Draft
Environmental Impact Report

Chabot Dam Seismic Upgrade
Technical Appendices

Prepared for:

East Bay Municipal Utility District

December 2013

SCH#: 2013042075

Draft
Environmental Impact Report

Chabot Dam Seismic Upgrade
Technical Appendices

Prepared for:

East Bay Municipal Utility District
375 11th Street,
Oakland, CA 94607
866/403.2683

SCH#: 2013042075

Prepared by:

AECOM
300 California Street, Suite 400
San Francisco, CA 94104
415/796.8100

December 2013

APPENDIX A

Public Involvement

Appendix A

Public Involvement

Public Review under CEQA

Public involvement is an essential feature of the California Environmental Quality Act (CEQA) environmental review process. This process has greatly expanded the opportunities for interested citizens and private stakeholders to participate in project planning and government decision-making. CEQA encourages public involvement as early as possible in a project's planning phase. The Environmental Impact Report (EIR) is a well-established tool to evaluate and define a broad variety of projects, including the Chabot Dam Seismic Upgrade Project (proposed project). EBMUD's outreach efforts for the proposed project, described next, exceed CEQA requirements.

Public Involvement for the Project

EBMUD has provided and will continue to provide opportunities for the public to participate in the CEQA process through various meetings, public notices on and public review of the Draft EIR, an additional public meeting, and preparation of the Final EIR. A summary of the public involvement process to date is shown in Table A-1. EBMUD has conducted 13 meetings; two were community meetings, and 11 were with public agencies to discuss the proposed project.

Table A-1: Chabot Dam Seismic Upgrade Project History of Public Involvement

Date	Agency or Community Meeting
June 21, 2012	EBRPD Staff Meeting
June 27, 2012	EBRPD Liaison Committee Meeting
July 21, 2012	City of San Leandro Staff Meeting
September 17, 2012	San Leandro City Council Meeting
September 18, 2012	Friends of San Leandro Creek Meeting
September 20, 2012	Community Meeting
October 26, 2012	San Leandro Disaster Council Meeting
December 13, 2012	Alameda County Staff Meeting
February 6, 2013	San Leandro Park and Recreation Commission Meeting
March 25, 2013	EBRPD Liaison Committee Meeting
April 18, 2013	San Leandro Recreation and Public Works Staff at Chabot Park
June 10, 2013	San Leandro City Council, Creeks and Watershed Workshop
June 26, 2013	Community Meeting at Chabot Park

EBMUD staff presented the proposed project at the community and agency meetings. EBMUD also has posted an information page for the Chabot Dam Seismic Upgrade on its Web site, available at: http://www.ebmud.com/about-ebmud/news/project-updates/chabot-dam-update-0.

EIR Process

After the Draft EIR is completed, and in conjunction with circulating the Notices of Availability to agencies, community residents, and interested parties, the Draft EIR will be posted on EBMUD's Web site to optimize opportunities for public review.

EBMUD has attempted in good faith to involve the public in reviewing and commenting on the proposed project. At each stage of the environmental review process, EBMUD has invited (and continues to invite) the public to provide input. EBMUD welcomes and encourages comments concerning the project and respects the input that members of the community have to offer.

APPENDIX B

NOP and NOP Comment Letters

NOTICE OF PREPARATION
ENVIRONMENTAL IMPACT REPORT
CHABOT DAM SEISMIC UPGRADE PROJECT
EAST BAY MUNICIPAL UTILITY DISTRICT
April 25, 2013

Project: The East Bay Municipal Utility District (EBMUD) proposes to prepare a project level Environmental Impact Report (EIR) for the seismic upgrade of Chabot Dam. The proposed project involves two components: improvement of the dam embankment and improvement to the outlet works.

The dam embankment toe would be improved through one of two options: conventional earthwork or cement deep soil mixing (CDSM). The conventional earthwork option would require excavating between 100,000 and 140,000 cubic yards of soil and treating soils at the nearby Filter Pond and Park Stockpile sites by mixing and moisture-conditioning then hauling, placing and compacting the treated material back in the excavated area. Under the CDSM option, 60,000 to 80,000 cubic yards of soils would be mixed with cement and water in-place and 32,000 to 39,000 cubic yards of material (soil and solidified mixture of cement and soil) would be hauled and temporarily stockpiled at the nearby the Filter Pond Stockpile. The 2.5-acre Filter Pond Stockpile is located at the former water treatment filter ponds at the site. The 4-acre Park Stockpile is located at Chabot Park. Both sites are owned by EBMUD and the Park area is leased to the City of San Leandro that operates the Chabot Park. Chabot Park would be closed for the duration of construction under either option. For the conventional earthwork option, tree removal would be required throughout both stockpiles. For the CDSM option, tree removal would be required at the Filter Pond Stockpile, and cement delivery trips would be required over a 10-week duration.

Two potential haul routes are proposed within the project site. The Upper Haul Route starts at the gate at the east side of the dam crest, make a turnaround loop east of the dam, and follows the West Shore trail to the West Shore trailhead located in Chabot Park. The West Shore Trail is part of Lake Chabot Regional Park, which is property owned by EBMUD and leased to the East Bay Regional Park District that operates the Lake Chabot Regional Park. This segment of the West Shore Trail within the limits of work will be closed for the duration of construction. The Lower Haul Route starts at the bottom of the dam and follows an EBMUD maintenance path to Chabot Park near the proposed Park Stockpile. This route presently is and will remain off limits during (and after) construction.

The outlet works would be improved by lining the vertical masonry shaft located behind the tower, moving the valves and controls from the tower to the vertical shaft, relining or installing new outlet pipes from the vertical shaft to the reservoir, and removing the tower and deteriorated pavilion.

The entire project site, including Chabot Dam, the outlet tower and shaft, haul routes, stockpile locations, and staging areas is owned by EBMUD. Following the Chabot Dam seismic upgrade activities, the footprint of the project area would be returned to existing conditions. See attached General Site Plan Figure.

Objectives: The objectives of the Chabot Dam Seismic Upgrade Project are to improve the dam embankment to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss and to prevent damage to the outlet works from the design level earthquake so that the outlet works remain operational following the earthquake.

Project Location/Setting: The project site is located at the end of Estudillo Avenue, and within the borders of the Cities of Oakland and San Leandro, and Castro Valley (unincorporated Alameda County). The dam is situated on the west end of Chabot Reservoir. The project site is primarily open space and recreation (Lake Chabot Regional Park and Chabot Park). Estudillo Avenue and the area west of Chabot Park are primarily single-family residential.

EIR Process: EBMUD, as lead agency under the California Environmental Quality Act (CEQA), will prepare an EIR. With this Notice of Preparation (NOP), input regarding the scope of the environmental review in the EIR is being solicited from interested parties and agencies, including responsible, resource and trustee agencies under CEQA. These agencies include but are not limited to the Cities of Oakland and San Leandro, Alameda County, East Bay Regional Park District, California Department of Fish and Wildlife, U.S. Army Corps of Engineers, Regional Water Quality Control Board, Bay Area Air Quality Management District and the California Division of Safety of Dams.

The environmental factors that could potentially be affected by this project (i.e., involving at least one impact that is a "Potentially Significant Impact") include Aesthetics, Biological Resources, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Cultural Resources, Geology and Soils, Transportation and Traffic, Recreation, Noise and Vibration, and Air Quality. Additional elements may be added to this list as a result of scoping.

EBMUD requests your input regarding the scope and content of the environmental information that should be considered or included in the proposed EIR. CEQA requires that your response be submitted to EBMUD at the earliest possible date, but no later than May 27, 2013.

Responses to or questions regarding this NOP should be directed to:

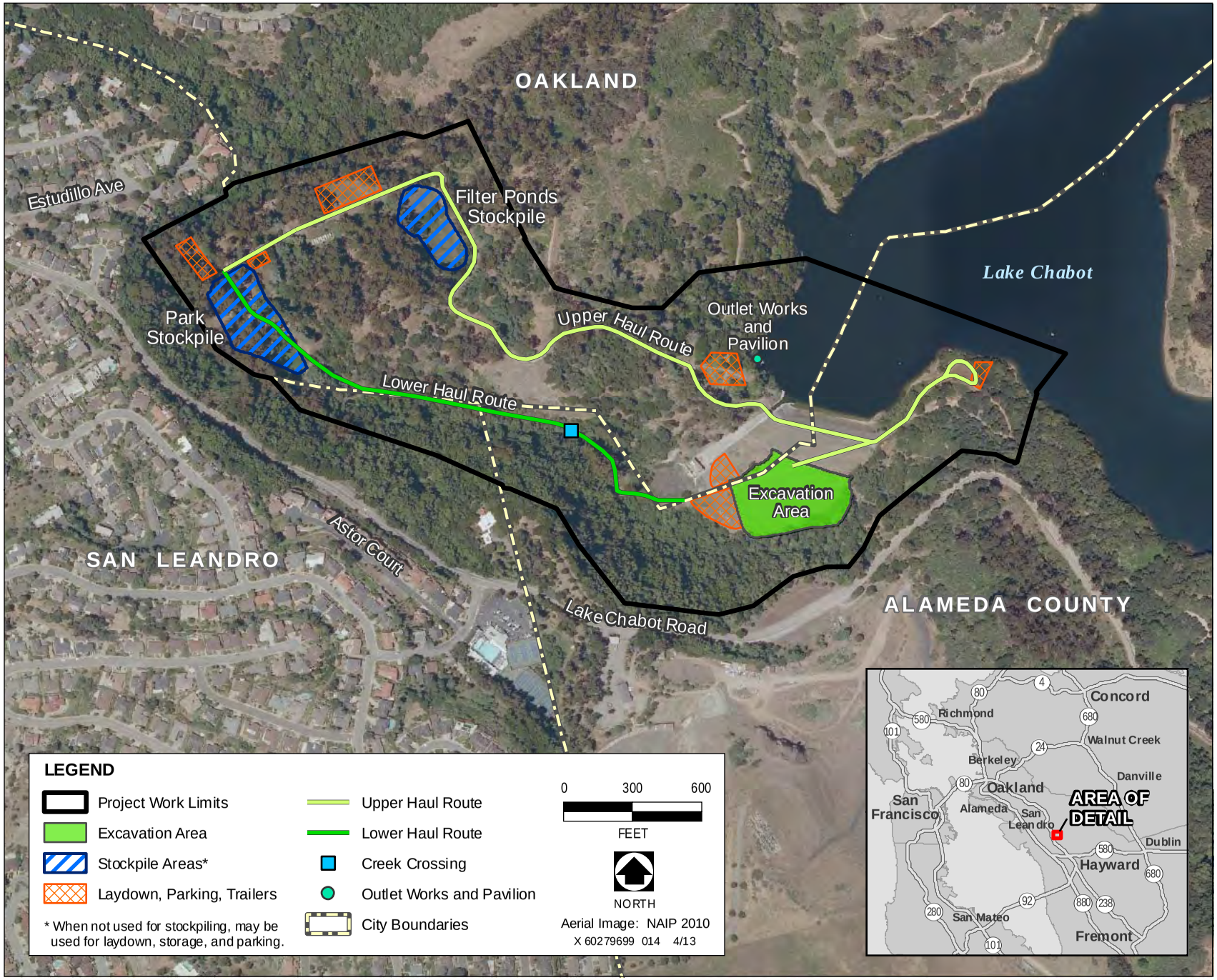
Gwen Alie, Associate Planner
East Bay Municipal Utility District
375 Eleventh Street, MS 701
Oakland, CA 94607-4240
(510) 287-1053
galie@ebmud.com

The Draft EIR is targeted for circulation in the fall of 2013, with action by EBMUD's Board of Directors anticipated in the spring of 2014. Notice will be given of public meetings, including a public hearing during the Draft EIR comment period. At the end of the review and comment process, EBMUD's Board of Directors will determine whether to adopt the Chabot Dam Seismic Upgrade Project and certify the EIR. Additional information about the Chabot Dam Seismic Upgrade Project can also be obtained from the EBMUD website at: http://www.ebmud.com/about-ebmud/news/project-updates/chabot-dam-update.

Xavier J. Irias, Director of Engineering and Construction
East Bay Municipal Utility District

4-11-13
Date

XJR:WRK:sb
sb13_076b.doc



Source: AECOM 2013, Terra Engineers 2013, EBMUD 2013

General Site Plan

Chabot Dam Seismic Upgrade Project

Public Works Agency
Alameda County

CONSTRUCTION AND DEVELOPMENT SERVICES DEPARTMENT
Construction Services (510) 670-5450 • FAX (510) 732-6173
Development Services (510) 670-6601 • FAX (510) 670-5269

Daniel Woldesenbet, Ph.D., P.E., Director
951 Turner Court • Hayward, CA 94545-2698 • www.acgov.org/pwa

May 21, 2013

Ms. Gwen Alie
Associate Planner
East Bay Municipal Utility District
375 Eleventh Street, MS 701
Oakland, CA 94607-4240

RECEIVED MAY 24 2013

Dear Ms. Alie:

Subject: EBMUD Chabot Dam Seismic Upgrade Project - Notice of Preparation of Environmental Impact Report

Reference is made to your transmittal of April 25, 2013, of the Notice of Preparation of Environmental Impact Report for the seismic upgrade of Chabot Dam, located at the End of Estudillo Avenue, and within the borders of the Cities of Oakland, San Leandro, and Castro Valley in unincorporated Alameda County.

We have reviewed the submitted document and offer the following comments:

1. The ACFCD requests that the EIR not only evaluate the direct and impacts resulting from the proposed construction activities but also address the overall impact that the dam and its operation have had and will continue to have on San Leandro Creek watershed, one of the pristine watersheds in Alameda County that supports a variety of federal and state listed endangered species including anadromous steelhead fish. This project has the opportunity to restore essential connectivity between the upper watershed and San Francisco Bay by providing by-pass access for fish to negotiate the 139-year old dam constructed at a time when its effects on the environment were not evaluated.

2. Lake Chabot Park is a popular recreation and daily exercise destination for local residents and residents from the surrounding cities. Many park patrons access the park by walking through the main park driveway. It is not clear from the project description sheet how much construction-related traffic may be generated during the seismic upgrade of the dam. However, the EIR should address the potential conflicts between park patrons and potential construction-related traffic. Also, the EIR needs to address any traffic impact on Lake Chabot Road and Fairmont Drive if the project is expected to generate any significant increase in vehicular trips from construction activities or hauling activities. Lastly, because residential properties are located within 0.5 mile of the lake, the EIR

should address potential environmental issues such as noise and air quality impacts to nearby residents.

3. No grading shall be permitted on sites located in unincorporated Alameda County until grading and erosion and sedimentation control plans have been reviewed by the County Public Works Agency and a grading permit is issued, as may be applicable, in accordance with the Alameda County Grading Ordinance.

4. It is the responsibility of the project proponent to comply with Federal, State, and local water quality standards and regulations. In order for the County and the project proponent to comply with our National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit issued by the San Francisco Bay Regional Water Quality Control Board, storm water quality measures must be implemented. The applicant shall provide measures to prevent discharge of contaminated materials into public drainage facilities during both construction and post-construction periods. Sites with land disturbances greater than one acre must file a Notice of Intent (NOI) with the State Water Resources Control Board for coverage under the State General NPDES permit for Construction Activities.

Thank you for the opportunity to review the Notice of Preparation of EIR for this project.

We will appreciate the opportunity to review the draft EIR and the supporting Technical documents upon which the EIR conclusion would be based.

If you have any questions, please call Rosemarie De Leon at (510) 670-5209.

Very truly yours,

A. Valderrama

Arthur Valderrama, P.E.
Supervising Civil Engineer
Construction and Development Services

cc: Rick Yeung, Traffic Engineering
Kwablah Attiogbe, Environmental Services
Rosemarie De Leon, Construction and Development Services

City of San Leandro
Civic Center, 835 E. 14th Street
San Leandro, California 94577

Office of the City Manager 510-577-3351
FAX 510-577-3340

May 24, 2013

Via E-Mail and U.S. Mail

Gwen Allie, Associate Planner
East Bay Municipal Utility District
375 Eleventh Street, MS 701
Oakland, CA 94607-4240

Re: Response to Notice of Preparation for Chabot Dam Seismic Upgrade Project

Dear Ms. Allie:

Thank you for sending the Notice of Preparation (NOP)for the Chabot Dam Seismic Upgrade Project to the City of San Leandro for review. The City of San Leandro is an interested party with respect to the project in that the City maintains and operates Chabot Park within the project site. Further, San Leandro Creek flows through the project site and continues downstream through the City; the City is concerned that the project could affect water quality and in turn fish habitats in the Creek and could affect City compliance with its NPDES permit. Finally, existing residential neighborhoods adjacent to the project site are located within the City.

The City requests that the following analyses be included in the project Draft EIR. For any analysis that identifies a significant or potentially significant impact, related mitigation measures should be specified in sufficient detail to demonstrate that the identified impact is avoided or reduced to less than significant.

Air Quality. The project site is adjacent to sensitive receptors: a heavily-used park and existing residential neighborhoods in the City. The NOP states that Chabot Park will be closed during construction; the existing residential neighborhoods will be directly affected by construction activity.

- Construction-related impacts, including generation of dust, diesel emissions, and particulates ($PM_{2.5}$, PM_{10}) for all phases of construction (e.g., excavation, hauling to stockpile sites, mixing/treating, hauling back to excavated area), and including equipment, haul trucks and any other source of construction emissions should be analyzed. Please identify whether any climatic conditions such as seasonal wind direction or speed would affect construction emissions. Please clarify with specificity when the park will be closed as related to the phases of construction.

Biological Resources. The project site is a large open space with a variety of recreational uses and contains considerable habitat value. The project site contains extensive tree cover; tree removal will be required under either embankment option. Further, San Leandro Creek flows through the project site and downstream through the City. Under these circumstances, impacts of the project are likely to be substantial with respect to these biological resources.

- Please identify the number, size, type and location of trees to be removed. Please identify what tree replacement is proposed.
- Potential impacts to raptors. Raptors typically use or nest in tall trees; local raptors could be affected by the project's removal of trees.
- Potential impacts to fish species and spawning areas located in San Leandro Creek should be analyzed related to potential project run-off and to ground borne vibrations from construction equipment and techniques.
- Potential impacts to other native wildlife (e.g., skunks, raccoons, deer, etc) should be analyzed in accordance with the broad direction of the Mandatory Findings of Significance in Appendix G of the CEQA Guidelines.

Geology/Soils

- Stability of base area of proposed stockpile sites where earthen mounds are going to be placed should be examined.
- Stability of the banks of San Leandro Creek should be analyzed as to construction effects, including ground borne vibration.
- How will the stability of the dam be ensured during excavation?

Hydrology/Water Quality. San Leandro Creek runs downstream through the City. Any construction impacts to the creek that are not contained or controlled on the project site will affect water quality where the creek passes through the City.

- Potential impacts related to construction run-off affecting water quality and turbidity should be examined for all phases of construction (e.g., excavation, hauling to stockpile sites, mixing/treating, hauling back to excavated area). Mitigation measures should be identified with specificity. Where mitigation involves compliance with regulatory standards, the standards should be identified so it is clear what actions the project will take to avoid or reduce the impact.
- Impacts to fish species, spawning areas, and other Creek-related resources could be affected by the planned release and later refill of dam water. Analysis of potential impacts should include a description of how much water will be released, how fast it will be released, and any other water release details that could affect in-stream or riparian resources. The refill should also be examined for any potential impacts.
- Will the completed project change or affect the existing inundation maps used by the City? Due to the large electronic size of the maps, copies of the City's inundation maps (i.e., Chabot

Dam Inundation and Upper San Leandro Dam Inundation Maps) are available or may be accessed by contacting the Building Safety and Inspection Services Division at 510-577-3405.

Noise

- Construction-related noise and ground borne vibration should be analyzed with respect to all nearby sensitive receptors.
- Any substantial increase in operational noise after project construction, if any, should be identified.

Recreation

- Construction-related impacts to established recreational activities, including programs offered by the City as well as people visiting the park, should be analyzed.
- Construction and post-construction impacts to City facilities, e.g., restrooms, BBQs, picnic tables, playground equipment, etc., should be analyzed.
- Construction and post-construction impacts on sporting activities and amenities currently available at the park, including hiking, walking, picnicking, biking, disc golf, field sports, nature activities, volleyball, and horseshoes, should be analyzed.
- Analysis of post-construction impacts to the above recreational resources should clearly identify what resources will be temporarily affected and any that will be permanently affected. The analysis should specify how the affected resources and facilities will be returned, rebuilt, or replaced following construction, especially given the heavy levels of public use currently.

Transportation/Traffic

- Construction-related truck and equipment trips and related damage to City roadways should be analyzed. Please analyze the potential damage to City streets from the heavy trucks and equipment coming to and from the site.
- What is the designated truck route to the 580, 880 freeways?
- The traffic impacts of transporting heavy construction equipment into and out of the park should be considered. As part of any construction traffic management plan for the project, the City Police Department requests notice of the dates when heavy equipment will be moved into or out of Chabot Park so the request can be permitted and reviewed. This may require contracting police services with San Leandro Police Department or another agency.
- The construction-related analysis should identify where the heavy machinery and trucks will be left during non-working hours/days. The analysis should identify any related security measures for the site and equipment, machinery during non-working hours/days.
- Construction impacts should include analysis of the project workforce, i.e., how many workers are expected on the project site? How will the workers get to and from the work site? Where will the workers park? The project and its mitigation measures for these impacts should ensure that the worker trips and parking do not affect adjacent residential neighborhoods.

Mandatory Findings of Significance. Please ensure that the mandatory findings of significance as specified in the CEQA Guidelines are addressed in the Draft EIR.

Thank you for the opportunity to comment on the scope of the Draft EIR for the project. Please do not hesitate to contact me if there are any questions on the above comments.

Very truly yours,

Chris Zapata, City Manager
City of San Leandro

c: City Council
Rich Pio Roda, City Attorney
Sandra Spagnoli, Police Chief
Cynthia Battenberg, Community Development Director
Debbie Pollart, Public Works Director
Carolyn Knudtson, Recreation and Human Services Director

2083581.4

Frank Mellon
Director, EBMUD
Ward 7

Dear Mr. Mellon,

My letter has two purposes 1) to clarify and document information I received on May 3 from Gwen Alie and 2) to request a scoping meeting for my immediate neighborhood.

On Friday, May 3 I received the NOP for the Chabot Dam project from Michelle Blackwell. After reading the NOP, I had questions so I contacted Gwen Alie, Associate Planner. I live a few houses from the entrance to Lake Chabot Park and have attended two information sessions regarding the project. I have met with many of my neighbors to let them know about the project. At the initial public information meeting, I was told the meetings were informational only. My understanding was that these meetings were not scope meetings and that once the NOP was released neighbors could meet to have input into the scope of the EIR. The LeBrun neighborhood is right at the entrance of the park and includes 45 homes. Having everyone submit their comments in writing is much more difficult than having a meeting. Therefore, I called Ms. Alie to ask about a scope meeting with our neighbors.

Ms. Alie stated that there had been many meetings already and there would not be community meetings until the draft EIR came out. She stated the EIR would be written by the experts in the various fields. I asked who would be writing the recreation and social parts of the EIR and was told that the city of San Leandro was very involved. As I asked questions, I was made to feel like I just did not understand the process. At this point I identified myself as a Recreation and Parks Commissioner, which gives me a little more knowledge than the average citizen regarding the Recreation and Parks Department. I know that city staff had met with EBMUD staff but the city staff were not under the impression they would be part of writing the EIR, which is what Ms. Alie implied. Will the city staff be actively involved in writing parts of the EIR? If you use other experts, who are those experts?

I want this process to go smoothly. I am known in the community as a collaborator and still would like to make this process go smoothly for my neighborhood and wider community.

I am requesting an opportunity to have a scoping meeting with my neighborhood rather than submitting individual comments. Please advise regarding my request. My husband and I are happy to host the meeting in our home.

Evelyn Gonzalez
1700 Daniels Drive
San Leandro, CA 94577
(510) 352-6716
ejgonzalez@comcast.net

cc: Gwen Alie
Mayor Steven Cassidy
Michelle Blackwell

From:	Tobin, Marcia
To:	Yogi, Susan
Subject:	FW: NOP Chabot Dam Project Response
Date:	Thursday, May 23, 2013 3:18:54 PM
Attachments:	WATERSHED_CENTERLtrNOP.pdf

FYI

From: Alie, Gwendolyn [mailto:galie@ebmud.com]
Sent: Thursday, May 23, 2013 2:03 PM
To: Tobin, Marcia
Cc: Todaro, Sean; Maggiore, Bill
Subject: FW: NOP Chabot Dam Project Response

Marcia, for the DEIR team's consideration in preparing the DEIR analysis.

From: Robin Freeman [mailto:rfreeman@peralta.edu]
Sent: Thursday, May 23, 2013 12:01 PM
To: Alie, Gwendolyn
Cc: Robin Freeman; robinf5713@aol.com
Subject: NOP Chabot Dam Project Response

Please accept my attached letter regarding the Notice of Preparation for the Chabot Dam Seismic Retrofit

Thank you,

Robin Freeman

May 26, 2013

Ms. Gwen Alie, Associate Planner

East Bay Municipal Utility District

375 Eleventh Street , MS 701

Oakland, CA 94607-4240

RE: Notice of Preparation – Chabot Dam Seismic Upgrade Project

Dear Ms. Alie:

We are pleased to provide input regarding the scope and content of the environmental information that should be considered or included in the proposed EIR. We appreciate the district's concern for public safety and efforts to improve and strengthen the dam and restore the site after project work is complete.

Our organization's mission "is to restore and enhance San Leandro Creek, to increase its potential as a visual and recreational amenity, to preserve its cultural and natural history and to make San Leandro Creek an economically attractive resource, and to promote a healthy environment for its native flora and fauna."

Public interest supporting the awareness and potential for habitat preservation/restoration of the San Leandro Creek watershed above and below the creek has been growing recently. A 'greenway' concept connecting The San Francisco Bay Trail and Lake Chabot is being developed and shared with community leadership in the watershed area.

Creek flows are needed to sustain ecosystem health. When the water needs of a creek ecosystem are defined by stakeholders, then scientists and water managers will be able to find ways of meeting human needs for water while maintaining adequate river flows for the ecosystem.

A creek's ecosystem's water needs are defined in an "environmental flow prescription." This flow prescription describes the necessary seasonal and inter-annual variation needed in low flows, high flow pulses and floods to support native species and critically

important ecological functions. The emphasis is on maintaining the portions of the hydrograph necessary to support a healthy river ecosystem.

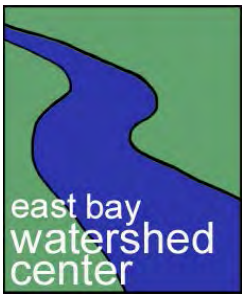
We look forward to working closely with East Bay Municipal Utility District on all aspects of this project.

Sincerely,

Michael J. Gregory, President

Friends of San Leandro Creek
RHSD South Offices
835 East 14th Street
San Leandro, CA 94577 http://fslc.org/

WATERSHED CENTER



Institute for Sustainable Policy Studies
Environmental Management and Technology
Merritt College
12500 Campus Drive, Oakland, CA 94619 www.ecomerritt.org

RE: Notice of Preparation
Chabot Dam Seismic Upgrade Project

Gwen Alie, Associate Planner
East Bay Municipal Utility District
375 Eleventh Street MS 701
Oakland, CA 94607-4240
galie@ebmud.com

May 23, 2013

Dear Associate Planner Alie,

I am writing regarding the adequacy of the scope of the EIR for the Chabot Dam Seismic Upgrade Project Notice of Preparation. I commend you for including Aesthetics, Biological Resources, Hydrology and Water Quality, Recreation, Geology and Soils and Greenhouse Gas Emissions.

In the Biologic Resources study, this is an excellent opportunity to include ecological restoration of the stream bank riparian vegetation and stream channel, fish passage flows or water recirculation, and educational access to the portion of San Leandro Creek in the East Bay Municipal District area below Chabot Dam.

The Frequently Asked Questions and NOP suggest that habitat restoration and fishery enhancement for Steelhead will not be considered due to downstream conditions.

Considering the comments by other agencies and the public, I encourage the East Bay Municipal Utilities District to consider habitat, fish passage and

educational access more thoroughly in order to meet CEQA standards of adequacy.

Reports and memos from the Environmental Protection Agency and National Marine Fisheries Service suggest that there are known native Rainbow Trout populations below Chabot Dam and that hydrology and habitat for Steelhead winter run should be restored.

Informal site inspections indicate that fish currently live in pools in the downstream reaches of San Leandro Creek and that overall there may be adequate water quality and channel improvement opportunities to support a fishery.

