berkeley to the west and Contra Costa County to the east. Habitats in the immediate vicinity and surrounding areas of the project include California annual grassland, eucalyptus forest, coast live oak woodlands, and riparian woodland.
Figure 1. Site Map
Figure 2. Project Study Area
Figure 3. Soils and National Wetland Inventory (NWI) Map
Figure 4. Habitat Map
5.0 EVALUATION OF ENVIRONMENTAL EFFECTS

The Environmental Checklist and discussion describes the impacts of the proposed project, as detailed in the Project Description. The Environmental Checklist is based on the questions provided in Appendix G of the CEQA Guidelines (Revised 2009). This checklist focuses on 17 different categories. If substantial evidence exists for impacts not described in the checklist, these impacts should also be considered. Potential environmental impacts are described as follows:

**Potentially Significant Impact:** An environmental impact that could be significant and for which no feasible mitigation is known. If any potentially significant impacts are identified in this Checklist, an Environmental Impact Report (EIR) must be prepared.

**Less than Significant with Mitigation:** An environmental impact that requires the incorporation of mitigation measures to reduce that impact to less-than-significant level.

**Less than Significant Impact:** An environmental impact may occur, however, the impact would not be considered significant based on CEQA environmental standards.

**No Impact:** No environmental impacts would result from implementation of the project.
INITIAL STUDY CHECKLIST

I. Aesthetics – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Have a substantial adverse effect on a scenic vista?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b. Substantially damage scenic resources, including, but not limited to, trees, rock</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>outcroppings, and historic buildings, within a state scenic highway?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Substantially degrade the existing visual character or quality of the site and its</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>surroundings?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Create a new source of substantial light or glare, which would adversely affect</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>day or nighttime views in the area?</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Discussion: Land uses surrounding the project include Parks and Recreation areas. The project area includes buildings and facilities associated with the Tilden Nature Area including the Little Farm, Environmental Education Center, as well as park residences and maintenance facilities. Habitats that occur within the project area include California annual grassland, eucalyptus forest, coast live oak woodland, and riparian woodland (Sawyer and Keeler-Wolf, 2010). Views within the proposed project area include natural habitats and the buildings and facilities in the Tilden Nature Area. A dirt road begins near the sediment basin where excavation is proposed and continues through the Tilden Nature Area which links with several small hiking paths. Existing wooden boardwalks occur throughout the Tilden Nature Area. Existing sources of light are limited to lighting for the structures within the Little Farm, Environmental Education Center, a Park Residence, and maintenance facilities. No additional sources of light or glare exist in the immediate project area.

A significant impact would occur if the project would:

- substantially alter or have an impact on a scenic vista, or would block a view of a scenic vista
- substantially damage scenic resources such as trees, outcroppings, or historic buildings within a state scenic highway
- introduce elements that are inconsistent with the visual character of the site
- introduce substantial sources of light or glare that would affect day or nighttime views

a & c)

Less than Significant Impact. The proposed improvements would enhance existing aquatic and upland habitat and would not have an adverse effect on a scenic vista. The trail and boardwalk system would be made out of natural materials, such as wood decking and
decomposed granite, which is consistent with the aesthetic character of the existing boardwalk trails through the Tilden Nature Area. Vegetation removal is limited to a few trees in an area of many trees. Revegetation and habitat enhancement plantings would be completed with native-to-the-region species consistent with the area aesthetic.

b) **No Impact.** There are no state scenic highways near the project area; the nearest state scenic highway is State Route 24 which is located approximately 7 miles south. Given the project is not located within or near a state scenic highway no impacts would occur.

d) **No Impact.** No additional sources of lighting are proposed for this project. Since no new lighting is proposed, no impacts would occur.

**II. AGRICULTURAL AND FORESTRY RESOURCES** – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide or Local Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>d. Result in the loss of forest land or conversion of forest land to non-forest use?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>e. Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland (including livestock grazing) to non-agricultural use?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Discussion:** No prime farmland, unique farmland, or farmland of statewide local importance exists within the project area (California Department of Conservation, 2016). The Tilden Nature Area Little Farm exists in the project vicinity and is a demonstration farm for educational purposes, but no work is proposed at the Little Farm. There are existing residential properties
adjacent to the Tilden Nature Area and no agricultural uses within close proximity of the project site.

A substantial adverse effect to Agricultural Resources would occur if:

- There is a conversion of choice agricultural land to nonagricultural use, or impairment of the agricultural productivity of agricultural land;
- The amount of agricultural or forestland land in Contra Costa County is substantially reduced, converted to non-forest use; or
- Agricultural uses are subjected to impacts from adjacent incompatible land uses.

a-e)

**No Impact.** The proposed project would complete maintenance to improve a sediment basin, and enhance aquatic and upland habitats. The site does not have an active Williamson Act Contract, has been historically used as a nature area/park, and has never been used for commercial agriculture. The Little Farm which has been in operation since 1955 and seeks to preserve traditional, heritage breeds of farm animals and traditional, or heirloom, herbs and vegetables. The Little Farm is also used as an interpretive tool to teach park users about farm animals. The project would not convert Prime Farmland, Unique Farmland of Statewide Importance, or Locally Important Farmland (Farmland) and is not designated as a timber preserve zone. The project site has historically been used as a park is adjacent to existing residential neighborhoods, and therefore no impacts to agriculture or timber resources would occur as a result of the project.

**III. Air Quality** – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Conflict with or obstruct implementation of the applicable air quality plan?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Environmental Issue</td>
<td>Potentially Significant Impact</td>
<td>Less Than Significant with Mitigation</td>
<td>Less Than Significant Impact</td>
<td>No Impact</td>
</tr>
<tr>
<td>-----------------------------------------------------------------------------------</td>
<td>-------------------------------</td>
<td>--------------------------------------</td>
<td>-----------------------------</td>
<td>-----------</td>
</tr>
<tr>
<td>d. Expose sensitive receptors to substantial pollutant concentrations?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>e. Create objectionable odors affecting a substantial number of people?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

**Discussion:** The California Air Resources Board (CARB) is part of the California EPA and is responsible for the coordination and administration of both the federal and state air pollution control programs in California. CARB sets the California Ambient Air Quality Standards (CAAAQS), oversees the Toxic Air Contaminants Program (TACs), and the Hotspots Program. TACs were intended to reduce exposure to air toxins such as asbestos, benzene, and chloroform. The Hotspots Program was designed to report and notify the public of the types and quantities of air toxins routinely released in the air at specific locations.

The project area is located in the San Francisco Bay Air Basin and is under the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The BAAQMD enforces rules and regulations regarding air pollution sources and is the primary agency preparing the regional air quality plans mandated under state and federal law.

As of October 1, 2015 the EPA designated Contra Costa County as an 8-hour ozone nonattainment area (U.S. EPA, 2016), where Contra Costa County is mapped as “marginal”. The nonattainment status in the area of the proposed project can be attributed to the overall development history in the region. Development projects from the past, present and future contribute to the region’s adverse air quality impacts on a cumulative basis. By its very nature, air pollution is considered largely a cumulative impact. No individual project is sufficient in size to result in nonattainment of ambient air quality standards. Alternatively, a proposed project’s individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a proposed project’s contribution to the cumulative impact is considerable, then the project’s impact on air quality would be considered significant.

The most recent Bay Area Clean Air Plan (CAP) was adopted in 2010 by the BAAQMD and provides a comprehensive plan to improve Bay Area air quality and protect public health. The 2010 cap provides measures to (1) reduce emissions and decrease ambient concentrations of harmful pollutants; (2) safeguard public health by reducing exposure to air pollutants that pose the greatest health risk with an emphasis on protecting the communities most heavily impacted by air pollution; and (3) reduce Greenhouse Gas Emissions (GHG) to protect the climate.

The BAAQMD provides a guidance document titled *California Environmental Quality*
Act Air Quality Guidelines, which provides guidance for evaluating air quality impacts in the San Francisco Bay Area Air Basin pursuant to CEQA. The document provides guidance on evaluating air quality and GHG impacts of development projects and local plans, determining whether an impact is significant, and mitigating significant impacts.

The BAAQMD’s updated CEQA Guidelines including thresholds of significance were adopted on June 2, 2010 (BAAQMD, 2010). These current thresholds have been used in this analysis for a conservative determination of impact significance as shown in Table 1. The current significance thresholds including annual emissions for operational emissions and daily standards for short-term construction related emissions are shown in Table 1. Emission levels for Reactive Organic Gases, Nitrogen Oxides, and Particulate Matter (PM-2.5) are limited to 54 lbs./day during construction related projects and 82 lbs./day for Particulate Matter (PM-10) emissions.
### Table 1. Bay Area Air Quality Management District Thresholds of Significance

<table>
<thead>
<tr>
<th>Project-Level</th>
<th>Pollutant</th>
<th>Construction-Related</th>
<th>Operational-Related</th>
</tr>
</thead>
<tbody>
<tr>
<td>Criteria Air Pollutants and Precursors (Regional)</td>
<td>Event Average Daily Emissions (lb/day)</td>
<td>Event Average Daily Emissions (lb/day)</td>
<td>Maximum Annual Emissions (tpy)</td>
</tr>
<tr>
<td>ROG</td>
<td>54</td>
<td>54</td>
<td>10</td>
</tr>
<tr>
<td>NO\textsubscript{X}</td>
<td>54</td>
<td>54</td>
<td>10</td>
</tr>
<tr>
<td>PM\textsubscript{2.5} (exhaust only)</td>
<td>82</td>
<td>82</td>
<td>15</td>
</tr>
<tr>
<td>PM\textsubscript{10} (exhaust only)</td>
<td>54</td>
<td>54</td>
<td>10</td>
</tr>
<tr>
<td>PM\textsubscript{10}/PM\textsubscript{2.5} (fugitive dust)</td>
<td>Best Management Practices</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Local CO</td>
<td>None</td>
<td>9.0 ppm (8-hour average), 20.0 ppm (1-hour average)</td>
<td></td>
</tr>
<tr>
<td>GHGs Projects other than Stationary Sources</td>
<td>None</td>
<td>Compliance with Qualified Greenhouse Gas Reduction Strategy OR 1.100 MT of CO\textsubscript{2}-e/yr OR 4.6 MT CO\textsubscript{2}-e/SP/yr (residents + employees)</td>
<td></td>
</tr>
<tr>
<td>GHGs Stationary Sources</td>
<td>None</td>
<td>10,000 MT/yr</td>
<td></td>
</tr>
<tr>
<td>Risk and Hazards – New Source (Individual Project)</td>
<td>Same as Operational Thresholds“</td>
<td>Same as Operational Thresholds“</td>
<td></td>
</tr>
<tr>
<td>Risk and Hazards – New Receptor (Individual Project)</td>
<td>Same as Operational Thresholds“</td>
<td>Same as Operational Thresholds“</td>
<td></td>
</tr>
</tbody>
</table>

*Note: Threshold Effective Date May 1, 2011*
A substantial adverse effect on air quality would occur if:

- Construction operations would result in Reactive Organic Gases (ROG), Nitrogen Oxides \( \text{NO}_x \), exceeding 54 lbs./day during construction related projects (Table 1).
- Emissions of \( \text{PM}_{10} \), CO, \( \text{SO}_2 \) and Nox, as a result of construction or operation emissions, will result in ambient pollutant concentrations in excess of the applicable California Ambient Air Quality Standard (CAAQS).
- Emissions of toxic air contaminants cause cancer risk greater than 1 in 1 million (10 in 1 million if best available control technology for toxics is used) or a non-cancer Hazard Index greater than 1. In addition, the project must demonstrate compliance with all District, State and U.S. EPA regulations governing toxic and hazardous emissions.
a) **Less than Significant Impact.** Proposed projects that could generate emissions in excess of the BAAQMD’s recommended significance thresholds would be considered to potentially conflict with or obstruct implementation of the applicable air quality plan. As discussed in sub section c) below, implementation of the proposed project would not be anticipated to result in long-term increases of mobile-source emissions, nor would short-term construction-generated emissions be projected to exceed applicable thresholds of significance. For these reasons, implementation of the proposed project would not conflict with nor obstruct implementation of applicable air quality plans.

b) **Less than Significant with Mitigation.** The construction required for the proposed project could temporarily generate emissions in excess of the BAAQMD’s recommended significance thresholds that would be considered to result or contribute substantially to an existing or projected air quality violation, including increases in emissions for which the region is designated nonattainment. Fugitive dust emissions from construction of the project would cause increases in ambient air particulate matter concentrations at receptors near the project area. Construction dust is composed primarily of large particles that settle out of the atmosphere with increasing distance from the source. In general, construction dust would result in more of a nuisance than a health hazard. About one-third of the dust generated by construction activities consists of smaller size particles (PM-10) in the range that can be inhaled by humans (EPA, 2015). Persons with respiratory diseases who may be immediately downwind of the construction activities could be sensitive to this dust. The short-term PM-10 air quality impacts from fugitive dust during construction would be significant unless mitigation measures prescribed by BAAQMD are implemented. Therefore, the short-term PM-10 air quality impacts from fugitive dust during construction would be significant unless mitigation measures prescribed by BAAQMD are implemented.

Although exhaust emissions from construction vehicles are much lower than fugitive dust emissions, some of them, such as NOx and VOCs, contribute to the formation of ozone, a nonattainment pollutant, and fine particulate matter from exhaust emissions would contribute to ambient air PM-10 levels. Thus, short-term ozone impacts would be significant, and PM-10 impacts would be significant at locations near the construction site unless mitigation measures are adopted to reduce exhaust emissions.

**Mitigation Measure AQ-1:**

During construction of the project, the construction contractor shall implement the following fugitive dust control and emissions reduction measures during construction of the project. These measures are prescribed by BAAQMD to ensure that construction impacts are less than significant, and they include:

- Construction areas, unpaved access roads, and staging areas shall be watered at least twice daily or at a frequency necessary to control fugitive dust generation during dry weather or soil stabilizers shall be applied during active work.
- Trucks hauling soil and other loose material shall either be covered, have at least two feet of freeboard, or be sprayed with water prior to arriving and departing from the construction site.
- Construction vehicles shall use paved roads to access the construction site wherever possible.
- Vehicle speeds shall be limited to 15 mph on unpaved roads and construction areas or as required to control dust.
- Paved access roads, parking areas, and staging areas at construction sites and streets shall be cleaned daily with water sweepers if excessive soil material is carried onto adjacent public streets.
- Vehicles used in construction activities shall be tuned per the manufacturer’s recommended maintenance schedule.
- Vehicle idling time shall be minimized whenever possible.

c) **Less than Significant with Mitigation.** Short-term increases in emissions would occur during the construction phase of the project. Since the project would complete maintenance to improve a sediment basin, and enhance aquatic and upland habitats, there would be no long-term increases in emissions. Construction generated emissions would be of a temporary duration and last only as long as the actual construction for the project, but also have the potential to cause a significant air quality impact. The construction required for the proposed project could result in the temporary generation of emissions associated with site grading and excavation, paving, vehicle exhaust associated from construction equipment, including the movement of construction equipment on unpaved surfaces. Temporary short-term construction emissions would result in increased emissions of Reactive Organic Gases (ROG), Nitrogen Oxides (NO\textsubscript{2}) and emissions of PM-10, CO, SO\textsubscript{2} and Nox. Emissions of ozone-precursors would result from the operation of on-road and off-road motorized vehicles and equipment. Emissions of airborne PM are largely dependent on the amount of ground disturbance associated with site preparation activities and can result in increased concentrations of PM that can adversely affect nearby sensitive land uses.

The U.S. EPA designates Contra Costa County as an 8-hour ozone nonattainment area, where Contra Costa County is mapped as “marginal”. Given that the proposed project would be required to comply with the BAAQMD dust control requirements including the implementation of Mitigation Measure AQ\textsuperscript{-1}, project generated emissions would not exceed applicable BAAQMD significance thresholds. Therefore with the implementation of Mitigation Measure AQ\textsuperscript{-1} construction generated emissions would be considered less than significant.

**Mitigation Measure:**

Implement AQ\textsuperscript{-1}

d) **Less than Significant Impact.** Sensitive receptors are children or the elderly and occur in areas where outdoor activities are the primary land use, such as residences, schools, parks, hospitals, or other land uses where children or the elderly congregate. Potential short term exposure of sensitive receptors to pollutant concentrations from temporary construction activities would be considered less than significant. Upon project completion, sensitive receptors would not be exposed to substantial pollutant concentrations.
e) **Less than Significant Impact.** Temporary construction activities associated with the proposed project would involve the use of a variety of gasoline or diesel powered equipment and pavement coatings emitting temporary exhaust fumes and odors. However, construction-related emissions would occur intermittently throughout the workday and would dissipate rapidly with increasing distance from the source. As a result, short-term construction activities would not expose a substantial number of people to frequent objectionable odors. Potential short term exposure of sensitive receptors to objectionable odors would be considered less than significant.

### IV. Biological Resources – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies or regulations, or by the California Department of Fish &amp; Wildlife or U.S. Fish &amp; Wildlife Service?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies or regulations or by the California Department of Fish &amp; Wildlife or U.S. Fish &amp; Wildlife Service?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Discussion:** A preliminary biological resource assessment was completed for this project to identify the habitats which occur on site and which species have the potential to utilize these habitats in order to assess potential impacts and identify mitigation measures necessary to minimize potential impacts associated with the Project (Appendix C).

According to the Natural Resources Conservation Service (NRCS), soils found in the immediate vicinity of the project site are Millsholm loam 15% to 30% slopes, and Zamora silty clay loam 2 to 5% slopes (Figure 3). These soil units are not known to contain serpentine. The project site is located within or near the channel of Wildcat Creek, on the floor of a small valley. Elevations of the project site range from approximately 450 feet to 550 feet (150 meters to 170 meters) above mean sea level (MSL).

Nine general habitat types were identified within the vicinity of the project. These habitat types are based on their potential to support Special Status Species (SSS) flora and fauna. The habitat types are mixed riparian woodland, coast live oak woodland, coastal prairie, northern coastal scrub, chaparral, eucalyptus forest, agricultural lands, urban lands, and California annual grassland. Habitats that occur within the project area itself include California annual grassland, eucalyptus forest, coast live oak woodlands, streams, ponds, and riparian woodland (NCE, 2016; Sawyer and Keeler-Wolf, 2010) (Figure 4). Other habitats in the region include wetlands, ponds, riparian areas, and streams. The habitats in and surrounding the project site support a number of resident and migratory birds. These and other birds may nest, forage, or winter in habitats on or adjacent to the site. The riparian and upland vegetation in the vicinity provides foraging habitat and cover for several mammal species.

**Flora.** Of the 15 special status plant species known to occur in the project region, only 7 species have the potential to occur within the project site. This assessment is based on research of local occurrence data on the California Natural Diversity Database (CNDDB), CNPS’s Inventory of Rare and Endangered Plants (CNPS, 2010), and a site visit conducted on March 18, 2016 to identify plant communities within and surrounding the project area. No special status plant species or sensitive natural communities were identified during the site visit. Non-native plants exist in the sediment to be excavated from the basin, and in the upland areas surrounding the ponds. Non-native vegetation at the interpretive area will be removed through use of herbicide, stump removal, and hand pulling. Non-native vegetation that exists in the sediments to be excavated at the basin will be removed and disposed of along with the excavated sediment.

**Fauna.** Several of the special status or sensitive animal species that occur, or once occurred, regionally, have the potential to occur at the site. Of the 26 special status or sensitive animal species that occur or once occurred in the surrounding region, 19 have potential to occur at the project site. This assessment is based on research of local occurrence data on the California Natural Diversity Database (CNDDB), CNPS’s Inventory of Rare and Endangered Plants (CNPS, 2010), and a site visit conducted on March 18, 2016 to identify habitat types which have the potential to support special status species. These include nesting birds, bats, foraging birds, mammals, herptiles, fish, and insects. These and other species may either occur on the site incidental to home range and migratory movements, thus using the site infrequently, or may forage on the site year-round or during migration.
Less than Significant with Mitigation. The project has the potential to cause direct impacts to biological resources during construction. The proposed project will include the excavation of sediment in a section of Wildcat Creek, enhancement of habitat for CRLF at the interpretive area used for environmental education, and improvements to the interpretive area to enhance user experience while protecting habitat. This work will require temporary disturbance to in-stream and upland habitats to excavate excess sediment from the basin and to construct habitat enhancements at the pond area. This work will be mitigated by returning both the sediment basin and interpretive pond area to equal or greater habitat condition after completion of the project. Conducting biological monitoring before and during construction, and installing exclusion fencing will ensure no direct impacts to species during construction. Permanent impacts are limited to minor hardscape improvements within the interpretive area (i.e., enhanced trail system, and seating area). These impacts will be mitigated by stabilizing streambank areas disturbed in the basin during construction to equal or greater condition, and by enhancing and expanding aquatic and upland habitats in the interpretive area.

The project has potential to cause indirect impacts to biological resources during operation of the interpretive area. During project operation, the public would use the new interpretive trail near the ponds on an ongoing basis. This activity would create additional noise and other disturbance that has the potential to impact sensitive wildlife species that may be located in close proximity to the trail. Any increase in public use will be offset by increased habitat value in the ponds themselves and the project will result in a net gain in habitat value for CRLF and other plant and animal species that live in the immediate area. In addition, vegetation buffers, split rail fencing, and logs will be used to control public access, protect the wetlands, and direct the interpretation of the ponds to reduce the potential for this impact below the level of significance.

Flora. The potential for special status plant species to occur on site prior to construction activities is very low. However, pre-construction surveys are recommended. Special status or locally rare plants which occur within the area proposed for pond improvements and interpretive trails would be removed. Construction could facilitate the spread of invasive species to high quality habitat areas unless avoided or mitigated. A protocol level study may be required by agencies prior to construction to determine the presence or absence of additional special status plant species which have been known to occur in the area in the past but were not identified during site visits conducted on March 18, 2016. Herbicide application would be conducted to remove non-native plants in upland areas near the ponds.

Mitigation opportunities exist which can reduce impacts below the level of significance. The first is enhancement of habitat through transplantation (when possible) of native species. Second, is the management of invasive species in areas within and adjacent to the project area to prevent invasion of high quality habitats at the site. Third, replanting or restoration of impacted areas with locally native plants would achieve habitat of equal or greater value on site. Herbicide application would be consistent with EBRPD protocols and the exception for Invasive Species and Noxious Weed Programs specified in U.S. EPA’s injunction on
herbicide use in CRLF habitat areas, therefore it would pose a less than significant impact (U.S. EPA, 2016b).

**Fauna.** Trees, shrubs, and other habitats in the project vicinity may provide suitable nesting habitat for migratory birds, including raptors. If a migratory bird, regardless of its federal or state status, were to nest near the site prior to or during proposed construction activities, such activities could result in the abandonment of active nests or direct mortality to these birds. Construction activities that adversely affect the nesting success of special-status or non-special-status migratory birds, including tree-nesting raptors, or result in mortality of individual birds, constitute a violation of state and federal laws. In addition to birds that nest in trees and shrubs, ground nesting avian species do occur in the vicinity of the project. These nesting birds may be adversely affected by the noise and dust of construction activities.

The project would include the very limited tree and shrub removal thus protecting special status species habitat. The project shall avoid impacts to special status plant species where possible, however where impacts cannot be avoided, special status plant species will be incorporated into the planting plan for the pond area to be implemented by EBRPD or a qualified contractor. The project would entail minimal loss of foraging, nesting, and/or roosting habitat and this habitat is locally abundant. Appropriate best management practices would be implemented to protect habitat resources, including exclusionary fencing and tree protection within the sediment basin and interpretive areas, and biological monitoring before and during construction. Therefore, impacts to these special status species habitats would be considered less than significant with mitigation.

California red-legged frogs may use this reach of Wildcat Creek and the man-made ponds as breeding and non-breeding habitat. Resident rainbow trout (*Oncorhynchus mykiss*) have been observed near the sediment basin and can currently pass over the weir in high flows. Sacramento Perch, a California Species of Special Concern, has been observed in Jewel Lake in the past. Direct impacts to the riparian corridor and its buffer will be minimized. This work may result in temporary impacts to special status species on the site during construction and will result in a net gain in habitat after construction. Pre-construction surveys combined with avoidance and mitigation measures required by regulatory agencies will ensure that impacts to existing special status species are less than significant.

**Mitigation Measures:**

**BIO–1** Prior to construction, EBRPD or a qualified contractor shall pin flag or mark locations of special status plant species in proposed areas of grading at the basin and ponds. The pin flag or marker locations shall be maintained through the duration of project construction. Where possible, the special status plant species shall be salvaged prior to grading and transplanted during re-vegetation of the site. Re-vegetation will occur according to a Planting Plan developed by the EBPDRD and implemented by EBRPD or its contractor. The plant establishment will be monitored beginning immediately after completion of the seeding, planting, and irrigation system installation, and will continue for a minimum of 2 years.
**BIO-2** Tree or shrub removal shall occur during the non-breeding season (September 1 through January 31). If it is not possible to avoid tree removal or other disturbances during the breeding season (February 1 through August 31), a qualified biologist shall conduct a pre-disturbance survey for roosting bats, nesting raptors and other migratory birds in all trees within the operation footprint and within 250 feet of the footprint no more than 10 days prior to the onset of ground disturbance. If nesting migratory birds are detected on the site during the survey, a suitable buffer should be established around all active nests. The details of the buffer would be determined in consultation with CDFW and may vary depending on location and species. Vegetation clearing will be completed by hand when occurring within 50 feet from an active nest. Buffers should remain in place for the duration of the breeding season or until it has been confirmed by a qualified biologist that all chicks have fledged and are independent of their parents. Pre-disturbance surveys during the non-breeding season are not necessary.

**BIO-3** Prior to vegetation removal, pre-construction surveys should also be conducted for the presence of CRLF, Alameda whipsnake, and special status fish. If any of these special status species are identified on or near the site, then a specific plan to avoid disturbance shall be developed and implemented in consultation with CDFW. The U.S. Fish and Wildlife Service (USFWS) should also be consulted on any federally listed species.

**BIO-4** Monarch butterflies may occur on the site during project construction. Impacts to trees and milkweed shall be avoided where feasible by the construction contractor as determined by a qualified biologist. Avoidance mechanisms may include flagging or exclusionary fencing around milkweed and trees.

**BIO-5** If the presence of Alameda whipsnake is confirmed within the project area, the contractor shall install wildlife exclusion fencing around active work areas to prevent snakes from entering the work site. The barrier fence should be buried 4 to 6 inches into the ground and should remain in place throughout the entire construction period. The fence may be made from overlapping plywood sheets or heavy-duty geotextile fabric approved by the USFWS and the CDFW.

**BIO-6** A Biological Monitor will be a part of the project construction team. This monitor’s duty will be to inform the construction superintendent and site crews – primarily the vegetation clearing crews – of identification of CRLF and Alameda whipsnake and the actions to take if seen on the project site during construction, including who to contact for instruction on how to proceed in accordance with applicable Federal and State law. The Biological Monitor will be present during vegetation clearing activities to check for presence of CRLF, Alameda whipsnake, and any other special status species that may appear on site. Prior to the start of any vegetation and sediment removal activities and daily prior to construction during the implementation phase, the Biological Monitor shall survey the site for listed species. If CRLF or Alameda whipsnake are found during preconstruction surveys by the Biological Monitor or by crew members during activities,
work must stop immediately and will not commence until the Biological Monitor confirms it is ok to proceed.

**BIO-7** All construction activities shall occur in the sediment basin and the pond area. Stockpiling and staging areas shall be located along the dirt path between the basin and ponds and in upland areas. Stockpile areas shall be cleared by a biological monitor for special status species prior to stockpiling soils. Construction materials shall be brought on-site as close to the time they are needed as possible. Where possible, piping and other materials that could create refugia for species should be stored so as to avoid contact with the ground.

**BIO-8** Trenches or pits that are one foot or deeper, if they will be left for more than 48 hours, will be securely covered with boards or other material to prevent CRLF from falling into these areas. If the areas cannot be covered, the contractor will provide a wooden ramp or other suitable surface to allow CRLF an unaided escape from the trench or pit. A biological monitor shall inspect any trench, pit or hole than has not otherwise been immediately filled to ensure no individuals are trapped.

**BIO-9** If the work site is to be temporarily dewatered by pumping, intakes shall be completely screened with wire mesh not larger than five millimeters to prevent CRLF frogs from entering the pump system.

**BIO-10** Final project designs shall avoid sensitive habitats during construction and operation. In particular, uncommon plant communities, including riparian vegetation, shall be avoided during project design and construction wherever feasible. The design shall include exclusionary fencing and/or signage to keep people on trails and out of sensitive habitats and rare plant communities. EBRPD will review and approve the final plans prior to construction.

**BIO-11** EBRPD or its contractor shall begin construction after May 31 and be completed by October 15. No earth moving activities or soil disturbing may occur before May 31 or after October 15. The revegetation establishment period will occur immediately after completion of the seeding, planting and irrigation system installation, and is expected to continue for a minimum of 2 years. To the maximum extent possible, no construction activities will occur during rain events or within 24 hours following a rain event. The biological monitor will walk in front of construction equipment operating for the project as they travel to and from the unimproved dirt road to the direct work areas at the sediment basin and ponds to clear the area of any species or special habitat. All vehicles brought into the project site will be free of weeds and plant material to prevent the spread of noxious plant species. The biological monitor will work with contractor to identify and mark with wildlife-friendly construction fencing the upstream/upland or downstream work limit as applicable in the sediment basin and pond work areas.

C) **Less than Significant with Mitigation.** The project will include the excavation of up to 900 cubic yards of excess sediment which has accumulated within a sediment basin in Wildcat Creek. Direct impacts may occur to Wildcat Creek due to construction equipment
disturbing the area along the streambanks and within the channel to remove the excess sediment. The potential for impacts during construction to Wildcat Creek will be avoided by conducting sediment removal when there is no flowing water in the Creek. If groundwater is encountered, a dewatering plan will be implemented to route flows immediately downstream of the work site as discussed in Section IX Hydrology and Water Quality. The impacts to the waterway will be limited to the project area during construction, and the project will result in increased sediment basin function and an improvement of the waterway post construction. The project will be designed to provide streambank stabilization and prevent headcutting so that the potential for these impacts to occur is minimized and the impacts are less than significant. All necessary permits will be acquired prior to construction.

The man-made ponds at the interpretive area are isolated from any downstream waterways, and are proposed as non-jurisdictional waters under Section 404 of the Clean Water Act.

**Mitigation Measures:**

Implement HYD-2

**BIO-12** Any impacts to Waters of the US (WOUS) requiring dredge or fill in a WOUS shall obtain permits under Federal CWA Sections 401 and 404 prior to construction. Mitigation measures required by those permits, including compensatory mitigation, if required by the permit, shall be implemented by EBRPD and/or its construction contractor as part of the project.

d) **Less than Significant with Mitigation.** Wildlife-friendly construction fencing would be placed to prevent wildlife from entering the temporary staging area and the work area during construction activities. Due to the surrounding open-space land use, temporary impacts will be less than significant as migratory animals will be able to avoid the fence and travel around the work area freely during construction. After project completion, no barriers to movement will remain. Downstream barriers currently exist that limit migratory fish passage into work areas, and presence of migratory fish in the project area is unlikely during the proposed work period when flows in Wildcat creek are expected to be low. The repair of the sediment basin wood weir will not impede or interfere with migratory fish. All direct impacts to the riparian corridor and its buffer will be minimized. Water quality will be maintained and improved by using BMPs for surface water management. Tree and shrub removal may impact migratory birds and species which nest or forage in the area.

**Mitigation Measures:**

**BIO-13** The biological monitor will work with contractor to identify and mark with wildlife-friendly construction fencing, the upstream/upland or downstream work limit as applicable in the sediment basin and pond work areas.

Implementation of BIO-2
e) **Less than Significant with Mitigation.** The project would not change existing land use. Mitigation measures would ensure there are only limited and temporary impacts to natural resources and the project will therefore be in compliance with the goals and policies of the EBPRD Master Plan. The project site is located in an unincorporated area of Contra Costa County and therefore does not interfere with city policies or ordinances. A tree permit would be obtained from Contra Costa County planning division if any protected trees would be removed as part of the project work and thus would be consistent with local requirements.

**Mitigation Measures:**

**BIO–14** EBRPD or its construction contractor shall obtain a permit from Contra Costa County for removal of any protected trees or registered heritage trees. The tree permit must be obtained by EBRPD or its contractor at least three days prior to when work shall occur. Proposed tree removal shall be consistent with the conditions of the removal permit.

**BIO–15** The construction contractor shall be responsible for providing tree and shrub protection within active works areas in the sediment basin and the interpretive area (ponds), as described in final plans and specifications. The contractor shall be responsible for maintaining the tree and shrub protection for the duration of work occurring near trees and shrubs.

f) **No Impact.** There are no known Habitat Conservation Plans, Natural Community Conservation Plans, or other approved local, regional, or state habitat conservation plan that are relevant to the project site.

**V. Cultural Resources** – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Section 15064.5?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Disturb any human remains, including these interred outside of formal cemeteries?</td>
<td></td>
<td>X</td>
<td></td>
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</tr>
</tbody>
</table>
Discussion: A cultural resources study was conducted to identify potential impacts to cultural resources and necessary mitigation measures to minimize potential impacts (Appendix D). The study includes a summary of previous work, an archival records search, a pedestrian survey of the project area, and an evaluation of cultural resources within or adjacent to the Area of Potential Effect (APE) in accordance with the relevant state and federal regulations, summarized below.

National Historic Preservation Act:
The National Historic Preservation Act (NHPA) was enacted by Congress in 1966 to establish national policy for historic preservation in the United States. The NHPA establishes the role and responsibilities of the federal government in historic preservation. The NHPA directs agencies to identify and manage historic properties under their control; to undertake actions that will advance the Act’s provisions, and avoid actions contrary to its purposes; to consult with others while carrying out historic preservation activities; and to consider the effects of their actions on historic properties.

California Register of Historical Resources:
The California Register of Historical Resources (CRHR) is a guide to cultural resources that must be considered when a government agency undertakes a discretionary action subject to CEQA. The California Register helps government agencies identify and evaluate California’s historical resources (California Office of Historic Preservation 2001b:1), and indicates which properties are to be protected, to the extent prudent and feasible, from substantial adverse change (PRC §5024.1(a)). Any resource listed in, or eligible for listing in, the California Register is to be taken into consideration during the CEQA process.

Public Resources Code §5097.5:
California Public Resources Code §5097.5 prohibits excavation or removal of any “vertebrate paleontological site [..] or any other archaeological, paleontological or historical feature, situated on public lands, except with express permission of the public agency having jurisdiction over such lands”. Public lands are defined to include lands owned by or under the jurisdiction of the state or any city, county, district, authority or public corporation, or any agency thereof. Section 5097.5 states that any unauthorized disturbance or removal of archaeological, historical, or paleontological materials or sites located on public lands is a misdemeanor.

Native American consultation was initiated for this project on February 23, 2016. The EBRPD received one response from Wilton Rancheria requesting formal consultation. As of June 16, 2016, no other tribal representatives inquired about the project. Pursuant to California Public Resource Code Section 21080.3.1(b)(2) of the CEQA, the 30-day response timeframe for Native American inquiry for a project has expired. As of July 20, 2016, no tribal cultural resources had been identified to occur in the area by Wilton Rancheria or any other Native American Tribes.

A Northwest Information Center (NWIC) archival records search indicated that one prehistoric site, and one historic district have been recorded within the project vicinity (defined as a quarter mile buffer around the project area for the purposes of the archival records search). The project
area was surveyed in an attempt to locate the prehistoric site (P-07-000043) identified in the NWIC archival records search, but no cultural material was observed after extensive searching.

Two previously unrecorded features occur in the project area which retain integrity and are recommended as contributing elements to the Tilden Regional Park Historic District (P-07-004488); a Civilian Conservation Corps (CCC) constructed rock structure referred to as a “guzzler” by EBRPD (F2) and located approximately 30 feet south of one of the ponds, and a CCC constructed culvert located alongside the dirt road just south of Jewel Lake (F7). The guzzler is serviced with an EBMUD water line and currently used as a drinking water fountain. The wood weir, man-made ponds, and dirt road segment within the project area were examined in the ASR and recommended as not eligible for listing on the NRHP/CRHR (Appendix D).

The Project would have a significant adverse effect on Cultural Resources if it would:

- Cause an adverse change to the historical or archaeological resource as defined by Section 15064.5 of CEQA guidelines
- Directly or indirectly destroy a unique paleontological resource or unique geologic feature
- Disturb any human remains

Less than Significant with Mitigation. During project construction, equipment accessing the interpretive area could have direct impacts to the CCC guzzler (F2) and the CCC culvert (F7). The integrity of the structures could be impacted if construction equipment were to make contact with these structures. Due to the proximity of the guzzler to the proposed work area, there may be impacts if vibrations associated with construction activities would crack the mortar of the stone structure. During operation of the project, proposed improvements could increase public access to the guzzler which could have indirect impacts to the guzzler. Mitigation measures are proposed to reduce potential impacts below the level of significance.

It is possible that incidental discovery of archaeological or paleontological resources which were not previously recorded or otherwise identified may occur during the project. Implementation of mitigation measures would minimize impacts below the level of significance.

Mitigation Measures:

**CUL-1** Prior to any construction activities, the contractor shall install construction fencing in at least a 20 foot buffer around the guzzler (F2) and around both the inlet and outlet culvert features (F7) to provide a visual cue to construction equipment operators and a physical barrier to the features. The contractor shall maintain fencing for the duration of the project, and remove the fencing upon project completion.

**CUL-2** When conducting work around Pond 1, the Contractor shall, to the extent possible operate smaller equipment, or wheeled equipment rather than tracked equipment, to...
minimize potential impacts to the guzzler associated with vibrations caused by construction activities.

**CUL-3** A qualified archaeologist shall be present to monitor initial ground-disturbing activities related to earthwork, and initial activities related to installation of the boardwalk in the pond area given proximity to the guzzler. The archaeologist shall notify workers if there are signs of impact to the guzzler associated with the construction activities and shall cease work in the immediate area until the archaeologist provides notice that the work can proceed.

**CUL-4** Prior to completion of the project, the EBPRD shall install signage at the guzzler indicating its significance and alerting public users to not impact the guzzler.

**CUL-5** Specifications (e.g., Caltrans 2015 Standard Specifications Section 14-2 ) for incidental discovery of archaeological and paleontological resources shall be incorporated into the final specifications for the project and require the contractor implement the following protocols if an archaeological or paleontological resource is discovered during project construction:

1. Stop all work within a 60-foot radius of the discovery
2. Secure the area
3. Notify the Engineer
4. Do not remove archeological or paleontological resources or take them from the jobsite;
5. Do not resume work within the radius until authorized

EBRPD shall approve plans and specifications prior to construction.

c) **Less than Significant with Mitigation.** While not anticipated for this Project, it is possible that incidental discovery of paleontological resources may occur during construction. Implementation of mitigation measure **CUL-2** will minimize impacts below the level of significance.

**Mitigation Measure:**

Implementation of **CUL-5**

d) **Less than Significant with Mitigation.** No human remains are known to occur in the area. In case of inadvertent discovery of human remains, mitigation measures would be implemented to reduce impacts below the level of significance.

**Mitigation Measures:**

**CUL-6** As required by California Health and Safety Code Section 7050.5, in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, the Contractor must stop work and there shall be no further excavation or
disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined whether or not the remains are subject to the coroner’s authority. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission would identify a Native American Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated cultural materials.
**VI. Geology & Soils** – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Expose people or structures to potential substantial adverse effects, including risk of loss, injury, or death involving:</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>i.) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>ii.) Strong seismic ground shaking?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>iii.) Seismic-related ground failure, including liquefaction?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>iv.) Landslides?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b. Result in substantial soil erosion or the loss of topsoil?</td>
<td>X</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>c. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?</td>
<td>X</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>e.) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?</td>
<td></td>
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<td>X</td>
</tr>
</tbody>
</table>

**Discussion:** The project site is located within the greater San Francisco Bay Area which is recognized as one of the more seismically active regions of California. The seismic activity of the greater Bay Area results from the complex movements along the transform boundary between the Pacific Plate and the North American Plate.

The California Department of Conservation, Division of Mines and Geology completed an Alquist-Priolo and Seismic Hazard map for the USGS Richmond quadrangle which contains the project.
area. No active faults were identified in the project area, however the Hayward fault is located in the vicinity (California Department of Conservation, 1982). No areas prone to landslides or liquefaction were identified in the project area (California Department of Conservation, 2003). Areas prone to these seismic induced hazards occur east of the project area in upper elevations of the Wildcat Creek watershed.

The Coast Ranges Geomorphic Province is comprised of a complex sequence of Mesozoic and Cenozoic age volcanic and sedimentary bedrock materials. Geology in the project vicinity (between Lake Anza and Jewel Lake) is comprised primarily of rocks of the Orinda Formation on the east side of Wildcat Canyon, Moraga Formation on the west side of Wildcat Canyon, and unnamed sedimentary and volcanic rocks. The valley bottom and stream channel, where the project area is located, contain stream channel deposits that are poorly-sorted to well-sorted sand, silt, silty sand, or sandy gravel with minor cobbles (FlowWest, 2015).

Soils in the project vicinity consist of Millsholm loam 15% to 30% slopes, and Zamora silty clay loam 2 to 5% slopes (NRCS, 2010). Granular material with some silty clays were encountered in soil samples taken in the sediment basin. Clay and silty clays were encountered in soil samples taken in the pond area.