There is extensive public interest in creek access, habitat and fish restoration documented by citizen groups and Merritt College projects.

Sincerely,

Robin Freeman, Director
East Bay Watershed Center
Merritt College
rfreeman@peralta.edu

cc:
Alameda County Flood Control District
City of Oakland
City of San Leandro
East Bay Regional Park District
Friends of San Leandro Creek
San Leandro Creek Alliance

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
Alameda County Public Works Agency, Flood Control District (ACFCD)	5/21/2013	The ACFCD requests that the EIR not only evaluate the direct and impacts resulting from the proposed construction activities but also address the overall impact that the dam and its operation have had and will continue to have on San Leandro Creek watershed, one of the pristine watersheds in Alameda County that supports a variety of federal and state listed endangered species including anadromous steelhead fish. This project has the opportunity to restore essential connectivity between the upper watershed and San Francisco Bay by providing by-pass access for fish to negotiate the 139-year old dam constructed at a time when its effects on the environment were not evaluated.	Fish passage, impacts to San Leandro Creek watershed	Impacts resulting from the proposed construction activities are addressed in EIR Sections 3.4 Biological Resources and 3.11 Hydrology and Water Quality. The EIR is only required to address direct and indirect impacts as a result of the proposed project. The proposed project has no impact on planned releases from Chabot Reservoir after construction is complete. Restoring connectivity between watersheds is not within the scope of the project, nor related to objectives.
Alameda County Public Works Agency	5/21/2013	Lake Chabot Park is a popular recreation and daily exercise destination for local residents and residents from the surrounding cities. Many park patrons access the park by walking through the main park driveway. It is not clear from the project description sheet how much construction-related traffic may be generated during the seismic upgrade of the dam. However, the EIR should address the potential conflicts between park patrons and potential construction-related traffic. Also, the EIR needs to address any traffic impacts on Lake Chabot Road and Fairmont Drive if the	1 - Traffic in Chabot Park, on Lake Chabot Road, and Fairmont Drive 2 - Conflicts between construction and recreation use at Chabot Park	These issues are addressed in EIR Sections 3.6 Transportation and Circulation and 3.10 Recreation.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
		project is expected to generate any significant increase in vehicular trips from construction activities or hauling activities.		
Alameda County Public Works Agency	5/21/2013	Lastly, because residential properties are located within 0.5 mile of the lake, the EIR should address potential environmental issues such as noise and air quality impacts to nearby residents.	Noise, Air Quality impacts on residential properties	These issues are addressed in EIR Sections 3.9 Noise and 3.7 Air Quality.
Alameda County Public Works Agency	5/21/2013	No grading shall be permitted on sites located in unincorporated Alameda County until grading and erosion and sedimentation control plans have been reviewed by the County Public Works Agency and a grading permit is issued, as may be applicable, in accordance with the Alameda County Grading Ordinance.	Required grading permits and plans	Permit requirements are addressed in EIR Section 2.14 Discretionary Approvals Required for Project. Grading issues are addressed in Sections 3.3 Geology and Soils and 3.11 Hydrology and Water Quality.
Alameda County Public Works Agency	5/21/2013	It is the responsibility of the project proponent to comply with Federal, State, and local water quality standards and regulations. In order for the county and the project proponent to comply with our National Pollutant Discharge Elimination System (NPDES) Municipal Storm Water Permit issued by the San Francisco Bay Regional Water Quality Control Board, storm water quality measures must be implemented. The applicant shall provide measures to prevent discharge of contaminated materials into public drainage facilities	Water quality permit requirements	Permit requirements are addressed in EIR Section 2.14 Discretionary Approvals Required for Project. Water quality is addressed in EIR Section 3.11 Hydrology and Water Quality.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
		during both construction and post-construction periods. Sites with land disturbances greater than one acre must file a Notice of Intent (NOI) with the State Water Resources Control Board for coverage under the State General NPDES permit for Construction Activities.		
City of San Leandro	5/24/2013	The City is concerned that the project could affect water quality and in turn fish habitats in the Creek and could affect City compliance with its NPDES permit	Water quality and fish habitat impacts	These issues are addressed in EIR Sections 3.4 Biological Resources and 3.11 Hydrology and Water Quality.
City of San Leandro	5/24/2013	Air Quality. The project site is adjacent to sensitive receptors: a heavily-used park and existing residential neighborhoods in the City. The NOP states that Chabot Park will be closed during construction; the existing residential neighborhoods will be directly affected by construction activity. - Construction-related impacts, including generation of dust, diesel emissions, and particulates (PM2.5, PM10) for all phases of construction (e.g., excavation, hauling to stockpile sites, mixing/treating, hauling back to excavated area), and including equipment, haul trucks and any other source of construction emissions should be analyzed. Please identify whether any climatic conditions such as seasonal wind direction or speed would affect construction emissions.	Construction-related air emissions	This issue is addressed in EIR Section 3.7 Air Quality.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
City of San Leandro	5/24/2013	Please clarify with specificity when the park will be closed as related to the phases of construction.	Park closures related to construction phases	This issue is addressed in EIR Section 2.11.4 Access Modifications.
City of San Leandro	5/24/2013	Biological Resources. The project site is a large open space with a variety of recreational uses and contains considerable habitat value. The project site contains extensive tree cover; tree removal will be required under either embankment option. Further, San Leandro Creek flows through the project site and downstream through the City. Under these circumstances, impacts of the project are likely to be substantial with respect to these biological resources. - Please identify the number, size, type and location of trees to be removed. Please identify what tree replacement is proposed.	Impacts to trees	This issue is addressed in EIR Section 3.4 Biological Resources.
City of San Leandro	5/24/2013	Potential impacts to raptors. Raptors typically use or nest in tall trees; local raptors could be affected by the project's removal of trees.	Impacts to raptors	This issue is addressed in EIR Section 3.4 Biological Resources.
City of San Leandro	5/24/2013	Potential impacts to fish species and spawning areas located in San Leandro Creek should be analyzed related to potential project run-off and to ground borne vibrations from construction equipment and techniques.	Impacts to fish/spawning areas	Impacts resulting from the proposed construction activities are addressed in EIR Sections 3.4 Biological Resources, 3.9 Noise and Vibration, and 3.11 Hydrology and Water Quality.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
City of San Leandro	5/24/2013	Potential impacts to other native wildlife (e.g., skunks, raccoons, deer, etc.) should be analyzed in accordance with the broad direction of the Mandatory Findings of Significance in Appendix G of the CEQA Guidelines.	Impacts to native wildlife	This issue is addressed in EIR Section 3.4 Biological Resources.
City of San Leandro	5/24/2013	Geology/Soils Stability of base area of proposed stockpile sites where earthen mounds are going to be placed should be examined.	Stockpile site stability	This issue is addressed in EIR Section 3.3 Geology and Soils.
City of San Leandro	5/24/2013	Stability of the banks of San Leandro Creek should be analyzed as to construction effects, including ground borne vibration.	San Leandro Creek bank stability	This issue is addressed in EIR Section 3.3 Geology and Soils and 3.9 Noise and Vibration.
City of San Leandro	5/24/2013	How will the stability of the dam be ensured during excavation?	Dam stability during excavation	This issue is addressed in EIR Section 3.3 Geology and Soils.
City of San Leandro	5/24/2013	Hydrology/Water Quality. San Leandro Creek runs downstream through the City. Any construction impacts to the creek that are not contained or controlled on the project site will affect water quality where the creek passes through the city. - Potential impacts related to construction run-off affecting water quality and turbidity should be examined for all phases of construction (e.g., excavation, hauling to stockpile sites, mixing/treating, hauling back to excavated area). Mitigation measures should be identified with specificity.	Construction run-off affecting water quality and turbidity	This issue is addressed in EIR Section 3.11 Hydrology and Water Quality.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
		Where mitigation involves compliance with regulatory standards, the standards should be identified so it is clear what actions the project will take to avoid or reduce the impact.		
City of San Leandro	5/24/2013	Impacts to fish species, spawning areas, and other Creek-related resources could be affected by the planned release and later refill of dam water. Analysis of potential impacts should include a description of how much water will be released, how fast it will be released and any other water release details that could affect in-stream or riparian resources. The refill should also be examined for any potential impacts.	Dam release and recharge impacts	This issue is addressed in EIR Section 3.4 Biological Resources. Releases are discussed in Chapter 2 Project Description.
City of San Leandro	5/24/2013	Will the completed project change or affect the existing inundation maps used by the City? Due to the large electronic size of the maps, copies of the City's inundation maps (i.e., Chabot Dam Inundation and Upper San Leandro Dam Inundation Maps) are available or may be accessed by contacting the Building Safety and Inspection Services Division at 510-577-3405.	Inundation map changes	The proposed project will not affect the existing inundation maps. Flooding and inundation is addressed in EIR Section 3.11 Hydrology and Water Quality.
City of San Leandro	5/24/2013	Construction-related noise and ground borne vibration should be analyzed with respect to all nearby sensitive receptors.	Noise impacts	This issue is addressed in EIR Section 3.9 Noise.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
City of San Leandro	5/24/2013	Any substantial increase in operational noise after project construction, if any, should be identified.	Operational noise	This issue is addressed in EIR Section 3.9 Noise.
City of San Leandro	5/24/2013	Construction-related impacts to established recreational activities, including programs offered by the City as well as people visiting the park, should be analyzed.	Impacts to established recreational activities	This issue is addressed in EIR Section 3.10 Recreation.
City of San Leandro	5/24/2013	Construction and post-construction impacts to City facilities, e.g., restrooms, BBQs, picnic tables, playground equipment, etc., should be analyzed.	Impacts to City facilities	This issue is addressed in EIR Section 3.10 Recreation.
City of San Leandro	5/24/2013	Construction and post-construction impacts on sporting activities and amenities currently available at the park, including hiking, walking, picnicking, biking, disc golf, field sports, nature activities, volleyball, and horseshoes, should be analyzed.	Impacts on sporting activities and amenities	This issue is addressed in EIR Section 3.10 Recreation.
City of San Leandro	5/24/2013	Analysis of post-construction impacts to the above recreational resources should clearly identify what resources will be temporarily affected and any that will be permanently affected. The analysis should specify how the affected resources and facilities will be returned, rebuilt, or replaced following construction, especially given the heavy levels of public use currently.	Temporary versus permanent project impacts to Chabot Park	This issue is addressed in EIR Section 3.10 Recreation.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
City of San Leandro	5/24/2013	Construction-related truck and equipment trips and related damage to City roadways should be analyzed. Please analyze the potential damage to City streets from the heavy trucks and equipment coming to and from the site.	Damage to city streets	This issue is addressed in EIR Section 3.6 Transportation and Circulation.
City of San Leandro	5/24/2013	What is the designated truck route to the 580, 880 freeways?	Truck route to freeways	This issue is addressed in EIR Section 3.6 Transportation and Circulation.
City of San Leandro	5/24/2013	The traffic impacts of transporting heavy construction equipment into and out of the park should be considered. As part of any construction traffic management plan for the project, the City Police Department requires notice of the dates when heavy equipment will be moved into or out of Chabot Park so the request can be permitted and reviewed. This may require contracting police services with San Leandro Police Department or another agency.	Transporting heavy construction equipment in and out of Chabot Park, police requirements	Traffic impacts are addressed in EIR Section 3.6 Transportation and Circulation. Permit requirements are addressed in EIR Section 2.14 Discretionary Approvals Required for Project.
City of San Leandro	5/24/2013	The construction-related analysis should identify where the heavy machinery and trucks will be left during non-working hours/days. The analysis should identify any related security measures for the site and equipment, machinery during non-working hours/days.	After hours equipment storage and security	This issue is addressed in EIR Chapter 2 Project Description. Security measures are not a CEQA issue; however, such requirements are likely to be included in the construction contractor specifications.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
City of San Leandro	5/24/2013	Construction impacts should include analysis of the project workforce, i.e., how many workers are expected on the project site? How will the workers get to and from the work site? Where will the workers park? The project and its mitigation measures for these impacts should ensure that the worker trips and parking do not affect adjacent residential neighborhoods.	Impacts from project workforce on neighborhood traffic/parking	This issue is addressed in EIR Section 3.6 Transportation and Circulation.
City of San Leandro	5/24/2013	Mandatory Findings of Significance. Please ensure that the mandatory findings of significance as specified in the CEQA Guidelines are addressed in the Draft EIR.	Mandatory findings of significance	This issue is addressed in the Initial Study in EIR Appendix C.
Evelyn Gonzalez		Will the city staff be actively involved in writing parts of the EIR? If you use other experts, who are those experts?	EIR authors	This issue is addressed in EIR Chapter 6 List of Preparers. The City of San Leandro will not write the EIR, but will be consulted on city-related services and the proposed project.
East Bay Watershed Center, Merritt College	5/23/2013	In the Biologic Resources study, this is an excellent opportunity to include ecological restoration of the stream bank riparian vegetation and stream channel, fish passage flows or water recirculation, and educational access to the portion of San Leandro Creek in the East Bay Municipal District area below Chabot Dam. Considering the comments by other agencies and the public, I encourage the East Bay Municipal Utilities District to consider habitat, fish passage and	Inclusion of restoration, fish passage, water recirculation and educational access to the project and EIR analysis	Impacts resulting from the proposed construction activities are addressed in EIR Sections 3.4 Biological Resources and 3.11 Hydrology and Water Quality. The EIR is only required to address direct and indirect impacts as a result of the proposed project. The proposed project has no impact on planned releases from Chabot Reservoir after construction is complete. Inclusion of restoration, fish passage, water recirculation and educational access are not part of the project objectives.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
		educational access more thoroughly in order to meet CEQA standards of adequacy.		
East Bay Watershed Center, Merritt College	5/23/2013	Reports and memos from the Environmental Protection Agency and National Marine Fisheries Service suggest that there are known native Rainbow Trout populations below Chabot Dam and that hydrology and habitat for Steelhead winter run should be restored.	Trout population existence	This issue is addressed in EIR Section 3.4 Biological Resources.
East Bay Watershed Center, Merritt College	5/23/2013	Informal site inspections indicate that fish currently live in pools in the downstream reaches of San Leandro Creek and that overall there may be adequate water quality and channel improvement opportunities to support a fishery.	Downstream fish population	This issue is addressed in EIR Section 3.4 Biological Resources.
Ed Shapiro	5/15/2013	The loss of this park during the dam project will greatly impact the park users both at the facility and the access to Lake Chabot Park	Impacts to park users and access to Lake Chabot Park	These issues are addressed in EIR Section 3.10 Recreation.
Michael J. Gregory, Friends of San Leandro Creek	5/26/2013	A 'greenway' concept connecting the San Francisco Bay Trail and Lake Chabot is being developed and shared with community leadership in the watershed area.	Greenway concept	This project is still very conceptual and therefore was not included in the list of cumulative projects.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
Public Meeting at Chabot Park	6/20/2013	Main concern is pollution. Concerned regarding big earthwork machines and use of diesel gas. Is there a way to prevent diesel use? What about clean equipment? Look into diesel suppression. How is the air quality analysis done?	Air pollution	This issue is addressed in EIR Section 3.7 Air Quality.
Public Meeting at Chabot Park	6/20/2013	Will the park be completely closed? Will there be any flow of water coming down the creek?	Park access during construction; San Leandro Creek flows	This issue is addressed in EIR Section 3.10 Recreation.
Public Meeting at Chabot Park	6/20/2013	Will the dam height be lowered? Will more water be released?	Dam height	This issue is addressed in EIR Chapter 2 Project Description. The work does not result in a lowering of the dam.
Public Meeting at Chabot Park	6/20/2013	Will the reservoir level be lowered? Will more water be released?	Reservoir level	This issue is addressed in EIR Chapter 2 Project Description.
Public Meeting at Chabot Park	6/20/2013	If the project is done, will the park be returned to the public and open by fall of the same year?	Park restoration	This issue is addressed in EIR Chapter 2 Project Description.
Public Meeting at Chabot Park	6/20/2013	There is a concern from a lot of people about the park being returned to the public. If trees are taken out, what will be replanted?	Tree replanting	This issue is addressed in EIR Section 3.4 Biological Resources.
Public Meeting at Chabot Park	6/20/2013	The lower haul route follows San Leandro Creek. There is concern regarding water quality impacts along creek. When the route crosses over the creek will there be a temporary bridge?	Water quality impacts to San Leandro Creek	This issue is addressed in EIR Chapter 2 Project Description and EIR Section 3.11 Hydrology and Water Quality.
Public Meeting at Chabot Park	6/20/2013	What are the work hours?	Construction work hours	This issue is addressed in EIR Chapter 2 Project Description.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
Public Meeting at Chabot Park	6/20/2013	Is Estudillo the only way into the park? What about the fire road? Can the bridge at the Estudillo entrance handle construction traffic?	Construction access	This issue is addressed in EIR Chapter 2 Project Description and Chapter 4 Alternatives.
Public Meeting at Chabot Park	6/20/2013	When will it be determined if the conventional or CDSM dam construction method will be used?	Construction option decision	This issue is addressed in EIR Chapter 2 Project Description.
Public Meeting at Chabot Park	6/20/2013	The concept of "returning" the park needs to be looked at. Explore the impacts of excluding the public from using the park during construction. Address the concept that the land has public value to the community.	Park closure and restoration	These issues are addressed in EIR Section 3.10 Recreation.
Public Meeting at Chabot Park	6/20/2013	Is it possible for dialogue of the project to include some watershed coordination? Is there a possibility to broaden the scope of the EIR to include this discussion? There is a real interest in increasing water flow.	San Leandro Creek flows	The EIR is only required to address direct and indirect impacts as a result of the proposed project. The proposed project has no impact on planned releases from Chabot Reservoir after construction is complete. Restoring connectivity between watersheds is not within the scope of the project, nor related to the project objectives. As of the time of this EIR publication and separate from the Seismic Upgrade project, EBMUD Natural Resources and Operations staff have met with the Friends of the San Leandro Creek to discuss downstream flows.
Public Meeting at Chabot Park	6/20/2013	What safeguards will be taken to ensure water quality and that it doesn't deteriorate further?	Water quality impacts	This issue is addressed in EIR Section 3.11 Hydrology and Water Quality.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
Public Meeting at Chabot Park	6/20/2013	Who will be responsible for locking and unlocking park gates during the project? 2) How many construction workers will be coming in and out?	Construction traffic and logistics	This issue is addressed in EIR Section 2.11 2.11 Construction Sequence, Mobilization, and Modifications.
Public Meeting at Chabot Park	6/20/2013	What kind of materials will be stockpiled at the site and what stockpile height is anticipated?	Stockpile material	This issue is addressed in EIR Chapter 2 Project Description.
Public Meeting at Chabot Park	6/20/2013	Who is responsible for what happens to the creek or if something goes wrong?	Impacts to San Leandro Creek	This issue is addressed in EIR Section 3.11 Hydrology and Water Quality.
Public Meeting at Chabot Park	6/20/2013	Will the park be open intermittently between the 2 construction periods? How will Estudillo Avenue be maintained during construction?	Park access and operations during construction	These issues are addressed in EIR Section 3.10 Recreation.
Public Meeting at Chabot Park	6/20/2013	How will construction worker/equipment queuing into the site be managed? Do not allow construction workers to park on Sylvan Circle and Estudillo Avenue – make sure there is sufficient parking on-site. Parking is already a huge issue in the neighborhood.	Traffic and parking	These issues are addressed in EIR Section 3.6 Transportation and Circulation.
Public Meeting at Chabot Park	6/20/2013	Will the transportation/traffic analysis in the EIR look at off-site parking and identify mitigating factors?	Off-site parking	This issue is addressed in EIR Section 3.6 Transportation and Circulation.
Public Meeting at Chabot Park	6/20/2013	Biological, geology, water quality – these all relate to the creek. What happens with the stockpile if it rains? That is a soils and water quality issue.	Water quality impacts	This issue is addressed in EIR Sections 3.11 Hydrology and Water Quality and 3.3 Geology and Soils.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
Public Meeting at Chabot Park	6/20/2013	Please look at biological resources at the filter pond. It is a large breeding ground for frogs in the spring. Heard this might be a California Red-Legged Frog breeding ground.	Biological resources at the filter pond site	This issue is addressed in EIR Section 3.4 Biological Resources.
Public Meeting at Chabot Park	6/20/2013	Will the EIR address off-site parking and vanpooling for construction workers? And the possible use of electric vehicles?	Off-site parking for construction workers	This issue is addressed in EIR Section 3.6 Transportation and Circulation.
Public Meeting at Chabot Park	6/20/2013	Why even maintain Lake Chabot since it is not a fundamental part of the water supply system? It does not connect to the distribution system.	Purpose of Chabot Dam reservoir	This issue is addressed in EIR Section 2.2 Chabot Dam, Lake Chabot, and Appurtenant Facilities.
Public Meeting at Chabot Park	6/20/2013	EBRPD has found that on their projects, it has been helpful to have the construction specification state that the gate be manned 30 – 40 minutes before and after the start of each work shift.	Construction logistics – staffing the Park entrance gate	This issue is addressed in EIR Section 2.11.4 Access Modifications.
Public Meeting at Chabot Park	6/20/2013	What happens to the stockpile?	Stockpiles	This issue is addressed in EIR Section 2.11 Construction Sequence, Mobilization, and Modifications.
Public Meeting at Chabot Park	6/20/2013	What happens to the CDSM left over material?	Construction waste	This issue is addressed in EIR Section 2.11 Construction Sequence, Mobilization, and Modifications.
Public Meeting at Chabot Park	6/20/2013	Will the EIR list recreational activities?	Recreation activities	This issue is addressed in EIR Section 3.10 Recreation.
Public Meeting at Chabot Park	6/20/2013	What types of trucks will be used during construction?	Construction equipment	This issue is addressed in EIR Section 2.11 Construction Sequence, Mobilization, and Modifications.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
Public Meeting at Chabot Park	6/20/2013	Noise is going to be an issue and should be addressed in the EIR.	Noise impacts	This issue is addressed in EIR Section 3.9 Noise.
Public Meeting at Chabot Park	6/20/2013	When was the seismic stability evaluation completed? The upgrade seems confined to the area south of the dam; what is proposed for the north side of the dam?	Seismic stability evaluation	This issue is addressed in EIR Chapter 2 Project Description.
Public Meeting at Chabot Park	6/20/2013	How will project related complaints and concerns be addressed?	Community construction issues	A community affairs representative will be assigned to the project and can be called or emailed by the community if there are any issues. This person will interface with the construction team to resolve any issues.
Public Meeting at Chabot Park	6/20/2013	Some people work from home and can hear trucks backing up (from current work at park) and this is disruptive. Will construction noise be 8 hours/day? Can another route be used?	Construction equipment noise	The noise issue is addressed in EIR Section 3.9 Noise. Alternative routes are discussed in EIR Chapter 4 Alternatives.
Public Meeting at Chabot Park	6/20/2013	Noise at night is different from noise during the day. Temperature and other conditions affect how sound travels. Although the project benefits are widely dispersed, the impact is going to be highly concentrated on the community surrounding the work.	Construction noise at night	This issue is addressed in EIR Section 3.9 Noise.
Public Meeting at Chabot Park	6/20/2013	What happens if someone wants to come out to use the park and cars are backing up waiting?	Construction traffic and park use	This issue is addressed in EIR Section 3.6 Transportation and Circulation. The park will be closed during construction.

Table B-1
NOP Comments

Commenter	Date	Comment	Issue	Where Addressed in DEIR
Public Meeting at Chabot Park	6/20/2013	Will you replace the Frisbee Golf course if you end up using the park for stockpile?	Frisbee golf course	EBMUD will coordinate park restoration, including equipment and facilities, with the City.

Late NOP Comment Letters

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
777 Sonoma Ave., Room 325
Santa Rosa, CA 95404-4731

August 5, 2013

Gwen Alie
Associate Planner
East Bay Municipal Utility District
375 Eleventh Street, MS 701
Oakland, California 94607-4240

Dear Ms. Alie;

Thank you for the opportunity to comment on the East Bay Municipal Utility District's (EBMUD) preparation of a project level Environmental Impact Report (EIR) for the proposed Chabot Dam Seismic Upgrade project (Project) within the cities of Oakland and San Leandro, and the unincorporated Castro Valley region of Alameda County. EBMUD is proposing to improve the ability of Lake Chabot's dam embankment and outlet works to withstand shaking that could occur in the event of an earthquake along the Hayward Fault. To achieve the project objective, work will be required at the dam embankment and outlet works and surrounding EBMUD property and will include soil removals, stockpiles, haul routes, and tree removals.

Available information indicates that threatened Central California Coast (CCC) steelhead (*Oncorhynchus mykiss*) distinct population segment (DPS) occur in San Leandro Creek (71 FR 834, January 5, 2006). Historical habitat in San Leandro Creek could have potentially supported a sizable population of CCC steelhead (Spence *et al.* 2008, Spence *et al.* 2012). Under present conditions, reaches of San Leandro Creek downstream of Lake Chabot remain accessible to steelhead and suitable habitat remains upstream of Lake Chabot. Leidy *et al.* (2005) reports a reproducing *O. mykiss* population persisting in reaches above Upper San Leandro Reservoir. Through the CCC steelhead recovery planning process, NMFS has identified San Leandro Creek as a population that could support the viability of the Interior San Francisco Bay stratum and assist in the recovery of the broader CCC steelhead DPS. NMFS appreciates EBMUD's collaborative partnership as a voluntary signatory to the Statement of Understanding for development of the CCC Steelhead Recovery Program and recognizes the importance of EBMUD's previous and ongoing collaborative efforts to conserve and recover CCC steelhead in watersheds subject to EBMUD actions.

For the Lake Chabot Upgrade Project, NMFS recommends EBMUD consider, and assess in the EIR, the future effects of reservoir operations and maintenance on CCC steelhead in San Leandro Creek. The project's proposed construction at the dam and outlet works provides an opportunity to improve reservoir bypass flows and enhance conditions for steelhead in the

watershed. Reservoir releases from Chabot Dam should be developed to improve instream habitat conditions for the freshwater life stages of steelhead (*i.e.,* migration, spawning, egg incubation, and juvenile rearing) and implemented post-construction. To address the effects of upstream passage blockage at Chabot Dam, studies to evaluate the potential biological benefits and technical feasibility of a steelhead passage program should be performed, and if deemed technically feasible and biologically beneficial, a passage program to restore anadromy to the upper watershed should be implemented. My staff is available to assist EBMUD conduct this assessment and develop measures for steelhead.

NMFS appreciates the ongoing coordination provided by EBMUD staff associated with this project, and looks forward to further discussion and collaboration on projects that have the potential to incorporate measures to improve instream conditions and support the conservation and recovery of CCC steelhead. Please contact Darren Howe of my staff at 707-575-3152 or Darren.Howe@noaa.gov if you have questions concerning these comments, and to arrange for NMFS' participation in project planning.

Sincerely,

Dick Butler
North Central Coast Office Supervisor
Protected Resources Division

Literature Cited

71 FR 834: National Marine Fisheries Service. Final Listing Determinations for Ten Distinct Population Segments of West Coast Steelhead; Final Rule. Federal Register 71:834-862. January 5, 2006.

Leidy, R.A., Becker, G.S., and Harvey, B.N. (2005) Historical distribution and current status of steelhead/rainbow trout (*Oncorhynchus mykiss*) in streams of the San Francisco Estuary, California. Center for Ecosystem Management and Restoratin, Oakland, CA.

Spence, B.C., Bjorkstedt, E.P., Garza, J.C., Smith, J.J., Hankin, D.G., Fuller, D., Jones, W.E., Macedo, R., Williams, T.H., and Mora, E. (2008). A framework for assessing the viability of threatened and endangered salmon and steelhead in the north-central California coast recovery domain. U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, Southwest Fisheries Science Center. NOAA-TM-NMFS-SWFSC-423. April 2008.

Spence, B.C., Bjorkstedt, E.P., Paddock, S., and Nanus, L. (2012). Updates to biological viability criteria for threatened steelhead populations in the north-central California coast recovery domain. U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Marine Fisheries Service, Southwest Fisheries Science Center, Fisheries Ecology Division. March 2012.

EAST BAY
MUNICIPAL UTILITY DISTRICT

RICHARD G. SYKES
DIRECTOR OF WATER AND NATURAL RESOURCES
(510) 287-1629
rsykes@ebmud.com

August 27, 2013

Dick Butler, North Central Coast Supervisor
Protected Resources Division
National Marine Fish Services
Southwest Region
777 Sonoma Avenue, Room 325
Santa Rosa, CA 94504-4731

Re: Chabot Dam Seismic Upgrade Project

Dear Mr. Butler:

Thank you for your August 5, 2013, letter providing comment on the Notice of Preparation for the Chabot Dam Seismic Upgrade Project (Project) Environmental Impact Report (EIR).

The proposed Project is a dam and outlet tower seismic upgrade project required by the California Division of Safety of Dams to address seismic deficiencies, and the schedule for completion of this effort is 2016. The proposed Project will likely require releases to Lower San Leandro Creek prior to construction to lower the Lake Chabot level and use a temporary bridge to span San Leandro Creek to access the adjacent haul route. Temporary construction impacts related to pre-construction releases and creek work will be evaluated in the Draft EIR and implemented by East Bay Municipal Utility District (EBMUD). EBMUD will also comply with any temporary construction mitigation measures required by the appropriate permitting agencies. The proposed Project has no impact on planned releases from Chabot Reservoir after construction.

As you are aware, the California Central Coast (CCC) Steelhead Recovery Plan is still being developed. EBMUD is a participating agency and has been active in sharing data and reviewing information. EBMUD supports and is committed to the development of the CCC Steelhead Recovery Plan to strategically conserve and recover the CCC steelhead. We look forward to continued collaboration with National Marine Fish Services on this issue as well as the local community.

You will be provided an opportunity to comment on the Draft EIR, scheduled for 60 day review in winter 2013. We have previously communicated with Gary Stern from your agency regarding the proposed Project's temporary construction impacts. Please confirm if you or Gary is the preferred point of contact with your agency for the proposed Project.

375 ELEVENTH STREET . OAKLAND . CA 94607-4240 . FAX (510) 287-0541
P.O. BOX 24055 . OAKLAND . CA 94623-1055

I am available at 510-287-1629 to discuss either the Chabot Dam Seismic Upgrade Project, EBMUD's participation in the CCC Steelhead Recovery Plan and/or related topics.

Sincerely,

Richard G. Sykes
Director of Water and Natural Resources

RGS:GAA:sb

cc: Gwen Alie, Associate Planner EBMUD
Charlotte Ambrose, NMFS Santa Rosa

8/11/13

EBMUD
375 11th St
Oakland, CA 94607

Since Chabot Dam was buillt in the 1870's, EBMUD has had control of how much water is released into San Leandro Creek and when. Sometimes this means no flow, at other times torrential-like flood. A more natural flow regime could mean that species such as our endangered native rainbow/steelhead trout, could be reintroduced to its historic habitat.

Give San Leandro Creek a natural water flow to restore native life.

Sincerely,

Shauna Haines

Ms. Shauna Haines
1732 McGee Ave
Berkeley, CA 94703-1266

EAST BAY
MUNICIPAL UTILITY DISTRICT

August 15, 2013

Ms. Shauna Haines
1732 McGee Avenue
Berkeley, CA 94703-1266

Dear Ms. Haines,

Thank you for your letter dated August 11, 2013, regarding the flows at San Leandro Creek. A copy of the Chabot Dam Seismic Upgrade Frequently Asked Questions Document (FAQ) is attached in the hopes that it will answer any questions you might have about the creek and fish populations. I have highlighted the sections that are most relevant to the concerns in your letter for your convenience.

I have also forwarded your letter to both the Dam Upgrade team and to our Water and Natural Resources Department. You will automatically be added to the Chabot Dam Seismic Upgrade Environmental Impact Report (EIR) notification list. When the draft EIR is available you will receive a postcard telling you where and how to access the report. You will have the opportunity at that time to comment on the project and any associated impacts of the project.

Please feel free to contact me at any time if you have additional questions.

Sincerely,

Michelle Blackwell
Community Affairs
EBMUD
(510) 287-2053
mblackwe@ebmud.com

Attachment

cc: Chabot Dam Seismic Upgrade EIR Team, Water and Natural Resources Dept.
Sue Baker

APPENDIX C

Initial Study

EBMUD ENVIRONMENTAL CHECKLIST FORM

1.	**Project Title:**	Chabot Dam Seismic Upgrade
2.	**Lead Agency Name and Address:**	East Bay Municipal Utility District Water Distribution Planning Division – MS 701 375 11th Street Oakland, CA 94607
3.	**Contact Person:**	Gwen Alie: 510-287-1053, galie@ebmud.com
4.	**Project Location:**	At the end of Estudillo Avenue in Oakland, San Leandro, and unincorporated Alameda County (Castro Valley)
5.	**Project Sponsor's Name and Address:**	East Bay Municipal Utility District Water Distribution Planning Division – MS 701 375 11th Street Oakland, CA 94607
6.	**General Plan Designation:**	Based on a review of General Plan maps: City of Oakland: Resource Conservation Area City of San Leandro: Residential – Low Density, Parks and Recreation Unincorporated Alameda County (Castro Valley): Castro Valley General Plan Rural Area

7. **Zoning:** Based on a review of website maps :

   City of Oakland:

   - Project site, portions of the Lower and Upper Haul Routes: OS (RCA) – Open Space Resource Conservation Area

   City of San Leandro:

   - Project site and a portion of the Lower Haul Route: Residential Single-Family District

   Unincorporated Alameda County:

   - The project site and portions of the Upper and Lower Haul Routes are in the Castro Valley General Plan Rural Area

8. **Description of Project** *(Describe the whole action involved, including, but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary:)*

   The proposed project involves improving the Chabot Dam embankment toe through conventional earthwork or cement deep soil mixing (CDSM). The outlet works would be improved by re-lining the vertical brick-lined shaft that connects the sluice gate control to the outlet pipes, moving the valves and controls from the existing tower to the vertical shaft, relining or installing new outlet pipes from the vertical shaft to the reservoir, and removing the tower and tower pavilion. Excavated materials would be stockpiled at the Filter Pond Stockpile and/or Park Stockpile, which are located at the former EBMUD filter ponds and within Chabot Park, respectively. Two potential haul routes are proposed within the project site: the Upper Haul Route and the Lower Haul Route. At the completion of construction, the footprint of the project area would be returned to existing conditions. The entire project site, including Chabot Dam, the outlet tower and shaft, haul routes, stockpile locations, and staging areas is owned by EBMUD. The project description is provided in detail in Chapter 2 of the Draft EIR.

9. **Surrounding land uses and setting** *(briefly describe project's surroundings)*:

   The potential haul routes and stockpiles are shown on Figure 2-2 of the project description. The areas surrounding the Chabot Dam, Reservoir and watershed lands are predominantly recreational. East Bay Regional Park District (EBRPD) leases and manages the Anthony Chabot Regional Park, and the City of San Leandro leases and manages Chabot Park. The Estudillo Avenue access to the project site is through a residential neighborhood.

10. **Other public agencies whose approval is required** *(e.g., permits, financing approval, or participation agreement):*

    - California Department of Water Resources, Division of Safety of Dams
        - Application for Approval of Plans and Specifications for the Repair or Alteration of a Dam and Reservoir
    - California Department of Fish and Wildlife
        - Section 1602 of the CDFG Code – Lake and Streambed Alteration Permit
        - Section 2080.1 of the CDFG Code – Consistency Determination for affects on the Alameda whipsnake
    - Regional Water Quality Control Board:
        - Section 401 of the Clean Water Act – Water Quality Certification
        - Water Discharge
    - U.S. Fish and Wildlife Service
        - Section 7 of the Endangered Species Act – Consultation for potential affects on the California red-legged frog and Alameda whipsnake
    - United States Army Corps of Engineers
        - 404 permit – Dredge or fill of wetlands and waters of the U.S.
    - East Bay Regional Parks District
        - Letter of Understanding between EBRPD and EBMUD

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The proposed project could potentially affect the environmental topics checked below. In this Initial Study, the Potentially Significant Impact designation is being used solely to identify those topics that will be addressed in detail in the Draft Environmental Impact Report (Draft EIR) for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the Draft EIR because there is not sufficient information available at this time on these potentially affected resource areas.

☒	Aesthetics	☐	Agriculture Resources	☒	Air Quality
☒	Biological Resources	☒	Cultural Resources	☒	Geology/Soils
☒	Greenhouse Gas Emissions	☒	Hazards/Hazardous Materials	☒	Hydrology/Water Quality
☐	Land Use/Planning	☐	Mineral Resources	☒	Noise
☐	Population/Housing	☐	Public Services	☒	Recreation
☒	Transportation/Traffic	☒	Utilities/Service Systems	☒	Mandatory Findings of Significance

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.

☐ 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 applicant. 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" 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 Environmental Impact Report pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier Environmental Impact Report, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Xavier J. Irias
Director of Engineering and Construction
East Bay Municipal Utility District

Date

EVALUATION OF ENVIRONMENTAL IMPACTS

1. A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an Environmental Impact Report (EIR) is required.
4. "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced).
5. Earlier analyses may be used where, pursuant to the tiering, program EIR, or other California Environmental Quality Act (CEQA) process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063 (c) (3) (D). Earlier analyses are discussed in the Earlier Analysis Section at the end of the environmental checklist forms.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different ones.
9. The analysis of each issue should identify:
    a) The significance criteria or threshold used to evaluate each question; and
    b) The mitigation measure identified, if any, to reduce the impact to less than significance.

ENVIRONMENTAL IMPACT CHECKLIST

I. Aesthetics/Visual Quality **Would the Project:**	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Have substantially adverse effect on a scenic vista?	☒	☐	☐	☐
b) Damage scenic resources, including but not limited to, trees, rock outcropping, and historic buildings within a state scenic highway?	☒	☐	☐	☐
c) Substantially degrade the existing visual character or quality of the Site and its surroundings?	☒	☐	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☒	☐	☐	☐

DISCUSSION

I a-d. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Aesthetics and Visual Quality will be addressed in the Draft EIR.

II. Agriculture and Forest Resources **In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the Project:**	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland) to non-agricultural use? (The Farmland Mapping and Monitoring Program in the California Resources Agency, Dept. of Conservation, maintains detailed maps of these and other categories of farmland.)	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

II. Agriculture and Forest Resources **In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. Would the Project:**	**Potentially Significant Impact**	**Less than Significant with Mitigation Incorporated**	**Less than Significant Impact**	**No Impact**
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220[g]) or timberland (as defined in Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could individually or cumulatively result in loss of Farmland, to non-agricultural use?	☐	☐	☐	☒

DISCUSSION

II a-e. **No Impact.** The General Plan designations of the Chabot Dam project site is Resource Conservation Area (Oakland), Residential-Low Density and Park and Recreation (San Leandro), and Rural Area (Alameda County Castro Valley General Plan). The California Department of Conservation's Farmland Mapping and Monitoring Program identifies the site as "Other Land", which is a mapping category that is not considered prime farmland, farmland of statewide importance, unique farmland, grazing land, or urban and built-up land. The project site is not under a Williamson Act contract for agricultural preservation, does not contain agricultural uses and is not designated or zoned for agricultural uses. In addition, the project site is a reservoir with an earthen dam, owned and operated by EBMUD.

The proposed project would upgrade the dam and outlet tower to satisfy the requirements of the DSOD to withstand the shaking generated by the maximum credible earthquake on the Hayward Fault. No change in land use would occur at the site or in the surrounding areas as a result of the proposed project. The proposed project therefore would not convert any prime farmland, unique farmland, or Farmland of Statewide Importance to non-agricultural use, or result in the loss of forest land or convert forest land to non-forest use. Thus, the proposed project would have no impact on agricultural and forest resources.

III. Air Quality **Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Conflict with or obstruct implementation of the applicable Air Quality Attainment Plan or Congestion Management Plan?	☒	☐	☐	☐
b) Violate any stationary source air quality standard or contribute to an existing or projected air quality violation?	☒	☐	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☒	☐	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☒	☐	☐	☐
e) Create objectionable odors affecting a substantial number of people?	☒	☐	☐	☐

DISCUSSION

III a-e. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Air Quality will be addressed in the Draft EIR.

IV. Biological Resources **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse impact, 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 Dept. of Fish & Game or U.S. Fish & Wildlife Service?	☒	☐	☐	☐
b) Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Dept. of Fish & Game or U.S. Fish & Wildlife Service?	☒	☐	☐	☐
c) Have a substantial adverse impact on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) either individually or in combination with the known or probable impacts of other activities through direct removal, filling, hydrological interruption, or other means?	☒	☐	☐	☐
d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☒	☐	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☒	☐	☐	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan?	☒	☐	☐	☐

DISCUSSION

IV a-f. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Biological Resources will be addressed in the Draft EIR.

V. Cultural Resources **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Cause a substantial adverse change in the significance of a historical resource as defined in section 15064.5?	☒	☐	☐	☐
b) Cause a substantial adverse change in the significance of a unique archaeological resource as defined in section 15064.5?	☒	☐	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☒	☐	☐	☐

DISCUSSION

V a-d. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Cultural Resources will be addressed in the Draft EIR.

VI. Geology and Soils **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☒	☐	☐	☐
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?	☒	☐	☐	☐
ii) Strong seismic ground shaking?	☒	☐	☐	☐
iii) Seismic-related ground failure, including liquefaction?	☒	☐	☐	☐
iv) Landslides?	☒	☐	☐	☐
b) Result in substantial soil erosion or the loss of topsoil?	☒	☐	☐	☐
c) Be located on strata 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?	☒	☐	☐	☐
d) Be located on expansive soil as defined in Table 18-1-B of the Uniform Building	☒	☐	☐	☐

VI. Geology and Soils **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
Code 1994, creating substantial risks to life or property?				
e) Have soils incapable of supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☒	☐	☐	☐

DISCUSSION

VI a-e. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Geology and Soils will be addressed in the Draft EIR.

VII. Greenhouse Gas Emissions **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment, based on any applicable threshold of significance?	☒	☐	☐	☐
b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

DISCUSSION

VII a-b. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Greenhouse Gas Emissions will be addressed in the Draft EIR.

VIII. Hazards and Hazardous Materials **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☒	☐	☐	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the likely release of hazardous materials into the environment?	☒	☐	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☒	☐	☐	☐
d) Be located on a site which is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5 and as a result, would it create a significant hazard to the public or the environment?	☒	☐	☐	☐
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 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 or working in the project area?	☒	☐	☐	☐
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☒	☐	☐	☐
h) Expose people or structures to the risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☒	☐	☐	☐

DISCUSSION

VIII a-h. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Hazards and Hazardous Materials will be addressed in the Draft EIR.

IX. Hydrology and Water Quality **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Violate Regional Water Quality Control Board water quality standards or waste discharge requirements?	☒	☐	☐	☐
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 the local groundwater table level (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?	☒	☐	☐	☐
c) Substantially after the existing drainage pattern of the site 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?	☒	☐	☐	☐
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 in a manner which would result in flooding onsite or offsite?	☒	☐	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems to control?	☒	☐	☐	☐
f) Otherwise substantially degrade water quality?	☒	☐	☐	☐
g) Place housing within a 100-year flood plain, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☒	☐	☐	☐
h) Place within a 100-year flood plain structures which would impede or redirect flood flows?	☒	☐	☐	☐
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?	☒	☐	☐	☐
j) Inundation by seiche, tsunami, or mudflow?	☒	☐	☐	☐

DISCUSSION

IX a-j. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Hydrology and Water Quality will be addressed in the Draft EIR.

X. Land Use and Planning **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Physically divide an established community?	☐	☐	☐	☒
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?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural communities conservation plan?	☐	☐	☐	☒

DISCUSSION

X a. **No Impact.** The project site is already developed with a dam, reservoir, and outlet tower. The proposed project consists of upgrading the dam and outlet tower to satisfy the requirements of the DSOD to withstand the shaking generated by the maximum credible earthquake on the Hayward Fault. The construction activities would consist of improving the embankment toe of the dam, removing the pavilion on top of the outlet works, and relining or replacing the existing pipes in the outlet works. There would be no change in land use, and the project would not physically divide an existing community. Chabot Dam has been in existence since the 1870s, and preceded residential development of the area. No impact would occur.

X b. **No Impact.** The proposed project would not conflict with land use planning for the site. Pursuant to Section 53091 of the California Government Planning Code, projects that involve the production, generation, storage and/or transmission of water are exempt from zoning and building ordinances of a city or county because they involve the construction of facilities for the production, generation, storage and/or transmission of water. However, it is EBMUD's practice to be consistent with the regulations of all local jurisdictions to the extent feasible, where such actions would not compromise EBMUD's public purpose or responsibilities.

X c. **No Impact.** EBMUD prepared a Low Effect East Bay Habitat Conservation Plan (HCP) in April 2008. Portions of the project site that are leased to EBRPD are not included in the HCP. The 120 acre area between the base of Chabot Dam and the edge of Chabot Park are included in the HCP. All project work would conform to the HCP, including the HCP provisions for impacts and incidental take.

XI. Mineral Resources **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in 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?	☐	☐	☐	☒

DISCUSSION

XI a-b. **No Impact.** The California Geological Survey (CGS) has classified lands within the San Francisco Bay region into four Mineral Resource Zones. The easternmost portion of the project area is mapped in CGS Special Report 146 (Stinson et al. 1987) as MRZ-3. The majority of the project area has not been assigned an MRZ. There is currently no mineral extraction on site, and the project is not expected to affect any significant or potentially significant mineral resources that are of value for both the state and the region. Therefore, no impact on mineral resources would occur.

XII. Noise **Would the project result in :**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
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?	☒	☐	☐	☐
b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels?	☒	☐	☐	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☒	☐	☐	☐
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?	☒	☐	☐	☐

XII. Noise **Would the project result in :**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
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?	☒	☐	☐	☐

DISCUSSION

XII a-f. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Noise will be addressed in the Draft EIR.

XIII. Population and Housing **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

DISCUSSION

XIII a. **No Impact.** A project is considered growth inducing if its implementation would substantially increase the population or result in the need for additional development. The proposed project is a seismic improvement of an existing reservoir; it does not increase the capacity of the reservoir. , Chabot Reservoir is not part of the water distribution system that serves EBMUD customers, but serves as an emergency water supply source, conservation/storage of local runoff, and recreation facility. The seismic upgrade therefore would not indirectly induce growth. The proposed project does not include any residential, commercial, or other development that could alter the regional or local population characteristics.

The project construction would generate temporary jobs, depending on the construction phase. EBMUD is expected to meet this need for construction labor within the regional market for projects in the Alameda County area; therefore the proposed project would not create a demand for new housing resulting from an increase in temporary construction jobs.

XIII b-c. **No Impact.** All construction activities would occur on and within the Chabot Dam site. Temporary on-site haul routes, stockpiling, and staging areas would affect the Chabot Dam site. No housing presently exists or is proposed at the project site, therefore no housing or residents would be displaced. The proposed project would result in no impact on displacement of housing units.

XIV. Public Services **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental 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:	☐	☐	☐	☒
i) Fire protection?	☐	☐	☐	☒
ii) Police protection?	☐	☐	☐	☒
iii) Schools?	☐	☐	☐	☒
iv) Parks?	☒	☐	☐	☒
v) Other public facilities?	☐	☐	☐	☒

DISCUSSION

XIV a.i – a.iii, a.v. **No Impact.** A project would be considered to have significant impacts on public services if it were to result in the need for new or physically altered government facilities to maintain acceptable service of public services. The proposed project would not increase development at the site by adding residential or commercial development, resulting in an incremental increase in the demand for, and use of, public services.

The proposed project would seismically upgrade the existing Chabot Dam facility without increasing capacity. Therefore it would not induce population growth by making additional water supply available for new development. No planned growth in the Cities of Oakland and San Leandro, and Alameda County would be served by the facilities as Chabot Dam functions as an emergency water supply. EBMUD would maintain emergency access to the project site and would coordinate as appropriate with EBRPD, the Cities of Oakland and San Leandro, and County of Alameda emergency service providers regarding the construction period. As such it would not induce the need for additional public services.

XIV a.iv. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. Detailed analyses of the impacts and mitigation measures associated with recreational and park facilities will be addressed in the Draft EIR, under Recreation.

XV. Recreation **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Would the project 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?	☒	☐	☐	☐
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☒	☐	☐	☐

DISCUSSION

XV a-b. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Recreation will be addressed in the Draft EIR.

XVI. Transportation and Traffic **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
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 transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths and mass transit?	☒	☐	☐	☐
b) Conflict with an applicable congestions management program, including but not limited to level of service demands and travel demand measures, or other standards established by the county congestion management agency for designated roads an or highways?	☒	☐	☐	☐
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?	☒	☐	☐	☐

XVI. Transportation and Traffic **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
d) Substantially increase hazards to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☒	☐	☐	☐
e) Result in inadequate emergency access?	☒	☐	☐	☐
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?	☒	☐	☐	☐

DISCUSSION

XVI a – f. In this Initial Study, the "Potentially Significant Impact" designation is being used solely to identify those topics that will be addressed in detail in the EIR for this project and does not reflect the findings of any preliminary impact analysis. These topics are being included in the EIR because there is not sufficient information available at this time on the potentially affected resource area. Detailed analyses of the impacts and mitigation measures associated with Transportation and Traffic will be addressed in the Draft EIR.

XVII. Utilities and Service Systems **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☒	☐
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
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?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider	☐	☐	☐	☒

XVII. Utilities and Service Systems **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
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?				
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☒	☐

DISCUSSION

XVII a. **Less than Significant.** Temporary impacts to stormwater drainage would occur at the dam site, haul routes, and stockpiles from ground disturbance activities. However, these impacts would be minimized with the implementation of best management practices (BMPs) as part of the storm water pollution prevention plan (SWPPP) which would be required for the proposed project, and other requirements of the National Pollutant Discharge Elimination System (NPDES) Construction General Permit from the San Francisco Regional Water Quality Control Board (RWQCB) (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ). The BMPs implemented during construction would minimize erosion and sediment transport from the construction areas, haul routes, laydown/staging areas, stockpile sites, and dewatering activities. The SWPPP would specify a monitoring program and would require that the supervisors and workers be knowledgeable about each portion of the site, and maintain awareness of the importance of stormwater quality protection and pollution prevention. All BMPs would also be inspected on a regular basis to confirm proper installation and function. The SWPPP and BMPs would reduce the potential for contaminants, sediments, or pollutants in stormwater runoff to enter the combined sewer system during construction. Through compliance with the SWPPP and Construction General Permit requirements, construction-related water quality impacts related to stormwater would be less than significant.

XVII b-e. The proposed project would seismically upgrade the existing Chabot Dam facility without upgrading its capacity. Therefore it would not induce population growth, resulting in the need for the construction or expansion of water or wastewater treatment facilities, storm water drainage facilities, or water supply.

XVII f-g. **Less than Significant.** Solid waste generated in the form of construction debris that cannot be reused at the project site would be transported and disposed of in accordance with all applicable federal and state laws, and pursuant to standard EBMUD construction specifications which regulate material off haul and disposal as specified in Section 01 74 19, Construction Waste Management and Disposal, and Section 01 35 44 Environmental Requirements.

No additional solid waste would be generated after the completion of project. Therefore, the project would not conflict with federal, state, and local statutes and regulations related to solid waste.

XVIII. Mandatory Findings of Significance **Would the project:**	**Potentially Significant Impact**	**Less Than Significant With Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Does the project have the potential to degrade the quality of the environment, substantially 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?	☒	☐	☐	☐
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, and the effects of probable future projects)?	☒	☐	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

DISCUSSION

XVIII a. The proposed project could have the potential to degrade the quality of the environment; the Draft EIR will address potential impacts related to aesthetics, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, recreation, and transportation and traffic.

XVIII b. Cumulative impacts for the following resources areas have been determined to be less than significant: land use, population and housing, utilities and service systems, public services, mineral and energy resources, and agricultural and forest resources. The Draft EIR will analyze cumulative impacts related to aesthetics, air quality, biological resources, cultural resources, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, recreation, and transportation and traffic.

XVIII c. The environmental effects to human beings are primarily related to aesthetics, air quality, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, noise, recreation, and transportation and traffic. These impacts are anticipated to be temporary in that they are construction related and will cease upon completion of construction. These effects will be fully analyzed in the Draft EIR.

APPENDIX D-1

Preliminary Jurisdictional Wetland Delineation

Technical Report

Chabot Dam Seismic Upgrade Project

Wetland Delineation and Preliminary Jurisdictional Determination

Prepared for

East Bay Municipal Utility District

July 2013

Prepared by

AECOM
300 California Street, Suite 400
San Francisco, CA 94104

Contents

Figures

Tables

Appendices

Acronyms and Abbreviations

CDFW	California Department of Fish and Wildlife
CWA	Clean Water Act
EBMUD	East Bay Municipal Utility District
GPS	Global Positioning System
MSL	mean sea level
NWI	National Wetlands Inventory
OHWM	ordinary high water mark
RPW	relatively permanent water
RWQCB	Regional Water Quality Control Board
TNW	traditional navigable water
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey

1 Introduction

This report presents the methods and results of a wetland delineation conducted in support of the proposed East Bay Municipal Utility District's (EBMUD) Chabot Dam Seismic Upgrade Project (proposed project) in Alameda County, California (Figure 1-1). The proposed project would upgrade Chabot Dam to meet California Division of Safety of Dams seismic stability standards.

EBMUD contracted AECOM to conduct a wetland delineation for the proposed project in accordance with U.S. Army Corps of Engineers (USACE) wetland delineation protocols. Information included will support EBMUD's environmental review of the proposed project and may be used to obtain a jurisdictional determination from the San Francisco District USACE in accordance with Section 404 of the Clean Water Act (CWA). It will also serve as the baseline for future impact analysis and permitting documentation, as needed.

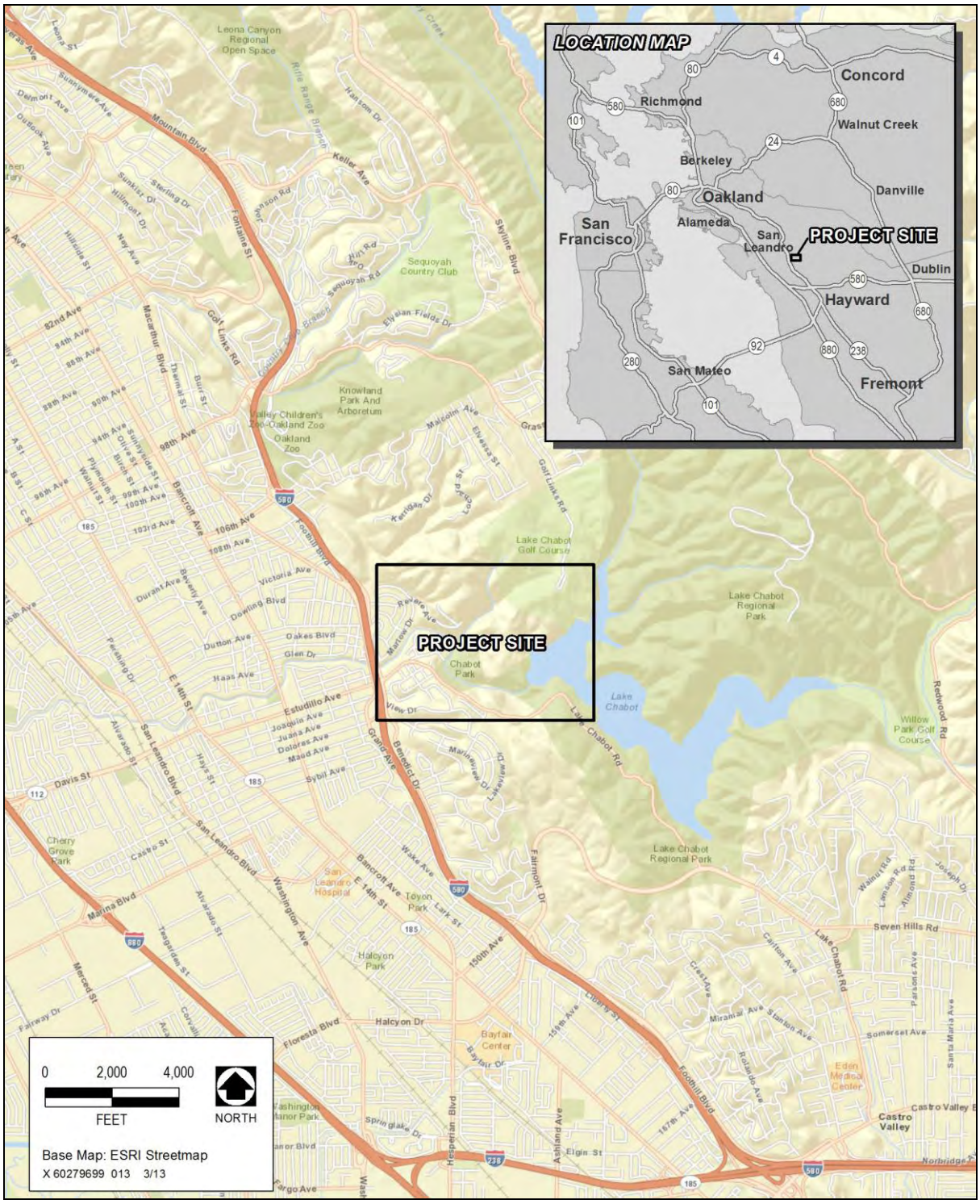
2 Delineation Methods

A pre-field review of the proposed project study area (study area) (Figure 2-1) was conducted to identify potential wetlands and other waters that may be present. Materials reviewed included the Preliminary Chabot Dam Seismic Remediation Project Initial Biological Resource Assessment (EBMUD 2011); and online geospatial wetlands information provided by the U.S. Fish and Wildlife Service's (USFWS) National Wetlands Inventory (NWI) (USFWS 2012), Google Earth imagery, and the San Leandro and Hayward U.S. Geologic Survey (USGS) 7.5-minute topographic quadrangle maps (USGS 1993a, 1993b). Soil types in the study area were identified using the Web Soil Survey, a resource provided by the National Resources Conservation Service (NRCS 2013a). AECOM wetland ecologists Kristin Asmus and Sarah Cannon conducted the wetland delineation field survey on January 17 and March 5 of 2013.