A substantial adverse effect on Geology and Soils would occur if the implementation of the project would:

- Expose people or structures to substantial adverse effects related to rupture of a known fault, strong seismic ground shaking, seismic-related ground failure including liquefaction, and landslides
- Expose unstabilized bare areas to wind and water erosion that would result in substantial erosion or loss of top soil
- Be located on a geologic unit that is in an unstable area or on expansive soils without design features that provide adequate stability to minimize hazards to people or structures
- Be located in an area of unsuitable soils for use of septic tanks or alternative waste water disposal systems

a) **Less than Significant Impact**

a)(i) **Earthquake Fault**- The project is not located within an Alquist-Priolo Fault Zoning map or in an area subject to fault rupture. Impacts would be less than significant.

a(ii) **Seismic Shaking**- Several faults exist within the San Francisco Bay region and the probability of seismic shaking exists throughout the region. No buildings or vertical structures above two feet are proposed as part of the project. Thus the project would not expose the public to substantial adverse effects related to seismic shaking. Impacts would be less than significant.
a(iii-iv)

**Risk of Ground Failure and Landslides** - The Seismic Hazards Map for the Richmond Quadrangle does not identify any areas prone to liquefaction or earthquake induced landslides in the project area. Based on this information impacts related to seismic induced ground failure or landslides is less than significant.

b) **Less than Significant Impact with Mitigation.** During construction, portions of the site would have exposed soil areas that if exposed to rain or high wind events could cause minor erosion. Land disturbing activities which are greater than one acre must develop a Stormwater Pollution Prevention Program (SWPPP) in order to comply with the Construction General Stormwater Permit (CGP) (2012-0006-DWQ). The SWPPP requires installation and maintenance of erosion and sediment control BMPs at the project site to prevent or minimize erosion. The BMPs may include silt fencing, construction limit fencing, and stabilized construction access areas. Linear sediment controls such as fiber rolls must be installed along the toe of the slope, face of the slope, and at exposed grade breaks to comply with sheet flow lengths specified in Table 1, Attachment D of the CGP (Order No. 2012-006-DWQ). The project site would be required to meet stabilization criteria specified in Section II.D.3 of the CGP. As a result, bare areas or topsoil exposed due to the project would be stabilized prior to project close out. Implementation of the SWPPP and complying with the CGP would minimize soil erosion or the loss of topsoil below the level of significance.

**Mitigation Measures:**

**GEO-1** EBRPD or a qualified contractor shall develop a SWPPP and obtain coverage under the CGP. To obtain coverage, EBRPD shall be required to submit and certify the SWPPP and Permit Registration Documents (PRDs) in the Stormwater Multiple Application Tracking and Reporting System (SMARTS) at least 14 days prior to any ground disturbance.

**GEO-2** The Contractor shall be required to implement the SWPPP throughout construction of the project until stabilization criteria have been met and a Notice of Termination (NOT) of coverage under the CGP has been filed in SMARTS.

c) **Less than Significant Impact.** The project is not located within an unstable geologic unit and therefore would not result in landslides, lateral spreading, subsidence, or liquefaction due to the project. Since the project is not within an unstable geologic unit, nor would the project create unstable conditions, impacts would be less than significant.

d) **Less than Significant Impact.** Zamora soils exist in an area where a boardwalk deck is proposed. Given that Zamora soils have moderate to high expansion potential. There may be potential impacts to the boardwalk structure due to being placed over expansive soils, which could require additional maintenance and may pose a minor risk to users if the boardwalk structure becomes uneven or unstable. The boardwalk design will incorporate methods to stabilize the subsurface where footings will be installed, or in other areas associated with the boardwalk, as deemed necessary by a qualified structural engineer which will reduce the potential for these impacts below the level of significance.
e) **No Impact.** The Project does not include the use of septic systems.

### VII. Greenhouse Gas Emissions – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Discussion:** Greenhouse gas emissions can be generated during both construction and operation of a project. Greenhouse gases absorb infrared energy that would otherwise escape from the earth and as the infrared energy is absorbed, the air surrounding the earth is heated. Since the Industrial Revolution the amount of CO₂ has dramatically increased to 100 times faster than the increase when the last ice age ended, according to the National Oceanic and Atmospheric Administration (NOAA). Greenhouse gases are defined as any gas that absorbs infrared radiation within the atmosphere and include: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), ozone, aerosols, hydrofluorocarbons (HFCs), chlorofluorocarbons (CFCs), perfluorocarbons (PFCs), water vapor, and sulfur hexafluoride (SF₆). Sources of greenhouse gases, such as electricity production and tail-pipe emissions from the operation of motor vehicles, have elevated greenhouse gas concentrations within the atmosphere. Emissions of greenhouse gases in excess of natural ambient concentrations are thought to be responsible for the enhancement of the greenhouse effect and contribute to what is termed “global warming,” a trend of unnatural warming of the earth’s natural climate. Unlike criteria air pollutants and toxic air contaminants, which are pollutants of regional and local concern, greenhouse gases are global pollutants and climate change is a global issue.

The BAAQMD is the primary agency responsible for air quality regulation in the nine county San Francisco Bay Area Air Basin. As part of that role, the BAAQMD has prepared CEQA Air Quality Guidelines that provide CEQA thresholds of significance for operational GHG emissions from land use projects. The BAAQMD has not defined thresholds for construction GHG emissions. The BAAQMD’s CEQA Air Quality Guidelines methodology and thresholds of significance have been used in this analysis to determine the potential GHG impacts associated with the project.

A substantial adverse effect resulting in increased greenhouse gas emissions would occur if the implementation of the project would:
- Increases in annual emissions where more than 1,100 metric tons per year (MT/yr) of CO2e; or 4.6 MT CO2e/SP/yr (residents + employees) from land use development projects that include residential, commercial, industrial, and public land uses and facilities.
- Stationary source projects that exceed 10,000 metric tons per year (MT/yr) of CO2e.

a & b)  **Less than Significant Impact.** Project construction would result in emission of GHG’s from on-site construction, equipment and off-site worker trips. With the exception of short-term increases of GHG’s as a result of construction and because the project would complete maintenance to improve a sediment basin, and enhance aquatic and upland habitats, it has been determined that the project would not contribute to long-term increases of GHG emissions. Given the relatively low GHG emissions generated during construction of the proposed project and those emissions would be short-term over an approximate 3-5 month construction timeframe, increases in GHG emissions would not result in a significant impact on the environment. Therefore, the proposed project would not conflict with applicable plans, policies, and regulations adopted for the purpose of reducing GHG emissions and, thus would have a less than significant impact.

**VIII. Hazards & Hazardous Materials** – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
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<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?)</td>
<td></td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Environmental Issue | Potentially Significant Impact | Less Than Significant with Mitigation | Less Than Significant Impact | No Impact
--- | --- | --- | --- |
result in a safety hazard for people residing or working in the project area? | | | | 
f. For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing in the project area? | | | X | 
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | | X | | 
h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | | | X |

**Discussion:** The project area has never been used for industrial activities, which could create the potential for hazardous waste to be present on site. Some materials with the potential to be hazardous may be used during construction, such as stain for boardwalk decking, if necessary, and pesticide for non-native plant removal.

Sources of sediment in the basin include instream channel erosion and upland erosion in the watershed. Prior to this project, soil sampling conducted by EBRPD in the basin did not identify the presence of contaminants or hazardous materials in the sediment.

California Government Code Section 65926.5 requires the Department of Toxic Substances Control (DTSC) to compile, and submit annually to the Secretary for Environmental Protection, a list of hazardous waste facilities subject to corrective action, land designated as hazardous waste property or border zone property, hazardous waste disposals on land, and all sites listed pursuant to Section 25356 of the Health and Safety Code. Pursuant to Section 25356 of the Health and Safety Code, DTSC’s Envirosstor database includes a list of sites, referred to as the “Cortese” list. Sites on the “Cortese” list include sites that are not owned by the Federal Government and a release or threatened release of hazardous substances has been confirmed by on-site sampling.

A substantial adverse effect would occur if the implementation of the project would:
- involve the transport or disposal of hazardous materials as part of routine operations
- create reasonably foreseeable conditions that would involve the release of hazardous materials into the environment
- emit hazardous materials near an existing or proposed school
- be located on a hazardous materials site and create a significant hazard to the public or environment.
a) **Less than Significant Impact.** The construction or operation of the project would not involve the routine transport, use, or disposal of hazardous materials as a result of construction activities. Given the site is located in a watershed primarily comprised of parkland and open space, and no history of past industrial activities in the project area, the sediment to be excavated and removed would not contain hazardous materials. Impacts would be less than significant.

b) **Less than Significant Impact.** Potentially hazardous materials which may be used during the construction of the project would be contained and stored per health and safety requirements and per SWPPP requirements to avoid any spills, leaks or reasonably foreseeable accident which would result in a release of these materials in the environment. The project would not construct buildings or dwelling units and therefore there would be no impacts related to vapor intrusion to indoor air from the migration of volatile chemicals in the subsurface.

c) **No Impact.** The project is not located within one-quarter mile of an existing or proposed school. Berkeley Christian School is the nearest school and is approximately 0.6 miles from the project site.

d) **No Impact.** The project area does not contain any sites listed on the Cortese List. The nearest site on the Cortese List is approximately 1.5 miles from the project area (California DTSC, 2016).

e,f) **No Impact.** The project area is not located within two miles of a public airport and is not within an airport land use plan, nor within the vicinity of a known private airstrip. The nearest airport is the Oakland international Airport which is over 13 miles south of the project site.

g) **Less than Significant Impact.** The proposed project is not expected to significantly increase the number of vehicles and or create traffic congestion that would interfere with an emergency evacuation or emergency response plan. The proposed project is not located on a public roadway and therefore would not affect emergency response to the project area. Construction of the project would not require closure of travel lanes that could impede circulation of emergency vehicles within Tilden Regional Park. Therefore impacts to emergency access would be less than significant.

h) **No Impact.** The project is in a non-residential area and would not create additional housing within the Tilden Nature Area and therefore would not pose a risk to residences associated with wildland fires.
## IX. Hydrology and Water Quality – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Violate any water quality standards?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of local groundwater supplies (i.e. the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff (e.g. due to increased impervious surfaces) in a manner which would result in flooding on- or off-site (i.e. within a watershed)?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>e. Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>f. Otherwise substantially degrade water quality?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>g. Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other Flood Hazard Delineation Map or other flood hazard delineation map?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>h. Place within a 100-year flood hazard area improvements which would impede or redirect flood flows?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?</td>
<td></td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>j. Inundation by seiche, tsunami, or mudflow?</td>
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<td>X</td>
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</table>
**Discussion:** The project is located within the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (RWQCB), the agency responsible for overseeing, administering, and/or implementing the Clean Water Act and the Porter-Cologne Water Quality Act.

The proposed project is in the upper reaches of the Wildcat Creek watershed (Hydrologic Unit Code 180500020702) between Lake Anza and Jewel Lake. This portion of the watershed experiences high rates of erosion and sediment loading to Wildcat Creek. The flows in this portion of the stream are regulated by the earthen dam and flashboards at the Lake Anza outflow, and this segment of Wildcat Creek is usually dry in summer months.

Laurel Creek is an intermittent drainage that occurs within the project vicinity between the sediment basin and the pond area. While no work is proposed in this drainage area, culverts and ditches convey flows from Laurel Creek underneath the dirt road eventually discharging to Wildcat Creek.

The man-made ponds are approximately 950 feet northwest of the sediment basin and are on the east side of the dirt road in an upland area. The ponds have no overflow or outlet and there is no surface flow connection to Wildcat Creek. The ponds fill with overland flow from the adjacent hillside to the east during rain events and in the past were supplemented with EBMUD water from a nearby water line to facilitate interpretation programs. The ponds and surrounding area will be excavated and re-graded to expand and enhance aquatic habitat for CRLF.

Water Quality Standards include beneficial uses, water quality criteria, and antidegradation. Wildcat Creek has designated beneficial uses for human consumption, aquatic life, and recreational uses. Water quality criteria established to protect these uses are provided in the San Francisco Bay Basin Plan. Numeric or narrative criteria exist for the San Francisco Bay for DO, pH, suspended sediment, bacteria, oil and grease, floating materials, and other pollutants.

The proposed project would remove approximately 700-900 cubic yards of excess sediment within a portion of Wildcat Creek, stabilize streambank areas that are currently experiencing erosion or would be disturbed during construction, and modify the wood weir structure to reduce existing scour and erosion occurring around the sides of the wood weir due to an unlevel surface across the weir.

The project would result in significant adverse impacts if the project would:

- cause or contribute to a violation of a water quality standard of receiving waters within or immediately downstream of the Project area
- create deep excavations that would interfere with groundwater movement or withdrawal of groundwater, or would lower the water table
- substantially alter drainage patterns that would cause an increase in erosion or siltation
- increase runoff volumes which cause or contribute to localized flooding of structures
- generate stormwater runoff volumes which would exceed the capacity of the storm drain system that exists at the Project site
- generate storm water pollutants that could substantially degrade water quality
- place structures or housing in a 100-year floodplain or impede flood flows within a floodplain
• expose people or structures to risk of loss, injury or death related to inundation by seiche, tsunami, or mudflow.

a) **Less than Significant Impact with Mitigation.** During construction of the project there is potential for suspended sediment from disturbed areas or oil and grease from construction vehicles to enter surface waters. Implementation of a SWPPP would be required as discussed in Section VII Geology and Soils and would reduce impacts below the level of significance. The SWPPP would specify BMPs that must be implemented to control run-on and run-off from the construction site, prevent and address fluids/oil and grease from construction equipment from entering into surface waters or surrounding soils, secure stockpiles and active work areas prior to rain events, and to conduct visual inspections to ensure the SWPPP is being implemented and the site is in compliance with the provisions of the CGP. Additional requirements may be required to protect water quality which would be specified in a CWA 401 Water Quality Certification to be obtained by EBRPD.

**Mitigation Measures:**

Implement **GEO-1 and GEO-2**

**HYD-1:** Prior to the start of construction EBRPD shall obtain permits from RWQCB to ensure compliance with Clean Water Act Section 401 and the Army Corps of Engineers to insure compliance with Section 404 of the Clean Water Act. The EBRPD and Contractor will be required to implement the mitigation measures and permit conditions specified in the permit documents.

b) **Less than Significant Impact with Mitigation.** Removal of excess sediment in the basin would require subsurface excavations up to 8 feet in depth and shallow subsurface groundwater within Wildcat Creek may be encountered. If groundwater is encountered a dewatering plan will be implemented to temporarily route groundwater flows downstream of the work area in Wildcat Creek. Implementation of a dewatering plan, if groundwater is encountered, would reduce the potential for impacts to groundwater recharge below the level of significance. There are no sole source aquifers within the project area and no impacts to existing groundwater wells are anticipated.

**Mitigation Measures:**

**HYD-2:** The Contractor shall be required to implement a dewatering plan if groundwater is encountered during construction of the project. The dewatering plan shall route flows within the proposed grading limit downstream of the weir and within Wildcat Creek.

c) **Less than Significant.** The project does not propose to substantially alter the course of a stream or river. Excess sediment would be excavated from a portion of Wildcat Creek to restore capacity in the basin and minimize erosion occurring along the streambanks. Streambank erosion is currently occurring and appears to be due to excess sediment in the basin which led to channel migration and concentrated flows along the right side of the streambank. Impacts during construction will be minimized by conducting the work when
there are no surface flows in Wildcat Creek. Potential indirect impacts may exist if the sediment excavation would result in headcutting, or higher velocity flows in areas prone to erosion. The project will be designed to provide streambank stabilization and prevent headcutting so that the potential for these impacts to occur is minimized and the impacts are less than significant.

d,e,f) **Less than Significant with Mitigation.** The project would not substantially increase existing impervious surfaces and therefore the project is not anticipated to increase stormwater runoff. Proposed hardscape improvements include a decomposed granite trail, a designated seating area with wood mulch over compacted subgrade, and an elevated boardwalk. These surfaces are semipermeable and a portion of rainfall would infiltrate into the subsurface, and runoff would drain to adjacent vegetated areas. Post construction mitigation measures required by the SWPPP would require site stabilization of disturbed areas which would reduce the likelihood of erosion and increased sedimentation from areas recently graded as part of the project. Upland areas in the ponds would be revegetated according to a planting plan for the project and would provide site stabilization in combination with any post construction BMPs required per the SWPPP.

**Mitigation Measures:**

- Implement **GEO-1 and GEO-2**
- Implement **BIO-1**

g,h,i) **Less than Significant.** No housing is proposed as part of this project and no improvements are proposed which would impede surface flows. Excavation of excess sediments would improve hydraulic capacity in this portion of Wildcat Creek and alleviate localized flooding which has been observed by EBRPD in recent years. The construction or implementation of this project is not anticipated to increase flows in a manner that would result in failure of a levee or dam.

i) **Less than Significant.** No residential or vertical structures other than an elevated boardwalk are proposed for this project. Given the inland location of the project, public exposure to these hazards is less than significant.
**X. LAND USE & PLANNING** – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Physically divide an established community?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>c. Conflict with any applicable habitat conservation plan or natural community conservation plan?</td>
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<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**Discussion:** A substantial adverse effect on Land Use would occur if the implementation of the project would:

- Result in the conversion of Prime Farmland as defined by the State Department of Conservation;
- Result in conversion of undeveloped open space to more intensive land uses;
- Result in a use substantially incompatible with the existing surrounding land uses; or
- Conflict with adopted environmental plans, policies, and goals of the community.

a) **No Impact.** The physical division of an established community typically refers to the construction of a physical feature (interstate highway or railroad tracks) or removal of a means of access (a local road or bridge) that would impair mobility within an existing community, or between a community and outlying areas. In this instance, the proposed project would complete maintenance to improve a sediment basin, and enhance aquatic and upland habitats. No new roadways or structures are proposed that would result in dividing an established community.

b) **No Impact.** The Contra Costa County General Open Space Element identifies Tilden Regional Park as a Major Park and states that there are no County standards for major parks and open space within the County and does not outline specific goals and policies for Tilden Regional Park. The project would be required to meet certain provisions of the Contra Costa County Zoning Ordinance as stated in the EBRPD Ord. 38: Chapter. II Sec. 200.2 that “District employees and concessionaires and their employees shall abide by the laws of the State of California and all applicable county and/or municipal ordinances.” Therefore, completing maintenance to improve the sediment basin, and enhancing aquatic and upland habitats would positively contribute to the implementation of the Natural Resource
Management goals set forth in the 2013 EBRPD Master Plan and be consistent with the EBRPD Ordinance 38.

c) **No Impact.** As stated in Item b) above, the proposed project would have a positive contribution to the implementation of the Natural Resource Management goals set forth in the 2013 EBRPD Master Plan and be consistent with the EBRPD Ordinance 38. There would be no conflict with any applicable habitat conservation or natural community conservation plans.

**XI. Mineral Resources** – Would the project result in:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. The loss of availability of a known mineral resource that would be of value to the region and the residents of the state?</td>
<td></td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>b. The loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?</td>
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<td>X</td>
</tr>
</tbody>
</table>

**Discussion:** The Surface Mining and Reclamation Act of 1975 (SMARA) requires that the State Mining and Geology Board identify, map, and classify aggregate resources throughout California that contain regionally significant mineral resources. Designations of land areas are assigned by California Department of Conservation and California Geological Survey following analysis of geologic reports and maps, field investigations, and using information about the locations of active sand and gravel mining operations.

The California Mineral Land Classification System represents the relationship between knowledge of mineral deposits and their economic characteristics (grade and size). Lands classified as a Mineral Resource Zone (MRZ) are areas that contain identified mineral resources. Areas classified as MRZ are considered important mineral resource areas.

There are no regionally significant aggregate resources (i.e., sand and gravel resources) in the project area, as identified by the California Department of Conservation and there are no ongoing mining activities in or near the proposed trail segment.

A substantial adverse effect on Mineral Resources would occur if the implementation of the project would:
• Result in obstruction of access to, and extraction of mineral resources classified as a Mineral Resource Zone (MRZ), or result in land use compatibility conflicts with mineral extraction operations.

a) **No Impact.** Prior to the creation of the Tilden Nature Area in the early 1900’s the creeks and streams in the vicinity of the project area were used to provide water to the adjacent communities. No known valuable mineral resources are known to exist in the project area based on previous field surveys conducted by the USGS. The project site is not classified as a MRZ and therefore no impacts would occur.

b) **No Impact.** The project site is located within an existing nature preserve and is identified as such in the Contra Costa County General Plan land Use Element, which does not allow mineral resource extraction. Given the inability to extract mineral resources within the nature preserve, as delineated by the Contra Costa County General Plan, no impacts would occur as a result of the project.
XII. **Noise** – Would the project result in:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Exposure of persons to or generation of noise levels in excess of standards established in the local General Plan or noise ordinance, or applicable standards of other agencies?</td>
<td></td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>b. Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?</td>
<td></td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>c. A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?</td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>d. A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>f. For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?</td>
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<td>X</td>
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</tbody>
</table>

**Discussion:** The project would be required to meet certain provisions of the Contra Costa County Zoning Ordinance as stated in the EBRPD Ord. 38: *Chapter. II Sec. 200.2* that “District employees and concessionaires and their employees shall abide by the laws of the State of California and all applicable county and/or municipal ordinances.” Since The EBRPD Ordinance 38 does not contain noise policies that relate to temporary construction noise, the provision set forth by Chapter 716-8.1004 under Title 7 of the Contra Costa County Building Ordinance would apply to the project. According to Chapter 716-8.1004, construction equipment noise is not allowed within 500 feet of a residential zone between the hours of 5:30 pm and 7:30 am the next day.

Vibration is described in terms of frequency and amplitude. Unlike sound, there is no standard way of measuring and reporting amplitude. Construction vibration is generally associated with pile driving and rock blasting. Occasionally, large bulldozers and loaded trucks can cause perceptible vibration levels at close proximity.

A substantial adverse effect due to Noise would occur if implementation of the project would:
• Result in short-term construction noise that creates noise exposures to surrounding noise sensitive land uses in excess of 65 dBA;
• Result in long-term operational noise that creates noise exposures in excess of 60 dBA at the adjoining property line of a noise sensitive land use; or
• Result in noise levels inconsistent with the performance standards contained in Title 7 of the Contra Costa County Building Ordinance.

a) **Less than Significant Impact.** Construction related activities would generate a short term increase of existing ambient noise levels. Sensitive noise receptors in the area include park users and individuals who live in the surrounding residential neighborhoods.

The project may result in a temporary or periodic exposure to or generation of noise levels in excess of standards established in the Contra Costa County Noise Standards, but it would be temporary and would not operate between the hours of 5:30 pm and 7:30 am within 500 feet of any residential zone. Therefore, the project would have a less than significant impact on noise.

b) **Less than Significant Impact.** Construction activities associated with the proposed project would not include pile driving or rock blasting. However, other construction activities could result in intermittent exposure to ground borne vibration to the immediate surrounding areas, but would be temporary and would not occur near any residential zones or sensitive receptors. Therefore, impacts in this regard are considered less than significant.

c) **Less than Significant Impact.** Noise due to construction would be temporary and would not occur within 500 feet of any residential zone between the hours of 5:30 pm and 7:30 am the next day per the Contra Costa Building Code Chapter 716-8.1004. The overall effect on the ambient noise level would be considered less than significant.

d) **Less than Significant Impact.** Refer to Item a) Discussion.

e & f) **No Impact.** A review of the project area indicates that the project is not located in an airport land use plan or within the vicinity of a private airstrip. The Oakland International Airport is located approximately 13 miles south of the project. Since the proposed project is not located in an airport land use plan or within the vicinity of a private airstrip there would be no exposure to people residing or working in the project area to excessive noise levels.
XIII. Population & Housing – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Induce substantial population growth in an area, either directly (i.e. by proposing new homes and businesses) or indirectly (i.e. through extension of roads or other infrastructure)?</td>
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<td>X</td>
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<tr>
<td>b. Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?</td>
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</tr>
<tr>
<td>c. Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?</td>
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<td>X</td>
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</tbody>
</table>

**Discussion:** A substantial adverse effect on Population and Housing would occur if the implementation of the project would:

- Create substantial growth or concentration in population;
- Create a more substantial imbalance in the areas current jobs to housing ratio; or
- Conflict with adopted goals and policies set forth in applicable planning documents.

a-c) **No Impact.** The proposed project would complete maintenance to improve a sediment basin, and enhance aquatic and upland habitats, and would not induce population growth directly by adding new housing or commercial or indirectly by adding new infrastructure. Therefore, the proposed project is not anticipated to induce substantial population growth either directly or indirectly. The project would not result in the removal of any homes within or adjacent to the project site and would not displace existing residents. Therefore, no homes or persons would be displaced as a result of the proposed project.
XIV. PUBLIC SERVICES – Would the project result in:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Substantial adverse physical impacts associated with the provision of new or physically altered governmental services and/or facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services?</td>
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<td>X</td>
</tr>
<tr>
<td>i. Fire Protection?</td>
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<td>X</td>
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<tr>
<td>ii. Police Protection?</td>
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<td></td>
<td>X</td>
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<tr>
<td>iii. Schools?</td>
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<td>X</td>
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<tr>
<td>iv. Parks?</td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>v. Other Public Facilities?</td>
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<td>X</td>
</tr>
</tbody>
</table>

Discussion: The EBRPD Fire Department has 10 stations and 14 fire engines that serve all 65 EBRPD parks, including mutual response agreements with local jurisdictions in the area. The nearest fire department to the project is located at 2501 Grizzly Peak Boulevard, Orinda, Ca, approximately 3 miles southeast of the site.

The EBRPD has its own police force that provides law enforcement and police protection for the District’s facilities, including mutual aid response agreements with other surrounding local jurisdictions. The EBRPD Police Department is located at 17930 Lake Chabot Rd in Castro Valley, CA, approximately 16 miles southeast of the project area. Police sub-stations are also located at the EBMUD San Pablo Reservoir in Orinda and Contra Loma Regional Park in Antioch, including an Air Support Unit at the Hayward Municipal Airport. The department includes an air support unit, marine patrol, equestrian patrols, k-9 unit, special enforcement unit, investigations unit, and a 24-hour per day 9-1-1 communications center in order to ensure visitor safety.

A substantial adverse effect on Public Services would occur if the implementation of the project would:

- Substantially increase or expand the demand for fire protection and emergency medical services without increasing staffing and equipment;
- Substantially increase or expand the demand for public law enforcement protection without increasing staffing and equipment;
- Substantially increase the public school student population exceeding current school capacity without also including provisions to adequately accommodate the increased demand in services;
- Place a demand for library services in excess of available resources;
- Substantially increase the local population causing overcrowding of developed parklands.

a)(i,ii)

**Less than Significant Impact.** No new or physically altered fire or police protection facilities would be required to provide police protection services to the improved sediment basin and enhanced aquatic and upland habitats. Impacts would be less than significant.

a)(iii-v)

**No Impact.** The proposed project would not lead to an increase in the resident population or housing stock of the area. Therefore, no demand for schools, libraries, parks, or other public facilities would be generated by the project. The project is not expected to have any direct impacts on nearby schools, libraries, or other public facilities.

There would not be significant additional demand for maintenance activities nor expanded public facilities as a result of the project. There are existing maintenance programs, crews, and facilities at the EBRPD that would maintain the quality of the improved sediment basin and enhanced aquatic and upland habitats. No other public facilities would be required and there would be no adverse impact.

**XV. Recreation** – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>b. Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?</td>
<td></td>
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<td>X</td>
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</tbody>
</table>

**Discussion:** A substantial adverse effect on Recreational Resources would occur if the implementation of the project would:

- Substantially increase the use of neighborhood or regional parks in the area such that substantial physical deterioration of the facility would occur; or
• Require the construction or expansion of recreational facilities that have not been analyzed as part of the EBRPD Master Plan Visions, Goals and Policies for future development and management of facilities.

a) **Less than Significant Impact.** Excavation of the sediment basin will not create a recreational facility and would not lead to increased use that would lead to deterioration of park facilities within the Tilden Nature area.

Currently the Tilden Nature Area receives a high volume of public visitors and is regularly maintained by EBRPD staff. The project would enhance existing trails through the interpretive area and therefore there may be potential impacts from increased visitors. Improvements at the ponds would be designed to reduce the potential for impacts and deterioration of the area by designing features along the proposed trail and boardwalk system that keep users on the trail and away from aquatic and upland habitats. Vegetation buffers, split rail fencing, and logs would be used to control public access, protect adjacent habitats, and direct interpretation activities and therefore impacts to adjacent habitats would be less than significant.

b) **Less than Significant Impact.** The proposed project would not expand recreational facilities at the sediment basin. Current recreational facilities at the pond area include the guzzler, three man made ponds, and a compacted dirt trail. The current trail system would be enhanced to include an elevated boardwalk above areas which would be restored, and a small seating area to facilitate interpretation programs. These hardscape improvements are minimal and would be offset by both aquatic and upland habitat enhancements that are proposed as part of this project. To the extent possible, these trail improvements would be constructed over areas that are currently disturbed (i.e., compacted dirt trail). Due to the fact that improvements will be constructed over currently disturbed areas in the pond area, and no recreational facilities are proposed at the sediment basin, the potential for impacts is less than significant.

**XVI. Transportation & Traffic** – Would the project result in:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transits and non-motorized travel and relevant components of the circulation system, including but not</td>
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<td>X</td>
</tr>
<tr>
<td>Environmental Issue</td>
<td>Potentially Significant Impact</td>
<td>Less Than Significant with Mitigation</td>
<td>Less Than Significant Impact</td>
<td>No Impact</td>
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<tr>
<td>limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?</td>
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<td></td>
<td>X</td>
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</tr>
<tr>
<td>b. Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?</td>
<td></td>
<td></td>
<td>X</td>
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</tr>
<tr>
<td>c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>d. Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?</td>
<td></td>
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<td>X</td>
<td></td>
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<tr>
<td>e. Result in inadequate emergency access?</td>
<td></td>
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<td>X</td>
<td></td>
</tr>
<tr>
<td>f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?</td>
<td></td>
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<td>X</td>
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</tr>
</tbody>
</table>

**Discussion:** Regional access to the Tilden Nature Area is provided from Interstate I-80 exiting onto University Avenue in Berkeley turning left onto Oxford St., right onto Rose St., left onto Spruce St., left onto Canon Dr. veering left onto Central Park Drive into the parking lot for the Nature Area. One of the main segments of University Avenue is a 4-lane road exiting from I-80. University Avenue carried approximately 34,402 vehicles during peak hours per day in 2000 (City of Berkeley 2001). The local roadway network in the project area operates at Level of Service of (LOS)\(^1\) B during peak AM and peak PM travel times.

**Congestion Management Plan**

The Contra Costa County Congestion Management Plan (CMP) was developed by the Contra Costa Metropolitan Transportation Commission (CCMTC). The CCMTC is the county’s Congestion Management Agency (CMA) and is responsible for maintaining and improving the

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\(^1\) Level of Service (LOS) refers to the operational conditions at an intersection based on the average number of seconds of delay experienced by vehicles traveling through the intersection, with LOS A representing free flow conditions and LOS F defining forced or breakdown flow.
county’s transportation system. The CCMTC is the primary transportation planning agency for Contra Costa County, responsible for prioritizing the County’s share of available Federal, State and regional transportation funds. As the CMA, CCMTC prepares the County’s CMP, monitors levels of service on the County’s roadways and works with other CMAs and agencies to address regional issues. There are no CMP designated highways directly connected to the entrance of the Tilden Regional Park. Nearby CMP highways include San Pablo Damn Road and Fish Ranch Road (CCMTC 2016).

Public Transit

The region around the Tilden Regional Park is served by the Bay Area Rapid Transit System (BART), Amtrak, Alameda-Contra Costa Transit (AC Transit) and West Contra Costa Transit Authority. The El Cerrito BART station is the nearest station roughly 2.5-miles directly west of the project site. AC Transit operates several local bus routes in El Cerrito that typically operate with 30 to 60-minute headways and connect to key destinations including Tilden Regional Park with the nearest stop in the parking lot near the project site.

Bikeways

All bikes are prohibited in the project area including Tilden’s Environmental Education Center (EEC) and Little Farm, or on trails in the Tilden Nature Area.

A substantial adverse effect on Traffic would occur if the implementation of the project would:

• Result in an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system;
• Generate traffic volumes which cause violations of adopted level of service standards (project and cumulative); or
• Result in, or worsen, Level of Service traffic congestion during weekday, peak-hour periods on any highway, road, interchange or intersection within the project area.

a) No Impact

Construction Traffic. The project would generate short-term vehicle trips to and from the project area during construction. These trips would include worker commute, construction equipment and materials transport, and/or only export of excavated soils within Tilden Regional Park. These vehicle trips would add to existing traffic volumes on local and regional roadways. Apart from the initial transport of construction equipment and materials, relatively minor construction-related traffic would occur. Because of the small scale of the proposed project, construction-related daily trips associated with worker commutes, equipment and materials transport, and haul truck trips would be relatively low. Construction staging would occur within an existing parking lot and would not result in a lack of access to any other properties in the vicinity of the Tilden Regional Park.

Operational Traffic. The majority of park users might drive to and from the Tilden Nature Area during the weekends or mornings and afternoon/early evening hours during the
weekdays. Implementation of the project is not anticipated to result in a substantive increase in vehicle trips during the AM and PM peak hours. Continual maintenance will be provided by the EBRPD and would not create any increase in vehicle trips to the area.

Since most of the construction and maintenance traffic would occur within the park, traffic increases would be negligible and only require intermittent deliveries of equipment and materials and trips for maintenance activities would be minimal. There would be no long-term impacts related to operational traffic.

b) **No Impact.** The City of Berkeley has six (6) designated truck routes (trucks over 7 tons) in the immediate vicinity of the proposed project to allow for the movement of construction equipment and materials. Since the project would require negligible deliveries of construction equipment and materials there would be no impacts to any congestion management programs or other standards established by the Contra Costa County congestion management agency for designated roads or highways.

c) **No Impact.** The site is not located within the boundaries of an airport land use plan or within 2.0 miles of an airport. The project would not result in a change in air traffic patterns.

d) **No Impact.** The proposed project would provide safety signs and warnings during project construction to promote safety for park users. A substantial increase in traffic hazards would not be created by the project.

e) **No Impact.** The proposed project is not located on a public roadway and therefore would not affect emergency response to the project area. Construction of the project would not require closure of travel lanes that could impede circulation of emergency vehicles within Tilden Regional Park. Therefore impacts to emergency access would be less than significant.

f) **No Impact.** As discussed above, the project would not conflict with the Contra Costa County CMP. Also, the project would not impact the City of Berkeley General Plan Circulation Element policies since it is not a transportation related project. Therefore, there are no adverse impacts on alternative transportation systems or conflicts with alternative transportation policies, plans, or programs.

**XVII. Utilities & Service Systems** – Would the project:

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
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<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?</td>
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<td></td>
<td>X</td>
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</tbody>
</table>
## Environmental Issue

<table>
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<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>b. Require or result in the construction of new water or wastewater delivery, collection or treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</td>
<td></td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>c. Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?</td>
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<td>X</td>
</tr>
<tr>
<td>d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?</td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>e. Result in a determination by wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project’s projected demand in addition to the provider’s existing commitments?</td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>f. Be served by a landfill with sufficient permitted capacity to accommodate the project’s solid waste disposal needs?</td>
<td></td>
<td></td>
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<td>X</td>
</tr>
<tr>
<td>g. Comply with federal, state, and local statues and regulations related to solid waste?</td>
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<td>X</td>
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</tbody>
</table>

**Discussion:** The Tilden Nature Area provides restroom facilities throughout the park. Currently there are restrooms in the Environmental Education Center and north of the pond area near Jewel Lake. An EBMUD water line exists within the area and has previously been used to provide irrigation to the ponds to support interpretive programs. Culverts and ditches route flows from tributary drainages to Wildcat Creek, but no storm drain facilities exist within the direct project area.

A substantial adverse effect on Utilities and Service Systems would occur if the implementation of the project would:

- Breach published national, state, or local standards relating to solid waste or litter control;
- Substantially increase the demand for potable water in excess of available supplies or distribution capacity without also including provisions to adequately accommodate the increased demand, or is unable to provide an adequate on-site water supply, including treatment, storage and distribution;
• Substantially increase the demand for the public collection, treatment, and disposal of wastewater without also including provisions to adequately accommodate the increased demand, or is unable to provide for adequate on-site wastewater system; or
• Result in demand for expansion of power or telecommunications service facilities without also including provisions to adequately accommodate the increased or expanded demand.

a, b, c) **Less than Significant Impact.** The proposed project does not involve the direct discharge of wastewater to sanitary sewer or on-site septic systems. No direct demand for sewer line capacity, wastewater treatment requirements, or wastewater treatment facilities would occur as a result of implementation or construction of the proposed project. Any increase in sewage generation due to increased use of the park facilities is expected to be negligible. No new storm drainage facilities or expansion of existing ditches or culverts will be completed as a result of this project.

d) **Less than Significant Impact.** The project would require the use of water for dust mitigation throughout construction of the proposed project. It is likely that water tanks would be filled using designated fire hydrants located in the project vicinity. The proposed project would not require the construction or expansion of any new water or wastewater facilities. Water usage for the construction and implementation of the proposed project would be negligible and existing entitlements and resources have the capacity to serve any temporary water needs for the project.

e) **Less than Significant Impact.** The proposed project exists in an area that is not serviced by a storm drain system and would not result in the construction of new storm water drainage facilities. Proposed hardscape improvements include a decomposed granite trail, a designated seating area with wood mulch over compacted subgrade, and an elevated boardwalk. These surfaces are semipermeable and a portion of rainfall would infiltrate into the subsurface, and stormwater runoff would drain to adjacent vegetated or non-erodible pervious areas.

f & g) **Less than Significant Impact.** Construction activities for the proposed project would generate excavated soils which would be transported to a disposal location located within the Tilden Regional Park which has sufficient capacity. Construction waste that would be generated would be limited to vegetation from site clearing, construction waste, signs, and excess boardwalk building materials. Long-term waste generation would include wastes from organic materials (i.e. leaves, sticks) and from trash cans along the trail. This waste would be collected by EBRPD as part of the general maintenance of the Tilden Nature Area.
XVIII. Mandatory Findings of Significance

<table>
<thead>
<tr>
<th>Environmental Issue</th>
<th>Potentially Significant Impact</th>
<th>Less Than Significant with Mitigation</th>
<th>Less Than Significant Impact</th>
<th>No Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Does the project have the potential to degrade the quality of the environment, substantiulously reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?</td>
<td></td>
<td>X</td>
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<tr>
<td>b. Does the project have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, or the effects of probable future projects.)</td>
<td></td>
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<td>X</td>
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<tr>
<td>c. Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?</td>
<td></td>
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<td>X</td>
</tr>
</tbody>
</table>

a) **Less than Significant with Mitigation.** The proposed project would result in potentially significant impacts to biological resources due to the presence of special status species within the project area. Mitigation measures BIO-1, BIO-2 and BIO-3 require restoration plans and special status species surveys and implementation of appropriate measures for removal, restoration and avoidance. These mitigation measures would reduce impacts to biological resources to less than significant. Mitigation measure BIO-2 would reduce impacts to nesting birds and raptors below the level of significance; BIO-4 implements avoidance measures to protect Monarch Butterfly habitat; and BIO-5 implements protection measures to avoid potential impacts to the Alameda whipsnake. Mitigation measures BIO-6, BIO-7, BIO-8, and BIO-9 have been designed to specifically avoid potential impacts to special status species that may appear on site. Implementation of mitigation measures BIO-10 and BIO-11 would be implemented to protect habitat and special status species and ensure no introduction of invasive species throughout project construction. Mitigation measure BIO-12 ensures that any potential impacts to WOUS require that EBRPD obtain permits under Federal CWA Sections 401 and 404 prior to construction. Mitigation measure BIO-13 would ensure that the contractor avoids disturbance outside the defined limits of the project area. Mitigation measures BIO-14 and BIO-15 require EBRPD or associated contractors obtain the required permit for tree removal from Contra Costa County and
provide tree and shrub protection within active work zones. Impacts to the quality of the environment and special status species are reduced to less than significant.

b) **Less than Significant Impacts.** The proposed project would not involve development or changes in land use that would result in increased population growth or demand for public services. The project would not contribute substantially to increased vehicle traffic in the area. The project would not require an increase in the wastewater treatment capacity of the Park District or cumulatively contribute to the capacity of other parks and recreation facilities in the area. Therefore, it is anticipated that there are no significant cumulative impacts resulting from the construction and implementation of the proposed project. As discussed throughout this environmental document, the project would not contribute to a substantial decline in water quality, air quality, noise, biological resources, agricultural resources, or cultural resources under cumulative conditions. Cumulatively considerable impacts associated with the project are less than significant.

c) **Less than Significant Impacts.** All impacts associated with construction and implementation of the proposed project identified in this Mitigated Negative Declaration are either less than significant after mitigation or less than significant and do not require mitigation. Therefore, the proposed project would not result in environmental effects that cause substantial adverse effects on human beings either directly or indirectly. Impacts would be less than significant.
6.0 REFERENCES


Appendix A
MITIGATION MONITORING AND REPORTING PLAN
# Tilden Nature Area Sediment Basin Excavation and Pond Restoration Mitigation Monitoring and Reporting Plan

## Mitigation Measures

<table>
<thead>
<tr>
<th>Mitigation Measures</th>
<th>Implemented By</th>
<th>When Implemented</th>
<th>Monitored By</th>
<th>Monitoring Action and Frequency</th>
<th>Verification By/Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. AESTHETICS</td>
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<tr>
<td>There are no potentially significant impacts related to Aesthetic resources.</td>
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<tr>
<td>II. AGRICULTURE AND FORESTRY RESOURCES</td>
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<tr>
<td>There are no potentially significant impacts related to agriculture and forestry resources.</td>
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<td>III. AIR QUALITY</td>
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<tr>
<td><strong>Mitigation Measure AQ-1:</strong></td>
<td>Contractor</td>
<td>During construction activities</td>
<td>East Bay Regional Park District</td>
<td>On a daily basis during grading activities</td>
<td>Submit a weekly construction report during grading activities for the project file</td>
</tr>
<tr>
<td>The Contractor must comply with all policies and regulations of the Bay Area Air Quality Management District (BAAQMD) and the California Air Resources Board.</td>
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<td>In addition, the Contractor will employ the following mitigation measures:</td>
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<td>• Construction areas, unpaved access roads, and staging areas shall be watered at least twice daily during dry weather, or soil stabilizers shall be applied during active work.</td>
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<td>• Trucks hauling soil and other loose material shall either be covered, have at least two feet of freeboard, or be sprayed with water prior to arriving and departing from the construction site.</td>
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<td>• Construction vehicles shall use paved roads to access the construction site wherever possible.</td>
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<td>• Vehicle speeds shall be limited to 15 mph on unpaved roads and construction areas, or as required to control dust.</td>
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<tr>
<td>• Paved access roads, parking areas, and staging areas at construction sites and streets shall be</td>
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<tr>
<td>Mitigation Measures</td>
<td>Implemented By</td>
<td>When Implemented</td>
<td>Monitored By</td>
<td>Monitoring Action and Frequency</td>
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<tr>
<td>• cleaned daily with water sweepers if excessive soil material is carried onto adjacent public streets. • Vehicles used in construction activities shall be tuned per the manufacturer’s recommended maintenance schedule; • Vehicle idling time shall be minimized whenever possible.</td>
<td></td>
<td></td>
<td>East Bay Regional Park District/ Qualified Biologist</td>
<td>Prior to construction activities</td>
<td></td>
</tr>
</tbody>
</table>

### IV. BIOLOGICAL RESOURCES

**Mitigation Measure BIO-1:**

Prior to construction, EBRPD or a qualified biologist shall pin flag or mark locations of special status plant species in proposed areas of grading at the basin and ponds. The pin flag or marker locations shall be maintained through the duration of project construction. Where possible, the special status plant species shall be salvaged and transplanted during re-vegetation of the site. Re-vegetation will occur according to a Planting Plan developed by the EBPRD and implemented by EBRPD or its Qualified Biologist.

**Mitigation Measure BIO-2:**

Tree or shrub removal shall occur during the non-breeding season (September 1 through January 31). If it is not possible to avoid tree removal or other disturbances during the breeding season (February 1 through August 31), a qualified biologist shall conduct a pre-disturbance survey for roosting bats, nesting raptors and other migratory birds in all trees within the operation footprint and within 250 feet of the footprint no more than 10 days prior to the onset of ground disturbance. If occupied nests are identified, establish buffer zones and no more than 30 days prior to ground disturbance for tree-nesting raptors, roosting bats.
<table>
<thead>
<tr>
<th>Mitigation Measures</th>
<th>Implemented By</th>
<th>When Implemented</th>
<th>Monitored By</th>
<th>Monitoring Action and Frequency</th>
<th>Verification By/Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nesting migratory birds are detected on the site during the survey, a suitable</td>
<td>East Bay Regional Park</td>
<td>Prior to</td>
<td>Biological Monitor</td>
<td>Once per active work area no</td>
<td>Submit a biological</td>
</tr>
<tr>
<td>buffer should be established around all active nests. The details of the buffer</td>
<td>Park District Lakes/</td>
<td>construction</td>
<td></td>
<td>less than 48 hours before work</td>
<td>survey/report for</td>
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<tr>
<td>would be determined in consultation with CDFW and may vary depending on location</td>
<td>Biological Monitor</td>
<td>surveys as</td>
<td></td>
<td>is scheduled to begin</td>
<td>the project file</td>
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<td>and species. Vegetation clearing will be completed by hand when occurring within</td>
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<td>required.</td>
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<td>50 feet from an active nest. Buffers should remain in place for the duration of</td>
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<td>the breeding season or until it has been confirmed by a qualified biologist that</td>
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<td>all chicks have fledged and are independent of their parents. Pre-disturbance</td>
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<tr>
<td>surveys during the non-breeding season are not necessary.</td>
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<tr>
<td><strong>Mitigation Measure BIO-3:</strong> Prior to vegetation removal, pre-construction</td>
<td>East Bay Regional Park</td>
<td>Conduct pre-</td>
<td>Qualified Biologist</td>
<td>Once per active work area no</td>
<td>Submit a biological</td>
</tr>
<tr>
<td>surveys should also be conducted for the presence of CRLF, Alameda whipsnake, and</td>
<td>Park District Lakes/</td>
<td>construction</td>
<td></td>
<td>less than 48 hours before work</td>
<td>survey/report for</td>
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<tr>
<td>special status fish. If any of these special status species are identified on or</td>
<td>Biological Monitor</td>
<td>surveys as</td>
<td></td>
<td>is scheduled to begin</td>
<td>the project file</td>
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<tr>
<td>near the site, then a specific plan to avoid disturbance shall be developed and</td>
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<td>required, if</td>
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<tr>
<td>implemented in consultation with CDFW. The U.S. Fish and Wildlife Service (USFWS)</td>
<td></td>
<td>monarch</td>
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<td>should also be consulted on any federally listed species.</td>
<td></td>
<td>butterflies</td>
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<tr>
<td><strong>Mitigation Measure BIO-4:</strong> Monarch butterflies may occur on the site during</td>
<td>East Bay Regional Park</td>
<td>Conduct pre-</td>
<td>Qualified Biologist</td>
<td>Once per active work area no</td>
<td>Submit a biological</td>
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<tr>
<td>project construction. Impacts to trees and milkweed shall be avoided where feasible</td>
<td>Park District/ Qualified</td>
<td>construction</td>
<td></td>
<td>less than 48 hours before work</td>
<td>survey/report for</td>
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<tr>
<td>by the construction contractor as determined by a qualified biologist. Avoidance</td>
<td>Biologist</td>
<td>surveys as</td>
<td></td>
<td>is scheduled to begin</td>
<td>the project file</td>
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<tr>
<td>mechanisms may include flagging or exclusionary fencing around milkweed and trees.</td>
<td></td>
<td>required, if</td>
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<tr>
<td><strong>Mitigation Measure BIO-5:</strong> If the presence of Alameda whipsnake is confirmed</td>
<td>East Bay Regional Park</td>
<td>Prior to and</td>
<td>Biological Monitor</td>
<td>During construction as deemed</td>
<td>Submit a biological</td>
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<tr>
<td>within the project area, the contractor shall install</td>
<td>Park District/</td>
<td>during construction</td>
<td></td>
<td></td>
<td>survey/report</td>
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<tr>
<td>Mitigation Measures</td>
<td>Implemented By</td>
<td>When Implemented</td>
<td>Monitored By</td>
<td>Monitoring Action and Frequency</td>
<td>Verification By/Date</td>
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<tr>
<td>wildlife exclusion fencing around active work areas to prevent snakes from entering the work site. The barrier fence should be buried 4 to 6 inches into the ground and should remain in place throughout the entire construction period. The fence may be made from overlapping plywood sheets or heavy-duty geotextile fabric approved by the USFWS and the CDFW.</td>
<td>Biological Monitor</td>
<td>if Alameda whipsnake is observed in the active work area.</td>
<td>necessary by a Biological Monitor.</td>
<td>for the project file</td>
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</tbody>
</table>

**Mitigation Measure BIO-6:**
A Biological Monitor will be a part of the project construction team. This monitor’s duty will be to inform the construction superintendent and site crews – primarily the vegetation clearing crews – of identification of CRLF and Alameda whipsnake and the actions to take if seen on the project site during construction, including who to contact for instruction on how to proceed in accordance with applicable Federal and State law. The Biological Monitor will be present during vegetation clearing activities to check for presence of CRLF, Alameda whipsnake, and any other special status species that may appear on site. Prior to the start of any vegetation and sediment removal activities and daily prior to construction during the implementation phase, the Biological Monitor shall survey the site for listed species. If CRLF or Alameda whipsnake are found during preconstruction surveys by the Biological Monitor or by crew members during activities, work must stop immediately and will not commence until the Biological Monitor confirms it is ok to proceed.
<table>
<thead>
<tr>
<th>Mitigation Measures</th>
<th>Implemented By</th>
<th>When Implemented</th>
<th>Monitored By</th>
<th>Monitoring Action and Frequency</th>
<th>Verification By/Date</th>
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</thead>
<tbody>
<tr>
<td><strong>Mitigation Measure BIO-7:</strong></td>
<td>East Bay Regional Park District/Contractor</td>
<td>During construction activities where stockpiling and staging areas are actively in use</td>
<td>Biological Monitor</td>
<td>Daily, prior to the start of construction activities in the stockpile and staging areas or as deemed necessary by a Biological Monitor</td>
<td>Submit report for the project file</td>
</tr>
<tr>
<td>All construction activities shall occur in the sediment basin and the pond area. Stockpiling and staging areas shall be located along the dirt path between the basin and ponds and in upland areas. Stockpile areas shall be cleared by a biological monitor for special status species prior to stockpiling soils. Construction materials shall be brought on-site as close to the time they are needed as possible. Where possible, piping and other materials that could create refugia for species should be stored so as to avoid contact with the ground.</td>
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<td><strong>Mitigation Measure BIO-8:</strong></td>
<td>East Bay Regional Park District/Contractor</td>
<td>During construction activities</td>
<td>Biological Monitor</td>
<td>Any time when Trenches or pits are excavated and will be left for more than 48 hours</td>
<td>Submit report for the project file</td>
</tr>
<tr>
<td>Trenches or pits that are one foot or deeper, if they will be left for more than 48 hours, will be securely covered with boards or other material to prevent CRLF from falling into these areas. If the areas cannot be covered, the contractor will provide a wooden ramp or other suitable surface to allow CRLF an unaided escape from the trench or pit. A biological monitor shall inspect any trench, pit or hole than has not otherwise been immediately filled to ensure no individuals are trapped.</td>
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<tr>
<td><strong>Mitigation Measure BIO-9:</strong></td>
<td>East Bay Regional Park District/Contractor</td>
<td>During construction activities</td>
<td>Biological Monitor</td>
<td>Once every 30 minutes for the first hour during</td>
<td>Submit report for the project file</td>
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<tr>
<td>If the work site is to be temporarily dewatered by pumping, intakes shall be completely screened</td>
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<tr>
<td>Mitigation Measures</td>
<td>Implemented By</td>
<td>When Implemented</td>
<td>Monitored By</td>
<td>Monitoring Action and Frequency</td>
<td>Verification By/Date</td>
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<td>with wire mesh not larger than five millimeters to prevent CRLF frogs from entering the pump system.</td>
<td>Biological Monitor</td>
<td></td>
<td></td>
<td>the start of pumping activity, then once per hour or another interval as determined appropriate by the Biological Monitor.</td>
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</table>

**Mitigation Measure BIO-10:**
Final project designs shall avoid sensitive habitats during construction and operation. In particular, uncommon plant communities, including riparian vegetation, shall be avoided during project design and construction wherever feasible. The design shall include exclusionary fencing and/or signage to keep people on trails and out of sensitive habitats and rare plant communities. EBRPD will review and approve the final plans prior to construction.

<table>
<thead>
<tr>
<th>Mitigation Measure BIO-11:</th>
<th>East Bay Regional Park District</th>
<th>Prior to project construction</th>
<th>East Bay Regional Park District</th>
<th>Prior to project construction</th>
<th>Submit final plans to the project file</th>
</tr>
</thead>
<tbody>
<tr>
<td>EBRPD or its contractor shall begin construction after May 31 and be completed by October 15. No earth moving activities or soil disturbing may occur before May 31 or after October 15. The revegetation establishment period will occur immediately after completion of the seeding, planting and irrigation system installation, and is expected to continue for a minimum of 2 years. To the maximum extent possible, no construction activities will occur during rain events or within 24 hours of rain.</td>
<td>East Bay Regional Park District/Contractor</td>
<td>After May 31 and completed by October 15</td>
<td>Biological Monitor</td>
<td>During construction activities, as deemed necessary by the Biological Monitor</td>
<td>Submit report for the project file</td>
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<tr>
<td>Mitigation Measures</td>
<td>Implemented By</td>
<td>When Implemented</td>
<td>Monitored By</td>
<td>Monitoring Action and Frequency</td>
<td>Verification By/Date</td>
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<td>hours following a rain event. The biological monitor will walk in front of</td>
<td>East Bay Regional Park</td>
<td>Prior to project</td>
<td>East Bay</td>
<td>Prior to project construction</td>
<td>Submit final permit</td>
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<tr>
<td>construction equipment operating for the project as they travel to and from</td>
<td>District/Contractor</td>
<td>construction</td>
<td>Regional</td>
<td>construction</td>
<td>approvals to the</td>
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<tr>
<td>the unimproved dirt road to the direct work areas at the sediment basin and</td>
<td></td>
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<td>Park</td>
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<td>project file</td>
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<td>ponds to clear the area of any species or special habitat. All vehicles brought</td>
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<td>into the project site will be free of weeds and plant material to prevent the</td>
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<td>Contractor</td>
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<td>spread of noxious plant species. The biological monitor will work with contractor</td>
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<td>East Bay</td>
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<td>to identify and mark with wildlife-friendly construction fencing the upstream/</td>
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<td>Regional</td>
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<td>upland or downstream work limit as applicable in the sediment basin and pond</td>
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<td>Park District/</td>
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<td>work areas.</td>
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<td>Contractor</td>
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<tr>
<td><strong>Mitigation Measure BIO-12:</strong></td>
<td>East Bay Regional Park</td>
<td>Prior to project</td>
<td>East Bay</td>
<td>Prior to project construction</td>
<td>Submit final permit</td>
</tr>
<tr>
<td>Any impacts to Waters of the US (WOUS) requiring dredge or fill in a WOUS shall</td>
<td>District/Contractor</td>
<td>construction</td>
<td>Regional</td>
<td>construction</td>
<td>approvals to the</td>
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<td>obtain permits under Federal CWA Sections 401 and 404 prior to construction.</td>
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<td>Park</td>
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<td>project file</td>
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<tr>
<td>Mitigation measures required by those permits, including compensatory mitigation,</td>
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<td>District/</td>
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<tr>
<td>if required by the permit, shall be implemented by EBRPD and/or its construction</td>
<td></td>
<td></td>
<td>Contractor</td>
<td></td>
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</tr>
<tr>
<td>contractor as part of the project.</td>
<td></td>
<td></td>
<td>East Bay</td>
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</tr>
<tr>
<td><strong>Mitigation Measure BIO-13:</strong></td>
<td>East Bay Regional Park</td>
<td>Prior to and</td>
<td>Biological</td>
<td>Once, prior to project</td>
<td>Submit report</td>
</tr>
<tr>
<td>The biological monitor will work with contractor to identify and mark with</td>
<td>District/Contractor</td>
<td>during project</td>
<td>Monitor</td>
<td>construction, then as needed</td>
<td>for the project file</td>
</tr>
<tr>
<td>wildlife-friendly construction fencing, the upstream/upland or downstream work</td>
<td></td>
<td>construction</td>
<td></td>
<td>during construction to maintain</td>
<td></td>
</tr>
<tr>
<td>limit as applicable in the sediment basin and pond work areas.</td>
<td></td>
<td></td>
<td></td>
<td>fencing.</td>
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</tr>
<tr>
<td>Mitigation Measures</td>
<td>Implemented By</td>
<td>When Implemented</td>
<td>Monitored By</td>
<td>Monitoring Action and Frequency</td>
<td>Verification By/Date</td>
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</tr>
<tr>
<td><strong>Mitigation Measure BIO-14:</strong>&lt;br&gt;EBRPD or its construction contractor shall obtain a permit from Contra Costa County for removal of any protected trees or registered heritage trees. The tree permit must be obtained by EBRPD or its contractor at least three days prior to when work shall occur. Proposed tree removal shall be consistent with the conditions of the removal permit.</td>
<td>East Bay Regional Park District/Contractor</td>
<td>Prior to project construction</td>
<td>East Bay Regional Park District/Contractor</td>
<td>Prior to project construction</td>
<td>Submit final permit approvals to the project file</td>
</tr>
<tr>
<td><strong>Mitigation Measure BIO-15:</strong>&lt;br&gt;The construction contractor shall be responsible for providing tree and shrub protection within active works areas in the sediment basin and the interpretive area (ponds), as described in final plans and specifications. The contractor shall be responsible for maintaining the tree and shrub protection for the duration of work occurring near trees and shrubs.</td>
<td>Construction Contractor</td>
<td>During construction activities</td>
<td>Contractor</td>
<td>As needed to maintain tree and shrub protection during construction</td>
<td>Submit report for the project file</td>
</tr>
<tr>
<td><strong>V. CULTURAL RESOURCES</strong>&lt;br&gt;<strong>Mitigation Measure CUL-1:</strong>&lt;br&gt;Prior to any construction activities, the contractor shall install construction fencing in at least a 20 foot buffer around the guzzler (F2) and around both the inlet and outlet culvert features (F7) to provide a visual cue to construction equipment operators and a physical barrier to the features. The contractor shall maintain fencing for the duration of the project, and remove the fencing upon project completion.</td>
<td>Construction Contractor</td>
<td>Prior to and during project construction</td>
<td>Construction Contractor</td>
<td>As needed to maintain fencing during construction</td>
<td>Submit report for the project file</td>
</tr>
<tr>
<td><strong>Mitigation Measure CUL-2:</strong>&lt;br&gt;When conducting work around Pond 1, the Contractor shall, to the extent possible operate smaller equipment, or wheeled equipment rather than tracked equipment, to minimize potential</td>
<td>Construction Contractor</td>
<td>During construction activities</td>
<td>Construction Contractor</td>
<td>Prior to conducting work around Pond 1 and the guzzler</td>
<td>Submit report for the project file</td>
</tr>
<tr>
<td>Mitigation Measures</td>
<td>Implemented By</td>
<td>When Implemented</td>
<td>Monitored By</td>
<td>Monitoring Action and Frequency</td>
<td>Verification By/Date</td>
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</tr>
<tr>
<td>Impacts to the guzzler associated with vibrations caused by construction activities.</td>
<td></td>
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</tr>
<tr>
<td><strong>Mitigation Measure CUL-3:</strong></td>
<td>East Bay Regional Park District/Contractor</td>
<td>During construction activities</td>
<td>Qualified archaeologist</td>
<td>Continuous during initial ground-disturbing activities near Pond 1 and the guzzler</td>
<td>Submit report for the project file</td>
</tr>
<tr>
<td>A qualified archaeologist shall be present to monitor initial ground-disturbing activities related to earthwork, and initial activities related to installation of the boardwalk in the pond area given proximity to the guzzler. The archaeologist shall notify workers if there are signs of impact to the guzzler associated with the construction activities and shall cease work in the immediate area until the archaeologist provides notice that the work can proceed.</td>
<td></td>
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</tr>
<tr>
<td><strong>Mitigation Measure CUL-4:</strong></td>
<td>East Bay Regional Park District</td>
<td>Prior to completion of the project</td>
<td>East Bay Regional Park District</td>
<td>Prior to completion of the project</td>
<td>Submit photos for the project file</td>
</tr>
<tr>
<td>Prior to completion of the project, the EBPRD shall install signage at the guzzler indicating its significance and alerting public users to not impact the guzzler.</td>
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</tr>
<tr>
<td><strong>Mitigation Measure CUL-5:</strong></td>
<td>East Bay Regional Park District</td>
<td>Prior to project construction</td>
<td>East Bay Regional Park District</td>
<td>Prior to project construction</td>
<td>Submit final plans to the project file</td>
</tr>
<tr>
<td>Specifications (e.g., Caltrans 2015 Standard Specifications Section 14-2) for incidental discovery of archaeological and paleontological resources shall be incorporated into the final specifications for the project and require the contractor implement the following protocols if an archaeological or paleontological resource is discovered during project construction:</td>
<td></td>
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<tr>
<td>1. Stop all work within a 60-foot radius of the discovery</td>
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<tr>
<td>2. Secure the area</td>
<td></td>
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<tr>
<td>3. Notify the Engineer</td>
<td></td>
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<tr>
<td>4. Do not remove archeological or paleontological resources or take them from the jobsite;</td>
<td></td>
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</tr>
<tr>
<td>Mitigation Measures</td>
<td>Implemented By</td>
<td>When Implemented</td>
<td>Monitored By</td>
<td>Monitoring Action and Frequency</td>
<td>Verification By/Date</td>
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<tr>
<td>5. Do not resume work within the radius until authorized</td>
<td>EBRPD shall approve plans and specifications prior to construction.</td>
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<tr>
<td><strong>Mitigation Measure CUL-6:</strong></td>
<td>Construction Contractor</td>
<td>During construction activities</td>
<td>Constructio Contractor</td>
<td>Within 24 hours in the event of discovery of human remains</td>
<td>Submit report for the project file</td>
</tr>
<tr>
<td>As required by California Health and Safety Code Section 7050.5, in the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, the Contractor must stop work and there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the remains are discovered has determined whether or not the remains are subject to the coroner’s authority. If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of this identification. The Native American Heritage Commission would identify a Native American Most Likely Descendant (MLD) to inspect the site and provide recommendations for the proper treatment of the remains and associated cultural materials.</td>
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</tbody>
</table>

**VI. GEOLOGY AND SOILS**

| Mitigation Measure GEO-1: | East Bay Regional Park District/ Contractor/QS D&QSP | Prior to, during, and post project construction | East Bay Regional Park District/ Contractor | As specified in the SWPPP | Submit final permit approvals to the project file. Submit NOT in SMARTS at the end of the project. |
| EBRPD or a qualified contractor shall develop a SWPPP and obtain coverage under the CGP. To obtain coverage, EBRPD shall be required to submit and certify the SWPPP and Permit Registration Documents (PRDs) in the Stormwater Multiple Application Tracking and Reporting System (SMARTS) at least 14 days prior to any ground |
### Mitigation Measures

<table>
<thead>
<tr>
<th>Mitigation Measures</th>
<th>Implemented By</th>
<th>When Implemented</th>
<th>Monitored By</th>
<th>Monitoring Action and Frequency</th>
<th>Verification By/Date</th>
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</thead>
<tbody>
<tr>
<td>disturbance.</td>
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<tr>
<td>Mitigation Measure GEO-2:</td>
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<tr>
<td>The Contractor shall be required to implement the SWPPP throughout construction of the project until stabilization criteria have been met and a Notice of Termination (NOT) of coverage under the CGP has been filed in SMARTS.</td>
<td>East Bay Regional Park District/Contractor</td>
<td>During construction activities</td>
<td>East Bay Regional Park District/Contractor</td>
<td>During construction</td>
<td>Submit report for the project file</td>
</tr>
</tbody>
</table>

### VII. GREENHOUSE GAS EMISSIONS

There are no potentially significant impacts related to Greenhouse Gas Emissions

### VIII. HAZARDS AND HAZARDOUS MATERIALS

There are no potentially significant impacts related to hazards and hazardous materials.

### IX. HYDROLOGY AND WATER QUALITY

**Mitigation Measure HYD-1:**
Prior to the start of construction EBRPD shall obtain permits from RWQCB to ensure compliance with Clean Water Act Section 401. The EBRPD and Contractor will be required to implement the mitigation measures and permit conditions specified in the permit documents.

<table>
<thead>
<tr>
<th>East Bay Regional Park District</th>
<th>Prior to project construction</th>
<th>East Bay Regional Park District</th>
<th>Prior to project construction</th>
<th>Submit final permit approvals to the project file</th>
</tr>
</thead>
</table>

**Mitigation Measure HYD-2:**
The Contractor shall be required to implement a dewatering plan if groundwater is encountered during construction of the project. The dewatering plan shall route flows within the proposed grading limit downstream of the weir and within Wildcat Creek.

<table>
<thead>
<tr>
<th>Construction Contractor</th>
<th>During project construction</th>
<th>Constructio n Contractor</th>
<th>During project construction</th>
<th>Submit report for the project file</th>
</tr>
</thead>
</table>

### X. LAND USE AND PLANNING

There are no potentially significant impacts related to land use and planning.

### XI. MINERAL RESOURCES

There are no potentially significant impacts related to mineral resources.

### XII. NOISE

There are no potentially significant impacts related to noise.

### XIII. POPULATION AND HOUSING

There are no potentially significant impacts related to population and housing.
<table>
<thead>
<tr>
<th>Mitigation Measures</th>
<th>Implemented By</th>
<th>When Implemented</th>
<th>Monitored By</th>
<th>Monitoring Action and Frequency</th>
<th>Verification By/Date</th>
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<tbody>
<tr>
<td>XIV. PUBLIC SERVICES</td>
<td></td>
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<tr>
<td>There are no potentially significant impacts related to public services.</td>
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<td>XV. RECREATION</td>
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<tr>
<td>There are no potentially significant impacts related to recreation.</td>
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<tr>
<td>XVI. TRANSPORTATION/TRAFFIC</td>
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</tr>
<tr>
<td>There are no potentially significant impacts related to transportation and traffic.</td>
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</tr>
<tr>
<td>XVII. UTILITIES AND SERVICE SYSTEMS</td>
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</tr>
<tr>
<td>There are no potentially significant impacts related to Utilities and Service Systems.</td>
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</tr>
</tbody>
</table>
Tilden Nature Area
Sediment Basin Excavation and Pond Restoration
Representative Photographs

Photograph 1. Man-Made Pond 1, looking southwest
Photograph 2. Close up of Man-Made Pond 1

Photograph 3. Man-Made Pond 2
Photograph 4. Man-Made Pond 3

Photograph 5. Wildcat Creek, looking downstream from upper limit of proposed grading area
Photograph 6. Wildcat Creek, looking upstream from proposed grading boundary

Photograph 7. Wildcat Creek, looking at right bank (facing downstream)
Photograph 8. Wildcat Creek, looking at left bank (facing downstream)

Photograph 9. Wildcat Creek, looking downstream at sediment that would be excavated
Photograph 10. Wildcat Creek, looking upstream at wood weir

Photograph 11. Wildcat Creek, looking at left bank downstream of wood weir
Photograph 12. Wildcat Creek, looking downstream at bridge, from wood weir
Appendix C
PRELIMINARY BIOLOGICAL RESOURCES ASSESSMENT
TILDEN NATURE AREA
Preliminary Biological Resource Assessment

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Mack Casterman
Staff Scientist

John Heal
Senior Scientist
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1.0 INTRODUCTION

This Preliminary Biological Resource Assessment (BRA) was prepared for the site of the Tilden Nature Area Sediment Basin Dredging and Pond Restoration Project (Project). This BRA describes the biological resources found in the area and the potential for impacts to those biological resources that must be considered under the California Environmental Quality Act (CEQA). The report concludes with an analysis of those potential impacts and how they may be reduced to less than significant with appropriate mitigation measures.

The objectives of this report are to:

- Summarize all site-specific information related to existing biological resources;
- Draw reasonable conclusions about the biological resources that could occur onsite based on habitat suitability, historical occurrences, and the proximity of the site to a species’ known range;
- Identify and discuss the potential impacts to biological resources from the proposed Project likely to occur on and near the site within the context of CEQA; and
- Identify avoidance and mitigation measures that would reduce potential impacts and that are generally consistent with recommendations of the resource agencies for affected biological resources.

1.1 PROJECT SITE

The project area is located in Section 23 and 26, Township 1 North, Range 4 West of the Mt. Diablo Meridian in Contra Costa County, California. The project area covers approximately 6.64 acres. The project area is located in unincorporated Contra Costa County within the Tilden Nature Area in Tilden Regional Park (Figure 1).

Land use in the project area is predominantly open space with residential development to the west and south of the project area. Land use includes both developed and undeveloped residential areas, paved roads, and open space recreational trails.
Figure 1: Project Vicinity
1.2 **Project Description**

The East Bay Regional Park District (EBRPD) proposes to excavate sediment to restore the capacity of an in-stream sediment basin, enhance habitat for California red-legged frog at an interpretive area used for environmental education, and make structural improvements to the interpretive area to enhance user experience while protecting habitat. The project is located in T.01N., R.04W., Sections 23 and 26 in unincorporated Contra Costa County within the Tilden Nature Area in Tilden Regional Park. The EBRPD owns and operates the land in the project area which is located within assessor’s parcel number (APN) 573-070-003. The project area is approximately 6.64 acres and includes a sediment basin, an interpretive area, and staging areas. Suitable habitat for the federally threatened California red-legged frog (CRLF) (*Rana draytonii*) exists within the project area and vicinity. The project also occurs within Final Designated Critical Habitat for Alameda whipsnake (*Masticophis lateralis*).

Specific project activities will include:
- Excavating approximately 700-900 cubic yards of sediment from a sediment basin in Wildcat Creek
- Improvements to the sediment basin wood weir
- Enhancing habitat for CRLF at existing man-made ponds in the interpretive area
- Constructing a new pond water augmentation system to efficiently supplement the ponds in the interpretive area
- Constructing a trail system comprised of a boardwalk and natural materials to enhance user experience while protecting aquatic and upland habitats in the interpretive area

The sediment basin is located along Wildcat Creek downstream of Lake Anza and upstream of Jewel Lake. Elevation near the sediment basin ranges from 500 to 550 feet. The sediment basin is an approximately 0.128 acre area within Wildcat Creek that provides non-breeding habitat for CRLF. The EBRPD has a Routine Maintenance Agreement (RMA) with the California Department of Fish and Wildlife (CDFW) to remove up to 200 cubic yards of sediment from the basin. Currently, more sediment has accumulated than what can be removed per the RMA and the EBRPD is interested in restoring capacity of the sediment basin and creek function and protecting downstream Jewel Lake from excess sedimentation.

Material will be excavated from the basin within the channel using an excavator and loader. Vegetation that has established on the sediment within the channel will be removed. The excavated material will be dried, stockpiled, and used later to maintain existing facilities within EBRPD property, or disposed of at a licensed disposal facility. Once the excavation is complete, the streambanks will be stabilized by re-establishing riparian vegetation.

A wood weir is located at the downstream end of the sediment basin. Minor improvements will be made to the weir to concentrate flows to the middle of the channel, either by leveling the top surface elevation of the weir or installing a notch, or both. Existing rip rap occurs downstream across the length of the weir. If necessary, additional rip rap would be installed. Currently, rainbow trout (*Oncorhynchus mykiss*) can pass the wood weir in high flows.
The interpretive area is approximately 950 feet northeast from the sediment basin and upland from Wildcat Creek. The interpretive area consists of three man-made ponds and an unimproved dirt path. A quail “guzzler” sits near the entrance to the interpretive area and is considered a potentially eligible cultural resource. No improvements or work will occur which would impact the guzzler.

Elevation around the ponds ranges from 450 to 500 feet. The combined surface area of the three ponds is approximately 0.108 acres. The ponds fill with overland flow during rain events and are supplemented with East Bay Municipal Utility District (EBMUD) water from a nearby water line. The ponds have no overflow or outlet and there is no surface flow connection to Wildcat Creek.

The interpretive ponds and surrounding area will be excavated and re-graded to expand and enhance aquatic habitat for CRLF. Vegetation removal will also occur in and around the ponds. Currently the ponds are dominated by cattails which will be removed prior to grading the site. Non-native plants and a eucalyptus tree will be removed, native-to-the-region plants will be re-established, and temporary irrigation will be installed to ensure plant establishment. The current trail through the interpretive area will be enhanced by laying a natural material, such as decomposed granite over existing dirt paths, widening a boardwalk crossing over a ditch to comply with ADA requirements, and adding a boardwalk deck to provide views of aquatic habitats. The pond water augmentation system which currently supplements the pond water levels will be removed and replaced with a combination of underground water lines and open channel flow features, fed by the adjacent EBMUD water line.

Construction is anticipated to occur from late summer to October in 2017.
Figure 2: Soils and National Wetland Inventory (NWI)
2.0 METHODS

The purpose of this Preliminary BRA is to describe the biological resources found in the area and the potential for impacts to those biological resources resulting from the proposed Project that must be considered under CEQA. Research was conducted on biological resources known to occur in the area and a site visit included both a reconnaissance level survey and and mapping of the manmade ponds and waters of the U.S. (WOUS) found on the site. The delineation of WOUS report is available under separate cover (NCE, 2016).

Site specific references and background information reviewed include:

- City of Berkeley General Plan
- U.S.G.S. Richmond, California, 7.5 minute quadrangle.
- U.S. Fish and Wildlife Service. 2016. Federally Endangered and Threatened Species that Occur in or may be Affected by Projects in the Richmond, Briones, Oakland East, U.S.G.S. 7 ½ Minute Quads. Accessed online.

The site was visited on March 18th, 2016 by Mack Casterman, Debra Lemke and Marcy Kamerath of NCE. A reconnaissance level survey was conducted, plant communities and habitats were observed and recorded, and the edges of the Ordinary High Water Mark (OHWM) and riparian area were delineated and subsequently mapped. Transects were traversed on foot and the site was photographed. Focused surveys for special status species of flora and fauna were not conducted.
3.0 RESULTS

3.1 SOILS AND TOPOGRAPHY

3.1.1 Soils

Soils within the survey area have been mapped by the Natural Resources Conservation Service (NRCS) and are described in the Custom Soil Resource Report for Contra Costa County, California (NRCS, 2016a). The survey includes two soil types: Millsholm loam, 15 to 30% slopes, MLRA 15 and Zamora silty clay loam, 2 to 5% slopes. The NRCS descriptions of these soil types are described below and shown on Table 1.

Soil Unit: Millsholm loam, 15 to 30 percent slopes, MLRA 15
This soil unit is found on hillslopes at elevations between 0 to 1,800 feet above mean sea level. The components of this soil type are 85% Millsholm and similar soils, 10% Dibble, and 5% Unnamed. The soil unit has a Natural Drainage Class of well drained with a moderately low to high saturated hydraulic conductivity (Ksat, 0.14 to 2.00 inches/hour). The Runoff Class is high. The depth to the water table is more than 80 inches. The frequency of flooding and ponding are none and the available water storage in its profile is low.

The typical profile is:
A - 0 to 8 inches: loam
Bt – 8 to 17 inches: loam
R – 17 to 27 inches: bedrock

This soil type is found in the northern portion of the survey area. Millsholm and Dibble soils are not classified as hydric (NRCS, 2016b).

Soil Unit: Zamora silty clay loam, 2 to 5 percent slopes
This soil unit is found on alluvial fans, terraces, and valley floors between 100 to 500 feet above mean sea level. The components of this soil type are 85% Zamora and similar soils, 5% Garretson, 5% Los robles, and 5% Rincon. The soil unit has a Natural Drainage Class of well drained with a moderately low to moderately high saturated hydraulic conductivity (Ksat, 0.06 to 0.20 inches/hour). The Runoff Class is medium. The depth to the water table is more than 80 inches. The frequency of flooding and ponding are none and the available water storage in its profile is high.

The typical profile is:
H1 - 0 to 16 inches: silty clay loam
H2 - 16 to 72 inches: silty clay loam

This soil type is found in the southern portion of the survey area. Zamora, Garretson, and Los robles soils are not hydric; Rincon is classified as a hydric soil (NRCS, 2016b).
Table 1. Soils in the Project Area

<table>
<thead>
<tr>
<th>Soil Series/Soil</th>
<th>Map Symbol</th>
<th>Parent Material</th>
<th>Drainage Class</th>
<th>% of Project Boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millsholm loam, 15 to 30 percent slopes, MLRA 15</td>
<td>MeE</td>
<td>Residuum weathered from sandstone and shale</td>
<td>well drained</td>
<td>35.7%</td>
</tr>
<tr>
<td>Zamora silty clay loam, 2 to 5 percent slopes</td>
<td>ZaB</td>
<td>Alluvium derived from sedimentary rock</td>
<td>well drained</td>
<td>64.3%</td>
</tr>
</tbody>
</table>

### 3.1.2 Topography

The project area is located in the upper watershed of Wildcat Creek. The site is located within or near the channel of Wildcat Creek, on the floor of a small valley, and has generally flat terrain. Elevations of the project site range from approximately 500 feet to 550 feet (150 meters to 170 meters) above mean sea level.

### 3.1.3 Climate

The climate in Contra Costa County (CCC) varies depending on the location and topography. Western CCC experiences cool summers and mild winters due to its proximity to San Francisco and San Pablo Bays. Elevation and proximity to the sea have a direct effect on the average annual precipitation across the County. Mean annual temperature in the project area is 58.5 degrees Fahrenheit, and precipitation is typically 20 to 30 inches annually. Precipitation at the project area generally occurs between October and May due to the site’s Mediterranean climate. The most precipitation falls in January, and averages 4.84 inches. In August, the area reaches an average high of 79.7 degrees Fahrenheit, with an average low of 55.4 degrees Fahrenheit. In December, the area averages a high of 54.9 degrees Fahrenheit with a low of 43.1 degrees Fahrenheit.

### 3.2 Habitats

#### 3.2.1 Project Region

Habitats in this area include mixed riparian woodland, coast live oak woodland, coastal prairie, northern coastal scrub, chaparral, eucalyptus forest, agricultural lands, urban lands, and California annual grassland. Other habitats in the region include wetlands, ponds, riparian scrub, and streams.

#### 3.2.2 Project Site and Vicinity

Four general habitat types were identified on the project site. These are California annual grassland, eucalyptus forest, coast live oak woodlands, and riparian woodland (Figure 3) (Sawyer 2010) (Holland 1986).
Plant species found at the Project site in the California annual grassland habitat type include wild oat (*Avena* sp.), English plantain (*Plantago lanceolata*), vetch (*Vicia* sp.), ripgut brome (*Bromus diandrus*), burr clover (*Medicago polymorpha*), cutleaf geranium (*Geranium dissectum*) and coyote brush (*Baccharis pilularis*).

Riparian woodlands at the project area were characterized by the red alder riparian forest alliance. These habitats included pacific willow (*Salix lasiandra*), red alder (*Alnus rubra*), dogwood (*Cornus sericea*), and big-leaf maple (*Acer macrophylla*). The understory included California blackberry (*Rubus ursinus*), Himalayan blackberry (*Rubus discolor*), gooseberry (*Ribes* sp.), and western sword fern (*Polystichum munitum*).

Plant species found in the coast live oak woodland include coast live oak (*Quercus agrifolia*), poison oak (*Toxicodendron diversilobum*), and California bay (*Umbellaria californica*).

These plant communities also provide habitat for a number of resident and migratory birds. These and other birds may nest, forage, or winter in habitats on or adjacent to the site. The riparian and upland vegetation in the vicinity provides foraging habitat and cover for several mammal species. These include western gray squirrel (*Sciurus griseus*), coyote (*Canis latrans*), mule deer (*Odocoileus hemionus*), grey fox (*Urocyon cinereoargenteus*), raccoon (*Procyon lotor*), and dusky footed wood rat (*Neotoma fuscipes*).

The habitats within and surrounding the project site support a varied assemblage of wildlife, which may move up and down the riparian corridor along Wildcat Creek. Overhanging riparian vegetation protects pools up to 3 feet deep in the mainstem area near the entrance bridge. Stream conditions downstream include well-developed riparian cover and a shallow, gravel stream bed. These areas may provide habitat for California red-legged frog (*Rana draytonii*), a federally threatened species and California Species of Special Concern. Rainbow Trout (*Oncorhynchus mykiss*) have the potential to occur in Jewel Lake and have access to the project area during high flows in Wildcat Creek. California newts (*Taricha tarosa*) have previously been observed in Wildcat creek and in man-made ponds within the project area. Alameda whipsnake (*Masticophis lateralis euryxanthus*), a federally threatened species are also known to occur in the region (CDFW 2016). However, no special status species fish or herptiles were identified on site during field visits in March, 2016.
Figure 3: Habitat Map
3.3 Special Status Species

A wide variety of taxa native to the state of California have low populations, limited distributions, or are otherwise vulnerable to extinction or extirpation within the state. Although they may include Ecologically Significant Units and sub-species as well as species, these taxa are collectively referred to as “special status species.”

These flora and fauna may be considered “rare” and are vulnerable to extirpation as the state’s human population grows, the habitats these species occupy are converted to agricultural and urban land uses, and or they are subject to other impacts, such as climate change, pollution, or wildfires. State and federal laws have provided the CDFW and the U.S. Fish and Wildlife Service (USFWS) with the responsibility for conserving and protecting the diversity of plant and animal species native to the state. Because of the diversity of habitats within the state, a relatively large number of native plants and animals have been formally designated as “threatened” or “endangered” under state and federal endangered species legislation. Others have been designated as candidates for such listing. Still others have been designated as “species of special concern” by the CDFW. The California Native Plant Society (CNPS) has developed its own set of lists of native plants considered rare, threatened, or endangered (CNPS 2016). Additionally, conservation groups such as the American Fisheries Society, the World Conservation Union, and the Xerces Society have developed lists and categorized species that are of particular concern with regard to conservation.

Several special status plants and animals have the potential to occur in the site’s vicinity. These species and the likelihood of their occurrence in the study area are listed in Table 2, found below. Sources of information for this table included California’s Wildlife, Volumes I, II, and III (Zeiner et. al 1988), California Natural Diversity Database (CDFW 2016), California Wildlife Habitat Relationships (CDFG 2008a), A California Cooperative Anadromous Fish and Habitat Data Program (CalFish 2011), and The California Native Plant Society’s Inventory of Rare and Endangered Vascular Plants of California (CNPS 2016). This information was used to evaluate the potential for special status plant and animal species to occur on the site. It is important to note that the California Natural Diversity Database is a volunteer database of historical occurrences; therefore, it may not contain all known or gray literature records.