The Corps of Engineers Wetlands Delineation Manual (Environmental Laboratory 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West (Environmental Laboratory 2008) were used as guidance to delineate wetlands that are potentially subject to USACE jurisdiction under Section 404 of the CWA. The 1987 Manual and 2008 Regional Supplement provide technical guidelines and methods for a three-parameter approach to determine the location and boundaries of jurisdictional wetlands. This approach requires that an area support positive indicators of hydrophytic vegetation, hydric soils, and wetland hydrology to be considered a jurisdictional wetland. Potentially jurisdictional areas were identified and mapped in the field, and were later digitized on an aerial photograph. No wetland determination data forms were completed during this delineation because all potentially jurisdictional features had either a defined bed and bank, or a physically defined wetland edge. Locations of some potentially jurisdictional features were also recorded digitally, using a global positioning system (GPS) data logger (Trimble XH), and were imported onto an electronic version of an aerial photograph. GPS data were recorded in North American Datum 83.

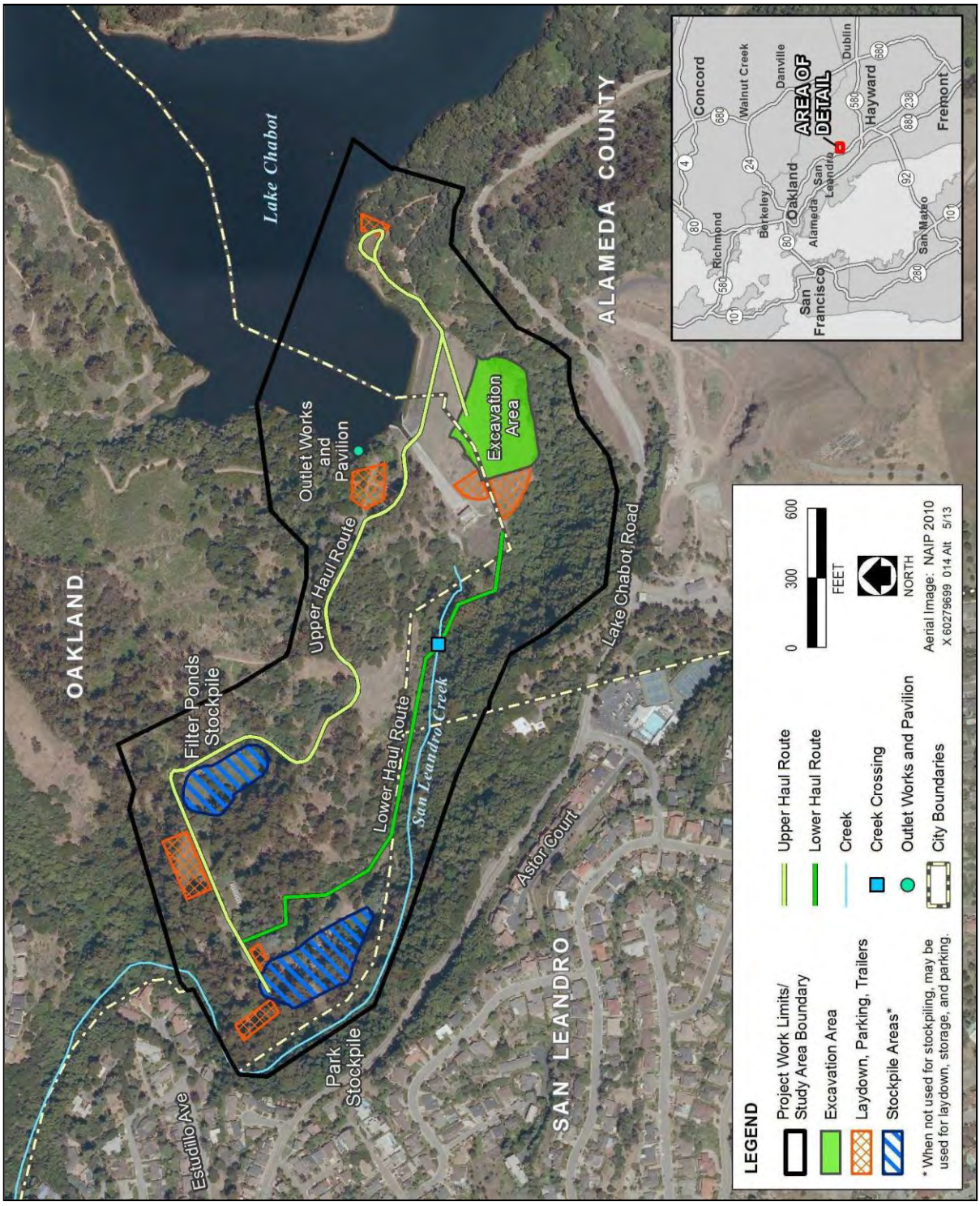
Waters of the United States were delineated based on the ordinary high water mark (OHWM). OHWMs for drainages typically correspond with characteristics such as shelving, scour lines, and other natural linear features which define the bed and bank portion of the channel that floods under normal conditions (USACE 2005).

During the field survey, plant species in the study area were recorded and the wetland indicator status for the species was identified using the USACE's National Wetlands Plant List: California 2012 Final State Wetland Plant List (Lichvar 2012). Botanical nomenclature used in this report follows The Jepson Manual: Vascular Plants of California (Baldwin et. al. 2012).



Source: Compiled by AECOM in 2013

Figure 1-1: Project Site Location and Vicinity



Sources: Terra Engineers 2013; EBMUD 2013; compiled by AECOM in 2013

Figure 2-1: Project Features and Study Area Boundary

Hydrophytic species include those listed as obligate, facultative wetland, or facultative. The designation of a species corresponds to the probability that a species will occur in a wetland habitat. The indicator categories are defined in Table 2-1.

Table 2-1: Wetland Indicator Categories

Indicator Category	Wetland Occurrence
Obligate wetland species (OBL)	Occurs almost always in wetlands (estimated greater than 99 percent probability of occurring in a wetland).
Facultative wetland species (FACW)	Usually occurs in a wetland (estimated between 67 and 99 percent probability of occurring in a wetland).
Facultative species (FAC)	Equally likely to occur in a wetland or a non-wetland (estimated between 33 and 67 percent probability of occurring in a wetland).
Facultative upland species (FACU)	Usually occurs in non-wetlands (estimated between 1 and 33 percent probability of occurring in a wetland).
Obligate upland species (UPL)	Occurs in wetlands in another region, but occurs almost always under natural conditions in non-wetlands in the Arid West Region (estimated less than 1 percent probability of occurring in a wetland).
Not Listed (NL)	Plants not listed on the National Wetlands Plant List (NWPL 2012) are assumed to be UPL, but are designated NL.
Source: Lichvar 2012	

Soils are typically examined by digging soil test pits to determine whether hydric soils exist at a sample location. Paired upland and wetland sample points are used to determine edges of wetland areas.

The single potentially jurisdictional wetland feature in the project study area is a spillway at the base of Chabot Dam. The edges of this feature are either covered in rock slope protection or a compacted berm. Therefore, paired sample points to determine the edge of wetland were not necessary. The determination of this feature is explained in more detail in Section 4. All remaining features in the study area are waters with a defined bed and bank.

Hydric soil determinations are based on the indicators described in the Wetlands Delineation Manual (Environmental Laboratory 1987), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Environmental Laboratory 2008), and Redoximorphic Features for Identifying Aquic Conditions (Vepraskas 1992). Soil units mapped for the study area as part of the soil survey were cross-referenced with the National Soils List (NRCS 2013b) by state to determine whether soils in the study area have been listed as a hydric map unit.

The USACE Jurisdictional Determination Form Instructional Guidebook (USACE 2007) was consulted to aid the preliminary determination as to whether an area would be subject to USACE jurisdiction under Section 404 of the CWA. The significant nexus test—outlined in a memorandum that was jointly authored by the U.S. Environmental Protection Agency and USACE—was applied to each potentially jurisdictional habitat type (Grumbles and Woodley 2008). To facilitate jurisdictional determinations consistent with the guidance, each waterbody delineated was evaluated as one of three types: (1) Traditional Navigable Water (TNW), (2) Relatively Permanent Water (RPW), or (3) non-RPW based on the following definitions:

- TNWs include all waters subject to the ebb and flow of the tide, or waters that are presently used, have been used in the past, or may be used in the future to transport interstate or foreign commerce, and all waters that are navigable in fact under federal law for any purpose.
- RPWs are waters that flow continuously at least seasonally (typically at least 3 months of the year) and are not TNWs.
- Non-RPWs are waters that do not have continuous flow at least seasonally.

The following types of waterbodies are subject to the CWA:

- all TNWs and adjacent wetlands;
- relatively permanent tributaries of TNWs and wetlands with a continuous surface connection to such tributaries; and
- non-relatively permanent tributaries of TNWs and adjacent wetlands if they have a significant nexus to a TNW.

Non-RPWs and adjacent wetlands are determined to have a significant nexus to a TNW if they significantly affect the chemical, physical, or biological integrity of a downstream TNW.

Representative photographs of the study area are provided in Appendix A, and a list of plant species observed during the wetland delineation field survey and other field surveys conducted by AECOM in the study area is provided in Appendix B.

3 Environmental Setting

The study area is located in the San Leandro Hills, part of the Pacific Coast Ranges that are situated on the eastern side of San Francisco Bay (Figure 1-1). Specifically, the study area is located within the USGS 7.5-minute San Leandro and Hayward Quadrangle, in an unsectioned portion of Township 2 South, Range 2 West. The study area is located approximately 2 miles east of the City of San Leandro and 10 miles southeast of the City of Oakland, California. The majority of the 98-acre study area is located within the Anthony Chabot Regional Park, owned by EBMUD and managed by the East Bay Regional Park District. The study area also encompasses the City of San Leandro's 10-acre Chabot Park. An approximately 0.5-mile stretch of San Leandro Creek flows through the project area. Within the study area, the creek originates downstream of the dam spillway and continues along the southern edge of the study area. The creek continues through the City of San Leandro and out to San Francisco Bay.

The regional climate is characterized as Mediterranean, typified by mild, wet winters and warm, dry summers. The climate is regulated by San Francisco Bay and the Pacific Ocean. The average regional temperature is 57 degrees Fahrenheit, with average daily temperatures ranging from 40 to 70 degrees Fahrenheit. Average annual precipitation is approximately 25 inches, with approximately 88 percent occurring as rain from October through April (Western Regional Climate Center 2013).

The study area is located within the Land Resource Region C: California Subtropical Fruit, Truck, and Specialty Crop Region of the United States (NRCS 2006:9–10). Specifically, the study area is situated within the Central California Coastal Valleys Major Land Resource Area and typically experiences 315 freeze-free days (NRCS 2006:21–22).

The study area boundary is roughly rectangular in shape, orientated southeast to northwest, with the middle section narrower than the ends. Existing land uses in the study area include recreation, water storage, and open space. The area is bounded on the west and southwest by residential development, on the southeast by a former quarry with some active commercial use of buildings on site, and on the north and east by park and open space.

3.1 Vegetation Communities

The study area is located in the Central West floristic region, in the Central Coast subregion of the California Floristic Provence (Baldwin 2012). Vegetation communities identified in the study area are characterized by a mosaic of nonnative woodlands, native oaks and mixed woodlands, native and nonnative grasslands, upland scrub, wetland and riparian communities, and developed or landscaped areas (Figure 3-1).

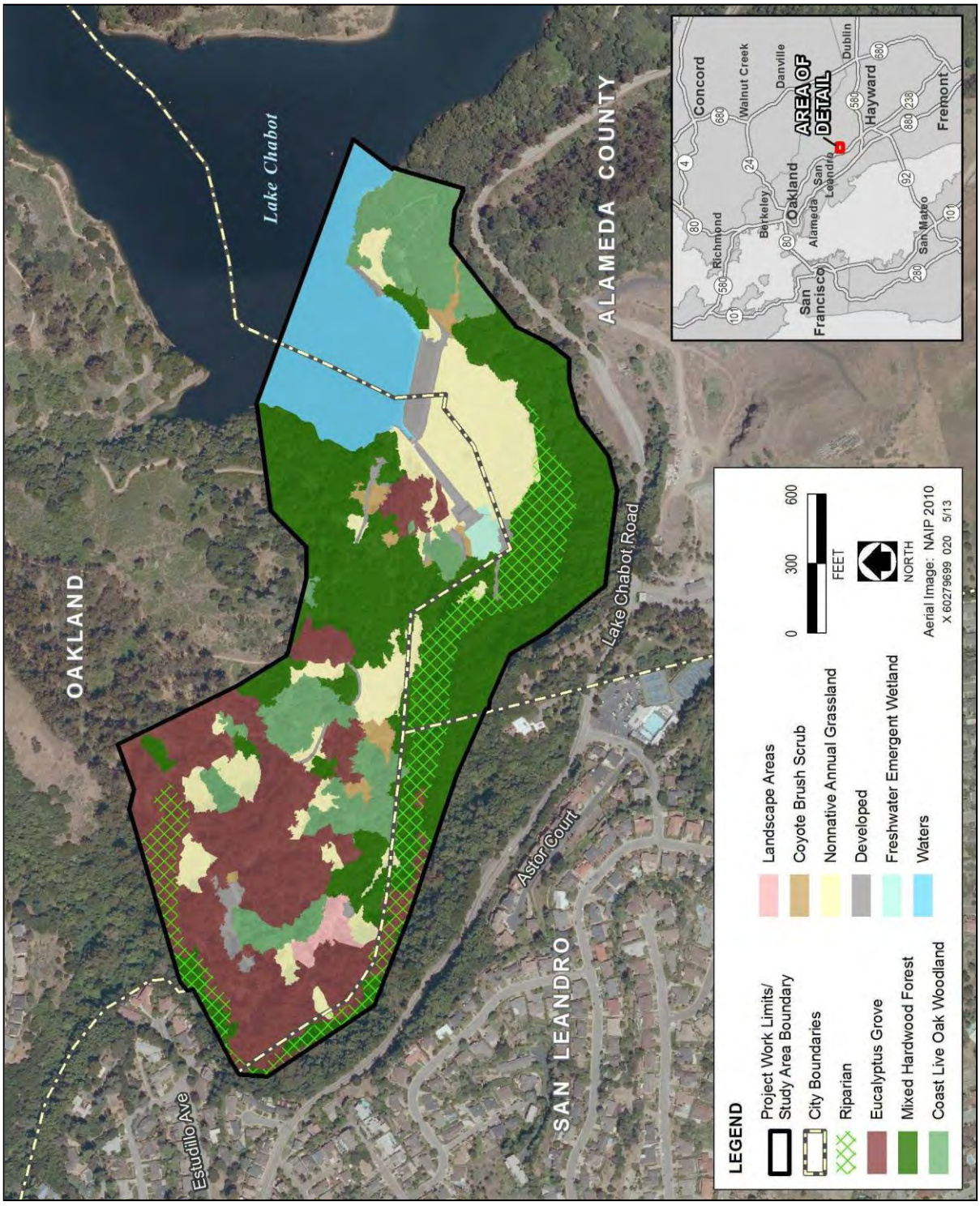
Vegetation in the study area has been subject to substantial human-caused disturbance for more than 135 years. More than 30 percent of the plant species occurring in Chabot Park are nonnatives (EBRPD 2003). Numerous exotic plant species occur in the area's vegetation communities, such as silver wattle (*Acacia dealbata*) from Australia, tree of heaven (*Ailanthus altissima*) from China, cork oak (*Quercus suber*) from Europe and North Africa, and Canary Island date palm (*Phoenix canariensis*). In the 1910s, Frank C. Havens of People's Water Company (the predecessor to EBMUD) imported millions of eucalyptus (*Eucalyptus* spp.) seedlings that were planted in the area, as evidenced by the extensive number of eucalyptus trees on-site. Vegetation communities present in the study area are described in more detail below and are as consistent as possible with A Manual of California Vegetation (Sawyer et. al. 2009).

3.1.1 Nonnative Annual Grassland

Nonnative Annual Grassland communities are typically composed of a dense cover of introduced (nonnative) annual grasses and ruderal (weedy) forbs (broad-leaved plants), adapted to colonizing and persisting in disturbed upland habitats. Dominant nonnative grasses in this community include wild oats (*Avena* spp.), Italian ryegrass (*Festuca perennis*), ripgut brome (*Bromus diandrus*), and hare barley (*Hordeum murinum* ssp. *leporinum*). Common nonnative forbs include burclover (*Medicago polymorpha*), rose clover (*Trifolium hirtum*), and filarees (*Erodium* spp.). Invasive nonnative annual forbs such as yellow star-thistle (*Centaurea solstitialis*), fennel (*Foeniculum vulgare*), and Italian thistle (*Carduus pycnocephalus*) are present in areas of past soil disturbance. A few native grasses, such as blue wildrye (*Elymus glaucus*) and creeping wildrye (*Elymus triticoides*), occur sparingly as relicts of the coastal prairie in this community. Common native forbs are also present, including California poppy (*Eschscholzia californica*), yarrow (*Achillea millefolium*), and blue-eyed grass (*Sisyrinchium bellum*). Approximately 12 acres of Nonnative Annual Grassland occurs in the project area.

3.1.2 Freshwater Emergent Wetland—Cattail Marsh

About 0.5 acre of Freshwater Emergent Wetland occurs below the Chabot Dam spillway. In the project area, this community is characterized by emergent marsh vegetation dominated almost entirely by broad-leaved cattail (*Typha latifolia*). Other species present include common tule (*Schoenoplectus acutus* var. *occidentalis*), rushes (*Juncus* spp.), tall flatsedge (*Cyperus eragrostis*), southern bulrush (*Schoenoplectus californicus*), Olney's three-square bulrush *(Schoenoplectus americanus*), spikerush (*Eleocharis macrostachya*), water plantain (*Alisma triviale*), and water smartweed



Sources: EBMUD 2012; compiled by AECOM in 2013

Figure 3-1: Vegetation Communities

(*Persicaria amphibia*). This area may be considered jurisdictional and subject to regulation by USACE, the California Department of Fish and Wildlife (CDFW), and/or the Regional Water Quality Control Board (RWQCB).

3.1.3 Coyote Brush Scrub

Coyote brush (*Baccharis pilularis*) is the sole or dominant shrub in the continuous or intermittent canopy of the Coyote Brush Scrub community. Other species typical of this community include California sagebrush (*Artemisia californica*), coast live oak (*Quercus agrifolia*), bush monkeyflower (*Mimulus aurantiacus*), poison-oak (*Toxicodendron diversilobum*), California blackberry (*Rubus ursinus*), toyon (*Heteromeles arbutifolia*), California coffeeberry (*Rhamnus californica*), silver bush lupine (*Lupinus albifrons*), and soaproot (*Chlorogalum pomeridianum*). Approximately 1 acre of Coyote Brush Scrub occurs in the project area.

3.1.4 Coast Live Oak Woodland

Coast live oak is the sole, dominant or important tree in the canopy. Bigleaf maple (*Acer macrophyllum*), valley oak (*Quercus lobata*), box elder (*Acer negundo*), California bay (*Umbellularia californica*), California buckeye (*Aesculus californica*), elderberry (*Sambucus* spp.), toyon, California coffeeberry, and madrone (*Arbutus menziesii*) may also be present. About 11 acres of Coast Live Oak Woodland occurs in the project area.

3.1.5 Mixed Hardwood Forest

The Mixed Hardwood Forest community consists of a mix of trees that reach 30–50 feet in height. Coast live oak and California bay are codominant species, but other native trees, such as California buckeye, bigleaf maple, California black oak (*Quercus kelloggii*), and madrone, may also be present. Narrowleaf willow (*Salix exigua*), box elder, arroyo willow (*Salix lasiolepis*), California sycamore (*Platanus racemosa*), and blue elderberry (*Sambucus nigra* ssp. *caerulea*) are more common on the mesic, northeast-facing slopes. Monterey pine (*Pinus radiata*) and eucalyptus have invaded some disturbed areas. About 26 acres of Mixed Hardwood Forest occurs in the project area.

3.1.6 Riparian Forest

Approximately 13 acres of potentially jurisdictional riparian habitat comprised primarily of Mixed Hardwood Forest occurs in association with San Leandro Creek. This habitat is dominated by narrowleaf willow, box elder, arroyo willow, Fremont cottonwood (*Populus fremontii*), and California sycamore. These areas may be considered jurisdictional and subject to regulation by CDFW and/or RWQCB.

3.1.7 Eucalyptus Grove

Eucalyptus trees were introduced from Australia in the early 1900s and commonly planted throughout the East Bay Hills. In the project area, blue-gum eucalyptus (*Eucalyptus globulus*) is the dominant species, but red gum eucalyptus (*Eucalyptus camaldulensis*) stands also are common. The rapid growth to a height of 80–140 feet and high rate of reproduction of eucalyptus trees have resulted in their complete dominance in large portions of the East Bay Hills. These invasive trees outcompete native species by shading and by producing a dense leaf and bark litter on the ground. This litter, which contains allelopathic oils, prevents most other plants from becoming established; however, other species, including coast live oak, California bay, madrone, and California blackberry, may be present. Shrubs are infrequent, and the ground layer is usually sparse. About 19 acres of Eucalyptus Grove occurs in the project area.

3.1.8 Developed/Landscaped Areas

Developed or landscaped areas are those that have been developed or otherwise disturbed and maintained by human activities, have been covered with structures and pavement, or support predominately nonnative trees, shrubs, grasses, and forbs. Such areas are highly susceptible to invasion by nonnative species. Some of the most invasive, nonnative weeds that occur in disturbed locations in the study area are French broom (*Genista monspessulana*), golden spurge (*Euphorbia oblongata*), poison hemlock (*Conium maculatum*), yellow star-thistle, Italian thistle, and fennel. A limited number of native plant species (e.g., coast redwood [*Sequoia sempervirens*] and Fremont cottonwood) also occur in this community. About 4 acres of Developed/Landscaped Areas occurs in the project area.

3.2 Soil Survey Results

The study area is underlain with Tertiary intrusive, Ultramafic rocks and sedimentary Cretaceous marine rocks. Four soil units are mapped within the study area: Azule clay loam in the northwest portion; Los Gatos–Los Osos complex in the eastern portion along the dam face and Lake Chabot; Montara–Rock outcrop complex, which covers the largest area along the southern half of the study area; and a very small portion of Xerothents-Altamont complex in the southwestern corner (Figure 3-2).

3.2.1 Montara–Rock Outcrop Complex

The Montara–Rock outcrop complex comprises the largest portion of the study area. The map unit is approximately 75 percent Montara and similar soils, 15 percent rock outcrop, and 10 percent minor components. This complex consists of shallow, well drained soils with high runoff, with a clay loam texture. These soils formed in material that weathered from serpentinitic rocks and are found on rounded ridge tops and uplands.

3.2.2 Los Gatos–Los Osos Complex

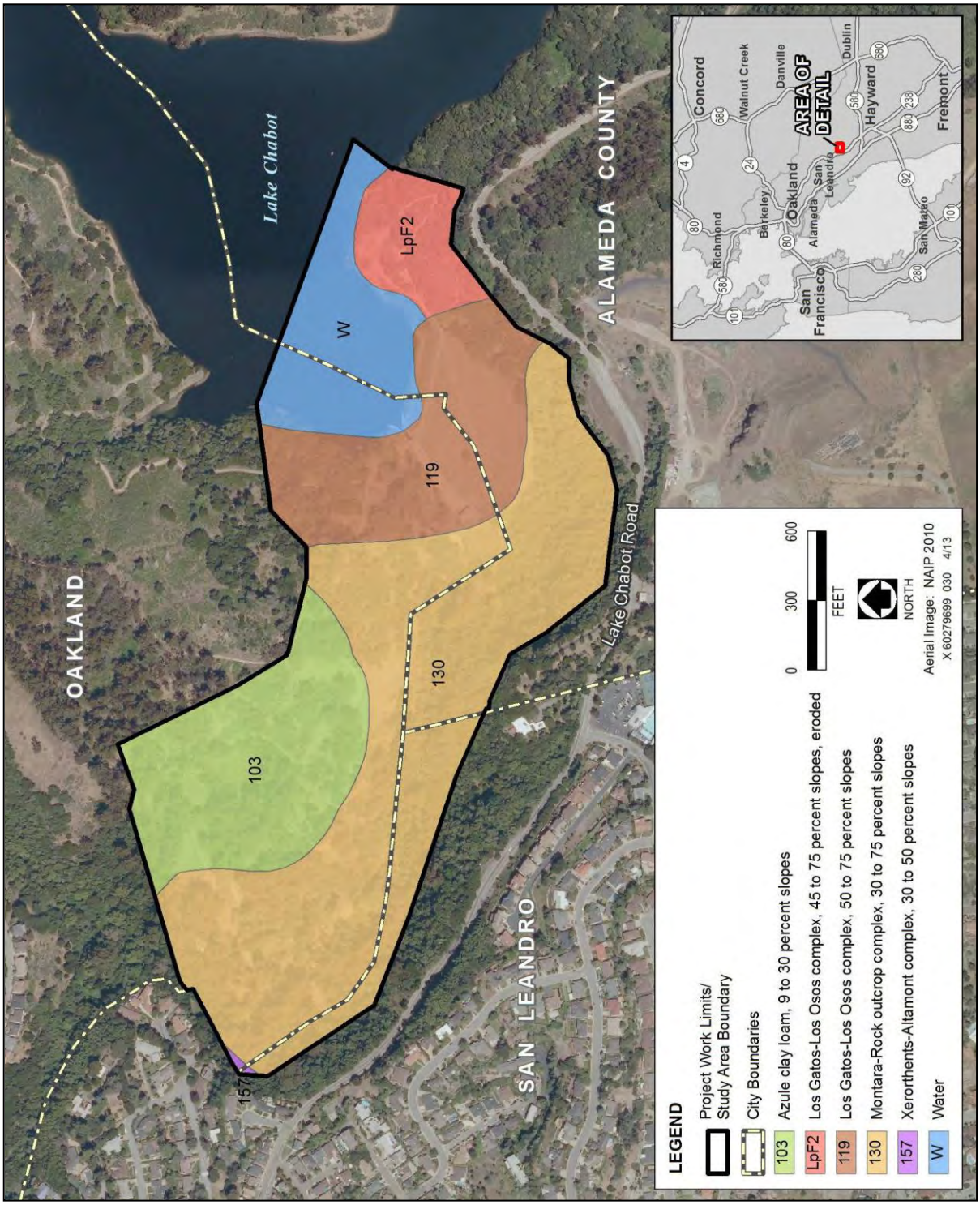
The Los Gatos–Los Osos complex occurs along the eastern edge of the study area, along the dam face and Lake Chabot. The map unit is approximately 45 percent Los Gatos and similar soils, 30 percent Los Osos and similar soils, and 25 percent minor components. This complex consists of moderately deep, well drained soils with moderate-slow permeability. These soils formed in material that weathered from sandstone and shale, with a texture ranging from sandy loam to clay loam. Los Osos loam soils, with seeped variant, with 3 to 15 percent slopes have a hydric rating in the National Soils List (NRCS 2013b).

3.2.3 Azule Clay Loam

The Azule Clay Loam complex occupies the northwest portion of the study area. The map unit is approximately 85 percent Azule and similar soils, and 15 percent minor components. This complex consists of moderately well drained soils with high runoff and a clay loam texture. These soils are located on hills that have slopes of 9 to 30 percent, on convex hill slopes. These soils formed in material that weathered from consolidated alluvium as well as from soft shale and fine ground sandstone.