A search of the CNDDB using the Rarefind 5 internet application was conducted for the Briones Valley, Richmond, Walnut Creek, Oakland, and Las Trampas Ridge quadrangles. A list of federally protected species was generated for these quadrangles by the USFWS and retrieved by NCE. All species listed in the CNPS’s Inventory of Rare and Endangered Plants (CNPS, 2010) for Contra Costa County Briones Valley quadrangle were reviewed for their potential to occur on the site. The results are presented in Table 2.
## Table 2. List of Special Status Species that May Occur in the Project Vicinity

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat</th>
<th>Occurrence in the Study Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plant Species</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bent-flowered fiddleneck (<em>Amsinckia lunaris</em>)</td>
<td>CNPS 1B.2</td>
<td>Cismontane woodland, valley and foothill grassland. 50-500 meters.</td>
<td>Possible. Suitable habitat for this species may occur on site.</td>
</tr>
<tr>
<td>Pallid manzanita (<em>Arctostaphylos pallida</em>)</td>
<td>FT, CE, CNPS 1B.1</td>
<td>Found in siliceous shale, sandy or gravelly soils. Habitats include broadleaved upland forest, closed-cone coniferous forest, chaparral, cismontane woodland, and coastal scrub. 185 - 465 meters. Blooms December - March.</td>
<td>Absent. Does not occur on the site. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td>Mt. Diablo fairy-lantern (<em>Calochortus pulchellus</em>)</td>
<td>1B.2</td>
<td>Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. On wooded and brushy slopes, 30-915 m.</td>
<td>Unlikely. Species distribution limited to specific areas. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td>Franciscan thistle (<em>Cirsium andrewsii</em>)</td>
<td>CNPS 1B.2</td>
<td>Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub</td>
<td>Possible. Suitable habitat for this species may occur on site.</td>
</tr>
<tr>
<td>Presidio clarkia (<em>Clarkia franciscana</em>)</td>
<td>FE, CE, 1B.1</td>
<td>Coastal scrub, valley and foothill grassland. Serpentine outcrops in grassland or scrub, 25-335 m.</td>
<td>Absent. Does not occur on the site. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td>Western leatherwood (<em>Dirca occidentalis</em>)</td>
<td>1B.2</td>
<td>On brushy slopes, mesic sites; mostly in mixed evergreen &amp; foothill woodland communities, 25-425 m.</td>
<td>Possible. Suitable habitat for this species occurs on site and the species is present near the project site. No occurrences have been recorded within the project area.</td>
</tr>
<tr>
<td>Tiburon buckwheat (<em>Eriogonum luteolum var. caninum</em>)</td>
<td>1B.2</td>
<td>Chaparral, valley and foothill grassland, cismontane woodland, coastal prairie. Serpentine soils; sandy to gravely sites, 0-700 m.</td>
<td>Possible. Suitable habitat for this species may occur on site.</td>
</tr>
</tbody>
</table>
### TILDEN NATURE AREA
Preliminary Biological Resource Assessment

#### 3.0 RESULTS

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat</th>
<th>Occurrence in the Study Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fragrant fritillary (<em>Fritillaria liliacea</em>)</td>
<td>1B.2</td>
<td>Coastal scrub, valley and foothill grassland, coastal prairie, cismontane woodland. Often on serpentine; various soils reported though usually clay, in grassland, 3-400 m.</td>
<td>Possible. Historical record exists for this species near the site, but species may be extirpated. Suitable habitat for this species may occur on site.</td>
</tr>
<tr>
<td>Diablo helianthella (<em>Helianthella castanea</em>)</td>
<td>1B.2</td>
<td>Usually in chaparral/oak woodland interface in rocky, azonal soils. Often in partial shade, 25-1150 m.</td>
<td>Possible. Suitable habitat for this species may occur on site.</td>
</tr>
<tr>
<td>Loma Prieta hoita (<em>Hoita strobilina</em>)</td>
<td>CNPS 1B.1</td>
<td>Usually serpentine, mesic habitats including chaparral, cismontane woodland, and riparian woodland. 30 - 860 meters. Blooms May - October.</td>
<td>Unlikely. Species distribution limited to specific areas. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td>Santa Cruz tarplant (<em>Holocarpha macradenia</em>)</td>
<td>FT, CE, CNPS 1B.1</td>
<td>Coastal prairie, coastal scrub, and valley and foothill grassland. Light, sandy soil or sandy clay; often with nonnatives, 10 - 220 meters. Blooms June - October.</td>
<td>Unlikely. Species distribution limited to specific areas. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td>Oregon meconella (<em>Meconella oregana</em>)</td>
<td>1B.1</td>
<td>Coastal prairie, coastal scrub. Open, moist places, shaded canyons under 1000 m.</td>
<td>Possible. Suitable habitat for this species may occur on site.</td>
</tr>
<tr>
<td>San Francisco popcornflower (<em>Plagiobothrys diffusus</em>)</td>
<td>CE, 1B.1</td>
<td>Historically from grassy slopes with marine influence. 60-485 m.</td>
<td>Unlikely. Species distribution limited to specific areas. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td>Most beautiful jewelflower (<em>Streptanthus albidus ssp. peramoenus</em>)</td>
<td>1B.2</td>
<td>Serpentine outcrops, on ridges and slopes. 95-1000 m.</td>
<td>Absent. Does not occur on the site. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td>Oval-leaved viburnum (<em>Viburnum ellipticum</em>)</td>
<td>2B.3</td>
<td>Chaparral, cismontane woodland, lower montane coniferous forest. 215-1400 m.</td>
<td>Absent. Does not occur on the site. Potential habitat does not exist on site.</td>
</tr>
</tbody>
</table>

**Avian Species**

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat</th>
<th>Occurrence in the Study Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooper’s Hawk (<em>Accipiter cooperii</em>)</td>
<td>WL</td>
<td>Woodland, chiefly of open, interrupted or marginal type.</td>
<td>Possible. Suitable habitat for this species occurs on site.</td>
</tr>
</tbody>
</table>
### 3.0 RESULTS

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat</th>
<th>Occurrence in the Study Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great horned owl (<em>Bubo virginianus</em>)</td>
<td>U</td>
<td>Occurs in a wide range of habitats. May nest in trees or on cliffs.</td>
<td>Possible. Great horned owls may occur incidentally on the site if they forage over adjacent areas. They are unlikely to nest on the site.</td>
</tr>
<tr>
<td>Red-tailed hawk (<em>Buteo jamaicensis</em>)</td>
<td>U</td>
<td>Deciduous and mixed forests, open country. Nests in large trees.</td>
<td>Possible. Red-tailed hawks may occur incidentally on the site if they forage over adjacent areas. They are unlikely to nest on the site.</td>
</tr>
<tr>
<td>Red-shouldered hawk (<em>Buteo lineatus</em>)</td>
<td>U</td>
<td>Deciduous and mixed forests, open country. Nests in large trees.</td>
<td>Possible. Red-shouldered hawk may occur incidentally on the site if they forage over adjacent areas.</td>
</tr>
<tr>
<td>Northern harrier (<em>Circus cyaneus</em>)</td>
<td>U</td>
<td>Open grasslands, marshes, and riparian woodlands. Nests in open field or meadow.</td>
<td>Possible. Northern harrier may occur incidentally on the site if they forage over adjacent areas. Suitable nesting habitat is absent from the site.</td>
</tr>
<tr>
<td>American kestrel (<em>Falco sparverius</em>)</td>
<td>U</td>
<td>Occurs in a wide range of habitats. Nests in cavities in trees or on cliffs.</td>
<td>Possible. Kestrels may occur incidentally on the site if they forage over adjacent areas. They are unlikely to nest on the site.</td>
</tr>
<tr>
<td>Bald Eagle (<em>Haliaeetus leucocephalus</em>)</td>
<td>CE</td>
<td>Lower montane coniferous forest, oldgrowth. Most nests within 1 mi of water.</td>
<td>Possible. Bald eagle may occur incidentally on the site if the forage over adjacent areas. They are unlikely to nest on the site.</td>
</tr>
<tr>
<td>California Black Rail (<em>Laterallus jamaicensis coturniculus</em>)</td>
<td>CT</td>
<td>Brackish marsh, Freshwater marsh, Marsh &amp; swamp, Salt marsh</td>
<td>Unlikely. Species distribution limited to specific areas. Suitable habitat not present on site.</td>
</tr>
</tbody>
</table>

### Mammal Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat</th>
<th>Occurrence in the Study Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pallid Bat (<em>Antrozous pallidus</em>)</td>
<td>CSC</td>
<td>Deserts, grasslands, shrublands, woodlands &amp; forests. Most common in open, dry habitats with rocky areas for roosting.</td>
<td>Absent. Does not occur on the site. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td>Townsend’s Big-eared Bat (<em>Corynorhinus townsendii</em>)</td>
<td>CA Candidate Threatened CSC</td>
<td>Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls &amp; ceilings.</td>
<td>Possible. Townsend’s Big-eared bats may occur incidentally on the site if they forage over adjacent areas. They are unlikely to roost on the site.</td>
</tr>
<tr>
<td>Species</td>
<td>Status</td>
<td>Habitat</td>
<td>Occurrence in the Study Area*</td>
</tr>
<tr>
<td>-------------------------------</td>
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<td>-------------------------------</td>
</tr>
<tr>
<td><strong>Silver-Haired Bat</strong></td>
<td>LC</td>
<td>deep, well-drained soil for burrowing.</td>
<td><strong>Possible.</strong> Silver-haired bats may occur incidentally on the site if they forage over adjacent areas. They are unlikely to roost on the site.</td>
</tr>
<tr>
<td><em>Lasionycteris noctivagans</em></td>
<td></td>
<td>Primarily a coastal &amp; montane forester dweller feeding over streams, ponds &amp; open brushy areas</td>
<td></td>
</tr>
<tr>
<td><strong>Hoary Bat</strong></td>
<td>LC</td>
<td>Prefers open habitats or habitat mosaics, with access to trees for cover &amp; open areas or habitat edges for feeding.</td>
<td><strong>Possible.</strong> Hoary bats may occur incidentally on the site if they forage over adjacent areas. They are unlikely to roost on the site.</td>
</tr>
<tr>
<td><em>Lasiurus cinereus</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Big Free-Tailed Bat</strong></td>
<td>CSC</td>
<td>Prefers rugged and rocky terrain.</td>
<td><strong>Possible.</strong> Big Free-Tailed Bats may occur incidentally on the site if they forage over adjacent areas. They are unlikely to roost on the site.</td>
</tr>
<tr>
<td><em>Nyctinomops macrotis</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>American Badger</strong></td>
<td>LC, CSC</td>
<td>Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.</td>
<td><strong>Absent.</strong> Does not occur on the site. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td><em>Taxidea taxus</em></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Herptile Species</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California tiger salamander</td>
<td>FT, CSC, VU</td>
<td>Need underground refuges, especially ground squirrel burrows, &amp; vernal pools or other seasonal water sources for breeding.</td>
<td><strong>Absent.</strong> Does not occur on the site. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td><em>Ambystoma californiense</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>California newt</td>
<td>CSC</td>
<td>Wet forests, oak forests, chaparral, and rolling grasslands</td>
<td><strong>Present.</strong> Species has been observed in and around project area during past breeding seasons.</td>
</tr>
<tr>
<td><em>Taricha tarosa</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Western Pond Turtle</td>
<td>CSC</td>
<td>Ponds, marshes, rivers, streams &amp; irrigation ditches, usually with aquatic vegetation, below 6,000ft elevation</td>
<td><strong>Possible.</strong> Historical and recent occurrence for species recorded in Jewel Lake near project site. Potential habitat exists on site.</td>
</tr>
<tr>
<td><em>Emys marmorata</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alameda whipsnake</td>
<td>FT, CT</td>
<td>Common in scrublands broken by scattered grassy patches, rocky hillsides, gullies, canyons, or stream courses.</td>
<td><strong>Possible.</strong> The Alameda whipsnake may occur incidentally on the site. Project site is within designated critical habitat for the species.</td>
</tr>
<tr>
<td><em>Masticophis lateralis euryxanthus</em></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 3.0 RESULTS

#### Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat</th>
<th>Occurrence in the Study Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Foothill yellow-legged frog (Rana boylii)</strong></td>
<td>SSC, NT</td>
<td>Partly-shaded, shallow streams &amp; riffles with a rocky substrate in a variety of habitats. Typically found in or near perennial streams. Need at least some cobble-sized substrate for egg-laying.</td>
<td><strong>Absent</strong>. Does not occur on the site. Potential habitat does not exist on site.</td>
</tr>
<tr>
<td><strong>California red-legged frog (Rana draytonii)</strong></td>
<td>FT, CSC, IUCN VU</td>
<td>A pond frog that inhabits humid forests, woodlands, grasslands, and streamsides; however, frequents otherwise permanent sources of water. Breeds January-April and can be found in damp woods during non-breeding periods.</td>
<td><strong>Possible</strong>. California red-legged frog may occur incidentally on the site. Potential habitat does exist on site.</td>
</tr>
</tbody>
</table>

#### Fish Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat</th>
<th>Occurrence in the Study Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sacramento Perch (Arctoplites interruptus)</strong></td>
<td>CSC, AFS TH</td>
<td>Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditions.</td>
<td><strong>Possible</strong>. Historical occurrence data exists for Jewel Lake and Anza Lake.</td>
</tr>
<tr>
<td><strong>Central California Coast Steelhead (Oncorhynchus mykiss)</strong></td>
<td>FT, AFS TH</td>
<td>Require cool freshwater for spawning and rearing sites. Adult runs occur during the winter, while the amount of time spent in fresh versus salt water varies considerably. Typically steelhead enter the streams and rivers between late December-April, while spawning occurs in late spring.</td>
<td><strong>Possible</strong>. May occur on the site. Project site is isolated from known habitat due to physical man-made barriers, but access is possible during high flows in Wildcat Creek.</td>
</tr>
</tbody>
</table>

#### Invertebrate Species

<table>
<thead>
<tr>
<th>Species</th>
<th>Status</th>
<th>Habitat</th>
<th>Occurrence in the Study Area*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Obscure bumble bee (Bombus caliginosus)</strong></td>
<td>IUCN VU</td>
<td>Coastal California. Food plant genera include <em>Baccharis, Cirsium, Lupinus, Lotus, Grindelia</em> and <em>Phacelia</em>.</td>
<td><strong>Possible</strong>. This species may be underground during the colder part of the year.</td>
</tr>
</tbody>
</table>
### 3.0 RESULTS

**Species** | **Status** | **Habitat** | **Occurrence in the Study Area**
--- | --- | --- | ---
Western bumble bee (*Bombus occidentalis*) | IM | Once common & widespread, species has declined precipitously from central CA to southern B.C., perhaps from disease. | Possible. Suitable habitat for species may occur on site

Monarch butterfly (*Danaus plexippus*) | CSC | Wind protected tree groves (Eucalyptus, Monterey pine, cypress) with nectar and water sources nearby. | Possible. Suitable habitat for species occurs adjacent to project area.

Bay checkerspot butterfly (*Euphydryas editha bayensis*) | FT, XERCES CI | Restricted to native grasslands on outcrops of serpentine soil in the vicinity of San Francisco Bay. | Absent. Species distribution limited to specific areas. Potential habitat does not exist on site.

<table>
<thead>
<tr>
<th><strong>Habitat</strong></th>
<th><strong>Occurrence</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
<td>Present. Wetlands were identified in the vicinity of the project site (<a href="#">Figure 2</a>).</td>
</tr>
<tr>
<td>Coast Live Oak woodland</td>
<td>Present. Oak woodlands are present adjacent to the project site.</td>
</tr>
<tr>
<td>Native grassland</td>
<td>Absent. No native grassland is present on or in the vicinity of the project site.</td>
</tr>
<tr>
<td>Serpentine Bunchgrass</td>
<td>Absent. No other unique habitats were located on site.</td>
</tr>
<tr>
<td>Serpentine soils</td>
<td>Absent. No other unique habitats were located on site.</td>
</tr>
<tr>
<td>Northern Maritime Chaparral</td>
<td>Absent. No other unique habitats were located on site.</td>
</tr>
</tbody>
</table>


*Explanation of Occurrence Designations and Status Codes*

Present: Species observed on the sites at time of field surveys or during recent past.
Likely: Species not observed on the site, but it may reasonably be expected to occur there on a regular basis.
Possible: Species not observed on the sites, but it could occur there from time to time.
Unlikely: Species not observed on the sites, and would not be expected to occur there except, perhaps, as a transient.
Absent: Species not observed on the sites, and precluded from occurring there because habitat requirements not met.
STATUS CODES

Federally Endangered FE
Federally Threatened FT
Federally Endangered (Proposed) FPE
Federal Candidate FC
San Mateo County Unique U

California Endangered CE
California Threatened CT
California Rare CR
California Protected CP
California Species of Special Concern CSC
California Watch List WL
California Fully Protected FP

USFWS Birds of Conservation Concern BCC

California Native Plant Society Listing CNPS
Plants Presumed Extinct in California 1A
Plants Rare, Threatened, or Endangered in California and elsewhere 1B

Plants Rare, Threatened, or Endangered in California, but more common elsewhere 2
Plants about which we need more information – a review list 3
Plants of limited distribution – a watch list 4

American Fisheries Society AFS
Endangered EN
Threatened TH
Vulnerable VU

The World Conservation Union IUCN
Conservation Dependent CD
Critically Endangered CE
Data Deficient DD
Endangered EN
Least Concern LC
Near Threatened NT
Vulnerable VU

Xerces Society: Red List Xerces
Possibly Extinct PE
Critically Imperiled CI
3.4 **JURISDICTIONAL WATERS**

Jurisdictional waters are defined by the laws that protect them, including the federal Clean Water Act (CWA) and the California Fish and Game Code, Sections 1601 through 1603 (Section 1600). The CWA regulates waters of the U.S., which typically includes rivers, creeks, and drainages that have a defined bed and bank and which, at the very least, carry ephemeral flows. Waters of the U.S. may also include lakes, ponds, reservoirs, and wetlands, if these waters have a significant nexus with a Traditional Navigable Water.

Creeks, rivers, lakes, and their associated riparian areas may be subject to regulation by the CDFG under Section 1600, and the California Regional Water Quality Control Board (RWQCB) may take jurisdiction over all waters of the state. Waters of the state are defined as all surface and groundwater within the state of California.

Two drainages pass through the project site: Wildcat Creek and Laurel Creek. Laurel Creek is an intermittent tributary that discharges into Wildcat Creek west of the project site. Wildcat Creek and Laurel Creek are waters of the U.S. and waters of the State of California. Three man-made ponds were excavated in uplands east of Wildcat Creek and north of Laurel Creek. The three ponds were previously augmented with irrigation from an East Bay Municipal Utility District (EBMUD) water line. When irrigation is not applied these ponds can dry out. Based on the NCE’s WOUS delineation our professional opinion is the three ponds do not meet the criteria of a WOUS. This opinion will need to be confirmed by the United States Army Corps of Engineers (USACE).

The sediment basin proposed for excavation is located within Wildcat Creek. The three man-made ponds proposed for restoration are located upland and east of Wildcat Creek.
4.0 POTENTIAL IMPACTS AND MITIGATION MEASURES

4.1 LOCAL ORDINANCES AND REGULATIONS

Local ordinances and regulations of importance include the EBRPD Master Plan. This plan discusses policies for natural resources that should be protected. These include goals and policies for the protection and conservation of open space, special status species and native habitats on EBRPD land.

The project will require compliance with CEQA and the EBRPD will serve as the lead agency. As such, the District will conduct an environmental review, which will include a review of all studies conducted in compliance with CEQA, and the creation and adoption of appropriate mitigation measures. The project will be required to conform to any element of the District’s 2013 General Plan which protects sensitive natural resources (e.g., native plant communities, open space, etc.) (East Bay Regional Park District 2013).

In general, the project is a repair of existing infrastructure, restoration of habitat and does not change existing land use. Mitigation measures will ensure there are only limited and temporary impacts to natural resources and the project will be in compliance with the goals and policies of the East Bay Regional Park District Master Plan.

4.2 RELEVANT FEDERAL AND STATE LAWS

4.2.1 California Environmental Quality Act

The project will require compliance with CEQA and the EBRPD will serve as the lead agency. The District will conduct an environmental review, which will include a review of all studies conducted in compliance with CEQA, and the creation and adoption of appropriate mitigation measures.

4.2.2 Threatened and Endangered Species

State and federal “endangered species” legislation has provided the CDFW and the USFWS with a mechanism for conserving and protecting plant and animal species of limited distribution and/or low or declining populations. Species listed as threatened or endangered under provisions of the state and federal endangered species acts, candidate species for such listing, state species of special concern, and some plants listed as endangered by the California Native Plant Society are collectively referred to as “species of special status.”

Permits may be required from both the CDFW and USFWS if activities associated with a proposed project will result in the “take” of a listed species. “Take” is defined by the state of California as “to hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill” (California Fish and Game Code, Section 86). “Take” is more broadly defined by the federal Endangered Species Act to include “harm” (16 USC, Section 1532(19), 50 CFR, Section
Furthermore, the CDFW and the USFWS are responding agencies under CEQA. Both agencies review CEQA documents in order to determine the adequacy of their treatment of endangered species issues and to make project-specific recommendations for their conservation.

### 4.2.3 Migratory Birds

State and federal laws also protect most birds. The Federal Migratory Bird Treaty Act (16 U.S.C., sec. 703, Supp. I, 1989) prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs.

### 4.2.4 Birds of Prey

Birds of prey are also protected in California under provisions of the State Fish and Game Code, Section 3503.5, which states that it is “unlawful to take, possess, or destroy any birds in the order *Falconiformes* or *Strigiformes* (birds of prey) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto.” Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings, or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered “taking” by the CDFW.

### 4.2.5 Wetlands and Other Jurisdictional Waters

Natural drainage channels and adjacent wetlands may be considered “Waters of the United States” (hereafter referred to as “jurisdictional waters”) subject to the jurisdiction of the USACE. The extent of jurisdiction has been defined in the Code of Federal Regulations but has also been subject to interpretation of the federal courts. Jurisdictional waters generally include:

- All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
- All interstate waters including interstate wetlands;
- All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce;
- All impoundments of waters otherwise defined as waters of the United States under the definition;
- Tributaries of waters identified in paragraphs (a)(1)-(4) (i.e. the bulleted items above).

As recently determined by the United States Supreme Court in *Solid Waste Agency of Northern Cook County v. U.S. Army Corps of Engineers* (the SWANCC decision), channels and wetlands isolated from other jurisdictional waters cannot be considered jurisdictional on the basis of their use, hypothetical or observed, by migratory birds. However, the U.S. Supreme Court decisions *Rapanos v. United States* and *Carabell v. U.S. Army Corps of Engineers* (referred together as the Rapanos decision) impose a "significant nexus" test for federal jurisdiction over wetlands.
In June 2007, the USACE and Environmental Protection Agency (EPA) established guidelines for applying the significant nexus standard. This standard includes 1) a case-by-case analysis of the flow characteristics and functions of the tributary or wetland to determine if they significantly affect the chemical, physical, and biological integrity of downstream navigable waters and 2) consideration of hydrologic and ecologic factors (EPA and USACE 2007).

The USACE regulates the filling or grading of such waters under the authority of Section 404 of the Clean Water Act. The extent of jurisdiction within drainage channels is defined by “ordinary high water marks” on opposing channel banks. Wetlands are habitats with soils that are intermittently or permanently saturated, or inundated. The resulting anaerobic conditions select for plant species known as hydrophytes that show a high degree of fidelity to such soils. Wetlands are identified by the presence of hydrophytic vegetation, hydric soils (soils saturated intermittently or permanently by water), and wetland hydrology according to methodologies outlined in the 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987).

All activities that involve the discharge of fill into jurisdictional waters are subject to the permit requirements of the USACE (Wetland Training Institute, Inc. 1991). Such permits are typically issued on the condition that the applicant agrees to provide mitigation that result in no net loss of wetland functions or values. No permit can be issued until the RWQCB issues a certification (or waiver of such certification) that the proposed activity will meet state water quality standards. The filling of isolated wetlands, over which the USACE has disclaimed jurisdiction under the SWANCC decision, is regulated by the RWQCB. It is unlawful to fill isolated wetlands without filing a Notice of Intent with the RWQCB. The RWQCB is also responsible for enforcing National Pollution Discharge Elimination System (NPDES) permits, including the Construction General Permit. All projects requiring federal money must also comply with Executive Order 11990 (Protection of Wetlands).

The CDFW has jurisdiction over the bed and bank of natural drainages according to provisions of Section 1601 and 1602 of the California Fish and Game Code (2008b). Activities that would disturb these drainages are regulated by the CDFW via a Streambed Alteration Agreement. Such an agreement typically stipulates that certain measures will be implemented which protect the habitat values of the drainage in question.
5.0 PROJECT SPECIFIC IMPACTS AND MITIGATION MEASURES

The proposed project will include the excavation of sediment in a section of Wildcat Creek, enhancement of habitat for California red-legged frog at an interpretive area used for environmental education, and structural improvements to the interpretive area to enhance user experience while protecting habitat. This work will require grading, excavation, and limited vegetation removal.

Important natural resources on site are the riparian area, flora and fauna within the riparian woodland, and the water quality of Wildcat Creek. The construction and restoration activities associated with the Project have the potential to temporarily impact these natural resources, either directly or indirectly. Potential impacts include the possibility of crushing protected flora and fauna, degrading their habitats, preventing the successful breeding of wildlife, or degrading water quality in downstream water bodies. The applicant proposes to avoid and minimize the potential for these impacts by implementing specific mitigation measures.

5.1 IMPACTS TO RIPARIAN AREAS

At the sediment basin, a riparian corridor extends through the project site and is associated with Wildcat Creek, a perennial stream for much of its length. Approximately 0.128 acres of riparian wetland will be impacted during construction (Figure 2). The riparian corridor in the vicinity of the Project site is relatively intact riparian forest, shown as broadleaf deciduous riparian woodland on Figure 3.

Mitigation. To the extent practicable, the direct impacts to these riparian areas will be minimized and avoided. The area of disturbance will be limited to the smallest area necessary to complete dredging and restoration activities. After construction is complete, these impacts will be rectified by replanting locally native species including native willow, alder and dogwood, or other species that are appropriate. Replanting can be achieved by using cuttings from the vicinity. In the event that cuttings are not successful, locally sourced saplings can be planted to revegetate riparian areas and stabilize the stream bank.

5.2 IMPACTS TO HABITATS FOR RARE AND ENDANGERED AND OTHER SPECIAL STATUS SPECIES

5.2.1 Flora

Of the 15 special status plant species that could occur in the project vicinity, only 7 species have the potential to occur (Table 2). These are the bent-flowered fiddleneck, franciscan thistle, western leatherwood, Tiburon buckwheat, fragrant fritillary, diablo helianthella, and Oregon meconella.

The potential for these special status plant species to occur on site prior to construction activities is very low. However, pre-construction surveys are recommended. These surveys will focus on the area within and in the vicinity of proposed ground disturbing activities and should occur
during the appropriate blooming season, such as spring of 2017. The purpose of these surveys is to determine the presence or absence of the species on site prior to the time of construction.

If these special status plant species surveys result in a determination that the species are absent from areas impacted by construction activities, then there would be no impact to the species and mitigation would not be warranted.

**Mitigations for Special Status Plant Species**

1.) Should one or more populations of special status plant species be detected within the project footprint, then mitigation measures including replanting with locally native seed and plant stock would be required to offset impacts to these plant populations.

2.) Prior to construction, EBRPD or a qualified contractor shall pin flag or mark locations of special status plant species in proposed areas of grading at the basin and ponds. The pin flag or marker locations shall be maintained through the duration of project construction. Where possible, the special status plant species shall be salvaged prior to grading and transplanted during re-vegetation of the site. Re-vegetation will occur according to a Planting Plan developed by the EBRPD and implemented by EBRPD or its contractor. The plant establishment will be monitored beginning immediately after completion of the seeding, planting, and irrigation system installation, and will continue for a minimum of 2 years.

3.) Avoidance and minimization of direct impact to native trees, or oak and riparian woodlands will be included during final project design. These trees and shrubs will be protected prior to construction with construction fencing and any loss of these resources will be compensated by replanting after construction is complete. Removal of California bay trees, if required, will be done in a manner that avoids the spread of sudden oak death disease.

4.) To further protect rare plant populations in the project vicinity, invasive plants on the site should be controlled and Best Management Practices (BMPs) to control the spread of invasive plants should be implemented. Implementation of the above measures is expected to reduce project impacts to a less-than-significant level to any special status plant species that may occur on the site.

**5.2.2 Fauna**

Of the 26 special status or sensitive animal species that occur, or once occurred regionally, only 19 have any potential to occur at the site (Table 2). These are:

- Cooper’s Hawk
- Great horned owl
- Red-tailed hawk
- Red-shouldered hawk
- Northern harrier
- American kestrel
5.0 PROJECT SPECIFIC IMPACTS AND MITIGATION MEASURES

- Bald Eagle
- Townsend’s big-eared bat
- Silver-haired bat
- Hoary bat
- Big free-tailed bat
- Western pond turtle
- Alameda whipsnake
- California red-legged frog
- Sacramento Perch
- Central California Coast Steelhead
- Obscure bumble bee
- Western bumble bee
- Monarch butterfly

These special status animal species may occur during foraging activities around the site. These species may either occur on the site incidental to home range and migratory movements, thus using the site infrequently, or may forage on the site year-round or during migration.

The construction will include the avoidance of removing most trees and shrubs, while protecting special status species habitat. Project buildout will entail minimal loss of foraging, nesting, and/or roosting habitat that is abundantly available regionally.

Appropriate BMPs will be employed in order to protect these resources. Therefore, the loss of habitat for these species would be considered less than significant.

Although no stick nests were observed in trees on the site, a conclusive investigation of nesting birds was not conducted. Trees in the project vicinity may provide suitable nesting habitat for migratory birds, including tree-nesting raptors. If a migratory bird, regardless of its federal or state status, were to nest in trees near the site prior to or during proposed construction activities, such activities could result in the abandonment of active nests or direct mortality to these birds. Construction activities that adversely affect the nesting success of special-status or non-special-status migratory birds, including tree-nesting raptors, or result in mortality of individual birds constitute a violation of state and federal laws (see Section 4.2).

California red-legged frogs and California newts may use this reach of Wildcat Creek and the man-made ponds as breeding and non-breeding habitat. Rainbow trout (*Oncorhynchus mykiss*) occur downstream in Wildcat Creek, and have been observed near the sediment basin and can currently pass over the weir in high flows. Sacramento Perch, a California Species of Special Concern, has been observed in Jewel Lake in the past. All direct impacts to the riparian corridor and its buffer will be minimized. Water quality will be maintained and improved by using BMPs for surface water management. This project includes the restoration of the man-made ponds on site to improve red-legged frog habitat. This work will result in temporary impacts to red-legged frogs currently on the site during construction and will result in a net gain in habitat after construction. Pre-construction surveys combined with avoidance measures required by regulatory agencies will ensure that any impacts to existing frogs are less than significant.
Mitigation for Special Status Animal Species

1.) If trees need to be removed, their removal should occur during the non-breeding season (September 1 through January 31).

2.) If it is not possible to avoid tree removal or other disturbances during the breeding season (February 1 through August 31), a qualified biologist should conduct a pre-disturbance survey for tree-nesting raptors and other migratory birds in all trees within the operation footprint and within 250 feet of the footprint no more than 10 days prior to the onset of ground disturbance. If nesting migratory birds are detected on the site during the survey, a suitable activity-free buffer should be established around all active nests. The precise dimension of the buffer (up to 250 ft.) would be determined at that time and may vary depending on location and species. Buffers should remain in place for the duration of the breeding season or until it has been confirmed by a qualified biologist that all chicks have fledged and are independent of their parents. Pre-disturbance surveys during the non-breeding season are not necessary for migratory birds, as they are expected to abandon their roosts during construction activities. Implementation of the above measures would mitigate impacts to migratory birds, including tree-nesting raptors, to a less-than-significant level.

3.) Prior to vegetation removal, pre-construction surveys should also be conducted for the presence of roosting bats, California red-legged frog, Alameda whipsnake, California newts, special status fish, and any raptors. If any of these special status species are discovered within the project footprint during the pre-construction survey, avoidance of impacts to these protected species should be conducted in consultation with the CDFW. The USFWS should also be consulted on any federally listed species.

4.) If the presence of Alameda whipsnake is confirmed within the project area, the project applicant will install wildlife exclusion fencing around active work areas to prevent snakes from entering the work site. The barrier fence should be buried 4 to 6 inches into the ground and should remain in place throughout the entire construction period. The fence may be made from overlapping plywood sheets or heavy-duty geotextile fabric approved by the USFWS and the CDFW according to their specifications.

5.) EBRPD shall provide an on-site biological monitor during construction. This monitor’s duty will be to inform the construction superintendent and site crews – primarily the vegetation clearing crews – of identification of Alameda whipsnakes and the actions to take if a whipsnake is seen on the project site during construction, including who to contact for instruction on how to proceed in accordance with the Federal Endangered Species Act.

6.) Obscure bumble bees may use habitats in the vicinity. Ground disturbing activities during the time that the bees are hibernating may cause direct impacts to this species. Ground disturbing and construction activities should be limited to the time from May 1st to October 15th to minimize the potential to directly impact obscure bumble bees.
7.) In addition, training will be provided to construction crews on protected species, including California red-legged frogs and Alameda whipsnake. These mitigation measures will allow avoidance of significant impacts to these species.

**Temporary/Construction BMPs or Erosion & Sediment Controls.** The project will have to comply with the new CA NPDES Construction General Permit (CGP). There will be a number of Temporary and Permanent BMPs which will be required as part of the Stormwater Pollution Prevention Plan (SWPPP) and or final design in order to comply with the permit. The 2012-0006-DWQ CGP includes requirements for Post Construction BMPs and the permanent BMP or Post Construction BMP element will be included in the final design. The development of the SWPPP and application for coverage under the Construction General Permit (GCP) will occur after project design is complete.

**Waters of the U.S.** The project entails the dredging of sediment from an in-line sediment basin. Fill within waters of the U.S. (WOUS) will be minimized to the amount required to stabilize the bank. No additional loss of WOUS is anticipated.
The Tilden Nature Area Sediment Basin Dredging and Pond Restoration project requires excavation of excess sediment in the creek channel associated with Wildcat Creek and its associated riparian area. Work in the pond area occurs in areas with man-made aquatic habitats surrounded by annual grassland with coast live oak woodland and eucalyptus forest bordering the project area. Several special status species have the potential to use these and other adjacent habitats, and the potential exists to adversely affect these species and their habitats. However, the project will be designed to avoid impacts to sensitive species through the following actions: timing and pre-construction surveys, implementation of BMPs to avoid impacts to water quality, and restoration of areas where vegetation is unavoidably removed. These mitigation measures will allow the capacity and function to be restored at the sediment basin and will create and enhance habitat for special status species, while avoiding significant impacts to the natural resources of the site.
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Archaeological Survey Report for the Tilden Nature Area Sediment Basin Dredging Project, Contra Costa County, California

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1.0 INTRODUCTION

1.1 PROJECT BACKGROUND & DESCRIPTION
The Tilden Nature Area is situated within Tilden Regional Park which is located in the East Bay of the San Francisco Bay Area (Appendix A, Figure 1). Tilden Regional Park is located between the San Pablo Ridge to the east and the City of Berkeley to the west, within Contra Costa County, California. The project area is located south of Jewel Lake, along the east side of Wildcat Creek, to just south of the Environmental Education Center (Appendix A, Figure 2).

Tilden Regional Park protects the headwaters of one of the most important watersheds in the East Bay (Wildcat Creek). The Wildcat Creek Watershed drains from the East Bay Hills to San Pablo Bay and includes portions of the cities of Oakland, Berkeley, El Cerrito, San Pablo, and Richmond. The upper portion of the watershed is mostly contained within East Bay Regional Park District (EBRPD) property, while the lower portion of the watershed is urban and industrial. Because much of the land owned by EBRPD is in the headwaters of heavily disturbed watersheds, they protect and manage many important watershed functions including habitat, flood control, erosion control, and environmental education opportunities. The Wildcat Creek watershed upstream of Jewel Lake Dam experiences high erosion rates, which degrades habitat and causes maintenance problems for the EBRPD. Since last dredged in 1991, Jewel Lake has almost filled with sediment, impacting resident fish populations.

The EBRPD proposes to implement the Tilden Nature Area Sediment Basin Dredging Project. Project objectives focus on restoring and enhancing critical aquatic habitat (lakes and ponds), restoring function to a sediment basin, protecting special status species, and providing high quality interpretive areas. Preliminary designs are provided in Appendix B. Project activities will include:

- Excavating approximately 700-900 cubic yards of sediment from a sediment basin in Wildcat Creek
- Improvements to the sediment basin wood weir
- Enhancing habitat for CRLF at existing man-made ponds in the interpretive area
- Constructing a new pond water augmentation system to efficiently supplement the ponds in the interpretive area
- Constructing a trail system comprised of a boardwalk and natural materials to enhance user experience while protecting aquatic and upland habitats in the interpretive area

The purpose of this archaeological survey report is to document and evaluate cultural resources present within or adjacent to the project area. Documentation provided in the following pages includes archival research, Native American consultation, methods and results of an intensive pedestrian survey of the project area, resource significance evaluation, and a determination of effect.

1.2 DEFINITION OF UNDERTAKING
The project area (as described above) will constitute the proposed undertaking, as that term is commonly used in cultural resources management. The proposed undertaking requires compliance with Public Resource Code (PRC) Section 21083.2 and 21084.1 of the California Environmental Quality Act (CEQA). In addition, since the project may affect Waters of the United States (WOUS), the project proponent must meet requirements of Section 404 of the Clean Water Act and/or Section 10 of the Rivers and Harbors Act. Therefore, a WOUS delineation was...
performed by NCE and issuance of the 404 permit by the U.S. Army Corps of Engineers (USACE), San Francisco District is pending. As a result of federal permitting, compliance with Section 106 of the National Historic Preservation Act (NHPA) is also required.

This report describes an intensive archaeological survey of approximately 6.64 acres. The survey, conducted by NCE, is intended to demonstrate compliance Section 106 of the NHPA and the CEQA. All work was designed to comply with current state and professional standards. Those standards state that the goals of an intensive archaeological inventory (maximum 15 m transect interval) are to:

- Establish an Area of Potential Effect (APE);
- Identify prehistoric and historic period archaeological resources in the study area;
- Evaluate identified resources as to their eligibility for listing on the NRHP/CRHR;
- Provide management recommendations for those properties considered eligible to the NRHP/CRHR

1.3 AREA OF POTENTIAL EFFECT
The project area is approximately 6.64 acres which represents the maximum horizontal Area of Direct Impact (ADI) (see Appendix A, Figure 2). The maximum depth of vertical disturbance will be approximately 7.5 feet at the sediment basin, and approximately seven (7) feet at the ponds (see Appendix B). When combined, these horizontal and vertical dimensions serve to define the Area of Potential Effect (APE) associated with the proposed undertaking.

Indirect effects such as audio and visual impacts to the built environment need not be considered since historic properties such as standing buildings or structures are not located within or adjacent to the project area.
2.0 ENVIRONMENTAL SETTING

2.1 GEOLOGY
The project area lies within the Coast Ranges geologic and physiographic province. This province is characterized by northwest-southeast trending valleys and intervening mountain ranges that are structurally controlled by faulting and folding, the result of the collision of the Farallon and North American Plates. The plates are comprised of rocks of the Franciscan Complex, which are Cretaceous and Jurassic in age (100 to 65 million years old). The Franciscan Complex or Formation is composed of chert, basalt, greywache sandstone, shale, schist, serpentine, and other high-pressure metamorphic rocks, such as blueschist (Page 1966).

In general, geologic units in the study can be characterized as sedimentary and volcanic rocks upstream of Jewel Lake and downstream of Lake Anza, and volcanic rocks upstream of Lake Anza. The watershed upstream of Jewel Lake and downstream of Lake Anza is composed primarily of rocks from the Orinda Formation, Moraga Formation, and unnamed sedimentary and volcanic rocks. The Moraga Formation is located on the west side of Wildcat Canyon downstream of Lake Anza, while the east side of the canyon is composed of the Orinda Formation and unnamed sedimentary and volcanic rocks. The Orinda Formation is composed of bedded, nonmarine, pebble-to-boulder conglomerate, conglomeratic sandstone, coarse-to-medium-grained lithic sandstone, siltstone, and mudstone (Graymer 2000). The valley bottom is filled with stream channel deposits that include poorly-sorted to well-sorted sand, silt, silty sand, or sandy gravel with minor cobbles.

High sediment loads from the unnamed sedimentary and volcanic rocks unit are suggested from alluvial fan fluvial deposits mapped at the confluence with Meadow, Little Farm, Laurel Canyon drainages. Upstream of Lake Anza, the watershed is predominately composed of the Moraga Formation with intrusions of Bald Peak Basalt and Sierra Formation in the headwaters of Wildcat Creek and along the subwatershed divide with the Big Springs Watershed. The Moraga Formation includes basalt and andesite flows and minor rhyolite tuff (Graymer 2000).

2.2 SOILS
Soils in the project area consist of Millsholm loam (15-30% slopes) and Zamora silty clay loam (2-5% slopes). Millsholm loam, found on hillslopes, is derived from residuum weathered from sandstone. Zamora silty clay loam, found on alluvial fans, terraces, and valley floors, is derived from alluvium-formed sedimentary rock (Soil Survey Staff 2016).

2.3 HABITAT
Four general habitat types occur within the project area including California annual grassland, eucalyptus forest, coast live oak woodlands, and riparian woodland (Holland 1986; Sawyer 2010).

Plant species of the California annual grassland habitat found within the project area include wild oat, English plantain, vetch, ripgut brome, burr clover, cutleaf geranium, and coyote brush. Riparian woodlands at the project area were characterized by the red alder riparian forest alliance. These habitats included pacific willow, red alder, dogwood, and big-leaf maple. The understory included California blackberry, Himalayan blackberry, gooseberry, and western sword fern. Plant species found in the coast live oak woodland include coast live oak, poison oak, and California bay.
These plant communities also provide habitat for a number of resident and migratory birds. These and other birds may nest, forage, or winter in habitats on or adjacent to the site. The riparian and upland vegetation in the vicinity provides foraging habitat and cover for several mammal species. These include western gray squirrel, coyote, mule deer, and dusky-footed wood rat. Fish and other aquatic/riparian species within the project area include perch, steelhead, trout, Alameda whipsnake, and California red-legged frog.
3.0 CULTURAL SETTING

The following overviews were derived from several sources. Much of the prehistoric and ethnographic information is from Taggart and Haydu (2009) and Milliken et al. (2007). Taggart and Haydu of Analytical Environmental Services (AES) conducted an extensive archaeological study along the San Pablo Peninsula, located approximately 8 miles to the west of the current project area. The historic context is derived from Booker (2013) and Cole (2014) with much supplemental information obtained from Richard Langs (2016, pers. comm.), a local Tilden Regional Park historian.

3.1 PREHISTORIC OVERVIEW

The Bay Area has been inhabited since the terminal Pleistocene (Moratto 1984). By the time of Spanish settlement in 1776, seven native languages were spoken within the region including Southern Pomo, Wapo, Patwin, Coast Miwok, Bay Miwok, Karkin Costanoan, and San Francisco Costanoan (Milliken et al. 2007).