3.2.4 Xerothents–Altamont Complex

The Xerothents–Altamont Complex occurs in the southwest corner of the study area, on the southwest side of San Leandro Creek. The map unit is approximately 75 percent Xerothents and similar soils, 15 percent Altamont and similar soils, and 10 percent minor components. Xerothents soil is fill and reworked soil associated with developed areas. Altamont soils are formed in material



Sources: Natural Resources Conservation Service Soil Survey Geographic Database 2007; compiled by AECOM in 2013

Figure 3-2: Soil Types

that weathered from fine-grained sandstone and shale, and they have clay or silt clay loam texture. These soils are well drained, with slow permeability, and medium to high runoff. Altamont soil is typically found on uplands, hills, and mountains.

3.3 Hydrologic Setting

The study area is located within the San Leandro Creek watershed. The USGS hydrologic unit code for this watershed is 18050004 (USGS 2013). The study area is located largely in the Lower San Leandro Creek watershed below Lake Chabot and includes a small portion of Lake Chabot near the dam spillway. Chabot Reservoir, also called Lake Chabot, holds approximately 10,350 acre-feet (3.5 billion gallons) of water and covers a surface area of up to 341 acres. The reservoir surface elevation varies seasonally with rainfall, evaporation, and controlled releases. The reservoir surface elevation between January 2004 and July 2011 was between 219 and 228.5 feet above mean sea level (MSL), with an average annual range of 220 feet to 225 feet above MSL. Although not operated as a flood control structure, Chabot Dam provides flood control downstream by attenuating storm hydrographs.

San Leandro Creek is the primary drainage in the study area and drains a watershed of 44 square miles. The creek is a 22-mile-long, year-round natural stream that flows along the east side of the Berkeley and San Leandro Hills into Upper San Leandro Reservoir and then into Lake Chabot. Lower San Leandro Creek, below the dam, drains an area of approximately 4.9 square miles. An approximately 0.5-mile stretch of Lower San Leandro Creek flows west through the study area, along the southern edge, eventually flowing out of the study area and through the City of San Leandro approximately 4.25 miles to San Francisco Bay.

Within the study area, San Leandro Creek is characterized by a bed consisting of small gravel, cobble, and bedrock. The flow regime of Lower San Leandro Creek below Lake Chabot is regulated primarily by water releases from the dam. Natural hydrology within the study area is driven by direct precipitation and associated runoff into Lower San Leandro Creek. Within the study area, drainage is contained by Lower San Leandro Creek and its associated wetland and riparian areas.

3.4 National Wetland Inventory

The NWI was queried before the field survey, to gather information on any wetlands previously mapped in the study area. The NWI did not identify any wetlands or waters in the study area (USFWS 2012).

4 Delineation Results

The results of the delineation of waters of the United States, as defined by USACE under Section 404 of the CWA (presented next) are considered draft until they are verified by USACE San Francisco District. The preliminary wetland determination maps (Figures 4-1a and 4-1b) were prepared in accordance with the Draft Map and Drawing Standards for the South Pacific Regulatory Program, Special Public Notice (USACE 2012) and are 1 inch = 200 scale. These maps can be used by EBMUD to obtain a verified preliminary jurisdictional determination from USACE San Francisco District, as described under Regulatory Guidance 08-02 (USACE 2008).

4.1.1 Jurisdictional Habitat Types

Waters of the United States within the study area include one TNW totaling approximately 10.52 acres, three RPW features totaling approximately 1.37 acres (3,453 linear feet), and one non-

RPW feature totaling 0.07 acre (634 linear feet). Additionally, one freshwater emergent wetland, a cattail marsh, is present in the study area and covers approximately 0.51 acre.

4.1.2 Traditionally Navigable Water

Chabot Reservoir is the TNW in the study area. This feature qualifies as a TNW because it is navigable-in-fact. Chabot Reservoir is present in the northwestern portion of the study area. Water in Chabot Reservoir is the source of flow for RPW 1, Lower San Leandro Creek.

4.1.3 Relatively Permanent Water

There are three RPW features in the study area, two of which are tributaries to the main RPW, Lower San Leandro Creek. These features qualify as RPWs because they convey water for a period of at least 3 months a year. In the study area, Lower San Leandro Creek, RPW 1, originates from the pipe works, where regular outflow and other releases from the dam are controlled. It flows west for approximately 100 feet to the confluence with RPW3 and flows through the study area for approximately 0.5 mile. The OHWM of Lower San Leandro Creek at the outlet is approximately 10 feet and widens to approximately 20 feet below the confluence with RPW3 from the south. San Leandro Creek is a perennial stream.

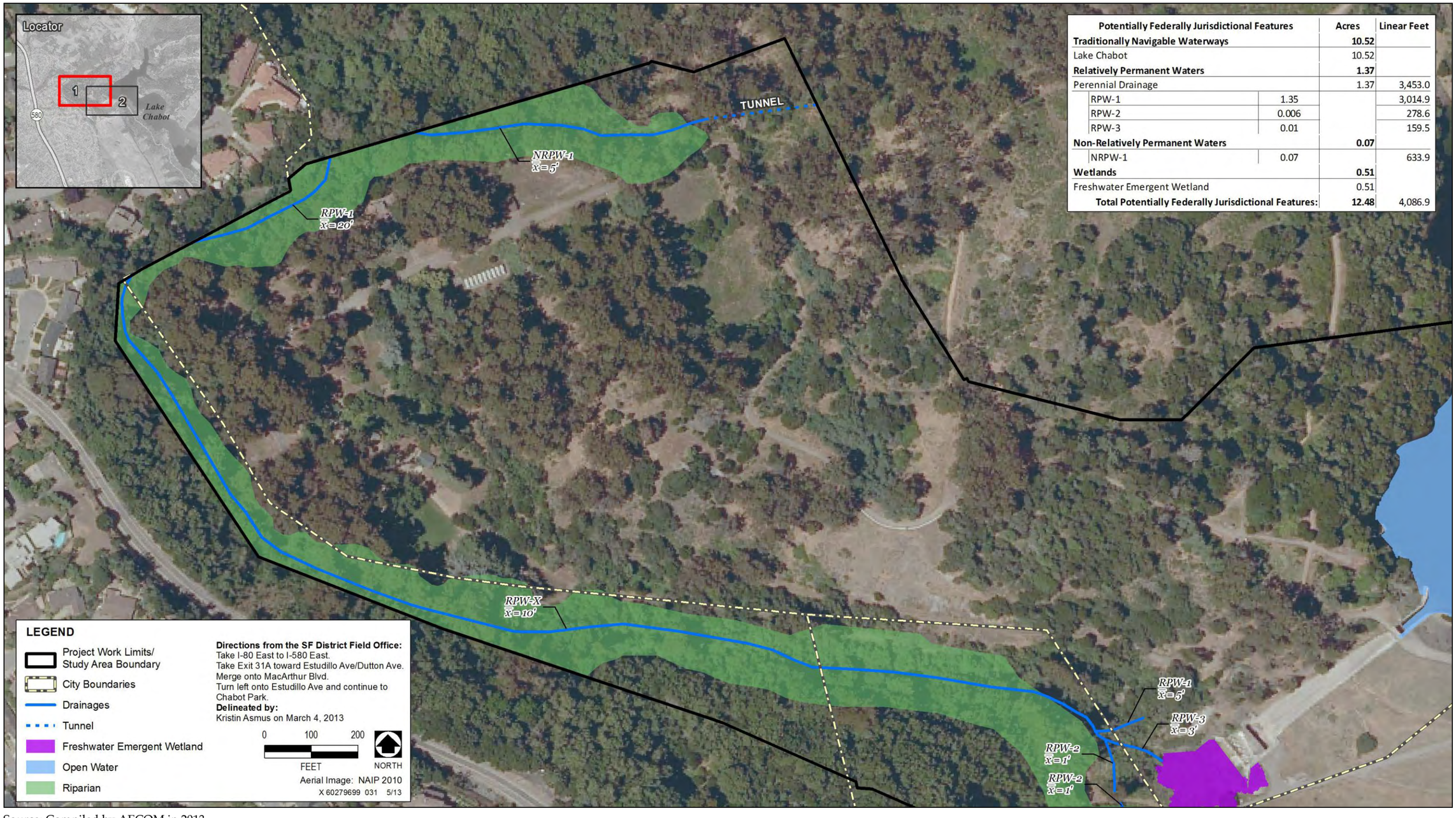
RPW 2 is an approximately 1-foot-wide natural bottom channel that begins in a thicket of willows and appears to drain a low spot on the landscape. It flows northwest, crosses under a dirt road southwest of the cattail marsh below the spillway, and then flows through a culvert to its confluence with RPW3, approximately 100 feet to the north. RPW 2 was flowing at the time of the field survey and is presumed to be an intermittent drainage that flows seasonally. RPW 3 is a natural bottom channel that originates from the outlet of the cattail marsh at the base of the spillway of Chabot Reservoir.

4.1.4 Non-Relatively Permanent Water

Non-RPWs are intermittent or ephemeral drainages that convey flow less than 3 months or for a short duration after a precipitation event. The study area contains one non-RPW that totals approximately 0.07 acre (634 linear feet). This non-RPW is a drainage feature that formerly conveyed flow from a now abandoned tunnel system from the dam. The channel bottom is comprised of rock and concrete. The channel was dry at the time of the field survey, and it is presumed to be an ephemeral drainage that only conveys flow during storm events.

4.1.5 Wetlands

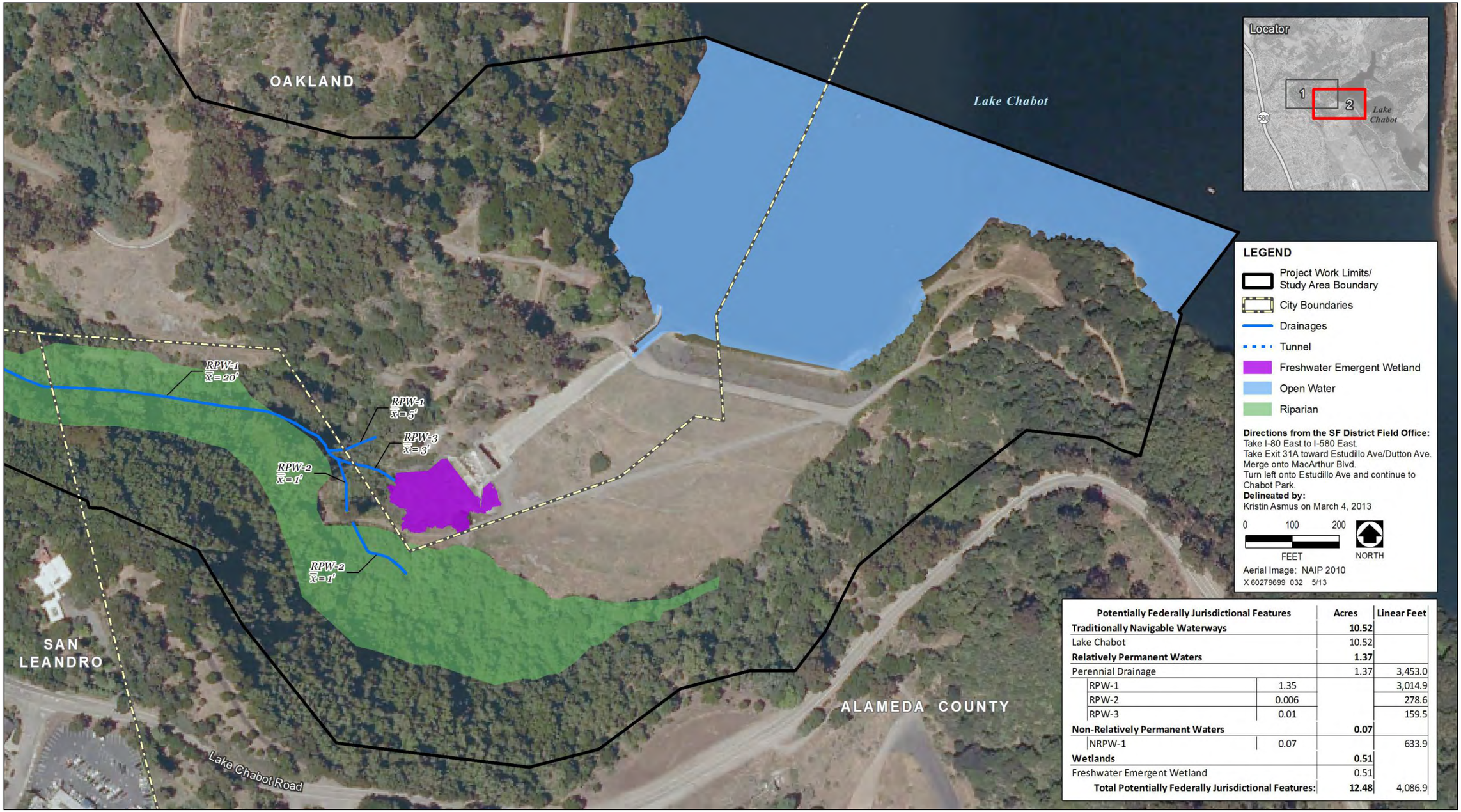
A freshwater emergent wetland, specifically a cattail marsh, is present in the study area. This wetland occupies 0.51 acre and is located at the base of the spillway of Chabot Reservoir. Because of hardened edge of the wetland (rock slope protection and compacted berm) and its location at the base of the Chabot Dam spillway, the size and location of the wetland was estimated by observations of the physical edge and presence and extent of obligate wetland vegetation species, specifically broad-leaved cattail. The vegetation is described further in Section 3.1. Water flows northwest out of the cattail marsh into RPW 3, and then flows into Lower San Leandro Creek. Because of the surface connection to San Leandro Creek and ultimately to San Francisco Bay, this wetland is considered to be a potentially jurisdictional feature. Table 4-1 lists potentially jurisdictional habitats and their approximate acreages in the study area.



Potentially Federally Jurisdictional Features		Acres	Linear Feet
Traditionally Navigable Waterways		**10.52**	
Lake Chabot		10.52	
Relatively Permanent Waters		**1.37**	
Perennial Drainage		1.37	3,453.0
RPW-1	1.35		3,014.9
RPW-2	0.006		278.6
RPW-3	0.01		159.5
Non-Relatively Permanent Waters		**0.07**	
NRPW-1	0.07		633.9
Wetlands		**0.51**	
Freshwater Emergent Wetland		0.51	
Total Potentially Federally Jurisdictional Features:		**12.48**	4,086.9

Source: Compiled by AECOM in 2013

Figure 4-1a: Preliminary Wetland Delineation Map – 1 of 2



Potentially Federally Jurisdictional Features		Acres	Linear Feet
Traditionally Navigable Waterways		**10.52**	
Lake Chabot		10.52	
Relatively Permanent Waters		**1.37**	
Perennial Drainage		1.37	3,453.0
RPW-1	1.35		3,014.9
RPW-2	0.006		278.6
RPW-3	0.01		159.5
Non-Relatively Permanent Waters		**0.07**	
NRPW-1	0.07		633.9
Wetlands		**0.51**	
Freshwater Emergent Wetland		0.51	
Total Potentially Federally Jurisdictional Features:		**12.48**	4,086.9

Source: Compiled by AECOM in 2013

Figure 4-1b: Preliminary Wetland Delineation Map – 2 of 2

4.2 Nonjurisdictional Habitat Types

Approximately 73 acres of the 98-acre study area are potentially nonjurisdictional habitats. Nonjurisdictional habitats in the study area include eucalyptus grove, nonnative annual grassland, coyote brush scrub, coast live oak woodland, mixed hardwood forest, and developed/landscaped areas. Table 4-2 lists these potentially nonjurisdictional habitats and their approximate acreage. These habitats are nonjurisdictional under Section 404 of the CWA because they are located above an OHWM and lack one or more of the following three parameters that define wetlands: hydrophytic plant assemblage, hydric soils, and/or wetland hydrology.

Table 4-1: Potentially Jurisdictional Features

Feature	Acreage[1]	Linear Feet
Traditionally Navigable Waters (TNW)		
TNW 1	10.52	NA
Total TNW Acreage	***10.52***	***NA***
Relatively Permanent Waters (RPW)		
RPW1	1.35	3,015
RPW2	0.006	279
RPW3	0.01	160
Total RPW	***1.37***	***3,453***
Non-Relatively Permanent Waters(non-RPW)		
Non-RPW 1	0.07	634
Total non-RPW	***0.07***	***634***
Wetlands		
Freshwater Emergent Wetland	0.51	NA
Total Wetlands	***0.51***	***NA***
Total Potentially Jurisdictional Features	**12.48**	**4,087**

Notes:
NA = not applicable
[1] Acreage beyond the thousandth decimal place is summed before rounding; therefore feature acreage in this column may not sum to the total acreages.
Source: Data compiled by AECOM 2013

Table 4-2: Potentially Nonjurisdictional Features

Upland Habitats	Acreage
Eucalyptus grove	19
Nonnative annual grassland	12
Coyote brush scrub	1
Coast live oak woodland	11
Mixed hardwood forest	26
Landscaped/developed	4
Total Potentially Nonjurisdictional Features	**73**
Source: Data compiled by AECOM 2013	

5 Jurisdictional Determination

The one TNW (10.52 acres) is likely subject to USACE jurisdiction under Section 404 of the CWA because this feature is navigable-in-fact. Additionally, waters from this feature ultimately flow to San Francisco Bay. The three RPWs (1.37 acres; 3,453 linear feet) and one non-RPW (0.07 acre; 634 linear feet) are also likely subject to jurisdiction under Section 404 of the CWA because these features are perennial, intermittent, or ephemeral linear aquatic features that possess a well-established bed, bank, or channel and have clearly identifiable OHWMs. RPWs 2 and 3 and non-RPW 1 are tributaries to RPW 1, Lower San Leandro Creek, which flows to San Francisco Bay, the nearest downstream TNW.

One freshwater emergent wetland (0.51 acre) was identified in the study area. This area captures overflow water from Chabot Dam, TNW 1, over the spillway. The wetland shows evidence of all three parameters of USACE wetland criteria. Additionally, this feature drains to RPW 1, which flows to San Francisco Bay and, therefore, this feature is considered to be a potentially jurisdictional wetland.

Upland habitats in the study area, including eucalyptus grove, nonnative annual grassland, coyote brush scrub, coast live oak woodland, and mixed hardwood forest, are not dominated by a hydrophytic vegetation assemblage and do not exhibit evidence of wetland hydrology. Landscaped and developed areas in the study area also do not meet the USACE three-parameter wetland criteria. Therefore, these areas are not considered to be jurisdictional.

6 References

Baldwin, B. G. (ed.). 2012. *The Jepson Manual: Vascular Plants of California.* Second edition. Berkeley: University of California Press.

East Bay Municipal Utility District (EBMUD). 2011. Preliminary Chabot Dam Seismic Remediation Project, Initial Biological Resource Assessment.

East Bay Regional Park District (EBRPD). 2003. Wild Plants of Anthony Chabot Regional Park. Oakland, CA.

Environmental Laboratory. 1987. *U.S. Army Corps of Engineers Wetlands Delineation Manual*. Vicksburg, MS: U.S. Army Corps of Engineers, Waterways Experiment Station. Technical Report Y-87-1.

———. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region.* Version 2.0. Vicksburg, MS: U.S. Army Corps of Engineers, Engineer Research and Development Center. Technical Report ERDC/EL TR-08-28.

Grumbles, B. H., and J. P. Woodley, Jr. 2008 (December 2). *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos* v. United States *and* Carabell v. United States. Memorandum to U.S. Environmental Protection Agency regions and U.S. Army Corps of Engineers districts. Washington, DC.

Lichvar, R. W. 2012. The National Wetland Plant List. ERDC/CRREL TR-12-11. Hanover, NH: U.S. Army Corps. Available: http://wetland_plants.usace.army.mil/. Accessed April 24, 2013.

Natural Resources Conservation Service (NRCS). 2006. "Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin." U.S. Department of Agriculture Handbook 296.

———. 2013a (February 17). Web Soil Survey. Version 2.3. Available: http://websoilsurvey.nrcs.usda.gov/. Accessed April 22, 2013.

———. 2013b. (April). National Hydric Soils List. Available: http://soils.usda.gov/use/hydric/. Accessed April 22, 2013.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. *A Manual of California Vegetation*. Second edition. Sacramento: California Native Plant Society.

U.S. Army Corps of Engineers (USACE). 2005 (December 7). *Ordinary High Water Mark Identification.* Regulatory Guidance Letter No. 05-05.

———. 2007. *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*. Washington, DC.

———. 2008 (June 26). *Jurisdictional Determinations* Regulatory Guidance Letter No. 08-02.

———. 2012 (March 5). *Draft Map and Drawing Standards for the South Pacific Regulatory Program Special Public Notice.*

U.S. Fish and Wildlife Service (USFWS). 2012. National Wetlands Inventory. Available: http://107.20.228.18/Wetlands/WetlandsMapper.html. Accessed April 24, 2013.

United States Geological Survey (USGS). 1993a. Hayward, California 1:24,000 (7.5-minute) topographic quadrangle map.

———. 1993b. San Leandro, California 1:24,000 (7.5-minute) topographic quadrangle map.

———. 2013 (January 16). Science in Your Watershed. Available: http://water.usgs.gov/wsc/cat/18010209.html. Accessed April 24, 2013.

Vepraskas, M. J. 1992. *Redoximorphic Features for Identifying Aquic Conditions*. Raleigh: North Carolina Agricultural Research Service, North Carolina State University. Technical bulletin 301.

Western Regional Climate Center. 2013. Cooperative Climatological Data Summaries, Upper San Leandro FLTR, California (049185). Available: http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca9185. Accessed March 18, 2013.

Appendix A
Representative Photographs

Photo 1. View of TNW 1 within the study area.

Photo 2. View of pipe works outlet at RPW1 during a release.

Photo 3. View downstream of RPW 1 within the study area.

Photo 4. View upstream of RPW1 at road crossing and below confluence with RPW3.

Photo 5. View of RPW 2 near west side of culvert connecting to freshwater emergent wetland.

Photo 6. View from top of spillway to freshwater emergent wetland at base.

Photo 7. View below spillway of freshwater emergent wetland area.

Photo 8. View of non-RPW 1 within the study area.

Appendix B
Plant Species Observed

Scientific Name	Common Name	Wetland Indicatory Category
Acacia baileyana	cootamundra wattle	NL
Acacia melanoxylon	blackwood acacia	NL
Baccharis pilularis	coyote brush	NL
Brassica nigra	black mustard	NL
Bromus diandrus	ripgut brome	NL
Cardamine oligosperma	bitter-cress	FAC
Cerastium glomeratum	sticky mouse-ear chickweed	FACU
Chlorogalum pomeridianum	soap plant	NL
Conium maculatum	poison hemlock	FACW
Cortaderia jubata	purple pampas grass	UPL
Cortaderia selloana	pampas grass	FACU
Cotoneaster sp.	cotoneaster	NL
Duchesnea indica	mock-strawberry	NL
Eriogonum fasciculatum	California buckwheat	NL
Erodium botrys	storksbill	FACU
Erodium cicutarium	redstem filaree	NL
Eucalyptus globulus	blue gum	NL
Festuca perennis	rye grass	NL
Foeniculum vulgare	fennel	NL
Fumaria sp.	fumitory	NL
Galium porrigens	climbing bedstraw	NL
Gallium aparine	goose grass	FACU
Genista monspessulana	French broom	NL
Geranium dissectum	cranesbill, geranium	NL
Geranium molle	cranesbill, geranium	NL
Geranium robertianum	cranesbill, geranium	NL
Hedera helix	english ivy	NL
Helminthotheca echioides	bristly ox-tongue	FACU
Heteromeles arbutifolia	toyon	NL
Holcus lanatus	common velvet grass	FAC
Hypochaeris glabra	smooth cat's-ear	NL
Juncus patens	spreading rush	FACW
Lamium purpureum	dead nettle	NL
Ligustrum lucidum	Chinese privet	NL
Lupinus sp.	lupine	
Medicago polymorpha	California burclover	FACU
Claytonia perfoliata	miner's lettuce	FAC
Narcissus pseudonarcissus	daffodil	NL
Olea europaea	olive	NL
Pentagramma triangularis ssp. triangularis	goldback fern	NL
Pinus radiata	Monterey pine	NL
Plantago coronopus	plantain	FACW
Plantago lancelota	english plantain	FAC
Plantago major	common plantain	FAC
Populus fremontii	Fremont cottonwood	NL
Prunus sp.	prunus	NA
Quercus agrifolia	coast live oak	NL
Raphanis sativa	wild radish	NL
Rubus armeniacus	Himalayan blackberry	FACU
Rubus ursinus	California blackberry	FACU
Rumex crispus	curly dock	FAC
Salix laevigata	red willow	FACW
Sambucus nigra caerulea	blue elderberry	FAC
Senecio vulgaris	common groundsel	FACU
Silybum marianum	milk thistle	NL
Sisymbrium sp.	mustard	NL
Stellaria media	common chickweed	FACU
Taraxacum officinale	common dandelion	FACU
Toxicodendron diversilobum	poison oak	NL
Trifolium hirtum	rose clover	NL
Umbellularia californica	California bay	FAC
Urtica dioica	stinging nettle	FAC
Vicia americana ssp. americana	American vetch	FAC
Vicia sativa	vetch	FACU
Vinca major	greater periwinkle	NL
Centaurea solstitialis	yellow star-thistle	NL
Ribes speciosum	fuchsia-flowered gooseberry	NL
Carex sp.	sedge	NA
Cistus sp.	rock-rose	NL

APPENDIX D-2

California Red-Legged Frog Habitat Assessment

San Leandro Creek Crossing, March 31, 2013
Photo: Kent A. Reeves

Chabot Dam Seismic Upgrade Project

EAST BAY MUNICIPAL UTILITY DISTRICT, PROJECT NUMBER 60279699

California Red-Legged Frog Habitat Assessment

California red-legged frog
Photo: USFWS

Prepared on behalf of AECOM and EBMUD by:

Sustain Environmental Inc.
3104 O Street, Suite 164
Sacramento, CA 95816

May 2013

Introduction

East Bay Municipal Utility District (EBMUD) plans to upgrade the Chabot Dam and outlet tower to increase safety and satisfy the requirements of the California Division of Safety of Dams (DSOD), which regulates dams to protect people and property (WRE 2013). Sustain Environmental Inc. (Sustain), under subcontract to AECOM, conducted a habitat assessment for California red-legged frog (CRLF) (*Rana draytonii*) within the footprint of the seismic upgrade project (project site), including all associated access routes; staging, laydown, and parking areas; stockpile sites; and temporary construction sites.

Regulatory Framework

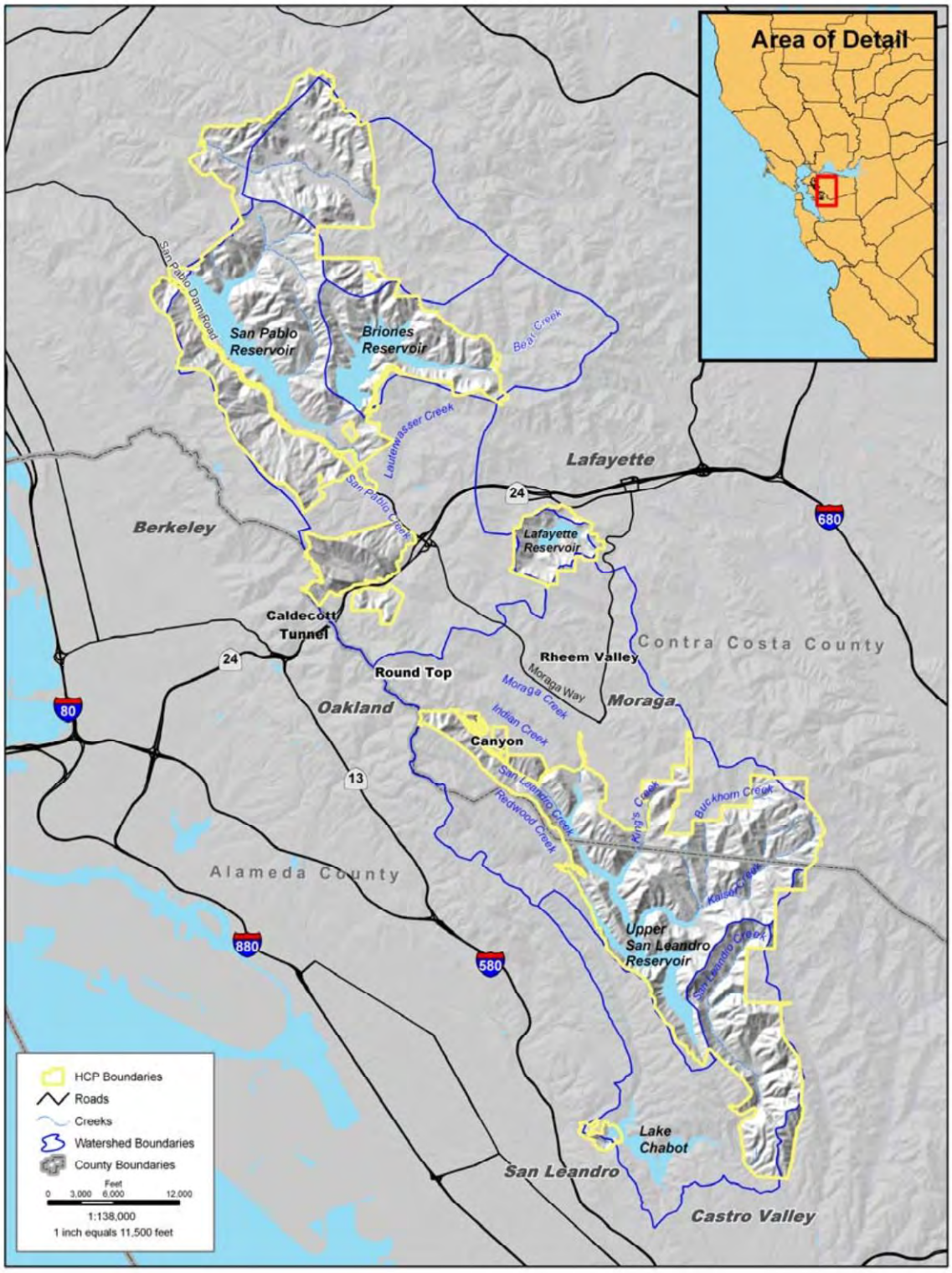
The U.S. Fish and Wildlife Service (USFWS) listed CRLF as threatened under the terms of the Endangered Species Act (ESA) on June 24, 1996. A revised final designation of critical habitat was published in the Federal Register on March 17, 2010 (USFWS 2010). The revised critical habitat area covers approximately 450,288 acres, including several thousand acres in the East Bay.