Early archaeological excavations focused primarily on shell mounds, a fairly ubiquitous prehistoric feature throughout the region. More than 100 shell mounds were recorded in Alameda and Contra Costa County during the early years of the Twentieth Century by University of California, Berkeley archaeologists. These features have provided archaeologists with a wealth of information pertaining to Bay Area prehistoric human land use patterns and subsistence practices (Banks and Orlins 1981). The Bay Area is recognized as a discrete archaeological entity derived from an economy primarily focused on the intensive use of shellfish which has resulted in the accumulation of large shell middens (Moratto 1984).

Culture chronology within the region is a subject of significant debate between researchers (e.g., Beardsley 1948, 1954; Bennyhoff and Hughes 1987; Bennyhoff 1972; Heizer 1949, Heizer and Fenenga 1939, Lillard et al. 1939; and Lillard and Purves 1936). In the last 50-60 years, the archaeological recognition of sub-regional cultural variation, beyond the classic Central California Taxonomic System (CCTS) has led to more refined cultural chronologies based on specific artifact types and/or assemblages (e.g., Bennyhoff and Fredrickson 1994; La Jeunesse and Pryor 1990; Milliken et al. 2007; Moratto 1972; Olsen and Payen 1968; Ragir 1972; Sundahl 1982; and White 2002). For purposes of this report, the Bay Area cultural sequence provided by Milliken et al. (2007) is used with the exception of the Paleoindian Period.

3.1.1 Paleoindian Period (13000 to 10000 BP)

The climate during the Paleoindian Period was cool and moist, supporting extensive pine forests. Archaeological evidence, although sparse, indicates that people lived in small groups, collecting shellfish and harvesting wild seeds. The artifact assemblage includes basketry, seagrass cordage, incipient milling stones (e.g., matates and manos), beads, chert tools, and fish-like effigies (SBMNH 2002).

3.1.2 Early Holocene/Lower Archaic (10000 – 5500 BP)

Within the Bay area, this period within is characterized by a generalized mobile forager subsistence pattern, typified by more widespread use of milling stones and handstones compared with the Paleoindian Period and by a variety of large wide-stemmed and leaf-shaped projectile points made from local Franciscan chert toolstone (Hylkema 2002). Burials have been dated to this period; however, there is an overall lack of associated artifacts.
3.1.3 Early Period/Middle Archaic (5500 – 2500 BP)

Pine forests were extensive during the Early Period, reflecting a cool and wet climate that continued from the earlier Paleoindian Period. Considerably more evidence exists for occupation during this period which is commonly referred to as the “Millingstone Culture” due to the abundance of milling stones. The first mortar and pestle groundstone implements are documented in the Bay Area during this period. In fact, during the latter stages of the Early Period, the mortar and pestle wholly replace milling slabs and handstones (Milliken et al. 2007). As such, seed and plant processing formed a major part of the diet. Shellfish-gathering and fishing appear more important than hunting during this time. A typical Early Period marker is the net sinker (i.e., stone weights to help sink a net).

In addition to the abundance of milling stones, the Early Period is also typified through a strong association of artifacts with buried human remains. The artifact assemblage includes projectile points and blades, charmstones, rectangular Olivella and Haliotis beads (cut and/or perforated), bone and antler implements, quartz crystals, and red ochre. Many of these artifacts served as funerary objects that were coupled with highly-specific mortuary practices (e.g., interment westerly orientation). Other artifacts associated with the Early Period, but somewhat less consistently, include baked clay objects, human bone, trident harpoon tips, and pipes (Taggart and Haydu 2009; Milliken et al. 2007).

3.1.4 Lower Middle Period/Initial Upper Archaic (2500 – 1520 BP)

This period is marked by the disappearance of the rectangular shell bead, used for 3,000 years prior, within the Bay Area, Central Valley, and Southern California. New decorative and presumed religious object appeared including tiny saucer-shaped, split-beveled, and spire-lopped Olivella beads and circular Haliotis ornaments (Elsasser 1978; Luby 2004). New tool types made from bone appear such as barbless fish spears, elk femur spatulae, whistles, and basketry awls. Mortars and pestles continue to be the primary groundstone implements. Net sinkers, a typical marker of the Early Period, disappear during the Lower Middle Period (Milliken et al. 2007).

Although shellfish and seed/nut processing remained important, one major shift in subsistence during this period was a focus on big game such as elk, deer, and sea mammals. This is evidenced not only by faunal remains, but by the occurrence of large projectile points hafted to dart shafts and thrown with an atlatl (i.e., throwing board or stick).

3.1.5 Upper Middle Period/Late Upper Archaic (1520 – 900 BP)

Fishing and sea mammal hunting became more important during the Upper Middle Period. New inventions, including shell hooks and single-barbed bone fish spear, enabled coastal peoples to catch a wider variety of fish. Intensified fishing led to population increase and large, permanent coastal settlements. New or distinct artifact types include intricate ceremonial blades, fishtail charmstones, new Haliotis ornament forms, mica ornaments, Olivella wall beads, ear spools, and large mortars (Elsasser 1978; Tamez 1978).

Other markers of the Upper Middle Period include the sudden collapse of the Olivella saucer bead trade, the appearance of Olivella saddle beads, and the arrival of the Meganos extended burial mortuary pattern (i.e., dorsal extended interments) (Bennyhoff and Fredrickson 1994).

Within the Bay Area during this period, the Olivella saddle bead type is replaced with a variety of wide and tall bisymmetrical forms and the appearance of unperforated rectangular and horizontally-perforated half oval Haliotis ornaments (Milliken et al. 2007). Although grave accompaniments continue during this period, the quantity and variety of mortuary artifacts is reduced compared to earlier periods.
3.1.6 Initial Late Period/Lower Emergent (900 – Contact)

The Initial Late Period is typified by a resurgence of mortuary artifacts. Typical artifacts include *Haliotis* beads, ornaments and whole shells, *Olivella* beads, charmstones, *Saxidomus nuttalli* (clam) beads, magnesite and steatite beads, ear spools and tubes, mammal bone tubes, incised bird bone whistles, barbed harpoon tips, antler arrow shaft straighteners, baked clay objects, wooden fishhooks, netting and basketry, and mortars and pestles (Heizer 1939).

This period is also referred to as the Emergent Period due to increased levels of sedentism, status ascription, and ceremonial integration evidenced in the archaeological record within Central California (Milliken et al. 2007).

Within the Central Valley, the bow and arrow replaced the atlatl and dart about 1500 BP, reflecting a shift in targeted faunal subsistence resources. However, arrow-sized projectile points (Stockton Serrated series) do not appear in the Bay Area until after 1250 A.D. (Justice 2002). Napa Valley obsidian is a common toolstone from which these projectile points are manufactured, whereas other tools continued to be made from local Franciscan chert (Bieling 1997; Hylkema 2002).

Millingstones and handstones are still present. Marine fishing remained a major part of the diet for coastal peoples. Sardines taken with nets were particularly important. Hunting of land animals and gathering of wild plants, with an emphasis on acorns, helped to supplement the marine diet.

3.2 Ethnographic Overview

3.2.1 Ohlone Territory & Origins

Ethnographic literature indicates that the region surrounding the current project area was near the northwestern extent of the Ohlone or Costanoan people’s pre-contact territory (Levy 1978). Their territory ranged from the San Francisco Peninsula in the north to Big Sur in the south and from the Pacific Ocean in the west to the Diablo Range in the east. Their vast region included the San Francisco Peninsula, Santa Clara Valley, Santa Cruz Mountains, Monterey Bay area, as well as present-day Alameda County, Contra Costa County, and the Salinas Valley.

The Ohlone language belongs to the Costanoan sub-family, a group of eight languages that were spoken by approximately 50 autonomous groups that occupied lands from the Carquinez Strait in Contra Costa County south into Monterey County. Villages were comprised of 50 to 500 members each, with an average of 200; members interacted freely in matters of marriages, trade, religious and other cultural practices (Levy 1978). The vicinity of the current project area is within the area attributed to the Huchiun Costanoan (Milliken 1995).

Linguistic evidence suggests Ohlone people migrated from the San Joaquin-Sacramento River system and arrived in the San Francisco and Monterey Bay Areas around 2400 BP (Levy 1978). This migration is thought to have displaced or assimilated earlier Hokan-speaking populations. In the vicinity of the project area, ancient shell mounds dated from Newark and Emeryville areas suggest villages were established in those areas as early as 5900 BP (Stanger 1968).

3.2.2 Ohlone Settlement and Subsistence

The Ohlone inhabited sedentary villages with targeted seasonal resource procurement. They are thought of as hunter-gatherers, but can also be considered harvesters because of the common practice to set annual fires to generate new and higher density seed crops (Brown 1973; Levy 1978). Their staple diet consisted of processed acorns, nuts, grass seeds, and berries, supplemented by game including grizzly bear, elk, pronghorn, and deer. Seafood
includes various fish, mussels, and abalone, and riverine resources such as salmon, perch, and stickleback (Levy 1978). Waterfowl, captured with nets and decoys, and other birds are also found within the ethnographic Ohlone diet including ducks, geese, quail, great horned owls, red-shafted flickers, downy woodpeckers, goldfinches, and yellow-billed magpies (Levy 1978; Teixeira 1997).

Ohlone houses consisted of dome-shaped structures ranging from six to 20 feet in diameter and built from woven or bundled mats of tules. At inland settlements located closer to redwood stands, houses were conical shaped and built from redwood bark attached to a wooden frame (Teixeira 1997).

3.2.3 **Spanish Mission Era (1769-1833)**

The arrival of missionaries and Spanish explorers had a profound impact on the relatively stable Ohlone culture and population. Goals of the Spanish were to establish a series of missions in strategic and defensible locations, convert Native Americans to Christianity, and expand the Spanish territory. In December of 1602, Spanish explorer Sebastian Vizcaíno may have been the first to make contact with the Ohlone people, known as the Rumsien, at Monterey (Levy 1978).

The next Spanish incursion did not take place until 1769, where Gaspar de Portolà, accompanied by Franciscan missionaries, landed at Monterey. Led by Father Junípero Serra, the missionaries introduced Spanish religion and culture to the Ohlone people. The Spanish erected a total of seven missions inside Ohlone territory between 1770 and 1823 (Teixeira 1997). Ohlone were brought into these missions to live and work, disrupting and undermining the traditional Ohlone social structure and way of life. Large numbers of Bay Area Native Americans were moved into three of the missions including Mission Santa Clara, Mission San Jose, and Mission San Francisco between 1794 and 1805. In the spring of 1795, food shortages and an epidemic struck the missions resulting in thousands of deaths and widespread panic. Escaping Ohlone spread disease to outside villages (Milliken 1995). A total of 60,000 deaths were recorded (Bean 1994).

The first recorded contact with the Huchiun (the Ohlone people occupying lands near the current project area) occurred in 1772 at the Richmond Wildcat Creek village during a Spanish expedition led by Lt. Pedro Fages and Father Juan Crespi. The goal of the expedition was to find a land route to the Point Reyes area from the South Bay region. Soon after Mission San Francisco was established in the early 1770s, the Huchiun were moved to the mission between 1788 and 1803 where they intermarried with other Costanoan peoples, as well as non-Costanoan peoples from the Bay Area. By mid-1801, the coastal Huchiun villages were all abandoned in favor of mission life (Milliken 1995).

It is estimated that the Native American population in the Bay Area was reduced by as much as 80 percent during the Spanish Mission Era (Pritzker 2000).

3.2.4 **Ohlone Today**

The Ohlone people today belong to one of several geographically distinct groups. The Muwekma Ohlone Tribe has members from around the San Francisco Bay Area, and is composed of descendants of the Ohlones from the San Jose, Santa Clara, and San Francisco missions. The Ohlone Costanoan Esselen Nation, consisting of descendants of intermarried Rumsen Costanoan and Esselen speakers of Mission San Carlos Borromeo, are centered within the Greater Monterey Bay Area. The Amah-Mutsun Tribe, located inland from Monterey Bay, consists of descendants of Mutsun Costanoan speakers of Mission San Juan Bautista. The Costanoan Rumsien Carmel Tribe of Pomona/Chino includes descendants from Mission San Carlos and now reside in southern California.
3.3 HISTORIC OVERVIEW

3.3.1 Mexican/Colonial Period (1821 – 1845)
Following the Spanish Mission Era (see Section 3.2.3), Mexico declared its independence from Spain, first as an empire in 1821, then as a republic in 1824. Spanish missions within what was known as Alta California were left to fend for themselves. In 1833, the Mexican government passed the Secularization Act which stripped the missions of their previously established land holdings. These holdings were issued to Mexican colonists as “ranchos”. Indians, whose lives had become entrenched with the missions, were also “secularized.” However, a simple return to aboriginal life was not possible. Disease was responsible for the further decline of native populations and those that remained lived in small pueblos established in secluded pockets of Alta California, or became enlisted essentially as indentured servants to the burgeoning cattle ranch industry within the Central Valley (Cole 2014).

Several years prior to secularization, between 1813 and 1817, an outpost to Mission San Francisco named San Ysidro de Los Juchiunes, was established in the Richmond-San Pablo area (Milliken 1995). Francisco Maria Castro, a father at Mission San Francisco, held title to San Ysidro de Los Juchinues. He filed a petition to the Mexican authorities in San Jose for the land in 1817 and his application was granted. The land grant was called El Rancho de Los Cuchinunes and was later renamed Rancho San Pablo (otherwise known as the Castro Land Grant). This area included Richmond, El Sobrante, Pinole, as well as the San Francisco and San Pablo Bays. Castro used the land to raise cattle and planted the area’s first fruit trees and grapes (Hoover et al. 1990). After Castro’s death in 1831, Rancho San Pablo was divided between his wife and 10 children; the land was still used for grazing cattle.

Between the 1830s and late 1840s, word had started to spread of the Bay Area’s fertile and underpopulated land. Yerba Buena was the original name of the Mexican settlement that would later become San Francisco. Located near the northeastern end of the San Francisco Peninsula, it was originally intended as a trading post for ships visiting San Francisco Bay. The first homes in the settlement were built by William Richardson (a whaling captain) and Jacob Lesse (a merchant) in the mid-1830s. By 1845, Yerba Buena was inhabited by a few hundred people including Americans, Indians, Spanish, Dutch, and a few Hawaiians (Cole 2014).

3.3.2 Bay Area Growth & East Bay Water Companies (1848 to 1928)
When gold was discovered at Coloma in 1848, the Bay Area and the City of San Francisco especially, underwent significant and rapid transformation. Prior to the gold discovery, San Francisco was home to less than 1,000 people, but by the end of 1848, the population grew to nearly 25,000 (Wollenberg 2002). In 1850, the year California was admitted to the United States, the population of San Francisco exploded to more than 149,000 (Gilman et al. 1904).

By the 1870s, small family farms and ranches were scattered throughout the East Bay Hill area, while Bay Area cities quickly grew in population. The source of water for these early communities consisted solely of the creeks that flowed from the hills. As the water supply dwindled, independent companies were formed to supply water to city residents and farms by tapping springs, drilling wells, and damming local canyons. A local, self-taught, hydraulic engineer named Anthony Chabot pioneered the “earth-fill” dam and is responsible for construction of the Temescal Dam in 1869 and the Chabot Dam in 1876. For the next 30 years, until around the turn of the 20th Century, Chabot’s Contra Costa Water Company dominated the East Bay water supply business (Kent 2014).

Around 1890, water companies in the East Bay became interested in the Wildcat Creek Watershed. In 1907, several water companies consolidated into the People’s Water Company
with land holdings covering much of the watershed and focusing primarily on well drilling. The East Bay Water Company, which took over the People’s Water Company in 1916, completed construction of the San Pablo Reservoir in 1919 (EBMUD 2016).

In 1921, the East Bay Water Company took over a privately-built diversion dam on Wildcat Creek, creating what was to become Jewel Lake, located just north of the project area. The function of the dam was to divert water from the creek into the San Pablo tunnel to supply the San Pablo Reservoir. The project was soon abandoned because it was discovered that the water quality of the creek was poor due to the density of suspended clay particles (EBRPD 1975). The headframe linking Jewel Lake to the San Pablo water tunnel was capped and the aqueduct collapsed some years later. Today, Jewel Lake still remains as a resource for wildlife and a popular scenic location.

In 1923, continued population growth coupled with severe drought helped to drive the founding of the East Bay Municipal Utility District (EBMUD). In 1928, the EBMUD acquired the holdings of the East Bay Water Company which at the time owned much of the land within the Wildcat Creek watershed (EBRPD 1975).

### 3.3.3 The East Bay Regional Park District & Tilden Regional Park (1934 to 1960s)

The acquisition of East Bay Water Company lands by the EBMUD consisted of 40,000 acres in the Berkeley and Contra Costa Hills, of which 15,000 was considered surplus (EBRPD 1975; 10,000 acres according to Kent 2014). This surplus was viewed by park advocates as a prime candidate for a “Grand Park” stretching 22 miles from Lake Chabot in the south to Wildcat Canyon in the North. A feasibility study was completed in 1930 and contained compelling statements about the need for Bay Area parks, as well as a detailed plan (Kent 2014).

In 1934, aided by community organizations and support, the Sierra Club and the East Bay Metropolitan Park Association campaigned for and won the creation of the East Bay Regional Park District (EBRPD). One objective of the newly formed park district was to manage the surplus land, incrementally purchased over time, from the EBMUD. In 1936, the park board agreed to purchase 2,162 acres from EBMUD, at a cost of $656,000, for what would become the District’s first parks at Upper Wildcat Canyon, Temescal, and Roundtop. The board also agreed to provide $63,428 in local funds to qualify for one million dollars in federal funding needed for park development projects (Kent 2014). In 1937, Upper Wildcat Canyon Park was renamed Tilden Regional Park in honor of Charles Lee Tilden, a Bay Area attorney, businessman, and first president of the Park District Board of Directors (EBRPD 1975). Tilden Regional Park is considered the crown jewel of the EBRPD system.

After the close of World War II in 1945, Richard Walpole returned from military service and was appointed the Park District’s general manager. Under his leadership, the Park District concentrated on the development and operation of its parks. After the Army terminated its lease of the Tilden CCC camp in 1946 (see below), the site was converted into what would become the Tilden Nature Area and the Little Farm used to teach natural history to school children. A full-time naturalist was hired to support this effort (Kent 2014).

Several attractions have been constructed at Tilden Park since its inception. In 1936, Billie Bell, a renowned golf course architect, designed the Tilden Golf Course and clubhouse, which were constructed in 1937 by the WPA. New Deal programs also financed Lake Anza, an open water swimming facility in the park, which opened in 1940. The EBRPD Botanic Garden in the park was founded in 1940. The Brazil Room, originally the Brazilian Pavilion of the 1939 Golden Gate International Exposition on Treasure Island, was gifted to the EBRPD by the country of Brazil. It was moved to its new home in Tilden Park where a new rock and timber exterior were built by the WPA (Living New Deal 2016). In 1947, the District Board purchased a vintage 1911
Hershell Spillman carousel to bolster concessions at Tilden Park. A quarter-size steam train amusement area began operation in 1952. In 1955, the Little Farm, home to a variety of farm animals, got its start with the construction of a barn by Berkeley High School carpentry students (Kent 2014). And a fishing pond, stocked with Sierra trout, was created and made available to the public during the 1950s and appears to have been decommissioned in the early 1960s.

By 1954, the EBRPD grew to six parks and 6,000 acres. In the 1960s, a new generation of management led by William Penn Mott, reorganized the district’s structure to support an expanding park system in advance of the area’s rapidly expanding population. Today, EBRPD includes 119,000 acres and over 1,250 miles of trails within a system of 65 public parklands.

### 3.3.4 Civilian Conservation Corps (1934 to 1942)

Soon after the EBRPD acquired their first lands in 1936, funding was available for six park employees and a workforce consisting of Civilian Conservation Corps (CCC) crews, Works Progress Administration (WPA) crews, and private contractors to begin improving the parks for public use. In 1934, the Wildcat Creek CCC Camp was established at Tilden (then Upper Wildcat Canyon). The camp consisted of approximately 20 buildings/structures including a headquarters, officer’s quarters, mess hall, five barracks, kitchen, latrine, supply structure, infirmary, technical office (administration), recreation hall, bath house, and three service and garage structures.

Prior to World War II, CCC and WPA crews carried out a variety of projects to reshape the park’s landscape including tree planting, erosion control, trail construction, and road construction or improvement (Kent 2014). By early 1942, the newly formed parks were placed in “caretaker” status as the workforce joined the war effort. District parks played an important role in supporting the war by providing recreational facilities for the military and for residents working in local war related industries. The Army leased the Tilden CCC camp for use as a training facility, as well as approximately 500 acres at the south end of Tilden Park where an early warning Regional Radar Center was constructed. The Army terminated its lease of the Tilden CCC Camp in 1946 (Kent 2014).

Several features in the project area can be attributed to the CCC. These features include a road between the Environmental Education Center (EEC) and Jewel Lake continuing to the northwest (identified as North Wildcat Road or the Loop Road), a stone-lined culvert along North Wildcat Road, and a stone guzzler currently functioning as a drinking fountain.
4.0 ARCHIVAL REVIEW

Prior to conducting the field survey, a records search request was submitted to the Northwest Information Center (NWIC) using a quarter (0.25) mile search buffer (archival study area). Emphasis was placed on determining which portions of the archival study area have been inventoried previously and on the location of previously recorded archaeological sites within or adjacent to the proposed project area. Search results were received on January 28, 2016 (Appendix C) and are summarized below.

The records search indicates that 19 inventories have been conducted, one prehistoric site, and one historic district have been recorded within the archival study area. Both the prehistoric site and the historic district intersect with the present project area.

Additional archival research was conducted at the EBRPD headquarters and at the Trudeau Archives. At each location, historic documents pertaining to Tilden Regional Park and especially documents and maps pertaining to the Tilden Nature Area were examined. Park staff and volunteers were informally interviewed to gather as much information as possible to help construct the background context provided above. This context helps to create the foundation in which subsequently identified cultural resources can be evaluated against established significance criteria.

4.1 PREVIOUS INVENTORIES

Table 1 provides a summary of previous archaeological inventories that have been conducted within or that extend into the archival study area.

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<td>S-000595</td>
<td>King, Ronald F.</td>
<td>1974</td>
<td>A Report on the Status of Generally Available Data Regarding Archaeological, Ethnographic, and Historical Resources Within a Five Mile Wide Corridor Through Portions of Colusa, Yolo, Solano, and Contra Costa Counties, California</td>
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<td>S-000848</td>
<td>Fredrickson, David A.</td>
<td>1977</td>
<td>A Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical &amp; Archaeological Resources</td>
<td>The Anthropology Laboratory, Sonoma State College; Winzler &amp; Kelly Consulting Engineers</td>
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<td>S-001978</td>
<td>Aiello, Anthony V.</td>
<td>1960</td>
<td>The Islands of Contra Costa</td>
<td>-</td>
</tr>
<tr>
<td>S-009462</td>
<td>Miller, Teresa A.</td>
<td>1977</td>
<td>Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties</td>
<td>San Francisco State University</td>
</tr>
</tbody>
</table>
Table 1. Previous Inventories within 1/4 Mile of the Project Area.

<table>
<thead>
<tr>
<th>Rpt #</th>
<th>Author</th>
<th>Year</th>
<th>Title</th>
<th>Survey Org.</th>
</tr>
</thead>
<tbody>
<tr>
<td>S-009583</td>
<td>Mayfield, David W.</td>
<td>1978</td>
<td>Ecology of the Pre-Spanish San Francisco Bay Area</td>
<td>San Francisco State University</td>
</tr>
<tr>
<td>S-009795</td>
<td>Jackson, Thomas L.</td>
<td>1986</td>
<td>Late Prehistoric Obsidian Exchange in Central California</td>
<td>Stanford University</td>
</tr>
<tr>
<td>S-016660</td>
<td>Fentress, Jeffrey B.</td>
<td>1992</td>
<td>Prehistoric Rock Art of Alameda and Contra Costa Counties, California</td>
<td>California State University, Hayward</td>
</tr>
<tr>
<td>S-017835</td>
<td>Suchey, Judy M.</td>
<td>1975</td>
<td>Biological Distance of Prehistoric Central California Populations Derived from Non-Metric Traits of the Cranium</td>
<td>University of California, Riverside</td>
</tr>
<tr>
<td>S-020044</td>
<td>Bakic et al.</td>
<td>1998</td>
<td>Historic American Engineering Record, Colgate-Oakland Transmission Line, HAER No. CA-190</td>
<td>PAR Environmental Services, Inc.</td>
</tr>
<tr>
<td>S-020395</td>
<td>Gillette, Donna L.</td>
<td>1998</td>
<td>PCNs of the Coast Ranges of California: Religious Expression or the Result of Quarrying?</td>
<td>California State University, Hayward</td>
</tr>
<tr>
<td>S-022814</td>
<td>Dexter, Sean and Daniel Shoup</td>
<td>2000</td>
<td>Cultural Resource Reconnaissance for the Proposed East Bay Regional Park District Fire Mitigation Projects, Alameda and Contra Costa Counties, CA, HMG# 919-515-24</td>
<td>URS Corporation</td>
</tr>
<tr>
<td>S-032596</td>
<td>Miliken et al.</td>
<td>2006</td>
<td>The Central California Ethnographic Community Distribution Model, Version 2.0, with Special Attention to the San Francisco Bay Area, Cultural Resources Inventory of Caltrans District 4 Rural Conventional Highways</td>
<td>Consulting in the Past; Far Western Anthropological Research Group, Inc.</td>
</tr>
<tr>
<td>S-033600</td>
<td>Meyer, Jack and Jeff Rosenthal</td>
<td>2007</td>
<td>Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4</td>
<td>Far Western Anthropological Research Group, Inc.</td>
</tr>
<tr>
<td>S-041082</td>
<td>Cardenas et al.</td>
<td>2013</td>
<td>Cultural Resources Inventory Report for the Hazardous Fire Risk Reduction Environmental Impact Statement, East Bay Hills, California</td>
<td>CH2M HILL</td>
</tr>
</tbody>
</table>

4.2 Previously Recorded Resources

Table 2 provides the previously recorded sites that have been identified within the archival study area. Site P-004488 is located within the project area, but P-07-000043 is situated outside but adjacent to the north of the project area.

Significance determinations (NRHP/CRHR) for sites within or adjacent to the project area were requested as part of the NWIC records search which includes the California Inventory of Historical Resources database, the Office of Historic Preservation (OHP) Archaeological Determinations of Eligibility database, and the OHP Historic Properties Directory for Contra Costa County, California (see Appendix C).

Table 2. Previously Recorded Sites within 1/4 Mile of the Project Area.

<table>
<thead>
<tr>
<th>Primary Site #</th>
<th>Trinomial Site #</th>
<th>Age</th>
<th>Description</th>
<th>Last Recorded</th>
<th>NRHP/CRHR</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-07-000043</td>
<td>CA-CCO-000024</td>
<td>Prehistoric</td>
<td>Projectile points</td>
<td>2001</td>
<td>Not listed</td>
</tr>
</tbody>
</table>
4.2.1 **P-07-000043 (CA-CCO-000024)**

Site P-07-000043 is described as a possible temporary camp site located on the eastern shore of Jewel Lake. It was originally recorded by Elsser (1958) and then updated by Schwartz (2001). Cultural constituents of the site consist of two projectile points (“blades”) that appear to have been collected.

Site P-07-000043 is not listed in the Kensington Historic Properties Directory and there is no indication on the site form if it has been recommended eligible to either the National Register of Historic Places (NRHP) or the California Register of Historical Resources (CRHR).

The site boundary (an approximation) suggests the site is located outside but adjacent to the north of the project area. See the Inventory Results section below for additional detail concerning this site.

4.2.2 **P-07-004488/P-01-011423**

This site represents the Tilden Regional Park Historic District, originally recorded as three distinct archaeological sites (P-07-004493, 4494, and 4495) and then combined in 2013 as P-07-004488 (Contra Costa County) and P-01-011423 (Alameda County). The district form was compiled by Venno (2012) of CH2M HILL and appears as more of an overview of several key features within the park rather than a detailed site record. Of interest for this project, the district form mentions several types of WPA features constructed during the 1930s; however, details concerning their construction and their specific location within the park are absent.

The district is not listed on the Kensington Historic Properties Directory; however, Venno (2012) recommends that Tilden Regional Park is eligible for listing in NRHP under Criterion A for its association with events that have made significant contributions to the history of Oakland and the East Bay Hills.

The current project area lies within the Tilden Regional Park Historic District boundary.

4.3 **ADDITIONAL TILDEN PARK CULTURAL RESOURCES**

Several nearby cultural resources (located outside the archival study area) that relate to the Tilden Regional Park Historic District deserve mention.

4.3.1 **P-07-000799/P-01-002179**

Located about 2.5 miles southeast of the present project area near Grizzly Peak, this site represents the Tilden Stream Trains amusement area. Recorded as a district by Egherman et al. (2000a), the amusement area began operation in 1952 and was renovated and enlarged from 1965 to 1967. Features recorded as part of the district include the train station, tracks, repair workshop, roundhouse, water tower, and associated features such as a rail bridge, rail tunnel, and drainage culverts.

At the time of its recording, the site was not yet 50 years old and therefore not subject to evaluation as a cultural resource. However, in anticipation of the site soon becoming a cultural resource, Egherman et al. (2000a) state that the site would be recommended eligible under National Register Criterion B for its association with Eric Thomsen and William Penn Mott, and
under Criterion C for the unique characteristics of construction and design in the field of model railroading.

4.3.2 P-07-000801
Located about 1.3 miles southeast of the project area (south of Lake Anza), is a segment of golf course pipe that is recorded as site P-07-000801, recorded by Egherman et al. (2000b). This pipe was installed in November 1948 and used to pump water from Lake Anza to the Tilden golf course.

4.3.3 P-07-000802
This site is a concrete building foundation and slab associated with the Tilden Archers Club, constructed in the 1960s and removed or torn down for reasons unknown. The site was recorded by Egherman et al. (2000c) and is located approximately 2.1 southeast of the project area.

4.4 HISTORIC MAPS CONSULTED
Several historic maps on file at the Trudeau Archives were examined, as well as publically available historic USGS quadrangle maps. When possible, digital copies of the maps were obtained and can be found in Appendix A (Figures 3-9). These include:

- 1934 Regional CCC Camps Map
- 1940 Tilden CCC Camp Illustration
- 1940 Jewel Lake Area Illustration
- 1947 Richmond 7.5’ USGS Map
- 1949 Richmond 7.5’ USGS Map
- 1959 Richmond 7.5’ USGS Map
- 1972 Tilden Park (Northern Portion) Brochure Map

Regarding the Tilden CCC camp, comparison of the 1949 and 1959 USGS maps indicates that several buildings were removed sometime within that 10 year span. The 1940 CCC camp illustration map depicts the buildings that were once part of the camp. The 1940 Jewel Lake map, although clearly more of a schematic than an actual depiction of conditions at the time of its creation, suggests that Jewel Lake may have been more extensive than at present.
5.0 NATIVE AMERICAN CONSULTATION

On February 23, 2016 a letter was sent to the Native American Heritage Commission (NAHC) requesting a search of their Sacred Lands database and a list of contacts that may have knowledge of cultural or tribal resources within or immediately adjacent to the project area. A response was received February 29, 2016 indicating that the Sacred Lands database search did not reveal the presence of Native American cultural resources within or immediately adjacent to the project area. The NAHC requested that several Native American cultural resource representatives be contacted (Table 3). Tribal representative inquiry letters were mailed March 14, 2016. Receipt confirmation of the letters was received from every individual.

Table 3. Tribal Representatives Identified by the NAHC.

<table>
<thead>
<tr>
<th>Representative</th>
<th>Title</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Irene Zwierlein</td>
<td>Chairperson</td>
<td>Amah Mutsun Tribal Band of Mission San Juan Bautista</td>
</tr>
<tr>
<td>Raymond Hitchcock</td>
<td>Chairperson</td>
<td>Wilton Ranceria</td>
</tr>
<tr>
<td>Ann Marie Sayers</td>
<td>Chairperson</td>
<td>Indian Canyon Mutsun Band of Costanoan</td>
</tr>
<tr>
<td>Rosemary Cambra</td>
<td>Chairperson</td>
<td>Muwekma Ohlone Indian Tribe of the SF Bay Area</td>
</tr>
<tr>
<td>Andrew Galvan</td>
<td>n/a</td>
<td>The Ohlone Indian Tribe</td>
</tr>
</tbody>
</table>

On March 23, 2016 a response letter was received from Mr. Steven Hutchason, Executive Director of the Wilton Rancheria requesting formal consultation on the project. The EBRPD was contacted soon thereafter and informed of the request for formal consultation. At that point, it was agreed that the District would take over consultation efforts with the Wilton Rancheria.

As of June 16, 2016, no other tribal representatives have inquired about the project. Pursuant of California Public Resource Code Section 21080.3.1(b)(2) of the CEQA, the 30-day response timeframe for Native American inquiry for a project has expired.

Correspondence related to Native American consultation can be found in Appendix D.
6.0 INVENTORY METHODS

6.1 EXPECTATIONS
Archival research indicates that the Tilden CCC camp was located adjacent to the project area and therefore at least one feature (i.e., guzzler) is known to exist. A poorly recorded prehistoric site may be located within or adjacent to the northern extent of the project area; however, the spatial location of this site is estimated on the site form. Lastly, several features of unknown origin and age including a wooden weir and three small ponds are slated for removal or modification as part of the proposed project. Given the lack of information regarding these features from the archives search, the features were visited in the field to ascertain their status as potential cultural resources.

6.2 INVENTORIED AREAS AND FIELD METHODS
The objective of the field inventory was to locate, describe, and evaluate cultural resources present within the project area. Fieldwork was performed in accordance with State of California standards. The project area was surveyed using pedestrian transects spaced no more than 15 meters apart. Heavily vegetated or saturated areas were not examined intensively.

When a cultural resource was encountered, the immediate area surrounding the resource was examined to determine the type, variation, and extent of cultural material. Archaeological components, including diagnostic artifacts, artifact concentrations, and features, were described in a field notebook, photographed using a high resolution camera, and plotted using a mapping-grade Trimble Geo7x GPS receiver. At least two overview photographs were taken per site or feature to capture the general surroundings with attention paid to capturing the horizon (if possible) to aid in future relocation. If applicable, photos of artifacts contain a scale and all photographs were GPS-plotted. Upon completion of the inventory, Trimble field data was differentially corrected using the nearest local base station and then converted to GIS shapefiles projected to NAD83 State Plane California Zone III. Sites, if identified, were recorded on California Department of Parks and Recreation (DPR) site forms and plotted on a USGS 7.5 minute map. Isolates, if identified, were mapped and photographed (if diagnostic). No artifacts were collected during the field survey.

Surface visibility ranged from 0% in the grass-covered meadow area adjacent to the ponds to 100% along previously disturbed areas such as the walking path near the ponds or the Loop Road.

A detailed photo log for the project is located in Appendix E.

6.3 PROJECT PERSONNEL AND DATES OF FIELD EXAMINATION
Jeremy Hall, Project Scientist at NCE, conducted the archaeological inventory of the proposed project area on March 31, 2016. Mr. Hall is a Registered Professional Archaeologist with 10 years of experience in historic preservation, archaeological investigation, and cultural resource management. He is familiar with State, Federal, and professional standards in compliance with Section 106 of the NHPA and PRC Section 21083.2 of the CEQA. Mr. Hall meets qualifications as an archaeologist as defined by the Secretary of Interior’s Standards for Archaeology and Historic Preservation (36 CFR Part 61).
7.0 INVENTORY RESULTS

As a result of the present effort, several previously unrecorded features associated with the Tilden Regional Park Historic District (P-07-004488) have been documented and are described in detail below. No isolated finds were identified. Site forms can be found in Appendix F.

7.1 PREVIOUSLY RECORDED RESOURCES

Based on archival research, one previously recorded prehistoric site (P-07-000043) and the Tilden Regional Park Historic District (P-07-004488) are located within or adjacent to the APE.

7.1.1 P-07-000043 (CA-CCO-000024) – Isolated Projectile Points

This site is described as a prehistoric lithic scatter consisting of two blades located outside but adjacent to the project area. Originally recorded by Elasser (1958), it was surmised from the presence of projectile points that a temporary camp might be located there or nearby. The site form was updated by Schwartz (2001) by placing the site information on a new site form and adding an approximate location for the site on a USGS 7.5’ quadrangle map. Interestingly, although the original site form describes the location of the site along the eastern shore of Jewel Lake, the site location map places the site south of Jewel Lake along the Loop Road.

As part of the present effort, the eastern shore of Jewel Lake and the plotted location on the south side of Jewel Lake were examined. Cultural material was not identified in either location. Information on both the original site form and the updated form indicate that the projectile points were collected and are possibly housed at UC Berkeley. The area south of Jewel Lake has been subjected to a fair amount of disturbance – a picnic area is situated directly within the plotted area, a bathroom facility has been installed outside and uphill of the plotted area, and the Loop Road has truncated the site along its western and northern margins. Given that no additional cultural material has been identified in either area (e.g., flakes, groundstone), this site is assumed to represent an isolated find consisting of the two artifacts that have subsequently been collected.

A site form update stating that the site was not relocated is provided in Appendix F.

7.1.2 P-07-004488/P-01-011423 – Tilden Regional Park Historic District

This site represents the Tilden Regional Park Historic District, originally recorded as three distinct archaeological sites (P-07-004493, 4494, and 4495) and then combined in 2013 as P-07-004488 (Contra Costa County) and P-01-011423 (Alameda County). The cover page erroneously labels the district as the Redwood Regional Park Historic District; however, that park is located southeast of Tilden.

The district form was compiled by Venno (2012) of CH2M HILL and appears as more of an overview of several key features within the park rather than a detailed site record. Of interest for this project, the district form mentions several types of WPA or CCC features constructed during the 1930s. However, details concerning their construction and their specific location within the park are absent.

A summary of the history of Tilden Regional Park is provided and several features are mentioned, but not officially recorded or documented in any way. Mentioned features include:

- 1930s WPA-constructed stone and mortar features, pathways, stairs, storm drains, culverts, roads, and other architectural throughout the park
- The Tilden Golf Course and clubhouse constructed in 1937 by the WPA
- Lake Anza which opened in 1940
- The Botanic Garden founded in 1940
- The Brazil Room gifted by the Country of Brazil in 1939
- Skyline Boulevard constructed by the WPA in 1942
- The 1911 Herschell-Spillman merry-go-round acquired in 1946 and opened for use in 1948
- The 1952 Tilden Steam Trails
- The Nike Missile Radar Site installed at Vollmer Peak in 1954 (decommissioned in 1971)

Additional previously recorded sites that are not currently incorporated as part of the Tilden Regional Park Historic District include P-07-000799/P-01-002179, P-07-000801, and P-07-000802. Site P-07-000799/P-01-002179 represents the Tilden Steam Trail amusement area which began operation in 1952 and was renovated and enlarged during 1965 to 1967. Recorded as a district, features include the train station, tracks, repair workshop, roundhouse, water tower, and associated features such as a rail bridge, rail tunnel, and drainage culverts. P-07-000801 is a segment of golf course pipe installed November 1948 and used to pump water from Lake Anza to the Tilden golf course. Site P-07-000802 is a concrete building foundation slab associated with the Tilden Archers Club, constructed in the 1960s and removed or torn down for reasons unknown.

7.2 NEWLY IDENTIFIED RESOURCES

7.2.1 P-07-004488/P-01-011423 – Tilden Regional Park Historic District

As part of the present effort, seven new features located within the Tilden Nature Area are added to the Tilden Regional Park Historic District. Three features (F2, F6, and F7) are associated with CCC work conducted within the park from 1934 to 1942 and the remaining four features (F1, F3-F5) likely date to work conducted by park officials during the mid to late 1960s.

Feature 1 is a wooden weir located along Wildcat Creek adjacent to the pedestrian bridge used to access the Little Farm and the Environmental Education Center. The weir serves as a dam, creating a sediment basin intended to reduce the sediment load in the creek flowing toward Jewel Lake. The basin has filled up in recent years and currently provides little to no sediment retention. The weir is approximately 25 feet long and four feet tall. It is constructed with three, approximate two-foot diameter logs (two at the bottom and one at the top), placed perpendicular to the creek and held in place with large boulders along the downstream edge and several 8x8 beams installed vertically and nailed to the top log with large spikes at the upstream side. Along the north side of the feature, several 2x10 planks have been nailed to the top log. The south side of the weir has eroded and water is escaping from that end. It is unknown exactly when the sediment basin was installed but park officials estimate sometime in the 1960s.

Feature 2 is a CCC-constructed rock structure referred to as a “guzzler” by park officials. No documentation regarding this feature was identified during archival research. Currently the feature functions as a public drinking fountain. If constructed as a guzzler by CCC workers during the 1930s and 40s, it may have served to supplement the water supply for a variety of park animals (e.g., deer, turkey, etc.) or perhaps even livestock kept at the nearby CCC camp. The feature is constructed out of local basalt cobbles placed flat-side-out atop a concrete foundation forming the perimeter of the feature. The structure is quite angular with many sides but the general dimensions are approximately 18 feet long (NW-SE) by 12 feet wide (NE-SW).
The feature consists of four distinct compartments or levels with level 0 being nearest the ground and level 3 being the tallest at 42 inches above ground level (see Appendix E, Photo 20160331_084703). It is unknown if these levels were constructed at the same time or were added over time. Level 0, a low wall 10 inches wide and eight inches tall, is somewhat obscured at the back of the feature (northeast) where it is partially covered by vegetation. This level is approximately 12 feet long by 6 feet wide and likely represents the portion of the feature that served as a guzzler to supply water to park animals. Level 1 is located at the northwest side of the feature and measures approximately 62 inches long, 42 inches wide, and 22 inches tall. A plywood board is placed atop level 1. Inside level 1 are exposed plumbing fixtures and pipes. Although some of this plumbing might be original, it appears that the vast majority has been replaced over time. Level 2 is situated at the southeast side of the feature and measures approximately 59 inches long, 37 inches wide, and 25 inches tall. This level has a recessed top and likely served as a bird bath. Level 3 is the western most part of the feature and houses a modern drinking spout that is still functional. This level measures about 36 inches long, 12 inches wide, and 42 inches tall.