Although most of EBMUD East Bay watershed lands were acquired and facilities constructed prior to the enactment of the ESA, ongoing operations and maintenance procedures may result in the take of sensitive species. For this reason, EBMUD prepared the East Bay Municipal Utility District Low Effect Habitat Conservation Plan (EBMUD HCP), an ESA Section 10(a)(1)(B) Incidental Take Permit, in 2008. The EBMUD HCP area (Figure 1) comprises approximately 28,200 acres of watershed lands in Contra Costa and Alameda Counties owned and operated by EBMUD (Figure 2). The EBMUD HCP generally covers routine operations, maintenance, and management activities that are guided by the EBMUD Watershed Master Plan (EBMUD 1996), EBMUD Fire Management Plan (EBMUD 2000), and EBMUD Range Resource Management Plan (EBMUD 2001). The EBMUD HCP does not cover major modifications to existing infrastructure or new project construction. The permit covers a number of special-status species, including CRLF, for a term of 30 years.

Project Location

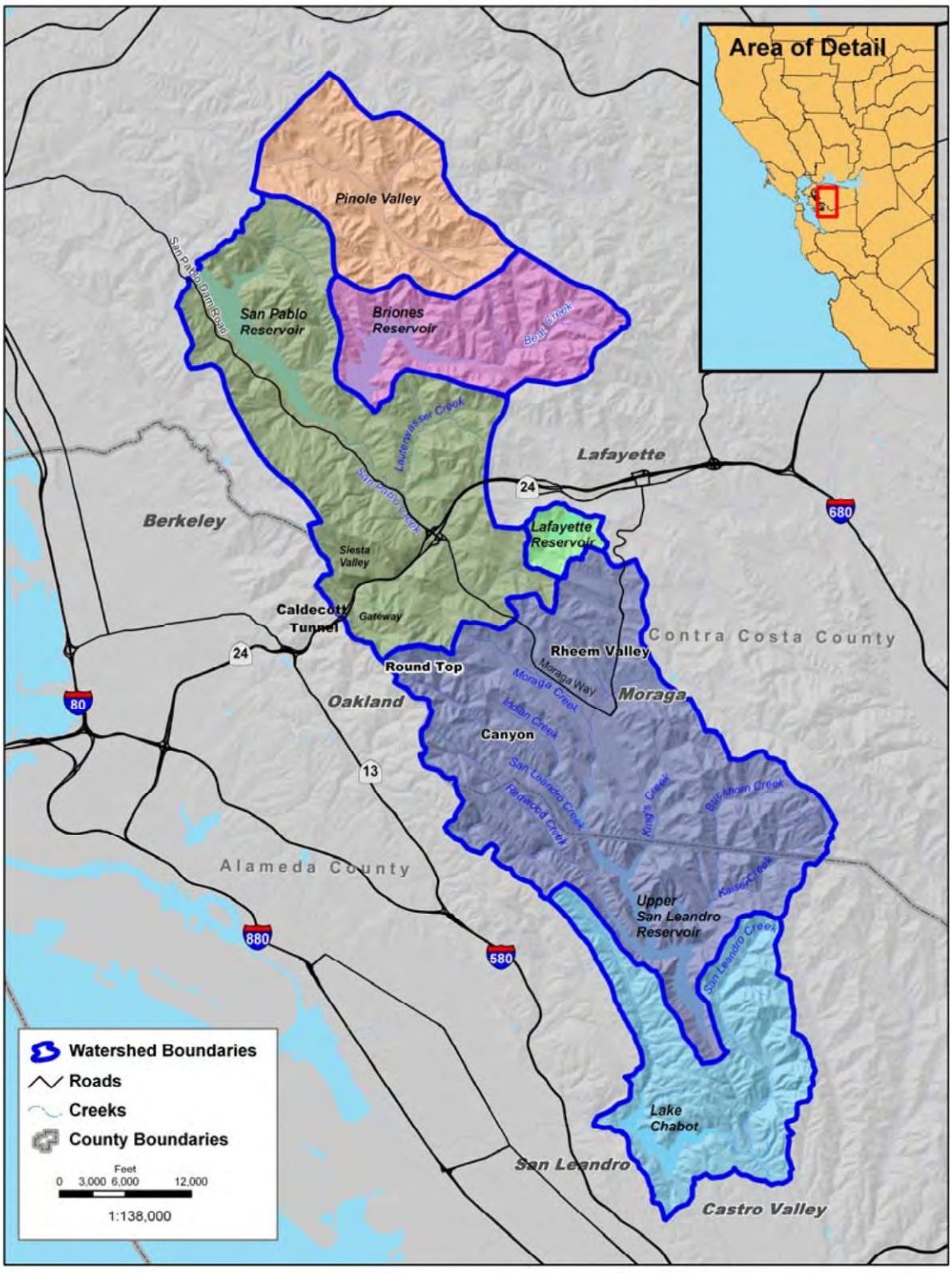
Chabot Reservoir is located in the San Leandro Hills, part of the Coast Range situated on the eastern side of San Francisco Bay (Figure 3). This falls within the southern end of the EBMUD HCP area. The 340-acre reservoir and approximately 3,845 acres of surrounding land are leased to, and operated by, East Bay Regional Park District (EBRPD). EBMUD maintains a 120-acre area of the San Leandro watershed between the base of Chabot Dam and the edge of Chabot Park.

Figure 1. Lands Covered under the EBMUD Low Effect Habitat Conservation Plan



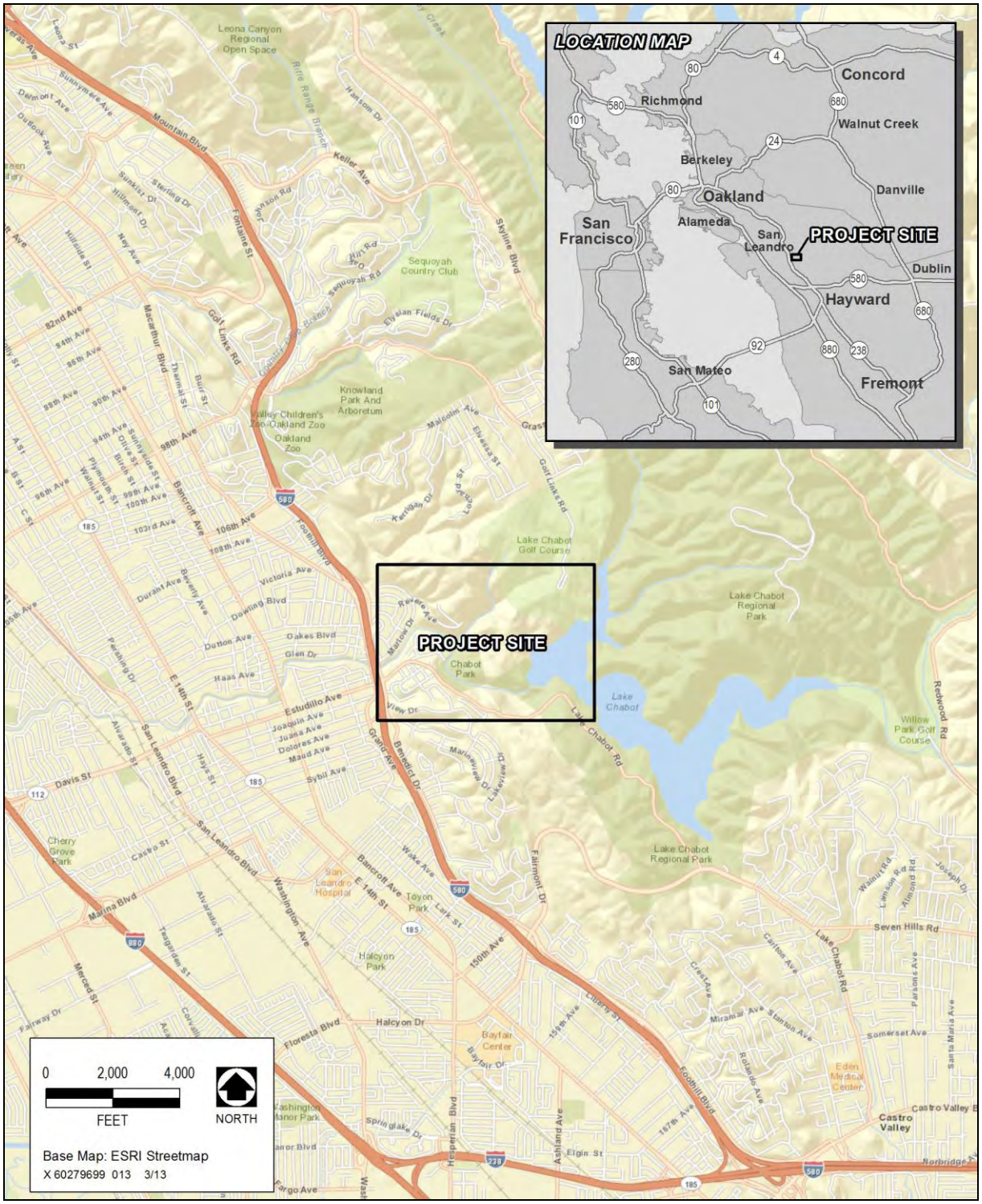
SOURCE: Low Effect East Bay HCP, EBMUD 2008

Figure 2. Watershed Basins of EBMUD Terminal Reservoirs, Contra Costa and Alameda Counties, California



SOURCE: Low Effect East Bay HCP, EBMUD 2008

Figure 3. Project Location and Vicinity Map



SOURCE: AECOM 2013

Project Description

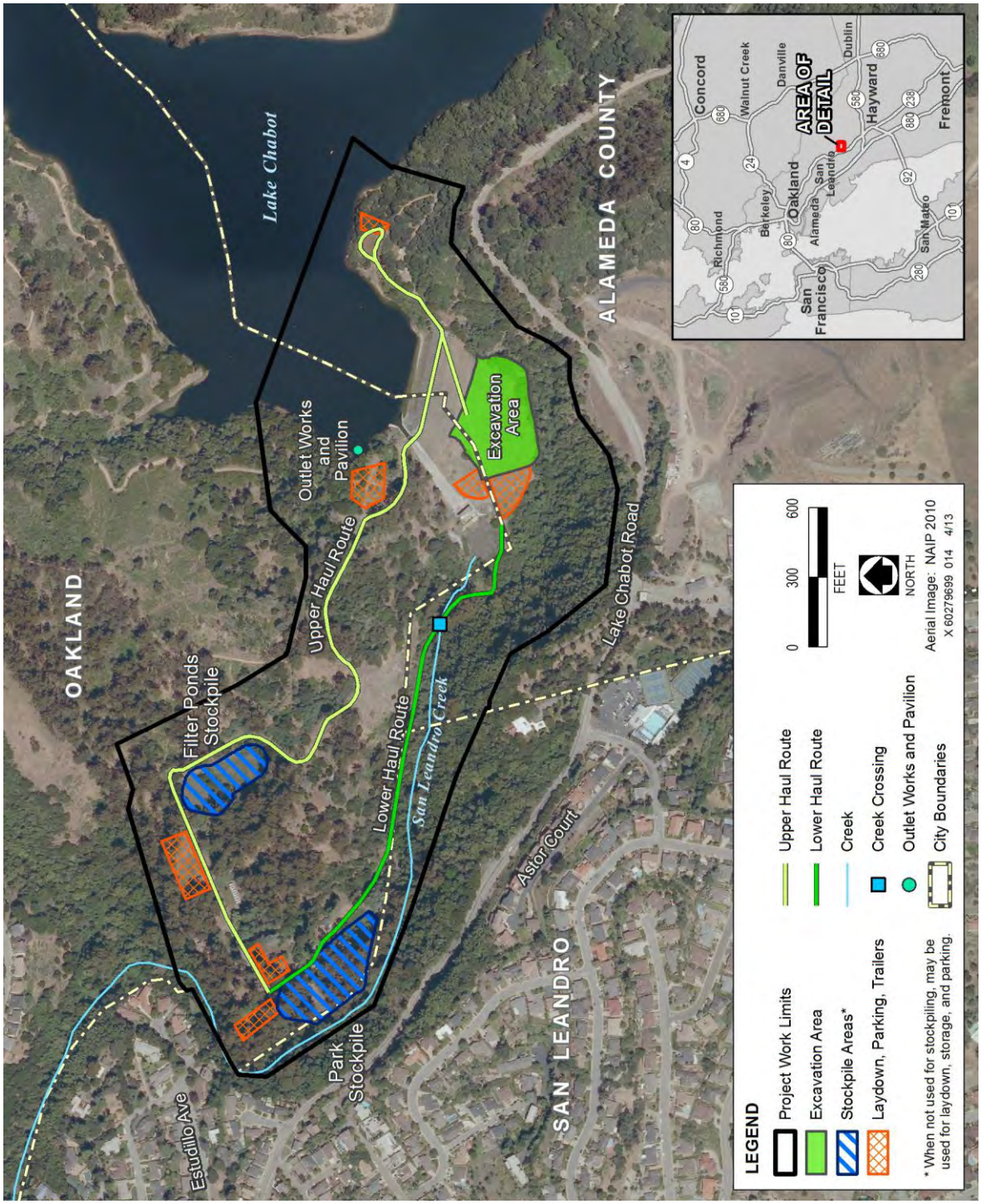
Chabot Dam was originally constructed between 1874 and 1875 as a primary water source for the East Bay. The main body of the dam (referred to as "wagon fill") was placed and compacted by teams of horses and wagons to a crest elevation of 233 feet during 1874 and 1875. A hydraulic fill buttress (referred to as "sluiced fill") was placed at the downstream toe of the embankment between 1875 and 1888. Additional fill was placed along the upstream and downstream slopes, and the crest was raised to an elevation of 243 feet between 1890 and 1892. In 1980, engineered fill was placed on the downstream slope to raise the crest to the current elevation of 250 feet, and a new spillway was constructed (URS 2005). Chabot Reservoir is one of five storage reservoirs operated by EBMUD in the East Bay. Chabot Reservoir serves three main functions: emergency water supply, conservation/storage of local runoff, and recreation (EBMUD 1996).

In 2005, URS Corporation completed a seismic evaluation and dynamic stability report on Chabot Dam for EBMUD to comply with a request from DSOD (URS 2005). The results of the evaluation indicated that sluiced fill placed during construction in the late 1800s in the downstream portion of the dam is susceptible to liquefaction. This fill would likely liquefy during the maximum credible earthquake on the Hayward Fault of 7.25 (a distance of approximately 0.3 mile from Chabot Dam) (URS 2005). During an earthquake of this magnitude, the outlet tower would suffer damage that could preclude the ability to release water from the reservoir, creating a safety concern.

The primary objectives of the proposed project are to: improve the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss; limit permanent deformation or settlement at the dam crest to acceptable levels; prevent damage to the outlet works from the design level earthquake; and continue reservoir and outlet works operation during construction. Improvement of embankment soils would be performed either by cement deep-soil mixing or conventional earthwork. Both options would require transportation of excavated soil by either the Upper Haul Route or the Lower Haul Route to either the Filter Pond Stockpile or the Park Stockpile. The outlet works would be improved by lining the vertical shaft located behind the tower, moving the valves and controls from the tower to the shaft, and relining or installing new outlet pipes from the reservoir to the shaft. The proposed work areas for the seismic upgrade are shown in Figure 4.

Following completion of the Chabot Dam seismic upgrade activities, the project area footprint would be returned to existing conditions.

Figure 4. Proposed Work Areas for the Chabot Dam Seismic Upgrade Project



SOURCE: AECOM April 2013

Methods

Literature Review

Prior to conducting a site visit, Sustain ecologists reviewed available environmental documentation, recent and historic aerial photographs, and other relevant background information provided by EBMUD (1995, 1996, 2008, 2011). The California Department of Fish and Wildlife's (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2013) was reviewed for reported occurrences of CRLF within 3 miles of the proposed project site. Project-specific design and constructability documents were also reviewed to assess the footprint of the proposed project's activities (Terra Engineers 2013; URS 2005; WRE 2013).

Field Survey

Sustain Senior Ecologist Kent Reeves conducted a site visit with EBMUD Fisheries Biologist II Bert Mulchaey on March 31, 2013. The project site was reviewed in detail to assess the suitability of habitat for CRLF. Each of the project work areas was visually inspected to identify and delineate potential on-site and adjacent CRLF breeding, dispersal, aestivation, and refugia habitats.

Discussion

Habitat Requirements

Optimal habitat for CRLF includes ponds, stream courses, permanent pools (Storer 1925), and intermittent streams fed by drainage areas no larger than 120 square miles (Hayes and Jennings 1988; USFWS 2006). This species occurs between sea level and 5,000 feet in elevation (USFWS 2010). Typical habitat characteristics include water depth of at least 2.5 feet; largely intact emergent or shoreline vegetation such as cattails (*Typha* spp.), tules (*Scirpus* spp.), or willows (*Salix* spp.); and absence of competitors/predators such as bullfrogs (*Rana catesbeiana*) and largemouth bass (*Micropterus salmoides*) (Hayes and Jennings 1988). The largest densities of CRLF are associated with deep-water pools having dense stands of overhanging willows and an intermixed fringe of cattails (Jennings 1988). Permanent aquatic habitat is essential to the survival of local CRLF populations. Well-vegetated terrestrial areas within riparian corridors may provide important sheltering habitat during winter. They aestivate in small mammal burrows and moist leaf litter (Jennings and Hayes 1994).

Existing Land Use

Existing land uses in the project site include recreation, water storage, and open space. The area is bounded on the west and southwest by residential development, on the southeast by an active quarry, and on the north and east by park and open space (EBMUD 2011).

Habitats within the Project Site

The 78.6-acre project site is characterized by a mosaic of nonnative woodlands, native oak and mixed woodlands, native and nonnative grasslands, upland scrub, wetland communities, and riparian scrub and woodlands (Figure 5). An approximately 0.5-mile stretch of San Leandro Creek flows west through the area.

Vegetation in the project site has been subject to substantial human-caused disturbance for more than 135 years. More than 30 percent of the plant species occurring in the project site are nonnatives (EBRPD 2003). Numerous exotic plant species occur in the area's vegetation communities, such as silver wattle (*Acacia dealbata*) from Australia, tree of heaven (*Ailanthus altissima*) from China, cork oak (*Quercus suber*) from Europe and North Africa, and Canary Island date palm (*Phoenix canariensis*). In the 1910s, Frank C. Havens of People's Water Company (the predecessor to EBMUD) imported millions of eucalyptus (*Eucalyptus* spp.) seedlings that were planted in the area, as evidenced by the extensive eucalyptus trees on-site.

Aquatic Habitats

Chabot Reservoir has a capacity of 10,400 acre-feet, a surface area of 340 acres, and a drainage area of 41 square miles. The Chabot Dam crest is at an elevation of 250 feet above mean sea level (MSL), and the spillway crest elevation is 227 feet MSL. The reservoir surface elevation varies seasonally with rainfall and evaporation, with an average annual range of 220 feet to 225 feet above MSL. Although not operated as a flood control structure, Chabot Dam provides flood control downstream by attenuating storm hydrographs. The reservoir is stocked with hatchery-raised rainbow trout (*Oncorhynchus mykiss*) and channel catfish (*Ictalurus punctatus*), and also supports a popular nonnative, warmwater recreational fishery with largemouth bass (*Micropterus salmoides*), bluegill (*Lepomis macrochirus*), and black crappie (*Pomoxis nigromaculatus*). Although the presence of these predators in the lake does not negate the presence of CRLF, they greatly reduce the likelihood of occurrence.

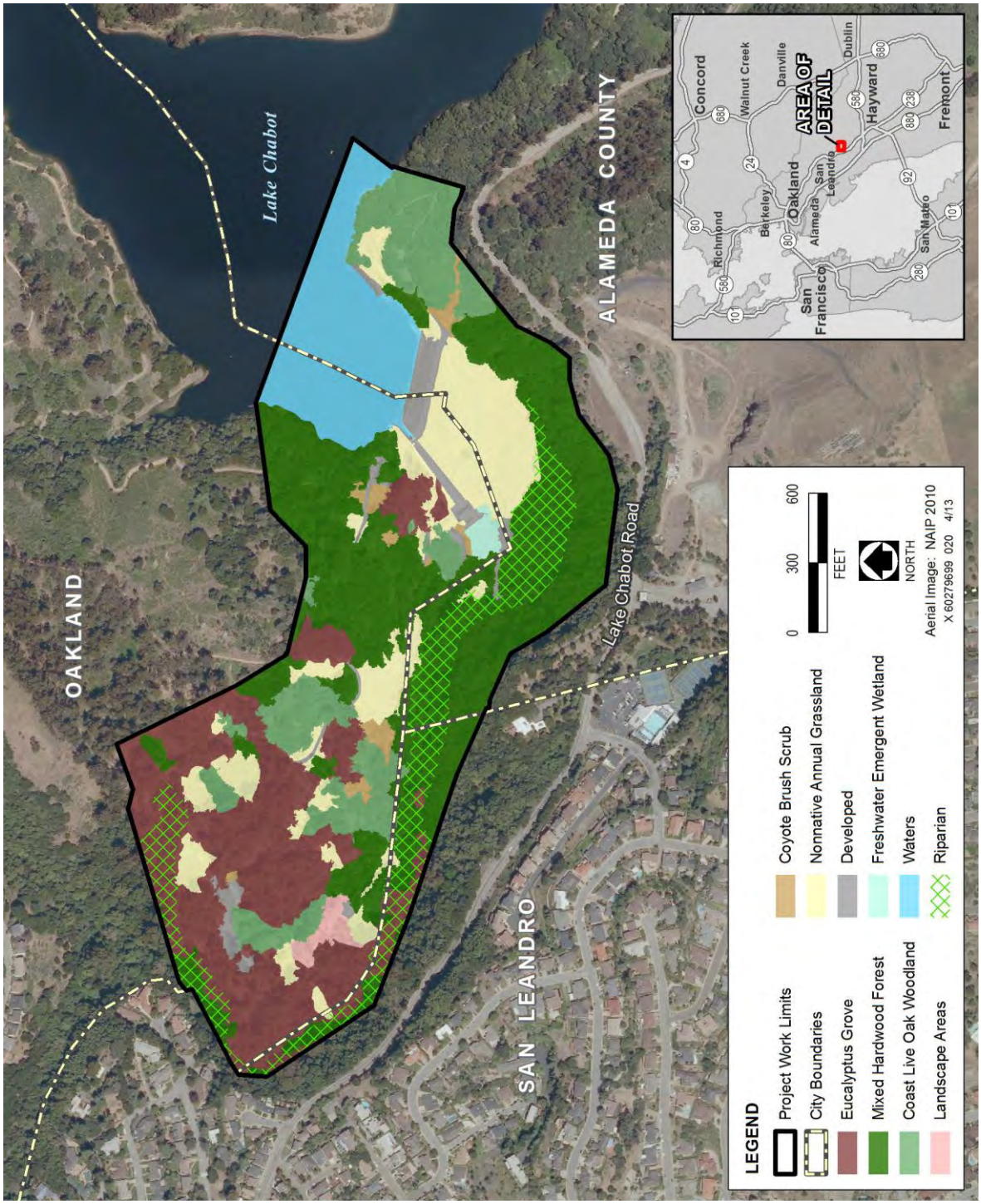
San Leandro Creek is a 22-mile-long, year-round natural stream that flows along the east side of the Berkeley and San Leandro Hills into the Upper San Leandro Reservoir and then Lake Chabot. After leaving the spillway from Lake Chabot, the creek flows as a perennial stream approximately 1 mile prior to meandering 5 miles through the city of San Leandro and into San Francisco Bay. The creek terminates in Arrowhead Marsh, one of the few tidal marshes remaining in the East Bay.

A small, 0.5-acre freshwater emergent wetland occurs below the Chabot Dam spillway. This community is characterized by dense emergent marsh vegetation dominated almost entirely by broad-leaved cattail (*Typha latifolia*). Other species present include common tule (*Schoenoplectus acutus* var. *occidentalis*), rushes (*Juncus* spp.), tall flatsedge (*Cyperus eragrostis*), southern bulrush (*Schoenoplectus californicus*), Olney's three-square bulrush (*Schoenoplectus americanus*), spikerush (*Eleocharis macrostachya*), water plantain (*Alisma triviale*), and water smartweed (*Persicaria amphibia*). The wetland is populated by bullfrogs, and the edge is covered with rock slope protection.

Known CRLF Occurrences within the Vicinity of the Project Site

No CRLF have been observed in the proposed project area (EBMUD 1996, 2008, 2011; Mulchaey 2013; Stebbins 1996), although no protocol-level surveys have been

Figure 5. Vegetation Communities in the Proposed Project Area



SOURCE: AECOM 2013

conducted. Self-sustaining CRLF populations have been observed (CDFW 2013; EBMUD 1996, 2011) above Chabot Reservoir in the vicinity of Upper San Leandro Dam since 2007, approximately 3 miles northeast of the proposed project site (Figure 6).

Potential Habitat Impacts on Proposed Project Sites

Sustain biologists used criteria developed by USFWS (2005) and EBMUD (2011) for the Chabot CRLF habitat assessment:

1. *No Potential*. Habitat on and adjacent to the proposed project site is clearly unsuitable for the species requirements of foraging, breeding, cover, elevation, hydrology, plant community, site history, and/or disturbance regime.
2. *Unlikely*. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the proposed project site is unsuitable, of very poor quality, or subject to significant disturbance. Species is not likely to be found on the site.
3. *Moderate Potential.* Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the proposed project site is unsuitable. The species has a moderate probability of being found on the site.
4. *High Potential.* All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the proposed project site is highly suitable. The species has a high probability of being found on the site.
5. *Present.* Species is observed on the proposed project site or has been recorded (e.g., CNDDB, other reports) on the proposed project site recently.

USFWS habitat assessment data sheets are included as Appendix A.

Filter Pond Stockpile

(Includes parking, staging, and laydown areas, per EBMUD 2011)

This upland site consists of coast live oak woodland, mixed hardwood forest, eucalyptus, developed, and annual grassland habitats (EBMUD 2011). There is no potential CRLF habitat on this site. *Habitat Assessment:* No potential.

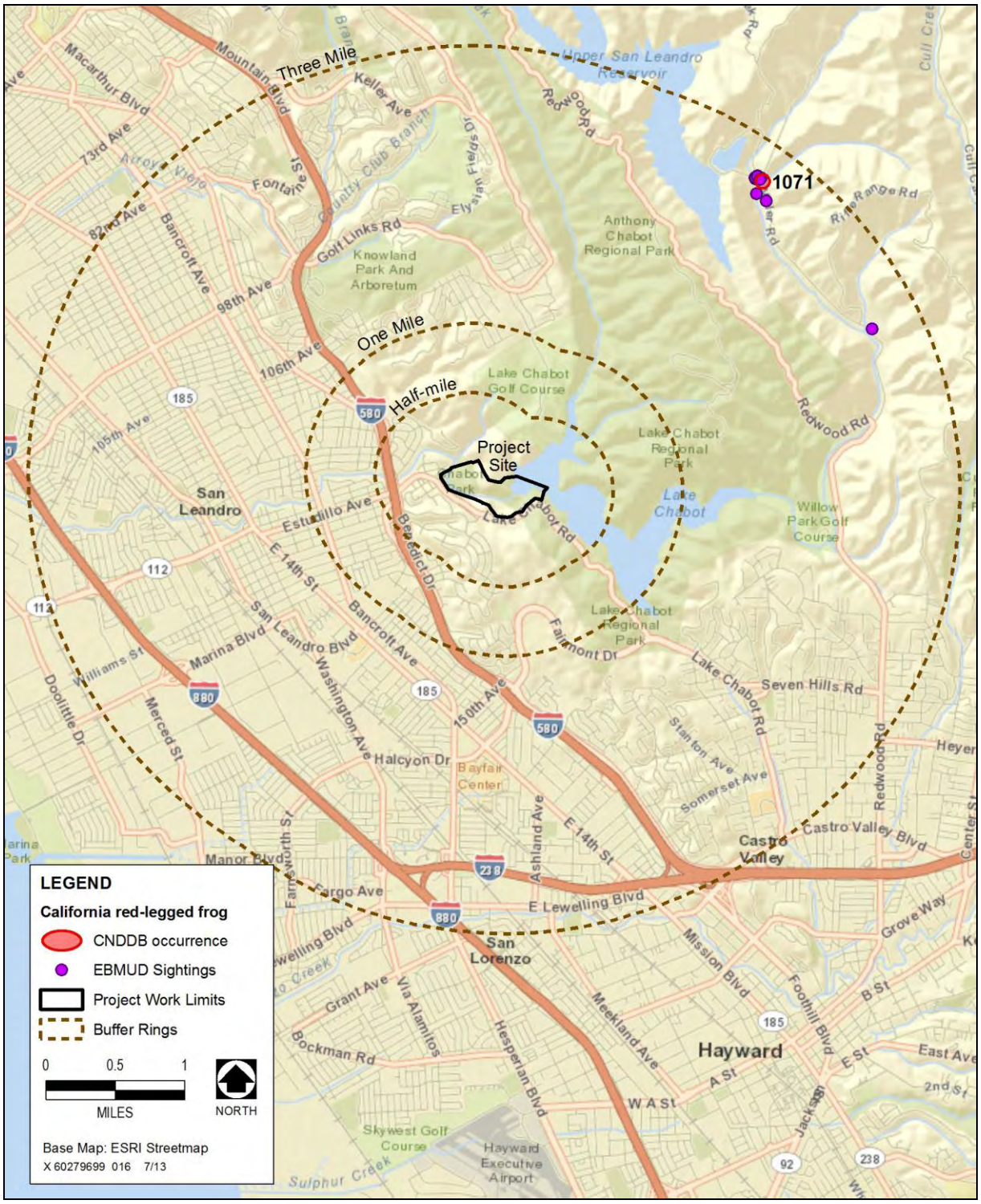
Cement Deep-Soil Mixing or Excavation Area

(Includes the stockpile, parking, and laydown areas, per EBMUD 2011)

California annual grassland habitat, south of the spillway, March 31, 2013. Photo: Kent Reeves

These sites are located southwest of the spillway and consist of highly disturbed annual grassland. This area lacks suitable rodent burrows for CRLF refugia. *Habitat Assessment:* Unlikely.

Figure 6. CRLF Occurrences within 3 Miles of Chabot Dam Seismic Upgrade Project Site



SOURCES: AECOM 2013; CDFW 2013; EBMUD 2013

Park Stockpile

(Stockpile 3, per EBMUD 2011)

This site is a mix of landscape plantings, eucalyptus, annual grassland, coast live oak woodland, and mixed hardwood forest (EBMUD 2011). San Leandro Creek runs as a shallow channel along the western boundary of the park and adjacent to the stockpile. The site is a designated recreational area with picnic facilities, and experiences high visitor use and disturbance. *Habitat Assessment:* Unlikely.

Outlet Works and Outlet Tower Staging Area

(Tower staging area, per EBMUD 2011)

This site is primarily mixed hardwood forest and coyote brush scrub. *Habitat Assessment:* No potential.

San Leandro Creek Crossing (below spillway)

Mixed hardwood forest where the road crosses San Leandro Creek, March 31, 2103. Photos: Kent Reeves

San Leandro Creek flows as a perennial stream from the spillway approximately 1 mile before entering the highly urbanized city of San Leandro. At the project site and the proposed road crossing, the surrounding habitat consists of mixed hardwood forest and disturbed riparian vegetation. The creek itself is shallow, with few deep pools and lacks emergent vegetation and habitat features that typically support the life cycle of CRLF. *Habitat Assessment:* Unlikely to moderate potential.

Spillway and Bridge

A small (0.5 acre) dense freshwater emergent wetland lies below the spillway and may provide potential refugia habitat for CRLF. The vegetation is very dense and populated by bullfrogs (a known predator) (Mulchaey 2013). This area will not be directly impacted by the project. *Habitat Assessment:* Unlikely to moderate potential.

Spillway and freshwater emergent wetland below the spillway, March 31, 2013. Photos: Kent Reeves

Conclusion

The nearest CRLF observations have occurred approximately 3 miles from the project site (CDFWF 2013; EBMUD 2011; Mulchaey 2013), and are separated from the project site by a dam and reservoir stocked with predators. It is unlikely that CRLF will move into the area, given the geographic separation, the proximity to the urban environment, the existing level of recreational use, and the existing habitat conditions found in and adjacent to the project site, as noted in recent biological survey work (EBMUD 2011) and confirmed during the March 31, 2013 habitat assessment conducted by Sustain. No additional surveys are recommended.

REFERENCES

California Department of Fish and Wildlife (CDFW). 2013. Rare Find: California Natural Diversity Data Base Record Search, March 21.

East Bay Municipal Utility District (EBMUD). 1995. Environmental Impact Report for East Bay Watershed Master Plan. East Bay Municipal Utility District, Oakland, CA. Prepared by Jones and Stokes Associates.

_____. 1996. East Bay Watershed Master Plan. East Bay Municipal Utility District, Oakland, CA. Prepared by Jones and Stokes Associates.

_____. 2000. Fire Management Plan. East Bay Municipal Utility District, Orinda, CA.

_____. 2001. Range Resource Management Plan. East Bay Municipal Utility District, Orinda, CA.

_____. 2008. East Bay Municipal Utility District Low Effect East Bay Habitat Conservation Plan. Available at http://www.ebmud.com/sites/default/files/pdfs/HCP_0.pdf.

_____. 2011. Preliminary Chabot Dam Seismic Remediation Project, Initial Biological Resource Assessment.

East Bay Regional Park District. 2003. Wild Plants of Anthony Chabot Regional Park. Oakland, CA.

Hayes, Marc P., and Mark R. Jennings. 1988. *Habitat Correlates of Distribution of the California Red-legged Frog (*Rana aurora draytonii*) and the Foothill Yellow-Legged Frog (*Rana boylii*): Implications for Management*. pp. 144–158 In: Szaro, Robert C., Kieth E. Severson and David R. Patton (technical coordinators). July 19–21, 1988. *Proceedings of the Symposium on the Management of Amphibians, Reptiles, and Small Mammals in North America.* United States Department of Agriculture, Forest Service, General Technical Report (GTR) – 166.

Jennings, M. R. 1988. Natural History and Decline of Native Ranids in California. pp. 61–72 *In* H. F. DeListle, P. R. Brown, B. Kaufman, and B. M. McGurty (editors), Proceedings of the Conference on California Herpetology. Southwestern Herpetologists Society, Special Publication (4).

Jennings, M. R., and M. P. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. California Department of Fish and Game, Inland Fisheries Unit, Rancho Cordova, CA.

Mulchaey, B. 2013. Personal communication of Bert Mulchaey, EBMUD Fisheries Biologist, with Kent Reeves, Sustain Environmental, during a site visit on March 31, 2013.

Storer, Tracy I. 1925. *A Synopsis of the Amphibia of California*. University of California Publications in Zoology. v27. The University of California Press. Berkeley, CA: pp 1–43, 231–245, 330, 331, 336–339.

Stebbins, R. C. 1996. Biological Survey Studies for the East Bay Municipal Utility District. East Bay Utility District.

Terra Engineers and AECOM. 2013. Chabot Dam Seismic Upgrade: Alternative Haul Routes: Constructability and Environmental Review. Prepared for East Bay Municipal Utility District, Engineering and Construction Department.

URS Corporation. 2005. Dynamic Stability Analysis of Chabot Dam, Alameda County, California. Final Report. Volume 1. Prepared for East Bay Municipal Utility District. URS, Oakland, CA. 26814536.G0000.

U.S. Fish and Wildlife Service (USFWS). 2005. *Revised Guidance on Site Assessments and Field Surveys for the California Red-legged Frog*. Sacramento Branch of the U.S. Fish and Wildlife Service, August.

_____. 2010. Endangered and Threatened Wildlife and Plants: Revised Designation of Critical Habitat for California Red-Legged Frog; Final Rule. Federal Register. Vol. 75, No 51. pp. 12816−12959. Available at http://www.gpo.gov/fdsys/pkg/FR-2010-03-17/pdf/2010-4656.pdf

Water Resources Engineering (WRE) and AECOM. 2013. Chabot Dam Seismic Upgrade Outlet Works and Pavilion: Constructability and Environmental Review. Prepared for East Bay Municipal Utility District, Engineering and Construction Department.

APPENDIX A

Aquatic Habitat Assessment Field Data

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

Site Assessment reviewed by _____ _____ _____
(FWS Field Office) (date) (biologist)

Date of Site Assessment: 5/9/13 & 3/31/2013
(mm/dd/yyyy)

Site Assessment Biologists: McElhaney Bert _____
(Last name) (first name) (Last name) (first name)

Reeves Kent _____
(Last name) (first name) (Last name) (first name)

Site Location: Chabot Dam, San Leandro Creek
(County, General location name, UTM Coordinates or Lat./Long. or T-R-S).

****ATTACH A MAP** (include habitat types, important features, and species locations)****

Proposed project name: Chabot Seismic Upgrade Project
Brief description of proposed action:
Seismic upgrade to Chabot Dam and the outlet Tower

1) Is this site within the current or historic range of the CRF (circle one)? (YES) NO

2) Are there known records of CRF within 1.6 km (1 mi) of the site (circle one)? YES (NO)
If yes, attach a list of all known CRF records with a map showing all locations.

GENERAL AQUATIC HABITAT CHARACTERIZATION

(if multiple ponds or streams are within the proposed action area, fill out one data sheet for each)

POND:
Size: _____ Maximum depth: _____

Vegetation: emergent, overhanging, dominant species: _____
_____
_____

Substrate: _____
_____

Perennial or Ephemeral *(circle one)*. If ephemeral, date it goes dry: _____

Appendix D.
California Red-legged Frog Habitat Site Assessment Data Sheet

STREAM:

Bank full width: 11.0 ft
Depth at bank full: 4.0 ft
Stream gradient: 1.5%

Are there pools (circle one)? (YES) NO

If yes,

Size of stream pools: Mean length 90.0 ft Mean width 10.0ft
Maximum depth of stream pools: 3.7 ft

Characterize non-pool habitat: run, riffle, glide, other: 10 glides and 24 riffles in this stretch

Vegetation: emergent, overhanging, dominant species: Canopy cover 57% mostly eucalyptus, willow and alder. Sparse emergent vegetation

Substrate: 14% silt/clay, 6% sand, 13% gravel, 29% small cobble 13% large cobble, 19% boulder

Bank description: ground cover sparse, Vegetation management and riprap evident in park area. English ivy, himalayan blackberrey and eucalyptus litter dominant.

(**Perennial**) **or Ephemeral** *(circle one)*. If ephemeral, date it goes dry: _____

Other aquatic habitat characteristics, species observations, drawings, or comments:

Creek banks largely dominated by non-natives such as ivy and himalayan black berry. Pools lack substantial cover. Bullfrogs documented at the site. No CRF observations have been made at the site.

Necessary Attachments:

1. All field notes and other supporting documents
2. Site photographs

Maps with important habitat features and species location

APPENDIX D-3

Focused Botanical Survey Report

AECOM
2020 L Street, Suite 400
Sacramento, CA 95811
www.aecom.com

916.414.5800 tel
916.414.5850 fax

August 16, 2013

East Bay Municipal Utility District
Gwen Alie
375 Eleventh Street, MS 701
Oakland, CA 94607-4240

Subject: Focused Botanical Survey for the Chabot Dam Seismic Upgrade Project, Alameda County, California

Dear Ms. Gwen Alie:

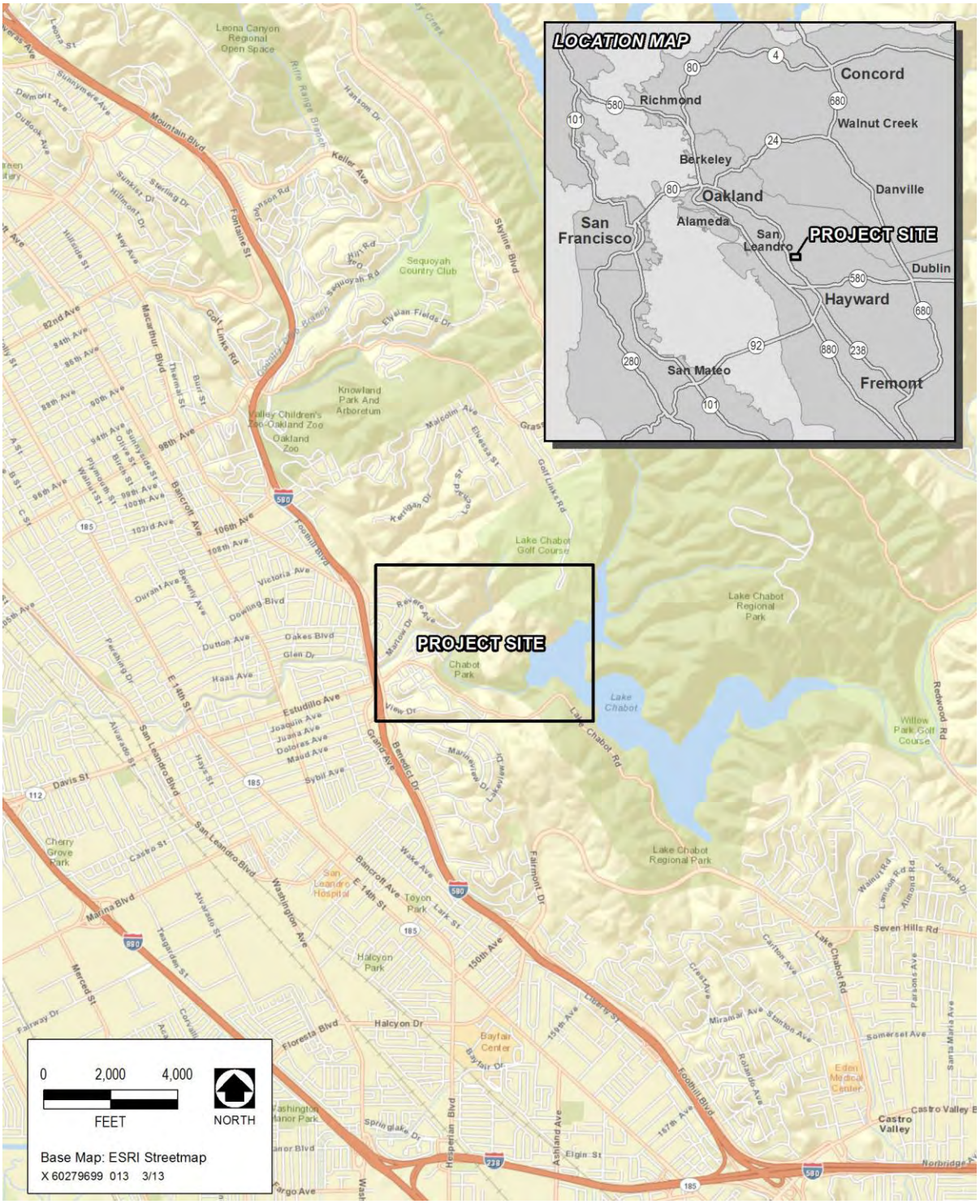
This letter report presents our findings for the focused botanical survey for the Chabot Dam Seismic Upgrade Project, Alameda County, California. Surveys that targeted 66 special-status species were conducted in March and May of 2013.

INTRODUCTION AND SETTING

AECOM was contracted by East Bay Municipal Utility District (EBMUD) to evaluate the potential for special-status plant species to occur, and conduct focused rare plant surveys, within the footprint of the Chabot Dam Seismic Upgrade project. The project area is located approximately 2 miles east of the City of San Leandro and 10 miles southeast of the City of Oakland (Figure 1). The majority of the approximately 86-acre project area is located within the Anthony Chabot Regional Park, which is owned by EBMUD and managed by the East Bay Regional Park District (EBRPD). The project area also encompasses the City of San Leandro's 10-acre Chabot Park. An approximately 0.5-mile-long stretch of San Leandro Creek flows through the project area. Within the project area, the creek originates downstream of the dam spillway and continues along the southern edge, eventually flowing out of the area and through the City of San Leandro to the San Francisco Bay.

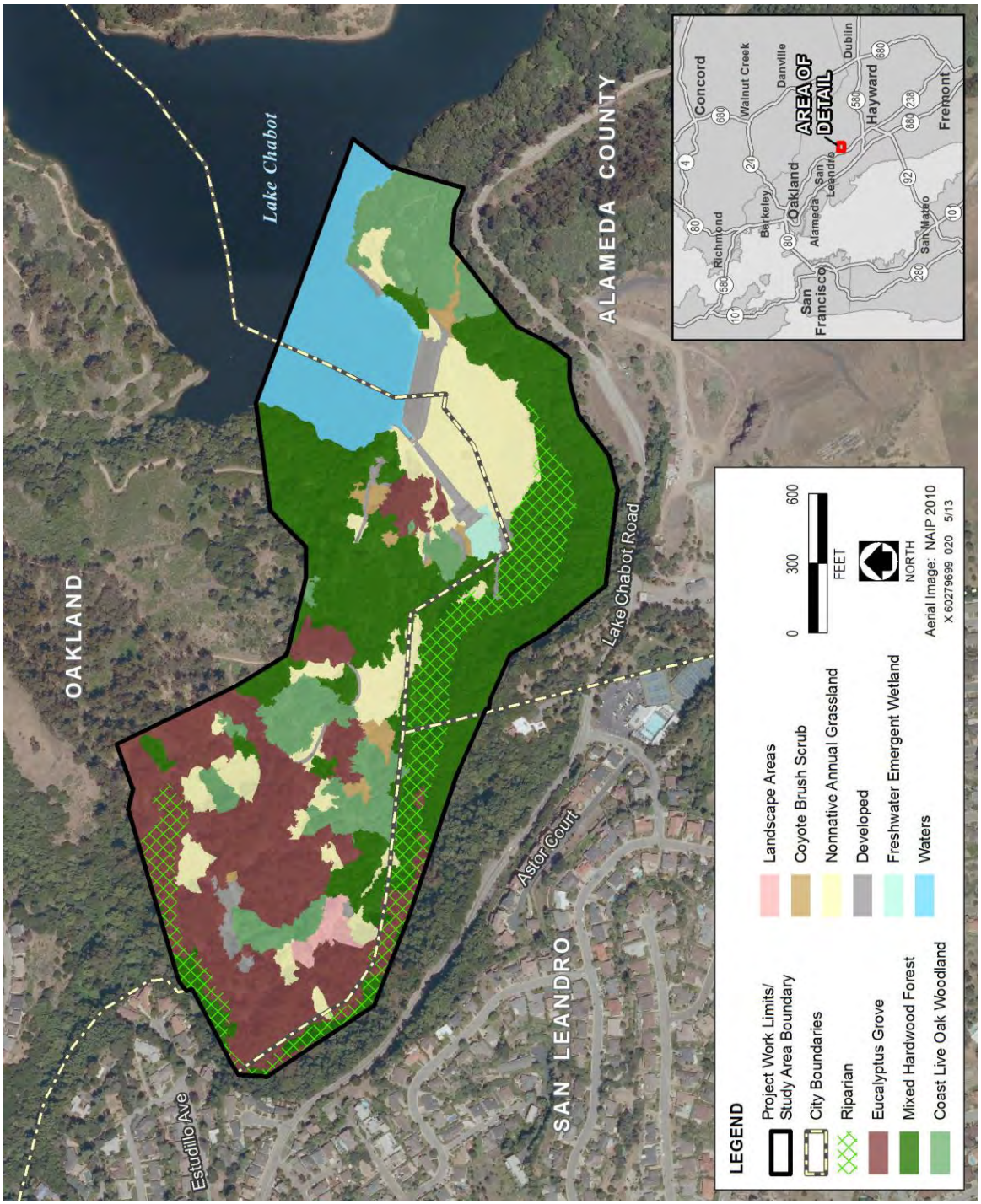
The project area boundary is roughly rectangular in shape and is orientated southeast to northwest, with the middle section narrower than the ends. Existing land uses in the project area include recreation, water storage, and open space. The area is bounded on the west and southwest by residential development, on the southeast by a former quarry with some active commercial use of buildings on site, and on the north and east by park and open space.

Vegetation in the project area has been subject to substantial human-caused disturbance for more than 135 years. More than 30 percent of the plant species that are found in the park are nonnatives (EBRPD 2003). The vegetation communities identified within the project area boundaries include nonnative annual grassland, coyote brush scrub, coast live oak woodland, mixed hardwood forest, eucalyptus grove (Figure 2). An approximately 6-acre riparian corridor is adjacent to San Leandro Creek, and a 0.5-acre freshwater emergent wetland, dominated by cattails (*Typha angustifolia*), is located directly below the Chabot Dam concrete spillway.



Source: Compiled by AECOM in 2013

Figure 1. Project Site Location and Vicinity



Sources: EBMUD 2012; compiled by AECOM in 2013

Figure 2. Vegetation Communities

METHODS

AECOM botanists, Kristin Asmus and Sarah Cannon, conducted a focused botanical survey on March 5 and May 30, 2013. During the field survey, all sites within the project area boundary that have the potential to be disturbed during construction (study area) were traveled on foot (Figure 3). All distinct upland and wetland plant communities were visited, and all plant species detected were identified and recorded. A complete plant species inventory for the study area is presented in Appendix A. Survey methods conformed to the California Department of Fish and Wildlife (CDFW) *Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities* (CFDG 2000) as well as the U.S. Fish and Wildlife Service (USFWS) *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 2000).

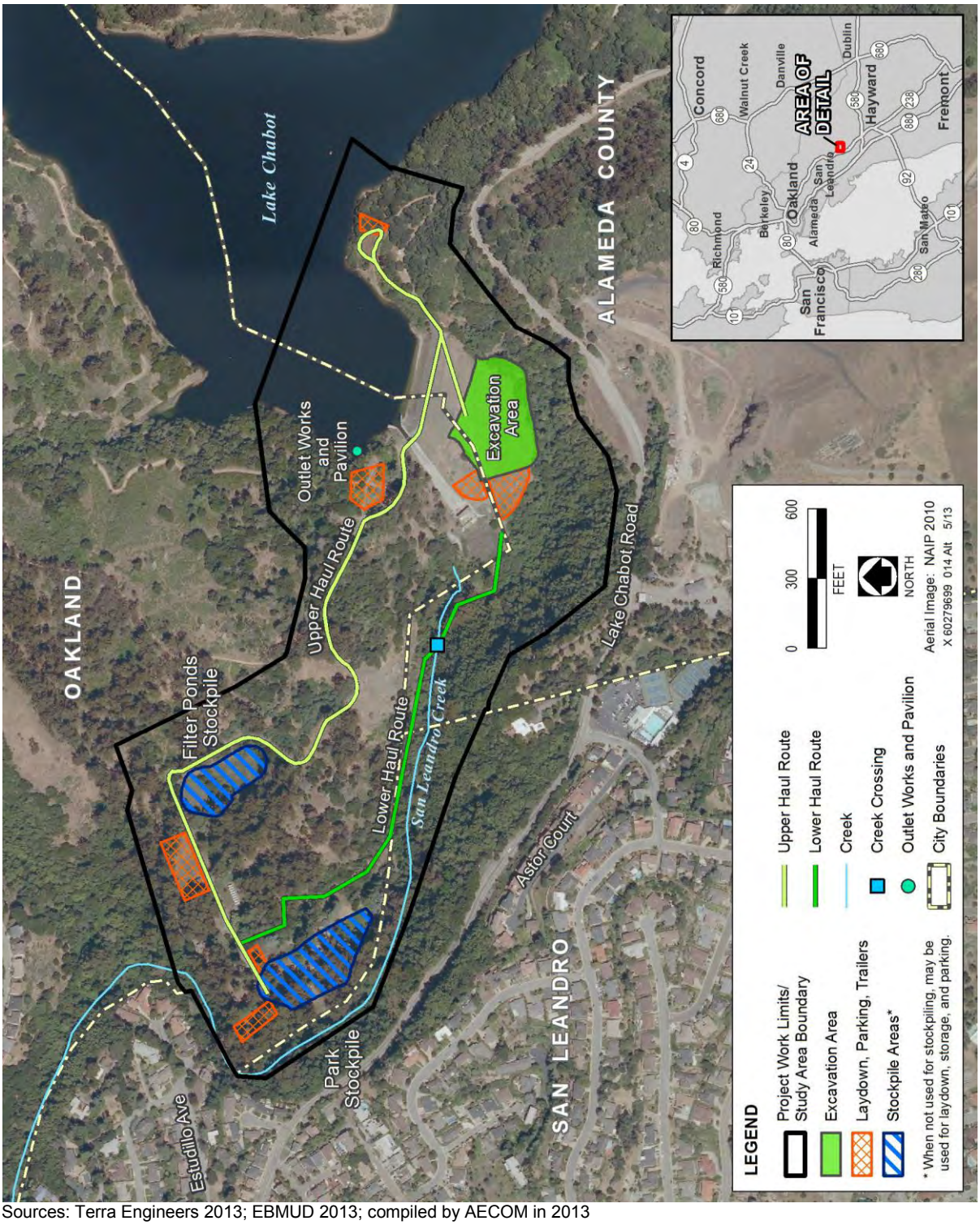
Information on special-status plant species was compiled through a review of the California Natural Diversity Database (CNDDB) *State and Federally Listed Endangered, Threatened, and Rare Plants of California* for the U.S. Geological Survey (USGS) 7.5-minute Hayward, Las Trampas, Oakland East, and San Leandro quadrangles (USGS 1993a, 1993b,c,d; CDFW 2013a), as well as the California Native Plant Society (CNPS) *Inventory of Rare and Endangered Plants of California* (CNPS 2013), CDFW Special *Vascular Plants, Bryophytes, and Lichens List* (CDFW 2013b), and USFWS *Federal Endangered and Threatened Species List that Occur in or May Be Affected by Projects* in the Oakland East, Las Trampas Ridge, Hayward, and San Leandro quadrangles (USFWS 2011). *Unusual and Significant Plants of Alameda and Contra Costa Counties* (Lake 2010) was also reviewed.

Nomenclature for plants used throughout this report conforms to *The Jepson Manual: Vascular Plants of California, Second edition* (Baldwin 2012), except where noted. Nomenclature for special-status plant species conforms to CDFW (2013a) and CNPS (2013) guidelines.

SPECIAL-STATUS PLANTS

Special-status plant species include those listed as endangered, threatened, or rare, or those species proposed for listing by USFWS (2011), CDFW (2013a,b), and CNPS (2013). The CNPS rare plant inventory (CNPS 2013) is sanctioned by CDFW and serves essentially as its list of “candidate” plant species. These plants may be eligible or become eligible for state listing. Plants with a CNPS California Rare Plant Rank (CRPR) 2A or 2B must be considered during the preparation of California Environmental Quality Act (CEQA) documents. Plants with a CRPR 3 or 4 are plants about which more information is needed, or are on a watch list due to limited localized distribution. CDFW and CNPS strongly recommend that these plants be considered for evaluation during the preparation of a CEQA document.

Based on a review of special-status plant species in Alameda County and a broad knowledge of the regional flora, a total of 82 special-status plant species were determined to have at least some potential to occur within the region or have been recorded historically in the project vicinity. Of those, 66 potentially occurring plant species were considered to be the “target species” for the site-specific focused surveys. A summary of the status, habitat affinities, blooming period, and the potential to occur in the project area for each of the target plant species is presented in Appendix B. An explanation of sensitivity status codes is provided in Appendix C. Of the 66 potentially occurring target species, none were detected within the study area during the focused botanical surveys. None of the remaining 16 special-status species are considered to have any potential to occur within the study area due to a lack of suitable habitat and/or the fact that they would have been detectable during the comprehensive focused plant surveys conducted.