Feature 2 retains a fair amount of integrity and its design components are intact; however, the feature is in a general state of disrepair. It appears that the mortar has been repointed in years past, but substantial cracks were noted along many of the walls.

Features 3 through 5 are small man-made ponds located to the northeast and north of the guzzler. Archival research did not produce information pertaining to these ponds; however, according to park officials, the ponds were likely installed in the mid to late 1960s for use in environmental programs. Feature 3 (Pond 1) is located nearest to Feature 2 and measures approximately 30 feet in diameter and two to three feet deep. Feature 4 (Pond 2) is located about 30 feet northeast of Pond 1 and measures approximately 60 feet long by 50 feet wide and five feet deep. Feature 5 (Pond 3) is located about 150 feet northwest of Pond 2 and measures about 50 feet in diameter and seven feet deep. An exposed three inch pipe was identified along the northwestern side of Feature 4. The pipe, which is oriented in the direction of the guzzler, indicates that these ponds were irrigated in the past, presumably to manage the water levels.

Feature 6 is a segment of the Loop Road, also known as North Wildcat Road/Trail, which extends northwest from the Tilden Nature Area visitor parking lot to just south of Jewel Lake. At that point the road splits, one segment continuing northwest past Jewel Lake and the other segment turning sharply to the southeast, heading uphill and eventually tying into Laurel Canyon Road. The segment which continues past Jewel Lake is referred to as the North Wildcat Road/Trail, whereas the portion that turns southeast and heads uphill is the Loop Road. The first 400 feet of the road from the parking lot to the maintenance yard adjacent to the Environmental Education Center is paved. Northeast of the maintenance yard, the road is unpaved but appears regularly maintained. According to an undated document entitled East Bay Regional Park History and Description examined at the Trudeau Archives, the section pertaining to road maintenance describes Route #9 – North Wildcat Road:

“From Route #7 [Oak Canyon Road] and #8 [CCC Camp Drive] at the Meadows northward down the Valley past the CCC Camp to the north end of the Park and beyond is an old road. This portion one mile long, 12 to 18’ wide partly graveled, is being improved by the CCC, crosses creek on a 7 x 8 culvert finished by CCC. Grades very slight. North end can be relocated on higher ground which allows the level of the lake to be raised” (EBRPD n.d.:7)

From this description, the CCC was not responsible for construction of the road; however, it was responsible for its improvement. Presently, Feature 6 retains little of its original integrity –
the road ranges from 15 to 20 feet wide and appears regularly maintained and graded. Several modern culverts have been installed along the recorded segment.

Feature 7 consists of a CCC-constructed culvert situated along Feature 6, located just south of Jewel Lake. This culvert likely represents the one referenced in the description of Route #9 from EBRPD (n.d.:7). Both the inlet of the culvert, located on the east side of the road, and the outlet, located on the west side of the road, are constructed from local basalt, flat-side-out, with rocks ranging roughly from five to 12 inches in maximum dimension. The inlet side (Feature 7a) is more substantial than the outlet, measuring seven feet long, four feet wide, and 57 inches tall from the bottom of the sump. The inlet has a large headwall that measures seven feet long by two feet wide, the top of the wall extending about 14 inches above the road grade. The ditch leading into and out of the feature is approximately 12 inches wide and 12 inches deep; approaches to and from the feature are rock-lined for a distance of about two feet. An 11-inch corrugated metal pipe is installed at about the same elevation as the ditch and a sump extends about 18 inches below this level.

The outlet (Feature 7b) on the west side of the road is a much smaller stone-lined box that measures 34 inches long, 30 inches wide and tapers from 33 inches to 18 inches tall. The sump which was partially filled at the time of recording is about four inches deep. The drainage channel which extends to the west is stone-lined and covered with a metal plate.

A site form update to the Tilden Regional Park Historic District form can be found within Appendix F. Also photos of the new feature are within Appendix E.
8.0 ELIGIBILITY RECOMMENDATIONS

Cultural resources are defined as buildings, sites, districts, structures, or objects, each of which may have historical, architectural, archaeological, cultural, and/or scientific importance. Numerous laws, regulations, and statutes at the Federal, State, and local level seek to protect and target the management of cultural resources.

The Tilden Nature Area Sediment Basin Dredging Project requires compliance with Section 106 of the National Historic Preservation Act (NHPA) and the California Environmental Quality Act (CEQA). As part of that process, one critical component pertaining to the evaluation of cultural resources within or adjacent to the APE that may be affected by project-related activities is the development of recommendations as to whether or not those resources are eligible for listing on the California Register of Historical Resources (CRHR) and the National Register of Historic Places (NRHP).

8.1 NATIONAL HISTORIC PRESERVATION ACT

Because the proposed project requires Federal involvement (i.e., Bureau of Indian Affairs fee-to-trust application), it must comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, and its implementing regulations found at 36 CFR Part 800. Section 106 requires federal agencies to identify cultural resources that may be affected by actions involving federal lands, funds, or permitting. The identified resource must be evaluated for significance using criteria established in 36 CFR 60.4, as described the National Register of Historic Places section below.

If a resource is determined to be significant, that is, a historic property, Section 106 of the NHPA requires that effects of the proposed project on the resource be determined. A historic property is defined as:

...any prehistoric or historic district, site, building, structure or object included in, or eligible for inclusion in the National Register of Historic Places, including artifacts, records, and material remains related to such a property...(NHPA Sec. 301[5]).

Section 106 of the NHPA prescribes specific criteria (outlined in 36 CFR 800.5) for determining whether a project would adversely affect a historic property. An impact is considered significant when a historic property is subjected to any of the following:

- physical destruction of or damage to all or part of the property;
- alteration of a property;
- removal of the property from its historic location;
- change of the character of the property’s use or of physical features within the property’s setting that contribute to its historic significance;
- introduction of visual, atmospheric, or audible elements that diminish the integrity of the property’s significant historic features;
- neglect of a property that causes its deterioration; and
- transfer, lease, or sale of the property.

If the historic property will be adversely affected by implementation of the project, then prudent and feasible measures to avoid or reduce adverse impacts must be taken. The State Historic Preservation Officer (SHPO) must be provided an opportunity to review and comment on these measures prior to project implementation.
8.1.1 National Register of Historic Places

The eligibility of a resource for listing in the National Register of Historic Places (NRHP) is determined by evaluating the resource using criteria defined in 36 CFR 60.4 as follows: The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, association, and

A (Event): are associated with events that have made a significant contribution to the broad patterns of our history;
B (Person): are associated with the lives of persons significant in our past;
C (Design/Construction): embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D (Information Potential): have yielded, or may be likely to yield, information important to prehistory or history.

To be considered eligible under Criterion A, a property must be associated with events that are important within a defined context. Several distinct cultural periods are described in the cultural overview above. A prehistoric site that exemplifies an adaptive trend associated with a distinctive cultural period might be considered eligible under Criterion 1. An ethnographic period site that is an outstanding example of changing lifeways and Native adaptation might also be considered as significant. Likewise, an historic period site that is considered eligible should represent an important contribution to an event within the associated context.

Criterion B applies to properties associated with individuals whose specific contributions to history can be identified and documented. As such, Criterion 2 usually applies to ethnohistoric and historic period sites because prehistoric sites generally lack associations with known individuals.

Criterion C applies to properties that embody distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic value; or represent a significant and distinguishable entity within a larger “district”. Prehistoric site types that meet Criterion 3 are generally distinctive site types that reflect elements of community design, or contribute to larger districts as key elements within a regional land use context.

Criterion D pertains to the information potential a property may contribute toward our understanding of prehistory or history. Research topics or themes presented in a historic context are the mechanism by which properties are evaluated against this Criterion 4.

8.2 California Environmental Quality Act

The California Environmental Quality Act (CEQA) requires that, for projects financed by or requiring the discretionary approval of public agencies in California, the effects of the project on Historical Resources must be considered (PRC Section 21083.2). Historical Resources are defined for CEQA purposes as “buildings, sites, structures, or objects, each of which may have historical, architectural, archaeological, cultural, or scientific importance” (PRC Section 50201).

Under the CEQA Guidelines, an effect is considered significant if a project will result in a substantial adverse change to the resource (PRC Section 21084.1). Actions that would cause a substantial adverse change to a historical resource include demolition, replacement, substantial alteration, and relocation. Before the significance of impacts can be determined and mitigation
measures developed, the significance of cultural resources must be determined. The 2000 CEQA Guidelines (Section 15064.5) define four cases in which a property may qualify as a significant historical resource for the purposes of CEQA review. The explanation of these criteria follows the NRHP criteria (A, B, C, and D) defined above, but pertain to California significance rather than National significance.

A. The resource is listed in or determined eligible for the listing in the CRHR. Section 5024.1 defines eligibility requirements and states that a resource may be eligible for inclusion in the CRHR if it:

1. **Event**: Is associated with events that have made a significant contribution to the broad patterns of California’s history and cultural heritage;
2. **Person**: Is associated with the lives of persons important in our past;
3. **Design/Construction**: Embodies the distinctive characteristics of a type, period, region, or method of construction, represents the work of an important creative individual, or possesses high artistic values; or
4. **Information Potential**: Has yielded, or may be likely to yield, information important in prehistory or history.

Properties that are listed in or eligible for listing in the NRHP are automatically considered eligible for listing in the CRHR, and thus are significant historical resources for the purpose of CEQA (Public Resources Code section 5024.1[d][1]).

B. The resource is included in a local register of historic resources, as defined in section 5020.1(k) of the Public Resources Code, or is identified as significant in a historical resources survey that meets the requirements of section 5024.1(g) of the Public Resources Code (unless the preponderance of evidence demonstrates that the resource is not historically or culturally significant).

C. The lead agency determines the resource to be significant as supported by substantial evidence in light of the whole record.

D. The lead agency determines that the resource may be a historical resource as defined in Public Resources Code section 5020.1(j) or 5024.1.

A substantial adverse change to a historical resource is considered a significant effect on the environment under CEQA. When it is determined that a project may cause a substantial adverse change, alternative plans or measures to mitigate the effects to the resource must be considered.

### 8.3 Integrity Criteria

Properties must not only demonstrate its significance under the NRHP or CRHR criteria, it must also retain sufficient integrity to convey such significance. The evaluation of integrity must always be grounded in an understanding of a resource’s physical features and how they relate to its significance. Aspects of integrity include the following:

1. **Location**: The place where the historic property was constructed or the place where the historic event occurred.
2. **Design**: The combination of elements that create the form, plan, space, structure, and style of a property.
3. **Setting**: The physical environment of a historic property.
4. **Materials**: The physical elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property.
5. **Workmanship:** The physical evidence of the crafts of a particular culture or people during any given period in history or prehistory.

6. **Feeling:** A property’s expression of the aesthetic or historic sense of a particular period of time.

7. **Association:** The direct link between an important historic event or person and a historic property.

### 8.4 Linear Resource Evaluation Criteria

Many historic period resources represent fragments of larger linear resources such as roads and utility lines. There are two issues here. The first is whether the site as a whole is significant under any state criteria. The second issue only relates to sites that are either evaluated as significant or are managed as if they are significant. This issue is whether or not segments recorded within the study area contribute to the eligibility of the larger site. Guidelines have been devised specific to the evaluation of individual segments of linear features. Mikesell (1990), Owen (1991), and Supernowicz (1991), Lindström and Hall (1994) combined historic context with property type requirements to create a framework for the comparative evaluation of “discrete segments of a linear feature.” This same framework was subsequently included in a contextual history and evaluation methodology established by the USFS (U.S. Forest Service 1999). Those evaluation guidelines rely on the review of four specific criteria. Each criterion is described below.

- **Length:** Linear features were intended to connect distant points. The ability to understand the connective role of an individual segment is reflected, in part, by that segment’s length. The segment should be of sufficient length to convey the functionality of the linear feature at large, and the segment’s relationship to that larger feature. The more the segment conveys that sense of function and relation, the more likely it is to contribute to the overall feature’s integrity of association with events or patterns important in history.

- **Distinctive Engineering Features and Associated Properties:** Examples of engineering features include bridges, rock retaining walls, and drainage structures. The presence of such features increases the richness of the resource and contributes to the overall feature’s significance as a type or method of construction. Examples of associated properties include way stations, fences, and construction related features or sites. The presence of associated properties also enriches the resource and contributes to their integrity of feeling.

- **Structural Integrity:** The ability to understand the original character and purpose of the segment is reflected, in part, by the feature’s integrity of design, material and workmanship. This criterion assesses the extent to which the segment retains those types of integrity. Subsequent natural and man-induced factors such as erosion and abandonment may conspire to diminish these types of structural integrity.

- **Setting:** The final criterion attempts to measure the integrity of the immediate context in which the segment exists. The segment should retain sufficient integrity of setting to convey a sense of place specific to the time when the segment and linear feature at large were in use. Integrity of setting is reduced by the presence of non-related sites or linear features, or alterations in the general landscape.

These criteria were used to assign segments of linear features into one of four integrity levels:

I. Primary feature (grade, flume, ditch, earthwork, etc.) is **substantially intact**, as are the contour and bed; no major impacts, recent alterations, or significant erosion/deterioration.
II. **Lightly impacted** but morphology is intact, with less than 25% altered or significantly eroded; at least half of structural elements, earthworks, or other elements are present.

III. **Morphology is compromised**, but route/contour still discernable; 25-50% altered, impacted, or significantly eroded; structural or other elements are missing or rare.

IV. **Route/segment difficult to discern**; over 50% altered, impacted, or significantly eroded; no remaining structural elements, earthworks, or other elements. Grade may be unrecognizable as historic feature, but convincing archival or contextual evidence exists.

In general, levels I or II have sufficient integrity to warrant considering the segment contributing to the significance of a linear site. Levels III and IV are generally judged to be lacking in such integrity and are not judged as contributing. Exceptions to this general rule are possible due to the possible presence of rare and significant elements within segments that have generally poor preservation. Even if a segment is not part of a significant site, characterization using these integrity levels provides a comparative framework for descriptive purposes.

### 8.5 Current Site Evaluations

Archival research indicates that sites identified within or adjacent to the project area are not listed in on the NRHP or the Kensington Historic Properties Directory (HPD). Site P-07-000043 was not relocated and therefore a site evaluation cannot be provided. However, as mentioned, given the overall paucity of material identified, it can likely be classified as an isolated find rather than a site. Although the Tilden Regional Park Historic District (P-07-004488/P-01-011423) is not listed on the NRHP/CRHR, the District has been recommended eligible for listing under Criterion A/1.

Table 4 lists the current eligibility status for sites that intersect with the proposed project area.

<table>
<thead>
<tr>
<th>Primary Site #</th>
<th>Trinomial Site #</th>
<th>Age Status Description</th>
<th>Description</th>
<th>NRHP/CRHR Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-07-000043</td>
<td>CA-CCO-000024</td>
<td>Prehistoric form updated; site form updated</td>
<td>Isolated projectile points</td>
<td>Not listed</td>
</tr>
<tr>
<td>P-07-004488</td>
<td>-</td>
<td>Historic Previously recorded; new features added in site form update</td>
<td>Tilden Regional Park Historic District</td>
<td>Not listed; recommended Eligible (A/1)</td>
</tr>
<tr>
<td>P-01-011423</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 8.5.1 P-07-000043 (CA-CCO-000024), Isolated Projectile Points – Not Relocated

This site consists of two isolated projectile points which were collected decades ago. As part of the present effort, the site was re-examined but no cultural material was identified. Therefore, an eligibility recommendation is not provided.

#### 8.5.2 P-07-004488/P-01-011423 – Tilden Regional Park Historic District – Eligible

In 2013, three previously recorded sites were combined to form the Tilden Regional Park Historic District. The district form, compiled by Venno (2012), is more of an overview that provides a categorical listing of elements present. However, in addition to the valuable historical background information provided on the district form, a significance justification is also provided. Here, Venno (2012:3) establishes the period of significance for the district as 1934 (the park’s inception) to 1952 (when the Tilden Steam Train was put into operation) and states that, “[g]iven its history...”
as one of the three original parks in the EBRPD, and its ties to work of the WPA and CCC in the East Bay Hills, Tilden Regional Park is eligible for listing in the NRHP under Criterion A [1] for its association with events that have made significant contributions to the history of Oakland and the East Bay Hills.” As part of the present effort, six features are added to the district form and each is evaluated as a contributing or non-contributing element within the park’s period of significance.

Features 1 and 3 through 5 are fairly unremarkable features that were likely installed within the Nature Area sometime in the 1960s (archival research did not produce information regarding these features). Feature 1 is a wooden log weir consisting of three large logs, held in place with boulders and beams, impounding a sediment basin. The logs are highly eroded and overall, the feature is in a state of dilapidation retaining very little integrity. Features 3 through 5 are small man-made ponds that are thought to have been installed for educational purposes. These ponds range in size between 30 to 60 feet in diameter and between three and seven feet deep. Although their exact dates of construction are unknown, none of these features appear to date to the period of significance associated with the Historic District. As a result, they are not evaluated as potentially contributing elements of that district. Rather, they are evaluated on their own individual merits. None can be associated with a significant event in history and none can be associated with an individual important in history. All three are typical examples of very general types of features. They offer little potential to yield data beyond what is currently available. In summary, Features 1 and 3 through 5 are recommended as not eligible for listing on the NRHP/CRHR under any of the criteria.

Both Feature 2 (guzzler) and Feature 7 (culvert) are examples of CCC work conducted within the Tilden Nature Area during mid-1930s and early 1940s, well within the Historic District’s period of significance. Both features retain several aspects of integrity and are considered individually eligible under Criterion C/3 for their unique design and construction, but also under the Park’s umbrella Criterion A/1 for events that have made a significant contribution to the history of the region (i.e., CCC involvement within the park). Therefore, Features 2 and 7 are considered contributing elements to the Historic District.

Feature 6 is a segment of the Loop Road, also known as the North Wildcat Road/Trail. From archival research, this road was present prior to CCC involvement and was improved by the CCC sometime between the mid-1930s and early 1940s. Although the road falls within the Historic District’s period of significance, the alignment has been graded numerous times and contains several modern improvements. As such, the segment falls under integrity level III because the original alignment has been highly altered from its original form. Any potential significance the feature may have had in the past has been eliminated. As a result, is considered a non-contributing element to the Historic District.
9.0 MANAGEMENT RECOMMENDATIONS

9.1 SUMMARY
The Wildcat Creek watershed upstream of Jewel Lake Dam experiences high erosion rates. This has caused maintenance problems for the East Bay Regional Park District (EBRPD). To address these issues, the EBRPD has proposed the Tilden Nature Area Sediment Basin Dredging Project. The Project objectives focus on restoring and enhancing critical aquatic habitat (lakes and ponds), restoring function to a sediment basin, protecting special status species, and providing high quality interpretive areas.

The project area is approximately 6.64 acres. This represents the maximum horizontal ADI. The maximum depth of vertical disturbance at the sediment basin will be 7.5 feet and approximately seven (7) feet at the ponds. When combined, these horizontal and vertical dimensions serve to define the Area of Potential Effect (APE) associated with the proposed undertaking.

Prior to conducting the field survey, a records search request was submitted to the NWIC. Northwest Information Center (NWIC). The records search indicated that 19 inventories have been conducted, one prehistoric site, and one historic district have been recorded within the archival study area (defined as a quarter mile buffer around the project area). Both the prehistoric site and the historic district intersect with the present project area.

On February 23, 2016, Native American consultation was initiated. A response was received from the NAHC on February 29, 2016 indicating that a search of the Sacred Lands database did not reveal the presence of Native American cultural resources within or immediately adjacent to the project area. The NAHC requested that several Native American cultural resource representatives be contacted. On March 23, 2016 a response letter was received from Mr. Steven Hutchason, Executive Director of the Wilton Rancheria requesting formal consultation on the project. The EBRPD was contacted soon thereafter and informed of the request for formal consultation. At that point, it was agreed that the District would take over consultation efforts with the Wilton Rancheria. As of June 16, 2016, no other tribal representatives have inquired about the project. Pursuant of California Public Resource Code Section 21080.3.1(b)(2) of the CEQA, the 30-day response timeframe for Native American inquiry for a project has expired.

The project area was surveyed using pedestrian transects spaced no more than 15 meters apart, except in heavily vegetated or saturated areas which were not examined intensively. As a result of the present effort, an attempt was made to relocate the prehistoric site (P-07-000043) but no cultural material was observed after extensive searching. Seven previously unrecorded features associated with the Tilden Regional Park Historic District (P-07-004488) were recorded including a wooden weir (F1), a CCC guzzler (F2), three small man-made ponds (F3-F5), a road segment (F6), and a CCC culvert (F7). No isolated finds were identified. The weir, ponds, and road segment are recommended as not eligible for listing on the NRHP/CRHR. The guzzler and the culvert retain the integrity and are recommended as contributing elements to the Historic District.

9.2 DETERMINATION OF EFFECT
According to design elements of the project, improvements are proposed to several features within the Tilden Regional Park Historic District including the wooden weir (F1) and the three small ponds (F3-F5). The wood weir will be modified to level the structure, a notch will be cut in the weir to concentrate flows in the middle of the channel, and additional rip rap will be
placed downstream along the streambanks to minimize active erosion. The ponds will be modified such that Ponds 1 and 2 will be enlarged, graded, and merged. A small channel will be cut and stabilized that extends from Pond 2 to Pond 3, which in turn will be enlarged and graded. These features (F1, and F3-F5) are recommended not eligible for listing on the NRHP/CRHR. As a result, project activities in or near the area of these features will have no effect on properties listed on or eligible for listing on the NRHP/CRHR.

The Loop Road (F6) will be used for access to construction areas; however, there are no plans to improve or modify the road segment within the APE. The road is considered a non-contributing element to the Historic District. Therefore, its casual use during construction will have no effect on properties listed on or eligible for listing on the NRHP/CRHR.

The CCC guzzler (F2) is a contributing element of the Historic District. The guzzler may be indirectly impacted as a result of project-related activities and should be afforded protection. The guzzler is located about 20 feet east of the road and 30 feet west of Pond 1. Recommended mitigation measures pertaining to Feature 2 include:

- It is recommended that construction fencing be placed in a 20-foot buffer around the guzzler to provide both a visual aide and a physical barrier to the feature.
- Heavy equipment working in close proximity to the guzzler may create enough vibration to crack the mortar. It is recommended that smaller equipment, such as a mini excavator and/or bobcat be used for work around Pond 1. Mitigation measures pertaining to Feature 2 include:
- It is recommended that a qualified archaeologist be present to monitor ground-disturbing activities associated with Ponds 1 through 3 given their proximity to Feature 2.
- Construction crews should be informed of the feature and its associated protection measures.

The CCC culvert (F7) is a contributing element of the Historic District. Given its location along the access road, it may also be impacted as a result of project-related activities. Mitigation measures pertaining to Feature 7 include:

- It is recommended that construction fencing be placed around both the inlet and outlet culvert features to provide both a visual aide and a physical barrier to the feature.
- Construction crews should be informed of the feature and its associated protection measures.

Additional mitigation measures include:

- Although improbable, it is possible that previously unidentified cultural material, prehistoric burials, or paleontological resources might be discovered within the APE. Should human remains, paleontological, or previously unidentified cultural resources be encountered during construction activities, work must cease in the immediate area and the contractor must immediately report the finding to the County Coroner and California OHP (for human remains), and other designated officials as appropriate. The OHP will contact the appropriate tribal representatives and consult on disposition of the remains and any associated artifacts.

NCE prepared this report for use by the EBRPD as the intended beneficiary of this work. Interpretations, conclusions, and recommendations contained within the report are based in part on information presented in other reports that are cited in the text and listed in the references. This report is subject to limitations and qualifications inherent to the referenced documents.
Techniques and methods used during this investigation were such that existing resources of a prescribed size (15 meters across, and a sample of smaller resources) in the study area that were visible to surface examination have been identified. Every reasonable effort was made to identify cultural resources in the study area. If, however, prehistoric or historic period resources are subsequently discovered that could be adversely affected by project-related activities, all such activities should cease immediately and OHP and EBRPD representatives should be contacted immediately.
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Wollenberg, Charles
Figure 3. 1934 CCC camps in Contra Costa hills region.
Figure 4. 1940 CCC camp illustration.
Figure 9. 1972 Tilden Park North Map.
Appendix B
PRELIMINARY DESIGN
NOT FOR PUBLIC RELEASE

Appendix C
RECORDS SEARCH RESULTS
Appendix D

NATIVE AMERICAN CORRESPONDENCE
Date: February 23, 2016
To: California Native American Heritage Commission
From: NCE
Subject: Request for Native American Contact List and Sacred File Search for the Tilden Nature Area Sediment Basin Dredging Project

Ms. Cynthia Gomez, Executive Secretary
California Native American Heritage Commission
1550 Harbor Boulevard, Suite 100
West Sacramento, California 95691

Dear Ms. Gomez:

The Tilden Nature Area resides within Tilden Regional Park and protects the headwaters of one of the most important watersheds in the East Bay (Wildcat Creek). Because much of the land owned by East Bay Regional Park District (EBRPD) is in the headwaters of heavily disturbed watersheds, they protect and manage many important watershed functions including habitat, flood control, erosion control, and environmental education opportunities. Project objectives focus on restoring and enhancing critical aquatic habitat (lakes and ponds) to restore function to a basin, protect special status species, and provide high quality interpretive areas. Project activities will include:

- Dredging an existing in line sediment basin along Wildcat Creek to restore capacity
- Repairing and/or replacing the sediment basin wood weir
- Restoring CRLF habitat at three existing interpretive ponds
- Designing a new irrigation system to efficiently supplement the interpretive ponds
- Designing improved interpretive areas at the ponds through a new path and/or boardwalk

The legal description of the project area is T.01N., R.04W., Sections 23 and 26. Two maps are enclosed for your use. Figure 1 is an overview map of the project area at a 1:24,000 scale with a USGS 7.5’ quadrangle background. Figure 2 provides more detail of the project area depicting the proposed design components of the project on an aerial basemap.

NCE is assisting the EBRPD in its project planning activities. NCE cultural resource staff will be conducting a cultural resources investigation on behalf of the proposed project soon. We request that you provide us a contact list for that portion of Contra Costa County in the vicinity of the project area. We also request that you conduct a search of your Sacred Lands database for any places of concern that may be located within or adjacent to the proposed project area.

If you have any questions, please feel free to contact me via email at jhall@ncenet.com or by telephone (775-588-2505). I appreciate your assistance and look forward to hearing from you soon. If possible, please provide a response by March 9, 2016.

Sincerely,

[Signature]
Enclosed: Figure 1, Overview Map; Figure 2, Trail Alignment Detail Map
February 29, 2016

Jay Hall
NCE

Sent by Email: jhall@ncenet.com
Number of Pages: 3

RE: Tilden Nature Area Sediment Basin Dredging Project, Contra Costa County

Dear Mr. Hall:

Attached is a consultation list of tribes with traditional lands or cultural places located within the boundaries of the above referenced counties. Please note that the intent above reference codes is to mitigate impacts to tribal cultural resources, as defined, for California Environmental Quality Act (CEQA) projects.

As of July 1, 2015, Public Resources Code Sections 21080.1, 21080.3.1 and 21080.3.2 require public agencies to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purpose mitigating impacts to tribal cultural resources:

Within 14 days of determining that an application for a project is complete or a decision by a public agency to undertake a project, the lead agency shall provide formal notification to the designated contact of, or a tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, which shall be accomplished by means of at least one written notification that includes a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation pursuant to this section. (Public Resources Code Section 21080.1(d))

The law does not preclude agencies from initiating consultation with the tribes that are culturally and traditionally affiliated with their jurisdictions. The NAHC believes that in fact that this is the best practice to ensure that tribes are consulted commensurate with the intent of the law.

In accordance with Public Resources Code Section 21080.1(d), formal notification must include a brief description of the proposed project and its location, the lead agency contact information, and a notification that the California Native American tribe has 30 days to request consultation. The NAHC believes that agencies should also include with their notification letters information regarding any cultural resources assessment that has been completed on the APE, such as:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:

   ▪ A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   ▪ Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   ▪ If the probability is low, moderate, or high that cultural resources are located in the APE,
   ▪ Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE; and
   ▪ If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.
2. The results of any archaeological inventory survey that was conducted, including:
   ▪ Any report that may contain site forms, site significance, and suggested mitigation measures.

   All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. **A search of the SFL was completed for the USGS quadrangle information provided with negative results.**

4. Any ethnographic studies conducted for any area including all or part of the potential APE; and

5. Any geotechnical reports regarding all or part of the potential APE.

Lead agencies should be aware that records maintained by the NAHC and CHRIS is not exhaustive, and a negative response to these searches does not preclude the existence of a cultural place. A tribe may be the only source of information regarding the existence of a tribal cultural resource.

This information will aid tribes in determining whether to request formal consultation. In the case that they do, having the information beforehand will help to facilitate the consultation process.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance we are able to assure that our consultation list contains current information.

   **If you have any questions, please contact me at my email address: sharaya.souza@nahc.ca.gov**

Sincerely,

[Signature]

Sharaya Souza
Staff Services Analyst
Native American Heritage Commission
Tribal Consultation List
Contra Costa County
February 29, 2016

Amah Mutsun Tribal Band of Mission San Juan Bautista
Irene Zwiebeln, Chairperson
789 Canada Road          Ohlone/Costanoan
Woodside          CA  94062
amahmutsuntribal@gmail.com
(650) 400-4806 Cell

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28          Ohlone/Costanoan
Hollister          CA  95024
ams@indiancanyon.org
(831) 637-4238

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
P.O. Box 360791          Ohlone / Costanoan
Milpitas          CA  95036
muwekma@muwekma.org
(408) 314-1898
(510) 581-5194

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152          Ohlone/Costanoan
Fremont          CA  94539
chochenyo@AOL.com          Bay Miwok
Plains Miwok
Patwin
(510) 882-0527 Cell

Wilton Rancheria
Raymond Hitchcock, Chairperson
9728 Kent Street          Miwok
Elk Grove          CA  95624
rhitchcock@wiltronancheria-nsn.gov
(916) 683-6000 Office

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.90 of the Public Resources Code.

This list is applicable only for consultation with Native American tribes under Public Resources Code Sections 21080.3.1 for the proposed Tilden Nature Area Sediment Basin Dredging Project, Contra Costa County.
The following letter was sent to these individuals:

<table>
<thead>
<tr>
<th>Representative</th>
<th>Title</th>
<th>Affiliation</th>
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</thead>
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<tr>
<td>Irenne Zwierlein</td>
<td>Chairperson</td>
<td>Amah Mutsun Tribal Band of Mission San Juan Bautista</td>
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<tr>
<td>Raymond Hitchcock</td>
<td>Chairperson</td>
<td>Wilton Ranceria</td>
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<tr>
<td>Ann Marie Sayers</td>
<td>Chairperson</td>
<td>Indian Canyon Mutsun Band of Costanoan</td>
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<tr>
<td>Rosemary Cambra</td>
<td>Chairperson</td>
<td>Muwekma Ohlone Indian Tribe of the SF Bay Area</td>
</tr>
<tr>
<td>Andrew Galvan</td>
<td>n/a</td>
<td>The Ohlone Indian Tribe</td>
</tr>
</tbody>
</table>
March 14, 2016

Irenne Zwierlein  
Chairperson  
Amah Mutsun Tribal Band of Mission San Juan Bautista  
Ohlone/Costanoan  
789 Canada Road  
Woodside, CA 94062  

Re: Request for Native American Consultation for the Tilden Nature Area Sediment Basin Dredging Project  

Dear Ms. Zwierlein:  

The Tilden Nature Area resides within Tilden Regional Park and protects the headwaters of one of the most important watersheds in the East Bay (Wildcat Creek). Because much of the land owned by East Bay Regional Park District (EBRPD) is in the headwaters of heavily disturbed watersheds, they protect and manage many important watershed functions including habitat, flood control, erosion control, and environmental education opportunities. The EBRPD has proposed a project within the Tilden Nature Area. The Project objectives focus on restoring and enhancing critical aquatic habitat (lakes and ponds), restoring function to a sediment basin, protecting special status species, and providing high quality interpretive areas. Project activities will include:  

- Dredging an existing in line sediment basin along Wildcat Creek to restore capacity  
- Repairing and/or replacing the sediment basin wood weir  
- Restoring habitat to be suitable for California Red-legged frog (CRLF) at three existing interpretive ponds  
- Designing a new irrigation system to efficiently supplement the interpretive ponds  
- Designing improved interpretive areas at the ponds including a new path and/or boardwalk  

The legal description of the project area is T.01N., R.04W., Sections 23 and 26. Two maps are enclosed for your use. Figure 1 is an overview map of the project area at a 1:24,000 scale with a USGS 7.5’ quadrangle background. Figure 2 provides more detail of the project area depicting the proposed design components of the project on an aerial basemap.  

As per Public Resource Code (PRC) Sections 21080.1, 21080.3.1, and 21080.3.2 of the California Environmental Quality Act (CEQA), public agencies are required to consult with California Native American tribes identified by the Native American Heritage Commission (NAHC) for the purposes of mitigating impacts to tribal cultural resources. The NAHC provided your information on a consultation list of tribes with traditional lands or cultural places potentially located within the vicinity of the above referenced project. A search of the NAHC’s Sacred Lands File (SLF) produced no findings.  

NCE is assisting the EBRPD in its project planning activities. NCE cultural resource staff will be conducting a cultural resources investigation on behalf of the proposed project soon. A records search at the applicable Information Center of the California Historical Resources Information System (CHRIS) has been requested, but results have yet to be delivered. Therefore, the probability of encountering cultural resources within the Area of Potential Effect
(APE) is unknown at this point. However, NCE can provide associated documentation pertaining to the cultural resources component of this project if requested.

As part of the archaeological review for this project, I respectfully request any information you wish to share about cultural resources that may exist within the project area. This notification provides you the opportunity to disclose the existence of Native American archaeological or cultural sites that could potentially be affected by the project and the opportunity to submit other comments regarding the project. Please note that pursuant to PRC Section 21080.3.1(b)(2), the timeframe to request formal consultation on the project is 30 days (from receipt of this letter).

If you have any questions, please feel free to contact me. I appreciate your assistance and look forward to hearing from you soon.

Sincerely,

Jeremy Hall
Project Scientist
NCE
PO Box 1760
Zephyr Cove, NV 89448
(775) 588-2505
jhall@ncenet.com

Enclosed: Figure 1, Overview Map; Figure 2, Detail Map
March 23, 2016

To: NCE
Jeremy Hall
P.O. BOX 1760
Zephyr Cove, NV 89448

RE: Tribal Cultural Resources under the California Environmental Quality Act, AB52 (Gatto, 2014). Tribal Consultation for Tilden Area Sediment Basin Dredging Project.

Dear: Jeremy Hall,

This letter constitutes a formal request for tribal consultation under the provisions of the California Environmental Quality Act (CEQA) (Public Resources Code section 21080.3.1 subdivisions (b), (d) and (e)) for the mitigation of potential project impacts to tribal cultural resource for the above referenced project. Wilton Rancheria (Tribe) requested formal notice and information for all projects within your agency’s geographical jurisdiction on July 1, 2015 and received notification on March 14, 2016 regarding the above referenced project.

The Tribe requests consultation on the following topics checked below, which shall be included in consultation if requested (Public Resources Code section 21080.3.2, subd. (a):

- [ ] Alternatives to the project
- [ ] Define the Applicant (Lead Agency)
- [ ] Project funding
- [ ] Recommended mitigation measures
- [ ] Significant effects of the project
- [ ] Native American Inspector present during ground disturbance

The Tribe also requests consultation on the following discretionary topics checked below (Public Resources Code section 21080.3.2, subd. (a):

- [ ] Type of environmental review necessary
- [ ] Significance of tribal cultural resources, including any regulations, policies or standards used by your agency to determine significance of tribal cultural resources
- [ ] Significance of the project’s impacts on tribal cultural resources
- [ ] Project alternatives and/or appropriate measures for preservation or mitigation that we may recommend, including, but not limited to:
  1. Avoidance and preservation of the resources in place, pursuant to Public Resources Code section 21084.3, including, but not limited to, planning and construction to avoid the resources and protect the cultural and natural
context, or planning greenspace, parks or other open space, to incorporate the resources with culturally appropriate protection and management criteria;

(2) Treating the resources with culturally appropriate dignity taking into account the tribal cultural values and meaning of the resources, including but not limited to the following:
   a. Protecting the cultural character and integrity of the resource;
   b. Protection the traditional use of the resource; and
   c. Protecting the confidentiality of the resource.

(3) Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.

(4) Protecting the resource.

Additionally, the Tribe would like to receive any cultural resources assessments or other assessments that have been completed on all or part of the project’s area of potential effect (APE), and area surrounding the APE including, but not limited to:

1. The results of any record search that may have been conducted at an Information Center of the California Historical Resources Information System (CHRIS), including, but not limited to:
   - A listing of any and all known cultural resources have already been recorded on or adjacent to the APE;
   - Copies of any and all cultural resource records and study reports that may have been provided by the Information Center as part of the records search response;
   - If the probability is low, moderate, or high that cultural resources are located in the APE or surrounding the APE.
   - Whether the records search indicates a low, moderate or high probability that unrecorded cultural resources are located in the potential APE or surrounding the APE; and
   - If a survey is recommended by the Information Center to determine whether previously unrecorded cultural resources are present.
     + The Tribe requests to be present at any survey conducted on the Applicants behalf.

2. The results of any archaeological inventory survey that was conducted, including:
   - Any reports that may contain site forms, site significance, and suggested mitigation measures.
   - Any reports or inventories found under the Native American Graves Protection and Repatriation Act.
     + All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum, and not be made available for public disclosure in accordance with Government Code Section 6254.10. All Wilton Rancheria correspondences shall be kept under this confidential section and only shared between the Tribe and lead agency.

3. The results of any Sacred Lands File (SFL) check conducted through Native American Heritage Commission. The request form can be found at
http://www.nahc.ca.gov/slf_request.html. USGS 7.5-minute quadrangle name, township, range, and section required for the search.

4. Any ethnographic studies conducted for any area including all or part of the potential APE or areas surrounding the APE; and

5. Any geotechnical reports regarding all or part of the potential APE or areas surrounding the APE.
   - The Tribe shall be notified before any geotechnical testing is planned. Geotechnical testing has potential to impact Tribal Cultural Resources and should be part of this consultation.

The information gathered will provide us with a better understanding of the project and will allow the Tribe to compare your records with our database. The below requested review fees are based on services provided by tribal staff time and general administrative expenses. The Tribe’s fiscal year 2016 fee schedule is listed below:
   - Requested document review fee $450.00
   - Onsite field investigation requested fee $500.00
   - Tribal Inspector rates are based on a different fee schedule
     > All payments shall be made out to Wilton Rancheria at the address above.

We would like to remind your agency that CEQA Guidelines section 15126.4, subdivision (b)(3) states that preservation in place is the preferred manner of mitigating impacts to archaeological sites. Section 15126.4, subd. (b)(3) of the CEQA Guidelines has been interpreted by the California Court of Appeal to mean that “feasible preservation in place must be adopted to mitigate impacts to historical resources of an archaeological nature unless the lead agency determines that another form of mitigation is available and provides superior mitigation of impacts.” *Madera Oversight Coalition v. County of Madera* (2011) 199 Cal.App.4th 48, disapproved on other grounds, *Neighbors for Smart Rail v. Exposition Metro Line Construction Authority* (2013) 57 Cal.4th 439.

The Tribe expects to begin consultation within 30 days of your receipt of this letter. Please contact the Tribe’s lead contact person below.

Sincerely,

Steven Hutchason
Executive Director
Environmental Resources Department
Wilton Rancheria
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Project Photos - Tilden Nature Area Sediment Basin Dredging Project

20160331_084644

20160331_084703
Project Photos - Tilden Nature Area Sediment Basin Dredging Project

20160331_091021

20160331_091544
Project Photos - Tilden Nature Area Sediment Basin Dredging Project

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Project Photos - Tilden Nature Area Sediment Basin Dredging Project

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Project Photos - Tilden Nature Area Sediment Basin Dredging Project

20160331_100913

20160331_100930
Project Photos - Tilden Nature Area Sediment Basin Dredging Project

20160331_103513
Delineation of Waters of the United States

Tilden Nature Area
Contra Costa County, California

Prepared For:
Joe Sullivan, Fisheries Program Manager
East Bay Regional Park District
2950 Peralta Oaks Court
Oakland, CA 94605-0381

Date:
June 1, 2016

Prepared By:
Debra Lemke, PWS, CPESC
NCE
1885 S. Arlington Ave., Suite 111
Reno, NV 89509

NCE Project Number:
567.06.55

Marcy Kamerath, CPSWQ, QSD/P
Project Manager

Debra Lemke, PWS, CPESC
Senior Scientist
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Appendix D – Custom NRCS Soils Report

Appendix E – CD with Aquatic Resources Excel Spreadsheet and GIS Data and Associated Metadata

ACRONYMS AND ABBREVIATIONS

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1.0 EXECUTIVE SUMMARY

NCE performed field investigations on March 18, 2016 evaluating the potential jurisdictional status of waters of the United States (WOUS) for a portion of the Tilden Nature Area located within the Tilden Regional Park, which is located southeast of Richmond, approximately two miles east of Kensington, in Contra Costa, California.

NCE inventoried the two drainages within the project study area and determined whether they had a potential tributary connection to the San Pablo Bay, a traditional navigable water. NCE also inventoried three man-made ponds to determine if they were jurisdictional WOUS.

The delineation was conducted in accordance with the:

- 1987 Corps of Engineers Wetland Delineation Manual;
- 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0), September 2008; and

Two drainages were recognized by the United States Geological Survey (USGS) National Hydrologic Dataset and the United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI). Three man-made ponds are located within the study area and none of these ponds were identified by USGS or USFWS NWI.

NCE surveyed a total of approximately 6.64 acres. NCE delineated two drainages that are jurisdictional WOUS due to the presence of ordinary high water mark indicators and a connection to the San Pablo Bay. The three man-made ponds are not jurisdictional WOUS due to their man-made creation in uplands, the lack of USGS and NWI mapping, isolation, the lack of a federal nexus to a jurisdictional traditional navigable water, and a lack of any pond containing a downstream outlet which could result in a significant effect on the chemical, physical, and biological integrity of downstream traditional navigable waters.

These findings should be considered preliminary until the United States Army Corps of Engineers makes a final approved jurisdictional determination in coordination with the United States Environmental Protection Agency.
2.0 INTRODUCTION

The East Bay Regional Park District (EBRPD) contracted NCE to conduct a formal United States Army Corps of Engineers (USACE) delineation of waters of the United States, including wetlands (WOUS) at the Tilden Nature Area. The Tilden Nature Area is located within the Tilden Regional Park, southeast of Richmond, and approximately two miles east of Kensington, an unincorporated community in the Berkeley Hills, in Contra Costa County, California. The street address is: Tilden Nature Area, 600 Canon Drive, Berkeley, California, 94708. A Site Map is located in Appendix A, Figure 1.

Directions to the Tilden Nature Area are as follows:

- From Highway 80, take the University Avenue exit in Berkeley. Follow University Avenue and turn left onto Oxford Street. Turn right onto Rose Street. Turn left onto Spruce Street. Follow Spruce Street until you reach a stop sign at the top of the hill, proceed through the intersection and turn immediately left down Canon Dr. At the bottom of Canon Drive, veer left onto Central Park Drive and follow into the parking lot for the Tilden Nature Area (East Bay Regional Park District, 2016).

- From Highway 24, exit at Fish Ranch Road. Take Fish Ranch Road to Grizzly Peak Boulevard and turn right. Continue on Grizzly Peak Boulevard until you come to the intersection of Spruce Street, Wildcat Canyon Road and Canon Drive. Turn right on Wildcat Canyon Road, then immediately make a sharp left down Canon Drive. At the bottom of the hill, veer left onto Central Park Drive and follow into the parking lot for the Tilden Nature Area (East Bay Regional Park District, 2016).

The project study area within the Tilden Nature Area is approximately 6.64 acres in size.

The latitude and longitude of the project study area is: 37.910519 and -122.266802.

The project study area assessor’s parcel number is: 573-070-003.

The project study area is located in Section 23 and 26, Township 1 North, Range 4 West of the Mt. Diablo Meridian. The project study area is shown on United States Geological Survey (USGS) Richmond, California 7.5-minute series topographic quadrangle in Appendix A, Figure 2.

This report presents the regulatory guidance, methodology, and results of NCE’s review of available literature, aerial photographs, soil surveys, and WOUS delineation for the project study area.

The results are summarized in Figure 8 to depict proposed jurisdictional WOUS following the technical guidelines provided in the 1987 U.S. Army Corps of Engineers Wetlands Delineation Manual, supplemental manuals, and regulatory guidance for identifying WOUS and distinguishing them from aquatic habitats and other non-wetlands.
The Corps regulates discharge of dredged or fill material into waters of the United States under Section 404 of the Clean Water Act (CWA). “Discharges of fill material” are defined as the addition of fill material into waters of the U.S., including, but not limited to the following: placement of fill that is necessary for the construction of any structure, or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and subaqueous utility lines [33 C.F.R. §328.2(f)].

Section 404 of the CWA requires approval prior to discharging dredged or fill material into the WOUS. Typical activities requiring Section 404 permits are:

- Depositing of fill or dredged material in waters of the U.S. or adjacent wetlands.
- Site development fill for residential, commercial, or recreational developments.
- Construction of revetments, groins, breakwaters, levees, dams, dikes, and weirs.
- Placement of riprap and road fills.

Section 401 of the CWA (33 U.S.C. 1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into WOUS to obtain a certification that the discharge will comply with the applicable effluent limitations and water quality standards.

Section 10 of the Rivers and Harbors Act of 1899 requires approval prior to the accomplishment of any work in or over navigable waters of the United States, or which affects the course, location, condition, or capacity of such waters. Typical activities requiring Section 10 permits are:

- Construction of piers, wharves, bulkheads, dolphins, marinas, ramps, floats intake structures, and cable or pipeline crossings.
- Dredging and excavation.

Any person, firm, or agency (including federal, state, and local government agencies) planning to work in navigable WOUS, or dump or place dredged or fill material in WOUS, must first obtain a permit from the USACE. Permits, licenses, variances, or similar authorizations may also be required by other federal, state, and local statutes.
3.1 Waters of the United States

Waters of the United States include essentially all surface waters such as all navigable waters and their tributaries, all interstate waters and their tributaries, all wetlands adjacent to these waters, and all impoundments of these waters. Navigable waters of the United States are defined as waters that have been used in the past, are now used, or are susceptible to use as a means to transport interstate or foreign commerce up to the head of navigation. Section 10 and/or Section 404 permits are required for construction activities in these waters. Boundaries between jurisdictional waters and uplands are determined in a variety of ways depending on which type of water is present. Methods for delineating wetlands and non-tidal waters are described below.

Wetlands are defined as “those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” [33 C.F.R. §328.3(b)]. Presently, to be a wetland, a site must exhibit positive indicators of three wetland criteria: hydrophytic vegetation, hydric soils, and wetland hydrology existing under the “normal circumstances” for the site.

The lateral regulatory extent of non-tidal waters is determined by delineating the ordinary high water mark (OHWM) [33 C.F.R. §328.4(c)(1)]. The OHWM is defined by the USACE as “that line on shore established by the fluctuations of water and indicated by physical character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” [33 C.F.R. §328.3(e)].

3.2 The Solid Waste Agency of Northern Cook County (SWANCC) Decision

The Solid Waste Agency of Northern Cook County v. the U.S. Army Corps of Engineers, 531 U.S. 159 (2001), is more commonly referred to as the SWANCC decision. The decision involved a challenge to CWA jurisdiction over certain isolated, intrastate, non-navigable ponds in Illinois that formerly had been gravel mine pits, but which, over time, provided habitat for migratory birds. Although these ponds served as migratory bird habitat, they were non-navigable and isolated from the tributary system of other waters regulated under the CWA. In the SWANCC decision, the Supreme Court held that the USACE had exceeded its authority in asserting CWA jurisdiction pursuant to § 404(a) over the waters at issue based on their use as habitat for migratory birds, pursuant to preamble language, commonly referred to as the Migratory Bird Rule (51 Fed. Reg. 41217 [1986]).

The SWANCC decision eliminates CWA jurisdiction over isolated waters that are intrastate and non-navigable, where the sole basis for asserting CWA jurisdiction is the actual or potential use of the waters as habitat for migratory birds that cross state lines in their migrations. CWA jurisdiction extends to waters, including wetlands, which are adjacent to navigable waters pursuant to the Supreme Court holding in Riverside Bayview Homes, which was endorsed in SWANCC as controlling law. The USACE and EPA regulations currently define the term ‘adjacent’ as "bordering, contiguous, or neighboring" [33 C.F.R. § 328.3(b)]. The case law on the precise scope of federal CWA jurisdiction since SWANCC is still developing.
3.3 The Rapanos Decision

The consolidated cases *Rapanos v. United States* and *Carabell v. United States*, 126 S. Ct. 2208 (2006) are referred to as Rapanos. The Supreme Court’s decision in these consolidated cases addressed where the federal government can apply the CWA, specifically by determining whether a wetland or tributary is a “water of the United States.” The justices issued five separate opinions in Rapanos, with no single opinion commanding a majority of the Court.

The plurality of the Court concluded that the USACE’s regulatory authority should extend only to “relatively permanent, standing, or continuously flowing bodies of water” connected to traditional navigable waters (TNWs), and to “wetlands with a continuous surface connection to” such relatively permanent waters (U.S. Army Corps and U.S. EPA 2007). Justice Kennedy concluded that wetlands are Waters of the United States “if the wetlands, either alone or in combination with similarly situated lands in the region, significantly affect the chemical, physical, and biological integrity of other covered waters more readily understood as navigable. When, in contrast, a wetland’s effects on water quality are speculative or insubstantial, they fall outside the zone fairly encompassed by the statutory term “navigable waters” (U.S. Army Corps and U.S. EPA 2007).

When there is no majority opinion in a Supreme Court case, controlling legal principles may be derived from those principles espoused by five or more justices. Thus, regulatory jurisdiction under the CWA exists over a “water” if either the plurality or Justice Kennedy’s standard is satisfied (U.S. Army Corps and U.S. EPA 2007).

As a result of the Rapanos decision, the USACE will assert jurisdiction over the following waters:

- Traditional navigable waters
- Wetlands adjacent to traditional navigable waters
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (e.g., typically three months)
- Wetlands that directly abut such tributaries

The agencies will decide jurisdiction over the following waters based on a fact-specific analysis to determine whether they have a significant nexus with a traditional navigable water:

- Non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary

The USACE generally will not assert jurisdiction over the following features:

- Swales or erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)
- Ditches (including roadside ditches) excavated wholly in and draining only uplands and that do not carry a relatively permanent flow of water
The USACE will apply the significant nexus standard as follows:

- A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by all wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of downstream traditional navigable waters
- Significant nexus includes consideration of hydrologic and ecologic factors
4.0 METHODS

4.1 LITERATURE REVIEW

Available information pertaining to the natural resources of the region was reviewed. All references reviewed for this delineation are listed in Section 7.0. Pertinent site-specific reports and general references utilized concurrent with the delineation include the following:

- USFWS NWI mapping.
- USGS National Hydrologic Dataset mapping.
- Google Earth.
- U.S. Department of the Interior, USGS. Richmond, California 7.5-minute series topographic quadrangle.
4.0 METHODS


- Personal communications with EBRPD staff.

- Tilden Nature Area plant lists provided from EBRPD staff.

4.2 RESEARCH AND FIELD METHODOLOGY

Prior to the field investigation, USGS topographic maps and National Hydrologic Dataset mapping, aerial photographs, USFWS NWI mapping, and a NRCS custom soil report of the project study area were reviewed for indications of ephemeral, intermittent, and perennial drainages as well as mapped wetlands and spring locations.

NCE visited the project study area on March 18, 2016 and conducted a formal field investigation to identify possible jurisdictional WOUS (including wetlands). NCE personnel traversed the project study area and identified two drainages that pass through the project study area and three man-made ponds were identified within the project study area.

A follow-up site visit was conducted to collect additional data on hydrology conditions on April 27, 2016.

Drainages

Two drainages (Wildcat Creek and Laurel Creek) within the project study area were assessed for the presence of OHWM indicators and some evidence that the drainage experiences surface water flows on a frequent and regular basis. These characteristics were considered to be indicative of a jurisdictional WOUS. Arid West Ephemeral and Intermittent Stream OHWM Datasheets were completed for each drainage with the presence of OHWM indicators. Datasheets for Wildcat Creek were labeled WC1, WC2, and WC3; a datasheet for Laurel Creek was labeled UT1 (for Unnamed Tributary 1). If the drainage had OHWM indicators present, the drainage was followed to determine if the drainage flowed into another drainage with OHWM indicators or if these indicators terminated. Where the drainage exhibited OHWM indicators, width measurements were taken to be used in determining an average width of the drainage and height measurements from the OHWM to the drainage bottom were taken. When drainages with OHWM indicators left the project study area, an attempt was made to follow the drainage to determine if OHWM indicators terminated or a connection to a TNW. The team was unable to physically follow Wildcat Creek to the San Pablo Bay due to private land ownerships, however, per Google Earth and USGS mapping, it was determined that Wildcat Creek discharges into the San Pablo Bay, a TNW. Laurel Creek discharges into Wildcat Creek west of the project study area. Ordinary high water mark indicator locations were recorded with a Trimble GPS unit and representative photographs were taken.
Representative photographs are provided in Appendix B. The Arid West OHWM datasheets are provided in Appendix C.

For a jurisdictional determination for drainages, these waters were classified on the basis of the agency guidance developed in response to the Rapanos decision for drainages.

**Wetlands**

Three man-made ponds within the project study area were delineated utilizing the USACE 1987 three-parameter (vegetation, hydrology, and soils) methodology. This methodology has been refined in the 2008 *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* and requires the collection of data on soils, vegetation, and hydrology at several locations to establish the potential jurisdictional boundary of wetlands.

The team identified representative locations for data collection. Soil pits were dug and the team collected data on vegetation, hydrology, and soils. Soils were also examined and correlations were developed between the three parameters to make wetland determinations. Data points were evaluated to determine the composition and identification of dominant plant species. The indicator status of all dominant plant species, as determined by the 2014 National Wetland Plant List, version 3.2, was applied and evaluated as part of the vegetation assessment portion of the wetland determination process. Additionally, immediate subsurface soil conditions were examined for hydric attributes or a lack thereof. Observations were made and recorded for both primary and secondary wetland hydrology indicators, if present. Soil pit locations were recorded with a Trimble GPS unit and representative photographs were taken.

Representative photographs are provided in Appendix B. The Arid West Region, Wetland Determination datasheets are provided in Appendix C.

For a jurisdictional determination for wetlands, these waters were classified on the basis of the agency guidance developed in response to the SWANCC decision.

**4.3 Survey Data Integration**

Boundaries of the potential WOUS within the project survey area were mapped using a Trimble GPS unit and digitized in ESRI ArcGIS 9.3 software and by mapping features on aerial photographs as well as topographic basemap with 1 foot contours.
5.0 FINDINGS

5.1 SURVEY AREA DESCRIPTION

5.1.1 Survey Area Location

The project study area is located in Section 23 and 26, Township 1 North, Range 4 West of the Mt. Diablo Meridian in Contra Costa County, California. The project area covers approximately 6.64 acres. The project area is located in unincorporated Contra Costa County within the Tilden Nature Area in Tilden Regional Park (Appendix A, Figures 1 and 2).

5.1.2 Land Use

Land use in the project study area is predominantly open space with residential development to the west and south of the project study area. Land use includes both developed and undeveloped residential areas, paved roads, and open space recreational trails.

NCE understands that the three ponds located in the northern portion of the project study area were dug in the mid to late 1960’s. The ponds were dug for the purposes of creating an on-site environmental aquatic habitat educational program. It is believed that permanent irrigation lines were installed at the time of the pond construction. The EBRPD staff used to regularly fills the ponds with irrigation waters during the summer months, however, the application of irrigation was ceased in 2013.

5.1.3 Climate

The climate in Contra Costa County (CCC) varies depending on the location and topography. Western CCC experiences cool summers and mild winters due to its proximity to San Francisco and San Pablo Bays. Mean annual temperature in the project area is 58.5 degrees Fahrenheit. In August, the area reaches an average high of 79.7 degrees Fahrenheit, with an average low of 55.4 degrees Fahrenheit. In December, the area averages a high of 54.9 degrees Fahrenheit with a low of 43.1 degrees Fahrenheit.

Elevation and proximity to the sea have a direct effect on the average annual precipitation across CCC. According to the Berkeley, California Station 040693, the Period of Record’s (January 1, 1893 to December 31, 2014) average total precipitation is 23.41 inches (Western Regional Climate Center (WRCC), 2016). Precipitation at the project area generally occurs between October and May due to the site’s Mediterranean climate. Typically most precipitation falls in December, January, February, and March with the largest Period of Record average being 4.98 inches in January. The 2015 December, 2016 January, February, and March precipitation totals have exceeded the Period of Record totals for those months by 5.35 inches (Table 1). Due to the increased precipitation prior to the delineation, the climatic conditions at the site were not typical.
Table 1. Precipitation Totals

<table>
<thead>
<tr>
<th>Month</th>
<th>Period of Record Precipitation Totals (inches)</th>
<th>2016 Precipitation Totals (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>December 2015</td>
<td>4.11</td>
<td>4.93</td>
</tr>
<tr>
<td>January 2016</td>
<td>4.98</td>
<td>8.26</td>
</tr>
<tr>
<td>February 2016</td>
<td>4.07</td>
<td>0.66</td>
</tr>
<tr>
<td>March 2016</td>
<td>3.27</td>
<td>7.93</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>16.43</strong></td>
<td><strong>21.78</strong></td>
</tr>
</tbody>
</table>

WRCC, 2016

5.2 **PHYSICAL FEATURES**

5.2.1 **Soils**

Soils within the project study area have been mapped by the NRCS and are described in the Custom Soil Resource Report for Contra Costa County, California (NRCS, 2016a). The survey includes two soil types: Millsholm loam, 15 to 30% slopes, MLRA 15 and Zamora silty clay loam, 2 to 5% slopes. The NRCS descriptions of these soil types are described below and shown on Table 2, and the soils are depicted on Appendix A, Figure 3.

**Soil Unit: Millsholm loam, 15 to 30 percent slopes, MLRA 15**

This soil unit is found on hillslopes at elevations between 0 to 1,800 feet above mean sea level. The components of this soil type are 85% Millsholm and similar soils, 10% Dibble, and 5% Unnamed. The soil unit has a Natural Drainage Class of well drained with a moderately low to high saturated hydraulic conductivity (Ksat, 0.14 to 2.00 inches/hour). The Runoff Class is high. The depth to the water table is more than 80 inches. The frequency of flooding and ponding are none and the available water storage in its profile is low.

The typical profile is:

- **A** - 0 to 8 inches: loam
- **Bt** – 8 to 17 inches: loam
- **R** – 17 to 27 inches: bedrock

This soil type is found in the northern portion of the survey area. Millsholm and Dibble soils are not classified as hydric (NRCS, 2016b).

**Soil Unit: Zamora silty clay loam, 2 to 5 percent slopes**

This soil unit is found on alluvial fans, terraces, and valley floors between 100 to 500 feet above mean sea level. The components of this soil type are 85% Zamora and similar soils, 5% Garretson, 5% Los robles, and 5% Rincon. The soil unit has a Natural Drainage Class of well drained with a moderately low to moderately high saturated hydraulic conductivity (Ksat, 0.06 to 0.20 inches/hour). The Runoff Class is medium. The depth to the water table is more than 80 inches. The frequency of flooding and ponding are none and the available water storage in its profile is high.

The typical profile is:

- **H1** - 0 to 16 inches: silty clay loam
- **H2** - 16 to 72 inches: silty clay loam

This soil type is found in the southern portion of the survey area. Zamora, Garretson, and Los robles soils are not hydric; Rincon is classified as a hydric soil (NRCS, 2016b).
The custom NRCS soil report is located in Appendix D.

Table 2. Soils in the Project Area

<table>
<thead>
<tr>
<th>Soil Series/Soil</th>
<th>Map Symbol</th>
<th>Parent Material</th>
<th>Drainage Class</th>
<th>% of Project Boundary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millsholm loam, 15 to 30 percent slopes, MLRA 15</td>
<td>MeE</td>
<td>Residuum weathered from sandstone and shale</td>
<td>well drained</td>
<td>35.7%</td>
</tr>
<tr>
<td>Zamora silty clay loam, 2 to 5 percent slopes</td>
<td>ZaB</td>
<td>Alluvium derived from sedimentary rock</td>
<td>well drained</td>
<td>64.3%</td>
</tr>
</tbody>
</table>

The two drainages are located in the Zamora silty clay loam, 2 to 5 percent slopes. The three man-made ponds (Man-Made Pond 1, Man-Made Pond 2, and Man-Made Pond 3) are located within both soil types. Specifically, Man-Made Pond 1 and 2 are located in Zamora silty clay loam, 2 to 5 percent slopes, and Man-Made Pond 3 is located in both soil types.

5.2.2 Topography

The project study area is located in the upper watershed of Wildcat Creek. The site is located on the floor of a small valley, and has generally flat terrain. Elevations of the project site range from approximately 500 feet to 550 feet (150 meters to 170 meters) above mean sea level.

5.2.3 Regional Hydrology

Lake Anza is upstream (south) of the project study area and is in the headwaters of Wildcat Creek. Wildcat Creek crosses the southern project study area and then travels outside the western project study area boundary. Laurel Creek crosses the project study area and discharges into Wildcat Creek west of the project study area. Wildcat Creek discharges into the San Pablo Bay, a TNW.

5.2.4 Site-Specific Hydrology

Wildcat Creek is classified as a perennial drainage and Laurel Creek is classified as an intermittent drainage per the USGS. Both of these drainages are recognized on the USFWS NWI.

The three man-made ponds are present in the northern portion of the project study area. These man-made ponds are not recognized by USGS or the USFWS NWI. The ponds were excavated near the toe of a hillslope. The hillslope produces runoff during rain events and the water appears to collect within these man-made ponds.
5.3 Vegetation

Four general habitat types were identified on the project study area. These are California annual grassland, eucalyptus forest, coast live oak woodlands, and riparian woodland (Appendix A, Figure 4) (Sawyer 2010) (Holland 1986).

Plant species identified at the project study area in the California annual grassland habitat type include wild oat (Avena sp.), English plantain (Plantago lanceolata), vetch (Vicia sp.), ripgut brome (Bromus diandrus), burr clover (Medicago polymorpha), cutleaf geranium (Geranium dissectum) and coyote brush (Baccharis pilularis).

Plant species found in the coast live oak woodland include coast live oak (Quercus agrifolia), poison oak (Toxicodendron diversilobum), and California bay (Umbellularia californica).

Riparian woodlands at the project study area were characterized by the red alder riparian forest alliance. These habitats included Pacific willow (Salix lasiandra), red alder (Alnus rubra), dogwood (Cornus sericea), and big-leaf maple (Acer macrophylla). The understory included California blackberry (Rubus ursinus), Himalayan blackberry (Rubus discolor), gooseberry (Ribes sp.), and western sword fern (Polystichum munitum).

5.4 Classification of Waters of the United States

Three man-ponds ponds and two drainages were identified within the project study area. A description of the feature types delineated is provided below.

5.4.1 Man-Made Ponds

Three man-made ponds were delineated: Man-Made Pond 1, Man-Made Pond 2, and Man-Made Pond 3.

Five representative soil pits were dug in the man-made pond area. Appendix A, Figure 5 depicts the locations of the man-made ponds and the five representative soil pits. Soil pits at Man-Made Ponds 1, 2, and 3 (Soil Pit (SP) 1, SP4, and SP5) were dug on the edge of the ponds. All three soil pits had the presence of hydric soils, however, based on the NRCS soil descriptions and the application of irrigation for approximately the past 45 years, NCE believes that the hydric soils are falsely created and maintained. The two soil pits (SP2 and SP3) dug near the ponds did not have a presence of hydric soils. Representative photographs of the soil pits and the man-made ponds are shown in Appendix B. Appendix A, Figure 6 shows the locations of the ground photographs with the compass direction. Datasheets are located in Appendix C.

The vegetation at the man-made ponds data points was very similar to the data points adjacent to the man-made ponds. The difference was the ponds contained cattails and a Juncus species, both of which become quickly established with the application of irrigation waters. There is a significant lack of diverse hydrophytic wetland vegetation in the ponds.

At the time of the delineation (March 18, 2016), Man-Made Ponds 1 and 2 were nearly full with standing water, and Man-Made Pond 3 was partially full with standing water. NCE believes this is due to the excess amounts of rain prior to the delineation as well as the topography of the pond locations, which are at the bottom of a hillslope. It appears that the hillslope runoff discharges into the ponds. The man-made ponds OHWM was not recorded in the field due to safety issues of the ponds banks and the unknown water level depths. The
perimeter of each man-made pond was walked and recorded with a GPS unit. These perimeters of each man-made pond were used as the OHWM and are shown on Figure 5. However, the exact OHWM line may not be accurate; in fact it is likely that the OHWM is smaller than what was recorded in the field.

A follow-up site visit was conducted on April 27, 2016 to assess the water levels of the three ponds. Man-Made Ponds 1 and 2 were about 50% full with standing water, and Man-Made Pond 3 contained about a few feet of standing water.

The three Man-Made Ponds are not hydrologically connected to Wildcat Creek or Laurel Creek. The ponds do not possess an inlet or an outlet. Due to each pond not having a downstream outlet there is no possibility of the ponds significantly affecting the chemical, physical, and biological integrity of downstream traditional navigable waters. The ponds hydrology have been artificially maintained from about the 1960’s to 2013 with the application of irrigation waters in the summer months to provide aquatic habitat education resource tools for the Tilden Nature Area Interpretive Programs.

Tables 3a and 3b summarize the data collected in the man-made pond area.

Table 3a. Man-Made Pond Area Data Summary

<table>
<thead>
<tr>
<th>Location</th>
<th>Data Sheet Point</th>
<th>Hydrophytic Vegetation</th>
<th>Hydric Soils</th>
<th>Wetland Hydrology</th>
<th>Acreage</th>
<th>Jurisdictional/ Connection to a TNW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man-Made Pond 1</td>
<td>SP1</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>0.015</td>
<td>No, isolated, no inlet or outlet.</td>
</tr>
<tr>
<td>Between Man-Made Ponds 1 and 2</td>
<td>SP2</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Man-Made Pond 2</td>
<td>SP5</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>0.047</td>
<td>No, isolated, no inlet or outlet.</td>
</tr>
<tr>
<td>Near Man-Made Pond 3</td>
<td>SP3</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Man-Made Pond 3</td>
<td>SP4</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>0.046</td>
<td>No, isolated, no inlet or outlet.</td>
</tr>
</tbody>
</table>
Table 3b. Man-Made Pond Area Ground Photograph Summary

<table>
<thead>
<tr>
<th>Location</th>
<th>Data Sheet Point</th>
<th>Photo Number</th>
<th>Coordinates (Latitude and Longitude)</th>
<th>Compass Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man-Made Pond 1</td>
<td>SP1</td>
<td>1</td>
<td>37.91106065470, -122.26719960300</td>
<td>228.75</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Man-Made Pond 1</td>
<td>SP1</td>
<td>2</td>
<td>54.68</td>
<td></td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Man-Made Pond 1</td>
<td>SP1</td>
<td>3</td>
<td>Looking directly at soils</td>
<td></td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Between Man-Made Pond 1 and Man-Made Pond 2</td>
<td>SP2</td>
<td>4</td>
<td>37.91112858810, -122.26710734300</td>
<td>Looking directly at soils</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Man-Made Pond 2</td>
<td>SP5</td>
<td>5</td>
<td>Looking east</td>
<td></td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Man-Made Pond 2</td>
<td>SP5</td>
<td>6</td>
<td>Looking north</td>
<td></td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Man-Made Pond 2</td>
<td>SP5</td>
<td>7</td>
<td>Looking directly at soils</td>
<td></td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Man-Made Pond 2</td>
<td>SP5</td>
<td>8</td>
<td>265.65</td>
<td></td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Man-Made Pond 3</td>
<td>SP4</td>
<td>9</td>
<td>37.91160543120, -122.26738460200</td>
<td>291.47</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Man-Made Pond 3</td>
<td>SP4</td>
<td>10</td>
<td>174.44</td>
<td></td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Near Man-Made Pond 3</td>
<td>SP3</td>
<td>11</td>
<td>37.91155317190, -122.26736507600</td>
<td>Looking directly at soils</td>
<td>See Appendix B</td>
</tr>
</tbody>
</table>

A total of 0.108 acres of potential WOUS were delineated at the man-made pond area. Due to the lack of the three wetland indicators (except for Man-Made Pond 2), the historic application of irrigation waters for about 45 years to create and sustain hydrology, the lack of USGS and NWI mapping, their man-made creation in uplands, isolation, a lack of a connection to a jurisdictional TNW, and a lack of any pond containing a downstream outlet which could have a significant effect of the chemical, physical, and biological integrity of downstream TNW’s, these man-made ponds are considered non-jurisdictional and not subject to regulation under the CWA.

5.4.2 Drainages

Portions of two drainages were delineated within the project study area (Appendix A, Figure 2). Wildcat Creek, a perennial drainage, crosses the southern project study area and then travels outside the western project study area boundary. Laurel Creek, an intermittent drainage, crosses the project study area and discharges into Wildcat Creek west of the project study area. Both drainages were flowing at the time of the delineation. Both drainages presented multiple OHWM indicators and evidence that the drainages experience surface water flows on a frequent and regular basis. Appendix A, Figure 7 depicts the locations of the delineated drainages and OHWM data points. Representative photographs of the drainages
are shown in Appendix B and Appendix A, Figure 6 shows the locations of the ground photographs with the compass direction. Datasheets are located in Appendix C.

Tables 4a and 4b summarize the data collected at the drainages.

Table 4a. Drainages Data Summary

<table>
<thead>
<tr>
<th>Location</th>
<th>Data Sheet Point</th>
<th>OHWM Indicators Present</th>
<th>Length of Drainage with OHWM Indicators ¹ (feet)</th>
<th>Width of OHWM at Data Point (inches)</th>
<th>Height of OHWM from bottom of channel (inches)</th>
<th>Acreage</th>
<th>Jurisdictional/Connection to a TNW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wildcat Creek</td>
<td>WC1</td>
<td>Yes</td>
<td>320</td>
<td>195</td>
<td>11</td>
<td>0.128</td>
<td>Yes to the San Pablo Bay</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC2</td>
<td>Yes</td>
<td></td>
<td>646</td>
<td>27</td>
<td></td>
<td>Yes to the San Pablo Bay</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC3</td>
<td>Yes</td>
<td></td>
<td>121</td>
<td>4</td>
<td></td>
<td>Yes to the San Pablo Bay</td>
</tr>
<tr>
<td>Laurel Creek</td>
<td>UT1</td>
<td>Yes</td>
<td>51</td>
<td>55</td>
<td>5</td>
<td>0.005</td>
<td>Yes to Wildcat Creek, then to the San Pablo Bay</td>
</tr>
</tbody>
</table>

¹This is the length of the drainage within the project study area
Table 4b. Drainages Ground Photograph Summary

<table>
<thead>
<tr>
<th>Location</th>
<th>Data Sheet Point</th>
<th>Photograph Number</th>
<th>Coordinates (Latitude and Longitude)</th>
<th>Compass Direction</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wildcat Creek</td>
<td>WC1</td>
<td>12</td>
<td>37.90913158190, -122.26460584000</td>
<td>319.73</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC1</td>
<td>13</td>
<td></td>
<td>129.53</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC2</td>
<td>14</td>
<td>37.90925988370, -122.2648078000</td>
<td>353.97</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC2</td>
<td>15</td>
<td>37.90910825100, -122.26485924000</td>
<td>252</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC2</td>
<td>16</td>
<td></td>
<td>281.55</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC3</td>
<td>17</td>
<td>37.90921315970, -122.26513835500</td>
<td>64.59</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC3</td>
<td>18</td>
<td></td>
<td>347.81</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC3</td>
<td>19</td>
<td>37.90918526430, -122.26513712100</td>
<td>179.59</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Wildcat Creek</td>
<td>WC3</td>
<td>20</td>
<td>37.90921315970, -122.26513835500</td>
<td>246.59</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Laurel Creek</td>
<td>UT1</td>
<td>21</td>
<td>37.91045623070, -122.26665582300</td>
<td>47.33</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Laurel Creek</td>
<td>UT1</td>
<td>22</td>
<td></td>
<td>16.1</td>
<td>See Appendix B</td>
</tr>
<tr>
<td>Laurel Creek</td>
<td>UT1</td>
<td>23</td>
<td></td>
<td>232.61</td>
<td>See Appendix B</td>
</tr>
</tbody>
</table>

A total of 0.133 acres of potential WOUS were delineated at the project study area. Laurel Creek has a surface water connection to Wildcat Creek. Wildcat Creek has a surface water connection to the San Pablo Bay. Both drainages presented multiple OHWM indicators and have the potential to affect the integrity of the water quality of San Pablo Bay, a TNW. Therefore Laurel Creek and Wildcat Creek are considered jurisdictional and subject to regulation under the CWA.
6.0 CONCLUSION

Application of routine WOUS delineation techniques and SWANCC and Rapanos guidelines revealed the presence of features that appear to conform to the definition of WOUS pursuant to Section 404 of the federal CWA.

A total of 0.133 acres of drainages was delineated within the project study area and is jurisdictional and subject to regulation under the CWA. Specifically, 0.128 acres of Wildcat Creek (perennial drainage) and 0.005 acres of Laurel Creek (intermittent drainage) are present within the project study area.

Table 5 below provides acreage per class and summarizes the total acreage of WOUS in the project study area. Appendix A, Figure 8 depicts the proposed delineation map. Appendix A, Figure 9 depicts the proposed jurisdictional determination analysis map.

<table>
<thead>
<tr>
<th>Feature (Class)</th>
<th>Acres Jurisdictional Waters</th>
<th>Acres Non-Jurisdictional Waters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Man-Made Pond 1 (Open Water/Wetland)</td>
<td>-</td>
<td>0.015</td>
</tr>
<tr>
<td>Man-Made Pond 2 (Open Water/Wetland)</td>
<td>-</td>
<td>0.047</td>
</tr>
<tr>
<td>Man-Made Pond 3 (Open Water/Wetland)</td>
<td>-</td>
<td>0.046</td>
</tr>
<tr>
<td>Wildcat Creek¹ (Perennial Drainage)</td>
<td>0.128</td>
<td>-</td>
</tr>
<tr>
<td>Laurel Creek² (Intermittent Drainage/Relatively Permanent Water)</td>
<td>0.005</td>
<td>-</td>
</tr>
<tr>
<td>TOTAL</td>
<td>0.133</td>
<td>0.108</td>
</tr>
</tbody>
</table>

¹Used 320 inches as the average width to determine acres.
²Used 48 inches as the average width to determine acres.

The Aquatic Resources Table and the associated GIS data and associated metadata are located on a CD in Appendix E.

The above findings should be considered preliminary until the USACE makes a final approved jurisdictional determination in coordination with the United States Environmental Protection Agency. Areas deemed jurisdictional will then be subject to the regulatory requirements of the federal CWA.
7.0 CONTACT INFORMATION

Applicant:

Joe Sullivan, Fisheries Program Manager
East Bay Regional Park District
2950 Peralta Oaks Court
Oakland, California 94605-0381

Prepared by:

Debra Lemke, PWS, CPESC (Professional Wetland Scientist #1722; Certified Professional in Erosion and Sediment Control #2574)

NCE
1885 S. Arlington Ave #111
Reno, Nevada 89509
Phone: (775) 329-4955
8.0 REFERENCES


TILDEN NATURE AREA
Delineation of Waters of the United States

8.0 REFERENCES


Western Regional Climate Center. 2016. Climate data for the project study area accessed online at: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca0693.
Tilden Nature Area Waters of the United States Delineation

Project Site:
Tilden Nature Area / Little Farm Environmental Education Center (nearby address)
600 Canon Drive
Berkeley, CA 94708

Central Park Drive

Legend
- Project Site
- City Limit
- Census Designated Place (CDP)
- County

Site Map
1 in. = 1 miles

Credits: ESRI Basemap; NCE, NHD
Date prepared: 5/19/2016 Date revised: n/a
Author: Marcy Kamerath, Project Scientist, NCE
Figure 1
Man-Made Pond 3
Man-Made Pond 2
Man-Made Pond 1
Laurel Creek - 0.005 acres

Legend
- Map Reference Point
- Project Study Area (6.64 acres)
- Topography (10-foot Contour Interval)

Sampling Points
- Upland
- Potential Wetland

Waters
- Laurel Creek (0.005 Acres)
- Man Made Ponds OHWM (0.108 Acres)

Tilden Nature Area Waters of the United States Delineation
WOUS Data Points for Man-Made Ponds

Credits: Contra Costa County Orthoimagery (Oct 2014), NCE, NHD
Coordinate System: NAD 1983 State Plane Zone 3;
Projection: Lambert Conformal Conic; Datum: North American 1983

Created: 5/19/2016 Revised: n/a
Author: Marcy Kamerath, Project Scientist, NCE

Figure 5
Legend
- Map Reference Point
- Ground Photographs (Compass Direction)
- Project Study Area (6.64 acres)

Waters
- Laurel Creek (0.005 Acres)
- Wildcat Creek (0.128 Acres)
- Man Made Ponds OHWM (0.108 Acres)

Tilden Nature Area Waters of the United States Delineation
Ground Photograph Locations and Aspects

Credits: Contra Costa County Orthoimagery (Oct 2014), NCE, NHD
Coordinate System: NAD 1983 State Plane Zone 3;
Projection: Lambert Conformal Conic; Datum: North American 1983

Created: 5/23/2016 Revised: n/a
Author: Marcy Kamerath, Project Scientist, NCE
Wildcat Creek average width in project area is 320 inches. This average width was used to digitize Wildcat Creek for mapping purposes.
The findings should be considered preliminary until the USACE makes a final approved jurisdictional determination in coordination with the US EPA.

**Legend**
- Map Reference Points
- Project Study Area
- Topography (10-foot Contour Interval)

**WOUS**
- Intermittent Drainage - Laurel Creek (0.005 Acres)
- Perennial Drainage - Wildcat Creek (0.128 Acres)
Tilden Nature Area Waters of the United States Delineation
Proposed Jurisdictional Determination Analysis Map

Legend
- 12 HUC Watershed - 180500020702
- Project Study Area (6.64 acres)

Proposed Jurisdictional WOUS
- Intermittent Drainage RPW - Laurel Creek - Trib 2
- Perennial Drainage - Wildcat Creek - Trib 1

Proposed Non-jurisdictional Waters
- Man-made ponds - Trib 1 MMP

Credits: Contra Costa County Orthoimagery (Oct 2014), NCE, NHD
Coordinate System: NAD 1983 State Plane Zone 3;
Projection: Lambert Conformal Conic; Datum: North American 1983

Created: 5/23/2016 Revised: n/a
Author: Marcy Kamerath, Project Scientist, NCE
Appendix B

Representative Photographs
Photograph 1. Man-Made Pond 1, looking southwest, Data Sheet SP1

Photograph 2. Close up of Man-Made Pond 1, Data Sheet SP1
Photograph 3. Man-Made Pond 1 Soils, Data Sheet SP1

Photograph 4. Data Sheet SP2, between Man-Made Ponds 1 and 2
Photograph 5. Man-Made Pond 2, Data Sheet SP5

Photograph 6. Man-Made Pond 2, Data Sheet SP5
Delineation of Waters of the United States

APPENDIX B

REPRESENTATIVE PHOTOGRAPHS

Photograph 7. Man-Made Pond 2, Data Sheet SP5

Photograph 8. Man-Made Pond 2, Data Sheet SP5
Photograph 9. Man-Made Pond 3, Data Sheet SP4

Photograph 10. Man-Made Pond 3, Data Sheet SP4
Photograph 11. Near Man-Made Pond 3, Data Sheet SP3

Photograph 12. Wildcat Creek, looking downstream, Data Sheet WC1
Photograph 13. Wildcat Creek, looking upstream, Data Sheet WC1

Photograph 14. Wildcat Creek, looking at right bank (facing downstream), Data Sheet WC2
APPENDIX B

REPRESENTATIVE PHOTOGRAPHS

Photograph 15. Wildcat Creek, looking at left bank (facing downstream), Data Sheet WC2

Photograph 16. Wildcat Creek, looking downstream, Data Sheet WC2
Photograph 17. Wildcat Creek, looking upstream at weir, Data Sheet WC3

Photograph 18. Wildcat Creek, looking at right bank, Data Sheet WC3
Photograph 19. Wildcat Creek, looking at left bank, Data Sheet WC3

Photograph 20. Wildcat Creek, looking downstream at bridge, Data Sheet WC3
Photograph 21. Laurel Creek, looking upstream, Data Sheet UT1

Photograph 22. Laurel Creek, right bank, Data Sheet UT1
Photograph 23. Laurel Creek, looking downstream, Data Sheet UT1
Appendix C

ARID WEST OHWM AND ARID WEST WETLAND DETERMINATION DATASHEETS
WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tilden WOS
Applicant/Owner: East Bay Regional Park District
Investigator(s): Debra Lente, Maggie Kornich, Michael Fox
Landform (hillslope, terrace, etc.): Toe of Hillslope
Subregion (LRR): Mediterranean California
Lat.: 37°41'16.0"N
Long.: 122°26'10.2"W
State: CA
Slope (%): 18% of hill
Local relief (concave, convex, none): Concave
Section, Township, Range: 23S/T26N/R04W
Soil Map Unit Name: Part of Bimarin terraces, 5 to 30 ft slopes
Datum: NA88
% NA classification: None

Sampling Date: 3-18-16
City/County: Contra Costa County
State: CA
Sampling Point: 581

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No
Are Vegetation, Soil, or Hydrology significantly disturbed? No
Are "Normal Circumstances" present? Yes X No

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

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

Remarks:
Man-made depression in an upland. Depression has irrigation standing water to depression. No called to depression, have average precipitation recently.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ________)
1. ________________________________
2. ________________________________
3. ________________________________
4. ________________________________

Absolute % Cover

Dominant Species? Y N
Indicator Status

Hydrophytic Vegetation Indicators:
- Dominance Test = > 50%
- Prevalence Index = 33.0
- Morphological Adaptations
  - Provide supporting data in Remarks or on a separate sheet
- Problematic Hydrophytic Vegetation

% Bare Ground in Herb Stratum

% Cover of Biotic Crust

Hydrophytic Vegetation Indicators:
- Dominance Test = > 50%
- Prevalence Index = 33.0
- Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation

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

Hydrophytic Vegetation Indicators:
- Dominance Test = > 50%
- Prevalence Index = 33.0
- Morphological Adaptations
  - Provide supporting data in Remarks or on a separate sheet
- Problematic Hydrophytic Vegetation

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

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

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

Remarks:
Man-made depression in an upland. Depression has irrigation standing water to depression. No called to depression, have average precipitation recently.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ________)
1. ________________________________
2. ________________________________
3. ________________________________
4. ________________________________

Absolute % Cover

Dominant Species? Y N
Indicator Status

Hydrophytic Vegetation Indicators:
- Dominance Test = > 50%
- Prevalence Index = 33.0
- Morphological Adaptations
  - Provide supporting data in Remarks or on a separate sheet
- Problematic Hydrophytic Vegetation

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

Hydrophytic Vegetation Indicators:
- Dominance Test = > 50%
- Prevalence Index = 33.0
- Morphological Adaptations
  - Provide supporting data in Remarks or on a separate sheet
- Problematic Hydrophytic Vegetation

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

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

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

Remarks:
Man-made depression in an upland. Depression has irrigation standing water to depression. No called to depression, have average precipitation recently.
**Profile Description:** (Describe to the depth needed to document the Indicator or confirm the absence of indicators.)

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matric Color (moist)</th>
<th>%</th>
<th>Redox Features</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-18</td>
<td>7.5 YR 3/1</td>
<td>99</td>
<td>7.5 YR 5/8</td>
<td>1</td>
<td>C</td>
<td></td>
<td>Silty Clay</td>
<td></td>
</tr>
</tbody>
</table>

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

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

- Histosol (A1)
- Histic Eppipedon (A2)
- Black Histic (A3)
- Hydrogen Sulphide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (A6) (LRR D)
- Depressed Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matric (S4)

Hydic Soil Present? Yes [X] No

Remarks: Hydric soils probably present due to ongoing application of irrigation to keep ponds full. This is an education area for the park. Soils not hydric per NRCS and per the National Hydric Soil List.

**HYDROLOGY**

**Primary Indicators:** (minimum of one required, check all that apply)

- [X] Surface Water (A1)
- [X] High Water Table (A2)
- [X] 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)

**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-Natural Test (D5)

Field Observations:

- Surface Water Present? Yes [X] No
- Water Table Present? Yes [X] No
- Saturation Present? Yes [X] No

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

Remarks:

Standing water in man-made feature. Do not enter feature due to not knowing the depth. Assume at least a few feet deep.
WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tilden WOS
City/County: Contra Costa County
State: CA
Sampling Date: 3/18/16
Investigator(s): Debra Lunde, Nancy Kehret, Mark Good
Section, Township, Range: 5S 231E 12W
Landform (hillslope, terrace, etc.): toe of hillside
Local relief (concave, convex, none): concave to none
Slope (%): less than 5%
Subregion (LRR): Mediterranean California
Lat: 37.9111885, Long: -122.2614134, Datum: NAD 83
Soil Map Unit Name: Mediterranean form is to be filled in above
NWI classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No X
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation NO, Soil NO, or Hydrology NO naturally problematic? (If needed, explain any answers in Remarks.)

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

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes</th>
<th>No</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes</td>
<td>No</td>
<td>X</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes</td>
<td>No</td>
<td>X</td>
</tr>
</tbody>
</table>

Is the Sampled Area within a Wetland? Yes No X
Remarks: Project Area includes three man-made features that are filled with irrigation water. No inlet or outlet to features. Above average precipitation recently.

VEGETATION – Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: _________)</th>
<th>Absolute % Cover</th>
<th>Dominant Indicator Species?</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sapling/Shrub Stratum (Plot size: _________)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Herb Stratum (Plot size: 1 meter x 1 meter)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Avena Species</td>
<td>30 Y OPL</td>
</tr>
<tr>
<td>2. Bromus Species</td>
<td>35 Y FAC</td>
</tr>
<tr>
<td>3. Taraxacum officinale</td>
<td>10 N FAC</td>
</tr>
<tr>
<td>4. Geranium dissectum</td>
<td>5 NO NF</td>
</tr>
<tr>
<td>5. Plantago lanceolata</td>
<td>5 NO FAC</td>
</tr>
<tr>
<td>6.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>85</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Woody Vine Stratum (Plot size: _________)</th>
<th>= Total Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>= Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Bare Ground in Herb Stratum</th>
<th>% Cover of Biotic Crust</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Dominance Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Dominant Species That Are OBL, FACW, or FAC: 0</td>
</tr>
<tr>
<td>Total Number of Dominant Species Across All Strata: 2</td>
</tr>
<tr>
<td>Percent of Dominant Species That Are OBL, FACW, or FAC: 0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Prevalence Index worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total % Cover of OBL species x 1 =</td>
</tr>
<tr>
<td>FACW species x 2 =</td>
</tr>
<tr>
<td>FAC species x 3 =</td>
</tr>
<tr>
<td>FACU species x 4 =</td>
</tr>
<tr>
<td>UPL species x 5 =</td>
</tr>
<tr>
<td>Column Totals: (A)</td>
</tr>
<tr>
<td>Prevalence index = B/A =</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Indicators:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dominance Test is &gt;50%</td>
</tr>
<tr>
<td>Prevalence Index is 3.0</td>
</tr>
<tr>
<td>Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)</td>
</tr>
<tr>
<td>Problematic Hydrophytic Vegetation (Explain)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>% Bare Ground in Herb Stratum</th>
<th>% Cover of Biotic Crust</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes</th>
<th>No</th>
<th>X</th>
</tr>
</thead>
</table>

Remarks:
NI = No indicator on plant list. This plot is representative between the two man-made features. This plot is dominated by non-native Annual grasses.
**SOIL**

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Matrix</th>
<th>Redox Features</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>1.58</td>
<td>3.11 100</td>
</tr>
</tbody>
</table>

**Texture:** Loamy clay

**Remarks:**

---

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

- Histosol (A1)
- Histic Eppedon (A2)
- Black Histic (A3)
- Hydrogen Sulphide (A4)
- Stratified Layers (A5) (LRR C)
- 1 cm Muck (LRR D)
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

**Indicators for Problematic Hydrologic Soils:**

- 1 cm Muck (A9) (LRR C)
- 2 cm Muck (A10) (LRR B)
- Reduced Vertic (F18)
- Red Parent Material (F17)
- Other (Explain in Remarks)

**Restrictive Layer (if present):**

- Type: 
- Depth (inches): 

**Remarks:**

- Hydric Soil Present? Yes
- No hydraulic soil indicators present, and soil type is not on National Hydric Soils List.

---

**HYDROLOGY**

**Wetland Hydrology Indicators:**

- 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)
- Indication Visible on Aerial Imagery (B7)
- Water-Stained Leaves (B9)

**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
- Water Table Present? Yes
- Saturation Present? Yes

**Wetland Hydrology Present?** Yes

**Remarks:**

- No wetland hydrology features. Grass appears damp from recent rains.
WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tilden Wash
City/County: Santa Clara County
State: CA
Sampling Date: 3-18-16
Sampling Point: 503

Applicant/Owner: East Bay Regional Park District
Investigator(s): Orozco, Araceli, Kamesakis, Mark, Cato, Jovan, McEwen
Landform (hillslope, terrace, etc.): Middle of hill slope
Local relief (concave, convex, none): Convex
Slope (%): Less than 5%
Subregion (LRR): Paved Area, California
Lat: 37.411553, Long: -122.267357, Datum: NAD83
Soil Map Unit Name: Millisom

Are climatic/hydrologic conditions on the site typical for this time of year? Yes No (if no, explain in Remarks.)
Are Vegetation NO, Soil NO, or Hydrology NO significantly disturbed? Are "Normal Circumstances" present? Yes No
Are Vegetation NO, Soil NO, or Hydrology NO 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
Hydras Soil Present? Yes No
Wetland Hydrology Present? Yes No

Is the Sampled Area within a Wetland? Yes No

Remarks: These man-made features that are irrigated throughout year. NO inlet or outlet to features. Above average precipitation recently.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: )

1. 
2. 
3. 
4. 

Total Cover

45 Y FACW

50 Y UPL

50 NO N/A

100 = Total Cover

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) 0 (B)
Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:
- Dominance Test is >50%
- Prevalence Index is <3.0
- Morphological Adaptations' (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation' (Explain)

Herb Stratum (Plot size: )

1. 
2. 
3. 
4. 
5. 

Total Cover

50 NO N/A

50 = Total Cover

% Bare Ground in Herb Stratum

% Cover of Biotic Crust

Woody Vine Stratum (Plot size: )

1. 
2. 

Total Cover


NI= Not on plant list. Plot is near man-made feature and representative of the surroundings.
**SOIL**

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Log</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-12</td>
<td>7.5%</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

2Location: PL=Pore Lining, M=Matrix

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

- Histosol (A1)
- Histic Epiopedon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5) LRR C
- 1 cm Muck (A8) LRR D
- Depleted Below Dark Surface (A11)
- Thick Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

- Sandy Redox (S5)
- Stripped Matrix (36)
- 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)

**Restrictive Layer (if present):**

Type: ______________________

Depth (inches): ___________

Hydric Soil Present? Yes X No

Remarks:

no hydric soil indicators present. Milbkrom loam 15-30% slopes & Zama sm. silt Clay loam 2-5% slopes are not a natural hydric soils list.

**HYDROLOGY**

**Wellland Hydrology Indicators:**

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

- Surface Water (A1) X
- High Water Table (A2)
- Saturation (A3) No 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)

Secondary Indicators (2 or more required)

- 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)

**Field Observations:**

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

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

Saturation Present? Yes X No Depth (inches): ___________

Wetland Hydrology Present? Yes X No

Remarks:

No wetland hydrology indicators present.

US Army Corps of Engineers

Arid West – Version 2.0
WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Tilden Wash
City/County: Santa Clara
Sampling Date: 8-3-19-16
Applicant/Owner: East Bay Regional Park District
State: CA
Investigator(s): Deb Leonard, Nancy Kemeny, Jeff Ostertag
Section, Township, Range: 5S,28W,8N, R14W
Landform (hillslope, terrace, etc.): Bed Slope
Local relief (concave, convex, none): Concave
Subregion (LRR): Mediterranean California
Lot: 37.9110054 37.1201000
Long: -122.2673840602000
Datum: NA083
Soil Map Unit Name: Millbrae Basin 15 30Slopes
WLI classification: NOVE
Are climatic/hydrologic conditions on the site typical for this time of year? Yes ☑ No ❌ (If no, explain in Remarks.)
Are Vegetation NO, Soil NO, or Hydrology NO, significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ❌
Are Vegetation NO, Soil NO, or Hydrology NO, naturally problematic? (If needed, explain any answers in Remarks.)

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

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes ☑ No ❌</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes ☑ No ❌</td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes ☑ No ❌</td>
</tr>
<tr>
<td>Is the Sampled Area within a Wetland?</td>
<td>Yes ☑ No ❌</td>
</tr>
</tbody>
</table>

Remarks: Stream and features present, they are filled with irrigation water. Above average precipitation, no inlet or outlet to form features.

VEGETATION – Use scientific names of plants.

### Tree Stratum

<table>
<thead>
<tr>
<th>Plot size:</th>
<th>Absolute % Cover</th>
<th>Dominant Indicator Species? Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

### Sapling/Shrub Stratum

<table>
<thead>
<tr>
<th>Plot size:</th>
<th>Absolute % Cover</th>
<th>Dominant Indicator Species? Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

### Herb Stratum

<table>
<thead>
<tr>
<th>Plot size:</th>
<th>Absolute % Cover</th>
<th>Dominant Indicator Species? Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Typha latifolia Litter</td>
<td>40 Y OBL</td>
<td></td>
</tr>
<tr>
<td>2. Litter of Vascular Plants</td>
<td>5 N</td>
<td></td>
</tr>
<tr>
<td>3. Graminae Species</td>
<td>30 Y FACU</td>
<td></td>
</tr>
<tr>
<td>4. Poaceae Species</td>
<td>20 Y UPL</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

### Woody Vine Stratum

<table>
<thead>
<tr>
<th>Plot size:</th>
<th>Absolute % Cover</th>
<th>Dominant Indicator Species? Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>= Total Cover</td>
<td></td>
</tr>
</tbody>
</table>

% Bare Ground in Herb Stratum: 95%
% Cover of Biotic Crust

### Hydrophytic Vegetation Indicators

- **Dominance Test is >50%**
- **X** Prevalence Index is ≤3.0
- Morphological Adaptations (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation (Explain)

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

Hydrophytic Vegetation Present? Yes ☑ No ❌

Remarks:

plot on edge of man-made feature.
SOIL

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

<table>
<thead>
<tr>
<th>Depth</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-17</td>
<td>7.5YR 5/3</td>
<td>98</td>
<td>7.5YR 5/8</td>
<td>2</td>
<td>C</td>
<td></td>
<td>Silt clay</td>
<td></td>
</tr>
</tbody>
</table>

Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

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 Sebowl Dark Surface (A11)
- Thiek Dark Surface (A12)
- Sandy Mucky Mineral (S1)
- Sandy Gleyed Matrix (S4)

Sandy Redox (S5)
Stripped Matrix (S6)
Loamy Mucky Mineral (F1)
Loamy Glyed Matrix (F2)
Depleted Matrix (F3)
Redox Dark Surface (F6)
Depleted Dark Surface (F7)
Redox Depressions (F8)
Vernal Pools (F9)

Indicators for Problematic Hydric Soils:

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

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 X No __

Remarks:

Hydric soil probably present due to the high pressure of wet soil to the features. The soils do not appear on the National Hydric Soil list.

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)
- Drill 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)
- Drill Deposits (B3) (Riverine)
- Drainage Patterns (B10)
- Dry-Season Water Table (C2)
- Clayfish Burrows (C8)
- Saturation Visible on Aerial Imagery (C9)
- Shallow Aquitard (D3)
- FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): _____________
Water Table Present? Yes ____ No ____ Depth (inches): _____________
Saturation Present? Yes ____ No ____ Depth (inches): _____________

Wetland Hydrology Present? Yes X No ____

Remarks:

Man-made pond 3 is much less full than ponds 1 & 2.

US Army Corps of Engineers
Arid West – Version 2.0
**WETLAND DETERMINATION DATA FORM – Arid West Region**

**Project/Site:** Tilden WMA  
**City/County:** Contra Costa County  
**Sampling Date:** 3/18/16  
**Applicant/Owner:** East Bay Regional Park District  
**State:** CA  
**Investigator(s):** Deborah L. Demich, Michael K. LaGrand, Mark A. Kamnich  
**Sampling Point:** 945  
**Landform (hillslope, terrace, etc.):** toe of hill slope  
**Local relief (concave, convex, none):** concave  
**Slope (%):** 5.9%  
**Subregion (LRR):** Mendocino, California  
**Datum:** NAD83, 1995  
**Soil Map Unit Name:** Zumaon Silty Clay  
**NWRI classification:** None

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

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

Are Vegetation No, Soil No, or Hydrology No naturally problematic? **(If needed, explain any answers in Remarks.)**

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

<table>
<thead>
<tr>
<th>Hydrophytic Vegetation Present?</th>
<th>Yes X No</th>
<th>Is the Sampled Area within a Wetland?</th>
<th>Yes X No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydric Soil Present?</td>
<td>Yes X No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wetland Hydrology Present?</td>
<td>Yes X No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Remarks:** Above average precipitation to date. Three man-made features that are managed through ongoing irrigation.

**VEGETATION** – Use scientific names of plants.

<table>
<thead>
<tr>
<th>Tree Stratum (Plot size: _______ )</th>
<th>Absolute % Cover</th>
<th>Dominant Indicator Species?</th>
<th>Status</th>
<th>Dominance Test worksheet:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Sapling/Shrub Stratum (Plot size: _______ )**

<table>
<thead>
<tr>
<th></th>
<th>Absolute % Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
</tr>
</tbody>
</table>

**Herb Stratum (Plot size: _______ m x _______ m)**

<table>
<thead>
<tr>
<th></th>
<th>Absolute % Cover</th>
<th>Dominant Indicator Species?</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Woody Vine Stratum (Plot size: _______ )**

<table>
<thead>
<tr>
<th></th>
<th>Absolute % Cover</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td></td>
</tr>
</tbody>
</table>

**% Bare Ground in Herb Stratum**

**% Cover of Biotic Crust**

**Hydrophytic Vegetation Indicators:**
- Dominance Test is >50%
- Prevalence Index is ≤3.0
- Morphological Adaptations\(^1\) (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation\(^1\) (Explain)

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

**Remarks:** Plant on edge of manmade feature, calling Pond 2. Standing water within plot.
**SOIL**

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

<table>
<thead>
<tr>
<th>Depth (inches)</th>
<th>Color (moist)</th>
<th>%</th>
<th>Color (moist)</th>
<th>%</th>
<th>Type</th>
<th>Loc</th>
<th>Texture</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.9</td>
<td>75 YR 5/1</td>
<td>99</td>
<td>75 YR 5/8</td>
<td>1</td>
<td>C</td>
<td></td>
<td>Silty Clay</td>
<td></td>
</tr>
</tbody>
</table>

**Type:** C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains

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

- Histosol (A1)
- Histic Epigaeon (A2)
- Black Histic (A3)
- Hydrogen Sulfide (A4)
- Stratified Layers (A5)
- 1 cm Muck (A9)
- 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)
- Redox Depressions (F9)

**Hydric Soil Present?** Yes X No

**Restrictive Layer (if present):**

Type:

Depth (inches):

**Remarks:** Hydric soil indicator may be present due to ongoing application of irrigation waters. Soil tested is not hydric per NRCS National Hydric Soils List.

**HYDROLOGY**

**Wetland Hydrology Indicators:**

<table>
<thead>
<tr>
<th>Primary Indicators (minimum of one required; check all that apply)</th>
<th>Secondary Indicators (2 or more required)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water (A1)</td>
<td>Water Marks (B1) (Riverine)</td>
</tr>
<tr>
<td>High Water Table (A2)</td>
<td>Sediment Deposits (B2) (Riverine)</td>
</tr>
<tr>
<td>Saturation (A3)</td>
<td>Drift Deposits (B3) (Riverine)</td>
</tr>
<tr>
<td>Water Marks (B1) (Nonriverine)</td>
<td>Drainage Patterns (B10)</td>
</tr>
<tr>
<td>Sediment Deposits (B2) (Nonriverine)</td>
<td>Dry-Season Water Table (C2)</td>
</tr>
<tr>
<td>Drill Deposits (B3) (Nonriverine)</td>
<td>Clayish Burrows (C8)</td>
</tr>
<tr>
<td>Surface Soil Cracks (B8)</td>
<td>Saturation Visible on Aerial Imagery (C9)</td>
</tr>
<tr>
<td>Inundation Visible on Aerial Imagery (G7)</td>
<td>Shallow Aquitard (D3)</td>
</tr>
<tr>
<td>Water-Stained Leaves (B6)</td>
<td>FAC-Neutral Test (D5)</td>
</tr>
</tbody>
</table>

**Field Observations:**

- Surface Water Present? Yes X No Depth (inches): not known determine depth
- Water Table Present? Yes No Depth (inches): ____________________________
- Saturation Present? Yes X No Depth (inches): ____________________________

**Wetland Hydrology Present?** Yes X No

**Remarks:** Standing water present in man-made feature. Did not enter feature to determine depth to ground surface bottom of feature.
### Arid West Ephemeral and Intermittent Streams OHWM Datasheet

<table>
<thead>
<tr>
<th>Project: T-104</th>
<th>Date: 3-16-16</th>
<th>Time: 9:20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Number: 567-08-55</td>
<td>Town: Carson County</td>
<td>State: CA</td>
</tr>
<tr>
<td>Stream: W. Red Creek</td>
<td>Photo begin file#:</td>
<td>Photo end file#:</td>
</tr>
<tr>
<td>Investigator(s): Debra Lemon, Mary Kameras, Mark Cassens</td>
<td>5869</td>
<td>5872</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location Details:</th>
<th>Projection: State Plane Zone 3</th>
<th>Datum: NAD 83</th>
</tr>
</thead>
<tbody>
<tr>
<td>W. Red Creek - Sediment Basin</td>
<td>Coordinates: 37.9091315 -122.2646038400</td>
<td></td>
</tr>
</tbody>
</table>

### Potential anthropogenic influences on the channel system:
- Upstream and downstream dams, golf course, residential, and park system.
- Downstream bridge.
- Weir/dam, hikers, educational farm adjacent, parking lots.

### Brief site description:
- Delineate with flow, some vegetated banks, large sediment deposit, adjacent trail.

### Checklist of resources (if available):
- Aerial photography
  - Dates: June 2014
- Topographic maps
- Geologic maps
- Vegetation maps
- Soils maps
- Rainfall/precipitation maps
- Existing delineation(s) for site
- Global positioning system (GPS)
- Other studies

### Hydrogeomorphic Floodplain Units

![Diagram of hydrogeomorphic floodplain units]

### Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - Mapping on aerial photograph
   - Digitized on computer
   - GPS
   - Other:

### Other:

- Gage number:
- Period of record:
- History of recent effective discharges
- Results of flood frequency analysis
- Most recent shift-adjusted rating
- Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event.
Project ID: 567.08.055  Cross section ID: WC-1  Date: 3-18-16  Time: 9:20

Cross section drawing:

OHWM

GPS point: WC1 (Right Bank)

Indicators:
- [x] Change in average sediment texture
- [x] Change in vegetation species
- [ ] Change in vegetation cover
- [x] Break in bank slope
- [x] Other: deposition
- [x] Other: veg. matted down

Comments:
5869 Right bank
5870 Left bank
5871 Downstream
5872 Upstream

Floodplain unit: [x] Low-Flow Channel  [ ] Active Floodplain  [ ] Low Terrace

GPS point: WC1A Left bank → OHWM on L Bank

Characteristics of the floodplain unit:
- Average sediment texture: Sandy Silt
- Total veg cover: 100% Tree: 50% Shrub: 50% Herb: 20%
- Community successional stage:
  - [ ] NA
  - [ ] Early (herbaceous & seedlings)
  - [x] Late (herbaceous, shrubs, mature trees)

Indicators:
- [ ] Mudcracks
- [ ] Ripples
- [ ] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [ ] Surface relief
- [ ] Other:
- [ ] Other:
- [ ] Other:

Comments:
Project ID: 567.08.055
Cross section ID: WC1
Date: 3-18-16
Time: 9:20

Floodplain unit: □ Low-Flow Channel □ Active Floodplain □ Low Terrace

GPS point: ____________________________

Characteristics of the floodplain unit:
Average sediment texture: ____________________________
Total veg cover: ___% Tree: ___% Shrub: ___% Herb: ___%
Community successional stage:
□ NA □ Early (herbaceous & seedlings) □ Mid (herbaceous, shrubs, saplings)
□ Late (herbaceous, shrubs, mature trees)

Indicators:
□ Mudcracks □ Ripples □ Soil development
□ Drift and/or debris □ Other: ____________________________
□ Presence of bed and bank □ Other: ____________________________
□ Benches □ Other: ____________________________

Comments:

Not applicable

---

Floodplain unit: □ Low-Flow Channel □ Active Floodplain □ Low Terrace

GPS point: ____________________________

Characteristics of the floodplain unit:
Average sediment texture: ____________________________
Total veg cover: ___% Tree: ___% Shrub: ___% Herb: ___%
Community successional stage:
□ NA □ Early (herbaceous & seedlings) □ Mid (herbaceous, shrubs, saplings)
□ Late (herbaceous, shrubs, mature trees)

Indicators:
□ Mudcracks □ Ripples □ Soil development
□ Drift and/or debris □ Other: ____________________________
□ Presence of bed and bank □ Other: ____________________________
□ Benches □ Other: ____________________________

Comments:
Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Tilden
Project Number: 567.0055
Stream: Wildcat Creek
Investigator(s): Debra Lemke, Mary Kamerath, Mark Castorena

Date: 3/16/19
Town: Costa Mesa
State: CA
Photo begin file#: 5813
Photo end file#: 5800

Location Details:
Wildcat Creek-Salmon Basin
Projection: State Plane Zone 3 Datum: NAD 83
Coordinates: 37.9692, 117.1826

Location:
Y ☑ / N ☐ Do normal circumstances exist on the site?
Y ☐ / N ☑ Is the site significantly disturbed?

Potential anthropogenic influences on the channel system:
upstream golf course, park system, residence near, downstream bridge or weir, dam, trail system, educational programs, adjacent parking lots.

Brief site description:
Drainage of flow, vegetated banks, sediment deposit with channel flow.

Checklist of resources (if available):
☒ Aerial photography
   Dates: June 2014
☒ Topographic maps
☐ Geologic maps
☐ Vegetation maps
☒ Soils maps
☒ Rainfall/precipitation maps
☐ Existing delineation(s) for site
☐ Global positioning system (GPS)
☐ Other studies

Stream gage data
Gage number:
Period of record:
☒ History of recent effective discharges
☐ Results of flood frequency analysis
☐ Most recent shift-adjusted rating
☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   ☒ Mapping on aerial photograph
   ☒ Digitized on computer
   ☑ GPS
   ☐ Other:
Project ID: 567.09.55  Cross section ID: WC2  Date: 3-18-16   Time: 10:07

Cross section drawing:

![Cross section drawing]

**OHWM**

GPS point: **WC2 - Right Bank**

Indicators:  
- × Change in average sediment texture  
- × Change in vegetation species  
- × Change in vegetation cover  
- × Break in bank slope  
- × Other: deposition  
- × Other: Strange

Comments:

5873 Right Bank - WC2  
5874 Left Bank WC2A  
5875 WC2A

5876 WC2A  
5877 Upstream  
5878 Upstream  
5879 + 5880 Downstream

**Floodplain unit:**  
- × Low-Flow Channel  
- □ Active Floodplain  
- □ Low Terrace

GPS point: **WC2 - Left Bank**

Characteristics of the floodplain unit:  
- Average sediment texture: silty sand  
- Total veg cover: 25%  
- Tree: 15%  
- Shrub: 10%  
- Herb: 10%  
- Community successional stage:  
- × NA  
- □ Early (herbaceous & seedlings)  
- × Mid (herbaceous, shrubs, saplings) - sediment bank  
- × Late (herbaceous, shrubs, mature trees)  
- □ Soil development  
- □ Surface relief  
- □ Other:  
- □ Other:  
- □ Other:  
- □ Other:  
- □ Other:

Comments:

![Comments]
Project ID: 567.08.55  Cross section ID: WC2  Date: 3/16/16  Time: 10:07

Floodplain unit:  □ Low-Flow Channel  □ Active Floodplain  □ Low Terrace

GPS point: _______________________

Characteristics of the floodplain unit:
Average sediment texture: _______________________
Total veg cover: _____ %  Tree: _____ %  Shrub: _____ %  Herb: _____ %
Community successional stage:
□ NA  □ Early (herbaceous & seedlings)  □ Mid (herbaceous, shrubs, saplings)  □ Late (herbaceous, shrubs, mature trees)

Indicators:
□ Mudcracks  □ Ripples  □ Soil development  □ Drift and/or debris  □ Surface relief  □ Presence of bed and bank  □ Other: _______________________
□ Benches  □ Other: _______________________

Comments:  N/A
Arid West Ephemeral and Intermittent Streams OHWM Datasheet

**Project:** Tilden  
**Project Number:** 567.08.55  
**Stream:** Wildcat Creek  
**Investigator(s):** Debra Lenke, Mary Kureth, Mark Cashman  
**Date:** 2-19-10  
**Time:** 10:40  
**Town:** Contra Costa County  
**State:** CA  
**Photo begin file#:** 5885  
**Photo end file#:** 5893

<table>
<thead>
<tr>
<th>Y [X]</th>
<th>N</th>
<th>Do normal circumstances exist on the site?</th>
<th>Location Details: Wildcat Creek</th>
</tr>
</thead>
<tbody>
<tr>
<td>Y [X]</td>
<td>N</td>
<td>Is the site significantly disturbed?</td>
<td>Projection: State Plane Zone 3 Datum: NA92</td>
</tr>
</tbody>
</table>

**Coordinates:** 37.921315, -122.265136  
**Stream gage data**  
- **Gage number:**  
- **Period of record:**
- **History of recent effective discharges**  
- **Results of flood frequency analysis**  
- **Most recent shift-adjusted rating**  
- **Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event**

**Potential anthropogenic influences on the channel system:**  
- Upstream dam, golf course, residential, park system, Countstream bridge, weir, dam, bridges, fish ladders, Educational Programs, Adjacent parking lots.

**Brief site description:**  
- Drainage of flow, vegetated banks, large sediment deposit and adjacent trail.

**Checklist of resources (if available):**

- [X] Aerial photography  
  - Dates: June 2014
- [X] Topographic maps
- [ ] Geologic maps
- [ ] Vegetation maps
- [X] Soils maps
- [ ] Rainfall/precipitation maps
- [ ] Existing delineation(s) for site
- [ ] Global positioning system (GPS)
- [ ] Other studies

**Hydrogeomorphic Floodplain Units**

- Active Floodplain
- Low Terrace
- Low-Flow Channels
- OHWM
- Paleo Channel

**Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:**

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.  
   a) Record the floodplain unit and GPS position.  
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.  
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - [X] Mapping on aerial photograph
   - [ ] Digitized on computer
   - [ ] Other:
Project ID: 567.08.55  Cross section ID: WC3  Date: 3-18-16  Time: 10:40

Cross section drawing:

121° - MK, DL

4" from otum to channel bottom

121° - WC3

304°

sediment

turn otum WC 3

OHWM

GPS point: WC3

Indicators:
- Change in average sediment texture
- Change in vegetation species
- Change in vegetation cover

Comments:

downstream of WC3 is a bridge w/ culvert
upstream is a log weir manmade

Floodplain unit: Low-Flow Channel  Active Floodplain  Low Terrace

GPS point: WC3

Characteristics of the floodplain unit:
Average sediment texture: Silt
Total veg cover: % Tree: % Shrub: 25 % Herb: 5 %
Community successional stage:
- NA
- Early (herbaceous & seedlings)
- Mid (herbaceous, shrubs, saplings)
- Late (herbaceous, shrubs, mature trees)
- Soil development
- Surface relief

Indicators:
- Mudcracks
- Ripples
- Drift and/or debris
- Presence of bed and bank
- Benches

Comments:
Floodplain unit: □ Low-Flow Channel  □ Active Floodplain  □ Low Terrace

GPS point: ____________________________

Characteristics of the floodplain unit:
Average sediment texture: ____________________________

Total veg cover: _____%  Tree: _____%  Shrub: _____%  Herb: _____%

Community successional stage:
□ NA
□ Early (herbaceous & seedlings)
□ Mid (herbaceous, shrubs, saplings)
□ Late (herbaceous, shrubs, mature trees)

Indicators:
□ Mudcracks
□ Ripples
□ Drift and/or debris
□ Presence of bed and bank
□ Benches
□ Soil development
□ Surface relief
□ Other: ____________________________
□ Other: ____________________________
□ Other: ____________________________

Comments:

Not Applicable

Not Applicable
Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Tilden
Project Number: 567-09.55
Stream: Unnamed
Investigator(s): Deborah, Marcy, Kenneth, Mark

Date: 3-18-16
Time: 11:01
Town: Contra Costa County
State: CA
Photo begin file#: 5891
Photo end file#: 5900

Location Details:
Laurel Creek
Projection: State Plane 30-3 Datum: NAD 83
Coordinates: 37.1645623070, -122.1655873070

Potential anthropogenic influences on the channel system:
Active native trails perpendicular & crosses the drainage. Educational programs being run by the park, so increased human activity.

Brief site description:
Drainage flowing crosses under a dirt path through two culverts. Vegetated backs.

Checklist of resources (if available):
- Aerial photography
  Dates: June 2014
- Topographic maps
- Geologic maps
- Vegetation maps
- Soils maps
- Rainfall/precipitation maps
- Existing delineation(s) for site
- Global positioning system (GPS)
- Other studies

Hydrogeomorphic Floodplain Units

Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - Mapping on aerial photograph
   - Digitized on computer
   - GPS
   - Other:
**Cross section drawing:**

- Ohm
- UT1
- 55'' Width
- 5'' Height

**OHWM**

**GPS point:** UT1

**Indicators:**
- ☒ Change in average sediment texture
- ☒ Change in vegetation species
- ☐ Change in vegetation cover
- ☒ Break in bank slope
- ☐ Other: 
- ☐ Other: 

**Comments:**

downstream are two culverts that the drainage flows through under a dirt path. Culverts are 24'' each

**Floodplain unit:**

- ☐ Low-Flow Channel
- ☐ Active Floodplain
- ☐ Low Terrace

**GPS point:**

**Characteristics of the floodplain unit:**

- Average sediment texture: 5.14
- Total veg cover: 75% Tree: 10% Shrub: 60% Herb: 5%

**Community successional stage:**

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☐ Late (herbaceous, shrubs, mature trees)

**Indicators:**

- ☐ Mudcracks
- ☐ Ripples
- ☐ Drift and/or debris
- ☐ Presence of bed and bank
- ☐ Benches
- ☐ Soil development
- ☐ Surface relief
- ☐ Other: 
- ☐ Other: 
- ☐ Other: 

**Comments:**
Project ID: 567.9855  Cross section ID: [Unreadable]  Date: 3-18-16  Time: 11:01

Floodplain unit:  □ Low-Flow Channel  □ Active Floodplain  □ Low Terrace

GPS point: __________________________

Characteristics of the floodplain unit:
Average sediment texture: __________________________
Total veg cover: _____ %  Tree: _____ %  Shrub: _____ %  Herb: _____ %
Community successional stage:
□ NA  □ Early (herbaceous & seedlings)
□ Mid (herbaceous, shrubs, saplings)  □ Late (herbaceous, shrubs, mature trees)

Indicators:
□ Mudcracks  □ Ripples  □ Drift and/or debris  □ Presence of bed and bank  □ Benches
□ Soil development  □ Surface relief  □ Other: __________________________
□ Other: __________________________  □ Other: __________________________

Comments: [Not Applicable]  [Not Applicable]
Custom Soil Resource Report for
Contra Costa County, California
Tilden WOUS Delineation

March 17, 2016
Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the
individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.
The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Contra Costa County, California
Survey Area Data: Version 12, Sep 18, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 8, 2013—Oct 25, 2013

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.
Map Unit Legend

<table>
<thead>
<tr>
<th>Map Unit Symbol</th>
<th>Map Unit Name</th>
<th>Acres in AOI</th>
<th>Percent of AOI</th>
</tr>
</thead>
<tbody>
<tr>
<td>MeE</td>
<td>Millsholm loam, 15 to 30 percent slopes, MLRA 15</td>
<td>2.4</td>
<td>35.7%</td>
</tr>
<tr>
<td>ZaB</td>
<td>Zamora silty clay loam, 2 to 5 percent slopes</td>
<td>4.4</td>
<td>64.3%</td>
</tr>
<tr>
<td><strong>Totals for Area of Interest</strong></td>
<td></td>
<td><strong>6.8</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If
intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a soil series. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into soil phases. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A complex consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An association is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An undifferentiated group is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include miscellaneous areas. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.
Contra Costa County, California

MeE—Millsholm loam, 15 to 30 percent slopes, MLRA 15

Map Unit Setting

National map unit symbol: 2t7qs
Elevation: 0 to 1,800 feet
Mean annual precipitation: 18 to 39 inches
Mean annual air temperature: 57 to 63 degrees F
Frost-free period: 220 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Millsholm and similar soils: 85 percent
Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Millsholm

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Center third of mountainflank
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Residuum weathered from sandstone and shale

Typical profile

A - 0 to 8 inches: loam
Bt - 8 to 17 inches: loam
R - 17 to 27 inches: bedrock

Properties and qualities

Slope: 15 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.3 to 0.5 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: Shallow Loamy Hills (R015XI002CA)

Minor Components

Dibble

Percent of map unit: 10 percent
ZaB—Zamora silty clay loam, 2 to 5 percent slopes

Map Unit Setting
  National map unit symbol: h9cj
  Elevation: 100 to 500 feet
  Mean annual precipitation: 14 to 24 inches
  Mean annual air temperature: 59 degrees F
  Frost-free period: 260 to 330 days
  Farmland classification: Prime farmland if irrigated

Map Unit Composition
  Zamora and similar soils: 85 percent
  Minor components: 15 percent
  Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Zamora

Setting
  Landform: Alluvial fans, terraces, valley floors
  Landform position (three-dimensional): Tread, talf
  Down-slope shape: Linear
  Across-slope shape: Linear
  Parent material: Alluvium derived from sedimentary rock

Typical profile
  H1 - 0 to 16 inches: silty clay loam
  H2 - 16 to 72 inches: silty clay loam

Properties and qualities
  Slope: 2 to 5 percent
  Depth to restrictive feature: More than 80 inches
  Natural drainage class: Well drained
  Runoff class: Medium
  Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
  Depth to water table: More than 80 inches
  Frequency of flooding: None
  Frequency of ponding: None
  Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
  Available water storage in profile: High (about 9.9 inches)

Interpretive groups
  Land capability classification (irrigated): 2e
  Land capability classification (nonirrigated): 4e
  Hydrologic Soil Group: C
Minor Components

Garretson
  Percent of map unit: 5 percent

Los robles
  Percent of map unit: 5 percent

Rincon
  Percent of map unit: 5 percent
References


TILDEN NATURE AREA
Delineation of Waters of the United States

APPENDIX E

Appendix E
CD WITH AQUATIC RESOURCES EXCEL SPREADSHEET AND GIS DATA AND ASSOCIATED METADATA
October 13, 2016

Mr. Joe Sullivan  
East Bay Regional Park District  
2950 Peralta Oaks Court  
Oakland, CA 94605

Dear Mr. Sullivan:

Subject: Tilden Nature Area Sediment Basin Excavation and Pond Restoration Project Initial Study/Mitigated Negative Declaration, SCH No. 2016092027, Contra Costa County

The California Department of Fish and Wildlife (CDFW) has reviewed the Initial Study/Mitigated Negative Declaration (IS/MND) for the Tilden Nature Area Sediment Basin Excavation and Pond Restoration Project (Project). CDFW is submitting comments on the MND as a means to inform the East Bay Regional Park District (EBRPD), as the Lead Agency, of our concerns regarding CDFW permitting requirements for actions proposed in the MND.

CDFW is a Trustee Agency pursuant to the California Environmental Quality Act (CEQA) § 15386 with responsibility under CEQA for commenting on projects that could affect biological resources. As Trustee for the state’s fish and wildlife resources, CDFW has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and their habitat for the benefit and use by the people of California. CDFW also acts as a Responsible Agency pursuant to CEQA Section 15381 based on its discretionary authority regarding Project activities that impact streams and lakes (Fish and Game Code §§ 1600 – 1616), or result in the “take” of any species listed as candidate, threatened, or endangered pursuant to the California Endangered Species Act (CESA, Fish and Game Code, § 2050 et seq.).

Project Location and Description

The Project is located within the Tilden Nature Area portion of Tilden Regional Park in Contra Costa County. Tilden Regional Park is located between the San Pablo Ridge to the east and the City of Berkeley to the west. The EBRPD owns and operates the land in the Project area which is located within assessor’s parcel number (APN) 573-070-003. The Project consists of two areas: an interpretive area with isolated man-made ponds, located in an upland area south of Jewel Lake; and a sediment basin in Wildcat Creek just south of the Environmental Education Center.

The Project as proposed consists of the following actions: excavation of 700 to 900 cubic yards of sediment to restore the capacity of an in-stream sediment basin within Wildcat Creek; construction of a trail system comprised of a boardwalk and natural materials; improving the sediment basin wood weir; construction of a water augmentation system to supplement ponds. The Project area is approximately 6.64 acres.

Conserving California’s Wildlife Since 1870
Mr. Joe Sullivan  
October 13, 2016  
Page 2

Comment #1  
Lake or Streambed Alteration  
For any activity that will divert or obstruct the natural flow, or change the bed, channel, or bank (which may include associated riparian resources) of a river or stream, or use material from a streambed, CDFW may require a Lake or Streambed Alteration Agreement (LSAA), pursuant to Section 1600 et seq. of the Fish and Game Code, with the applicant. Issuance of an LSAA is subject to CEQA. CDFW, as a Responsible Agency under CEQA, will consider the MND for the Project. Currently EBRPD has an LSAA for Routine Maintenance Activities (RMA; 1600-2016-0269-R3). The Project as proposed does not fit within the scope of this RMA. CDFW recommends that EBRPD notify CDFW for the Project activities and obtain a separate LSAA for the Project.

Comment #2  
California Endangered Species Act  
Mitigation measure Bio-6 in the IS/MND states the following: Only a USFWS/CDFW approved biologist shall be allowed to capture and move California red-legged frog, Alameda whipsnake, western pond turtle and other wildlife in the work area.

Please be advised that a CESA Incidental Take Permit (ITP) must be obtained if a project has the potential to result in take of species of plants or animals listed under CESA, either during construction or over the life of the project. In this case, the capture of any state listed species, for the purpose of moving, is considered take under Fish and Game Code and would require a CESA ITP. Issuance of a CESA ITP is subject to CEQA documentation and early consultation is encouraged, as significant modification to the Project and mitigation measures may be required in order to obtain a CESA Permit. CESA-listed species identified that may occur within the Project area include the Alameda whipsnake (Masticophis lateralis euryxanthus).

Conclusion  
CDFW appreciates the opportunity to comment on Tilden Nature Area Sediment Basin Excavation and Pond Restoration Project. CDFW staff are available to meet with you to further clarify our comments and provide technical assistance on any changes to the Project necessary to protect resources. If you have any questions, please contact Ms. Melissa Farinha, Senior Environmental Scientist (Supervisory), at (707) 944-5579; or Mr. James Starr, Environmental Program Manager, at (209) 234-3440.

Sincerely,

Scott Wilson  
Regional Manager  
Bay Delta Region

cc: Katherine Hart, State Water Resources Control Board  
Stephanie Jentsch, U.S. Fish and Wildlife Service  
State Clearinghouse

ecc: M. Farinha, J. Starr, B. Blinn, M. Grefsrud, R. Stanley
RESPONSE TO COMMENTS

The Draft IS/MND was posted to the State Clearinghouse website, EBRPD website, and copies made available at the Environmental Education Center and EBRPD Headquarters for a period of 30 days (State Clearinghouse Number 2016092027). One comment letter was submitted by California Department of Fish and Wildlife (CDFW) on October 13, 2016. Comments and responses are summarized below.

<table>
<thead>
<tr>
<th>Agency</th>
<th>Comment Number</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDFW</td>
<td>1</td>
<td>Comment noted. EBRPD plans to notify CDFW of the project activities and apply for a separate LSAA for the project.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Comment noted. EBRPD met with CDFW staff to conduct a site walk on September 7, 2016. During this site walk it was discussed that California Endangered Species Act (CESA) Incidental Take Permit (ITP) coverage would not likely be required for Alameda whipsnake given the lack of habitat in the active work area. However it is noted that Mitigation Measure (MM) BIO-6 should be revised to avoid conflict with California Endangered Species Act. Thus MM Bio-6 was revised so that, instead of moving species observed in the work area, work shall cease if Alameda whipsnake are observed in the active work area and shall not commence until a biologist has confirmed the species is no longer in the active work area.</td>
</tr>
</tbody>
</table>