Sources: Terra Engineers 2013; EBMUD 2013; compiled by AECOM in 2013

Figure 3. Project Site Components

UNUSUAL AND SIGNIFICANT PLANTS OF ALAMEDA COUNTY

Species listed as unusual or significant include those deemed by the CNPS East Bay Chapter to be rare, threatened, or endangered in Alameda and Contra Costa counties, but not in the rest of California. Plants listed include those occurring in limited or threatened habitats, those occurring in isolated populations or that have a narrow geographic range in the two counties, plants found in small, stressed, or declining populations, plants reaching their range limits in the two counties, or plants that are in some way threatened or endangered in the East Bay, among other considerations (Lake 2010). No unusual or significant plants of Alameda or Contra Costa counties were detected within the study area during the focused botanical survey.

SENSITIVE NATURAL COMMUNITIES

Sensitive natural communities include those that are considered rare in the region, may support special-status plant or wildlife species, or may receive regulatory protection (i.e. Section 404 of the Clean Water Act and/or Section 1600 of the California Fish and Game Code). Such regulations are administered by various federal or state agencies, including the U.S. Army Corps of Engineers (USACE), Environmental Protection Agency, CDFW, and California Regional Water Quality Control Board (RWQCB). CNDDB has designated a number of communities as rare; these communities are given the highest inventory priority (CDFW 2010). The project area supports two such sensitive vegetation communities, freshwater emergent marsh and riparian forest. No regionally uncommon plant communities are regarded as rare by CNDDB. The freshwater emergent marsh is a wetland that falls under the regulatory authority of USACE and the RWQCB. Riparian vegetation associated with San Leandro Creek is considered a sensitive natural community by CDFW and RWQCB.

CONCLUSIONS AND RECOMMENDATIONS

Based on the current focused botanical survey conducted in 2013, no federally or state-listed endangered or threatened plant species were detected within the study area and none are expected to occur. No CNPS-listed species and no unusual or significant plants of Alameda County were detected within the study area.

The study area supports two sensitive vegetation communities, freshwater emergent wetland and riparian forest. No other sensitive communities were observed and no special-status plant taxa are considered to have any potential to occur on site due to a lack of suitable habitat and because they would have been detectable during the floristic surveys. Based on these findings, no further botanical studies for special-status plant species are warranted in the study area. These surveys are valid for a period of 5 years. If construction is delayed beyond this 5-year window, the surveys should be repeated.

If you have any questions, please do not hesitate to call at (916) 414-5800.

Sincerely,

Kristin Asmus
Botanist
AECOM

Lynn Hermansen
Lead Biologist
AECOM

Enclosure

Attachments:
Appendix A. Plant Species Detected – Chabot Dam Seismic Upgrade Project
Appendix B. Special-Status Plant Species Potential for Occurrence
Appendix C. Explanation of Sensitivity Status Codes

References

Baldwin, B.G. (ed.). 2012. The Jepson Manual: Vascular Plants of California. Second edition. Berkeley: University of California Press.

CDFW. See California Department of Fish and Wildlife.

California Department of Fish and Game. 2000. Guidelines for Assessing the Effects of Proposed Developments on Rare and Endangered Plants and Plant Communities. The Resources Agency, Sacramento. Revised May 8. http://www.slocounty.ca.gov/Assets/PL/environmental/CDFG_botanical_survey_guidelines.pdf

California Department of Fish and Wildlife (CDFW). 2010 (September). *Natural Communities List Arranged Alphabetically by Life Form*. California Natural Diversity Database. Available: http://www.dfg.ca.gov/biogeodata/vegcamp/natural_comm_list.asp. Accessed March 4, 2013.

_____.2013a. State and Federally Listed Endangered, Threatened, and Rare Plants of California. California Natural Diversity Database. Available: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/TEPlants.pdf. Accessed March 4, 2013.\

_____.2013b. Special Vascular Plants, Bryophytes, and Lichens List. California Natural Diversity Database. Available: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/SPPlants.pdf. Accessed on March 4, 2013.

California Native Plant Society. 2013. Inventory of Rare and Endangered Plants (online edition, v7-13). California Native Plant Society. Sacramento, CA. Accessed on March 4, 2013. http://www.rareplants.cnps.org/advanced.html

CNPS. See California Native Plant Society.

East Bay Regional Park District (EBRPD). 2003. *Wild Plants of Anthony Chabot Regional Park*. Oakland, CA.

Lake, D. 2010. Rare, Unusual and Significant Plants of Alameda and Contra Costa Counties. Eighth edition. California Native Plant Society, East Bay Chapter. Pinole, CA.

U.S. Fish and Wildlife Service. 2000. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants. http://www.fws.gov/sacramento/es/survey-protocols-guidelines/documents/listed_plant_survey_guidelines.pdf

_____.2011. Sacramento Fish and Wildlife Office. Federal Endangered and Threatened Species List that Occur in or May Be Affected by Projects in the Hayward, Oakland East, San Leandro, or Las Trampas Ridge U.S. Geological Survey 7.5-minute quadrangles. Available: http://www.fws.gov/sacramento/es_species/Lists/es_species_lists-overview.htm. Database last updated September 18, 2011. Accessed March 4, 2013.

USFWS. See U.S. Fish and Wildlife Service.

U.S. Geological Survey. 1993a. Hayward, California 1:24,000 (7.5-minute) topographic quadrangle map.

_____.1993b. Oakland East, California 1:24,000 (7.5-minute) topographic quadrangle maps.

_____.1993c. San Leandro, California 1:24,000 (7.5-minute) topographic quadrangle maps.

_____.1999d. Las Trampas Ridge, California 1:24,000 (7.5-minute) topographic quadrangle maps.

USGS. See U.S. Geological Survey.

Appendix A
Plant Species Detected – Chabot Dam Seismic Upgrade Project

Apppendix A: Plant Species Detected
Chabot Dam Seismic Upgrade Project

Scientific Name	Common Name
Acacia baileyana	cootamundra wattle
Acacia melanoxylon	blackwood acacia
Acacia sp.	acacia
Aesculus californica	California buckeye
Artemisia	mugwort
Avena fatua	wild oat
Baccharis pilularis	coyote brush
Bellardia trixago	Mediterranean lineseed
Brassica nigra	black mustard
Brodia sp.	brodia
Bromus diandrus	ripgut brome
Calocedrus decurrens	incense-cedar
Cardamine oligosperma	bitter-cress
Carduus pycnocephalus	Italian thistle
Centaurea melitensis	Napa star-thistle
Centaurea solstitialis	yellow star-thistle
Cerastium glomeratum	sticky mouse-ear chickweed
Chlorogalum pomeridianum	soap plant
Cirsium vulgare	bull thistle
Claytonia perfoliata	miner's lettuce
Conium maculatum	poison hemlock
Convolvulus arvensis	field bindweed
Cortaderia jubata	purple pampas grass
Cortaderia selloana	pampas grass
Cotoneaster sp.	cotoneaster
Cynosurus echinatus	hedgehog dogtail grass
Cyperus difformis	umbrella sedge
Duchesnea indica	mock-strawberry
Elymus triticoides	wild rye
Equisetum arvense	horsetail
Eriogonum fasciculatum	California buckwheat
Erodium botrys	storksbill
Erodium cicutarium	redstem filaree
Eschscholzia californica	California poppy
Eucalyptus globulus	blue gum
Festuca perennis	rye grass
Ficus carica	common fig
Foeniculum vulgare	fennel
Foumaria sp.	fumary
Galium porrigens	climbing bedstraw
Gallium aparine	goose grass
Genista monspessulana	French broom
Geranium dissectum	cranesbill, geranium
Geranium molle	cranesbill, geranium

Apppendix A: Plant Species Detected
Chabot Dam Seismic Upgrade Project

Scientific Name	Common Name
Geranium robertianum	cranesbill, geranium
Hedera helix	english ivy
Helminthotheca echioides	bristly ox-tongue
Heteromeles arbutifolia	toyon
Holcus lanatus	common velvet grass
Hordeum murinum leporinum	hare barley
Hypochaeris glabra	smooth cat's-ear
Hypochaeris radiacata	cat's ear
Juglans hindsii	Northern California black walnut
Juncus balticus	Baltic rush
Juncus patens	spreading rush
Lamium purpureum	dead nettle
Ligustrum lucidum	Chinese privet
Lonicera involucrata	twinberry
Lupinus sp.	lupine
Lythrum hyssopifolia	Hyssop loosestrife
Madia sp.	tarplant
Medicago polymorpha	California burclover
Mimulus aurantiacus	monkey-flower
Narcissus sp.	daffodil
Olea europaea	olive
Pentagramma triangularis ssp. triangularis	goldback fern
Phyla nodiflora	lippia
Pinus canariensis	Canary island pine
Pinus radiata	Monterey pine
Piptatherum miliacecum	smilo grass
Pittosporum sp.	pittosporum
Plantago coronopus	plantain
Plantago lancelota	english plantain
Plantago major	common plantain
Platanus racemosa	California sycamore
Polypogon monspeliensis	rabbitsfoot grass
Populus fremontii	Fremont cottonwood
Prunus sp.	cherry
Quercus agrifolia	coast live oak
Quercus suber	cork oak
Raphanis sativa	wild radish
Rhododendron sp.	rhododendron
Ribes amarum	gooseberry
Rubus armeniacus	Himalayan blackberry
Rubus ursinus	California blackberry
Rumex acetosella	sheep sorrel
Rumex crispus	curly dock
Rumex pulcher	fiddle dock

Apppendix A: Plant Species Detected
Chabot Dam Seismic Upgrade Project

Scientific Name	Common Name
Salix laevigata	red willow
Sambucus nigra caerulea	blue elderberry
Saxifrage sp.	saxifrage
Schinus terebinthifolius	Brazilian pepper
Senecio vulgaris	common groundsel
Sequoia sempervirens	coast redwood
Silybum marianum	milk thistle
Sisymbrium sp.	mustard
Stellaria media	common chickweed
Symphoricarpos mollis	creeping snowberry
Taraxacum officinale	common dandelion
Torolis nodosa	sock-destroyer
Toxicodendron diversilobum	poison oak
Trifolium fragiferum	strawberry clover
Trifolium hirtum	rose clover
Ulnus sp.	elm
Umbellularia californica	California bay
Urtica dioica	stinging nettle
Vicia americana ssp. americana	American vetch
Vicia sativa	vetch
Vinca major	greater periwinkle
Xylosoma sp.	xylosma

Appendix B
Special-Status Plant Species Potential for Occurrence

Special-status Plant Species Potential for Occurrence

Family Scientific Name	Common Name	Status	Habitat	Period	Elevation Range (Meters)	Potential for Occurrence
Adoxaceae - Muskroot Family						
Viburnum ellipticum	oval-leaved viburnum	CRPR 2.3	Chaparral, Cismontane woodland, Lower montane coniferous forest	May-Jun	3-1400	Moderate potential; suitable habitat present
Alliaceae - Onion Family						
Allium peninsulare var. *franciscanum*	Franciscan onion	CRPR 1B.2	Cismontane woodland, Valley and foothill grassland/clay, volcanic, often serpentinite	May-Jun	52-300	Moderate potential; suitable habitat present
Apiaceae - Carrot Family						
Sanicula maritima	adobe sanicle	SR, CRPR 1B.1	Chaparral, Coastal prairie, Meadows and seeps, Valley and foothill grassland/clay, serpentinite	Feb-May	3-240	Moderate potential; suitable habitat present
Asteraceae - Sunflower Family						
Balsamorhiza macrolepis	big-scale balsamroot	CRPR 1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland/sometimes serpentinite	Mar-Jun	3-1555	Moderate potential; suitable habitat present
Centromadia parryi ssp. *congdonii*	Congdon's tarplant	CRPR 1B.1	Valley and foothill grassland(alkaline)	May-Oct (Nov)	3-230	Unlikely; marginal habitat present
Cirsium fontinale var. *fontinale*	Crystal Springs fountain thistle	FE, SE, CRPR 1B.1	Chaparral(openings), Cismontane woodland, Valley and foothill grassland/serpentinite seeps	May-Oct	3-175	Very unlikely due to limited distribution; marginal habitat present
Eriophyllum jepsonii	Jepson's woolly sunflower	CRPR 4.3	Chaparral, Cismontane woodland, Coastal scrub/sometimes serpentinite	Apr-Jun	3-1025	Moderate potential; suitable habitat present
Eriophyllum latilobum	San Mateo woolly sunflower	FE, SE, CRPR 1B.1	Cismontane woodland(often serpentinite, on roadcuts)	May-Jun	3-150	Very unlikely due to limited distribution; suitable habitat present
Helianthella castanea	Diablo helianthella	CRPR 1B.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland	Mar-Jun	3-1300	Moderate potential; suitable habitat present
Hesperevax caulescens	hogwallow starfish	CRPR 4.2	Valley and foothill grassland(mesic, clay), Vernal pools(shallow)	Mar-Jun	3-505	Unlikely; marginal habitat present
Hesperevax sparsiflora var. *brevifolia*	short-leaved evax	CRPR 1B.2	Coastal bluff scrub(sandy), Coastal dunes, Coastal prairie	Mar-Jun	3-215	No potential; no habitat present
Holocarpha macradenia	Santa Cruz tarplant	FT, SE, CRPR 1B.1	Coastal prairie, Coastal scrub, Valley and foothill grassland/often clay, sandy	Jun-Oct	3-220	Very unlikely due to limited distribution; marginal habitat present
Lasthenia conjugens	Contra Costa goldfields	SE, CRPR 1B.1	Cismontane woodland, Playas(alkaline), Valley and foothill grassland, Vernal pools/mesic	Mar-Jun	3-470	Unlikely; marginal habitat present
Lasthenia ferrisiae	Ferris' goldfields	CRPR 4.2	Vernal pools(alkaline, clay)	Feb-May	3-700	No potential; no habitat present

Special-status Plant Species Potential for Occurrence

Family Scientific Name	Common Name	Status	Habitat	Period	Elevation Range (Meters)	Potential for Occurrence
Lessingia arachnoidea	Crystal Springs lessingia	CRPR 1B.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland/serpentinite, often roadsides	Jul-Oct	3-200	Very unlikely due to limited distribution; suitable habitat present
Lessingia tenuis	spring lessingia	CRPR 4.3	Chaparral, Cismontane woodland, Lower montane coniferous forest/openings	May-Jul	3-2150	Moderate potential; suitable habitat present
Micropus amphibolus	Mt. Diablo cottonweed	CRPR 3.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Valley and foothill grassland/rocky	Mar-May	3-825	Moderate potential; suitable habitat present
Microseris sylvatica	sylvan microseris	CRPR 4.2	Chaparral, Cismontane woodland, Great Basin scrub, Pinyon and juniper woodland, Valley and foothill grassland(serpentinite)	Mar-Jun	3-1500	Moderate potential; suitable habitat present
Monolopia gracilens	woodland woolythreads	CRPR 1B.2	Broadleafed upland forest(openings), Chaparral(openings), Cismontane woodland, North Coast coniferous forest(openings), Valley and foothill grassland/Serpentine	(Feb) Mar-Jul	3-1200	Moderate potential; suitable habitat present
Pentachaeta bellidiflora	white-rayed pentachaeta	FE, SE, CRPR 1B.1	Cismontane woodland, Valley and foothill grassland(often serpentinite)	Mar-May	3-620	Very unlikely due to limited distribution; suitable habitat present
Psilocarphus brevissimus var. *multiflorus*	Delta woolly-marbles	CRPR 4.2	Vernal pools	May-Jun	3-500	No potential; no habitat present
Senecio aphanactis	chaparral ragwort	CRPR 2.2	Chaparral, Cismontane woodland, Coastal scrub/sometimes alkaline	Jan-Apr	3-800	Moderate potential; suitable habitat present
Boraginaceae - Borage Family						
Amsinckia lunaris	bent-flowered fiddleneck	CRPR 1B.2	Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland	Mar-Jun	3-500	Moderate potential; suitable habitat present
Plagiobothrys chorisianus var. *chorisianus*	Choris' popcorn-flower	CRPR 1B.2	Chaparral, Coastal prairie, Coastal scrub/mesic	Mar-Jun	3-160	Moderate potential; suitable habitat present
Plagiobothrys diffusus	San Francisco popcorn-flower	SE, CRPR 1B.1	Coastal prairie, Valley and foothill grassland	Mar-Jun	3-360	Moderate potential; suitable habitat present
Plagiobothrys glaber	hairless popcorn-flower	CRPR 1A	Meadows and seeps(alkaline), Marshes and swamps(coastal salt)	Mar-May	3-180	No potential; no habitat present
Brassicaceae - Mustard Family						
Streptanthus albidus ssp. *peramoenus*	most beautiful jewel-flower	CRPR 1B.2	Chaparral, Cismontane woodland, Valley and foothill grassland/serpentinite	(Mar) Apr-Sep (Oct)	3-1000	Moderate potential; suitable habitat present
Chenopodiaceae - Goosefoot Family						
Atriplex coronata var. *coronata*	crownscale	CRPR 4.2	Chenopod scrub, Valley and foothill grassland, Vernal pools/alkaline, often clay	Mar-Oct	3-590	Unlikely; marginal habitat present
Atriplex joaquinana	San Joaquin spearscale	CRPR 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland/alkaline	Apr-Oct	3-835	Unlikely; marginal habitat present
Suaeda californica	California seablite	FE, CRPR 1B.1	Marshes and swamps(coastal salt)	Jul-Oct	3-15	No potential; no habitat present

Special-status Plant Species Potential for Occurrence

Family Scientific Name	Common Name	Status	Habitat	Period	Elevation Range (Meters)	Potential for Occurrence
Ericaceae -Heath Family						
Arctostaphylos andersonii	Anderson's manzanita	CRPR 1B.2	Broadleafed upland forest, Chaparral, North Coast coniferous forest/openings, edges	Nov-May	3-760	Moderate potential; suitable habitat present
Arctostaphylos montaraensis	Montara manzanita	CRPR 1B.2	Chaparral(maritime), Coastal scrub	Jan-Mar	3-500	Very unlikely due to limited distribution; marginal habitat present
Arctostaphylos pallida	pallid manzanita	FT, SE, CRPR 1B.1	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, Coastal scrub/siliceous shale, sandy or gravelly	Dec-Mar	3-465	Unlikely; marginal habitat present
Fabaceae - Legume Family						
Astragalus nuttallii var. *nuttallii*	ocean bluff milk-vetch	CRPR 4.2	Coastal bluff scrub, Coastal dunes	Jan-Nov	3-120	No potential; no habitat present
Astragalus pycnostachyus var. *pycnostachyus*	coastal marsh milk-vetch	CRPR 1B.2	Coastal dunes(mesic), Coastal scrub, Marshes and swamps(coastal salt, streamsides)	Apr-Oct	3-30	No potential; no habitat present
Astragalus tener var. *tener*	alkali milk-vetch	CRPR 1B.2	Playas, Valley and foothill grassland(adobe clay), Vernal pools/alkaline	Mar-Jun	3-60	No potential; no habitat present
Hoita strobilina	Loma Prieta hoita	CRPR 1B.1	Chaparral, Cismontane woodland, Riparian woodland/usually serpentinite, mesic	May-Jul (Aug)(Oct)	3-860	Moderate potential; suitable habitat present
Lupinus arboreus var. *eximius*	San Mateo tree lupine	CRPR 3.2	Chaparral, Coastal scrub	Apr-Jul	3-550	Moderate potential; suitable habitat present
Trifolium hydrophilum	saline clover	CRPR 1B.2	Marshes and swamps, Valley and foothill grassland(mesic, alkaline), Vernal pools	Apr-Jun	3-300	Unlikely; marginal habitat present
Geraniaceae - Geranium Family						
California macrophylla	round-leaved filaree	CRPR 1B.1	Cismontane woodland, Valley and foothill grassland/clay	Mar-May	3-1200	Moderate potential; suitable habitat present
Iridaceae - Iris Family						
Iris longipetala	coast iris	CRPR 4.2	Coastal prairie, Lower montane coniferous forest, Meadows and seeps/mesic	Mar-May	3-600	No potential; no habitat present
Juglandaceae - Walnut Family						
Juglans hindsii	Northern California black walnut	CRPR 1B.1	Riparian forest, Riparian woodland	Apr-May	3-440	Moderate potential; suitable habitat present
Lamiaceae - Mint Family						
Acanthomintha duttonii	San Mateo thorn-mint	FE, SE,CRPR 1B.1	Chaparral, Valley and foothill grassland/serpentinite	Apr-Jun	50-300	Very unlikely due to limited distribution; suitable habitat present
Acanthomintha lanceolata	Santa Clara thorn-mint	CRPR 4.2	Chaparral(often serpentinite), Cismontane woodland, Coastal scrub/rocky	Mar-Jun	3-1200	Moderate potential; suitable habitat present

Special-status Plant Species Potential for Occurrence

Family Scientific Name	Common Name	Status	Habitat	Period	Elevation Range (Meters)	Potential for Occurrence
Liliaceae - Lily Family						
Calochortus pulchellus	Mt. Diablo fairy-lantern	CRPR 1B.2	Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland	Apr-Jun	3-840	Moderate potential; suitable habitat present
Calochortus umbellatus	Oakland star-tulip	CRPR 4.2	Broadleafed upland forest, Chaparral, Cismontane woodland, Lower montane coniferous forest, Valley and foothill grassland/often serpentinite	Mar-May	3-700	Moderate potential; suitable habitat present
Fritillaria agrestis	stinkbells	CRPR 4.2	Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland/Clay, sometimes serpentinite	Mar-Jun	3-1555	Moderate potential; suitable habitat present
Fritillaria biflora var. *ineziana*	Hillsborough chocolate lily	CRPR 1B.1	Cismontane woodland, Valley and foothill grassland/serpentinite	Mar-Apr	3-150	Very unlikely due to limited distribution; suitable habitat present
Fritillaria liliacea	fragrant fritillary	CRPR 1B.2	Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland/Often serpentinite	Feb-Apr	3-410	Moderate potential; suitable habitat present
Lilium maritimum	coast lily	CRPR 1B.1	Broadleafed upland forest, Closed-cone coniferous forest, Coastal prairie, Coastal scrub, Marshes and swamps(freshwater), North Coast coniferous forest/sometimes roadside	May-Aug	3-475	Moderate potential; suitable habitat present
Linaceae - Flax Family						
Hesperolinon congestum	Marin western flax	FT, ST, CRPR 1B.1	Chaparral, Valley and foothill grassland/serpentinite	Apr-Jul	3-370	Moderate potential; suitable habitat present
Malvaceae - Mallow Family						
Malacothamnus arcuatus	arcuate bush-mallow	CRPR 1B.2	Chaparral, Cismontane woodland	Apr-Sep	3-355	Moderate potential; suitable habitat present
Malacothamnus davidsonii	Davidson's bush-mallow	CRPR 1B.2	Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland	Jun-Jan	3-855	Moderate potential; suitable habitat present
Malacothamnus hallii	Hall's bush-mallow	CRPR 1B.2	Chaparral, Coastal scrub	May-Sep (Oct)	3-760	Moderate potential; suitable habitat present
Onagraceae - Evening-Primrose Family						
Clarkia breweri	Brewer's clarkia	CRPR 4.2	Chaparral, Cismontane woodland, Coastal scrub/often serpentinite	Apr-Jun	3-1115	Moderate potential; suitable habitat present
Clarkia concinna ssp. *automixa*	Santa Clara red ribbons	CRPR 4.3	Chaparral, Cismontane woodland	(Apr) May-Jun (Jul)	3-1500	Moderate potential; suitable habitat present
Clarkia franciscana	Presidio clarkia	FE, SE, CRPR 1B.1	Coastal scrub, Valley and foothill grassland(serpentinite)	May-Jul	3-335	Very unlikely due to limited distribution; suitable habitat present

Special-status Plant Species Potential for Occurrence

Family Scientific Name	Common Name	Status	Habitat	Period	Elevation Range (Meters)	Potential for Occurrence
Orchidaceae - Orchid Family						
Piperia michaelii	Michael's rein orchid	CRPR 4.2	Coastal bluff scrub, Closed-cone coniferous forest, Chaparral, Cismontane woodland, Coastal scrub, Lower montane coniferous forest	Apr-Aug	3-915	Moderate potential; suitable habitat present
Orobanchaceae - Broomrape Family						
Castilleja ambigua var. *ambigua*	johnny-nip	CRPR 4.2	Coastal bluff scrub, Coastal prairie, Coastal scrub, Marshes and swamps, Valley and foothill grassland, Vernal pool margins	Mar-Aug	3-435	Unlikely; marginal habitat present
Chloropyron maritimum ssp. *palustre*	Point Reyes bird's-beak	CRPR 1B.2	Marshes and swamps(coastal salt)	Jun-Oct	3-10	No potential; no habitat present
Triphysaria floribunda	San Francisco owl's-clover	CRPR 1B.2	Coastal prairie, Coastal scrub, Valley and foothill grassland/usually serpentinite	Apr-Jun	3-160	Unlikely; marginal habitat present
Papaveraceae - Poppy Family						
Meconella oregana	Oregon meconella	CRPR 1B.1	Coastal prairie, Coastal scrub	Mar-Apr	3-620	No potential; no habitat present
Plantaginaceae - Plantain Family						
Collinsia multicolor	San Francisco collinsia	CRPR 1B.2	Closed-cone coniferous forest, Coastal scrub/sometimes serpentinite	Mar-May	3-250	Moderate potential; suitable habitat present
Polemoniaceae - Phlox Family						
Gilia capitata ssp. *chamissonis*	blue coast gilia	CRPR 1B.1	Coastal dunes, Coastal scrub	Apr-Jul	3-200	No potential; no habitat present
Leptosiphon acicularis	bristly leptosiphon	CRPR 4.2	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland	Apr-Jul	3-1500	Moderate potential; suitable habitat present
Leptosiphon ambiguus	serpentine leptosiphon	CRPR 4.2	Cismontane woodland, Coastal scrub, Valley and foothill grassland/usually serpentinite	Mar-Jun	3-1130	Moderate potential; suitable habitat present
Leptosiphon grandiflorus	large-flowered leptosiphon	CRPR 4.2	Coastal bluff scrub, Closed-cone coniferous forest, Cismontane woodland, Coastal dunes, Coastal prairie, Coastal scrub, Valley and foothill grassland/usually sandy	Apr-Aug	3-1220	Unlikely; marginal habitat present
Navarretia cotulifolia	cotula navarretia	CRPR 4.2	Chaparral, Cismontane woodland, Valley and foothill grassland/adobe	May-Jun	3-1830	Unlikely; marginal habitat present
Navarretia myersii ssp. *myersii*	pincushion navarretia	CRPR 1B.1	Vernal pools/often acidic	Apr-May	3-330	No potential; no habitat present
Navarretia nigelliformis ssp. *nigelliformis*	adobe navarretia	CRPR 4.2	Valley and foothill grassland (vernally mesic), Vernal pools (sometimes)/clay, sometimes serpentinite	Apr-Jun	3-1000	Unlikely; marginal habitat present
Polemonium carneum	Oregon polemonium	CRPR 2.2	Coastal prairie, Coastal scrub, Lower montane coniferous forest	Apr-Sep	3-1830	Unlikely; marginal habitat present
Polygonaceae - Buckwheat Family						

Special-status Plant Species Potential for Occurrence

Family Scientific Name	Common Name	Status	Habitat	Period	Elevation Range (Meters)	Potential for Occurrence
Chorizanthe cuspidata var. *cuspidata*	San Francisco Bay spineflower	CRPR 1B.2	Coastal bluff scrub, Coastal dunes, Coastal prairie, Coastal scrub/sandy	Apr-Jul (Aug)	3-215	No potential; no habitat present
Chorizanthe robusta var. *robusta*	robust spineflower	FE, CRPR 1B.1	Chaparral(maritime), Cismontane woodland(openings), Coastal dunes, Coastal scrub/sandy or gravelly	Apr-Sep	3-300	Unlikely; marginal habitat present
Eriogonum luteolum var. *caninum*	Tiburon buckwheat	CRPR 1B.2	Chaparral, Cismontane woodland, Coastal prairie, Valley and foothill grassland/serpentinite, sandy to gravelly	May-Sep	3-700	Unlikely; marginal habitat present
Eriogonum umbellatum var. *bahiiforme*	bay buckwheat	CRPR 4.2	Cismontane woodland, Lower montane coniferous forest/rocky, often serpentinite	Jul-Sep	3-2200	Moderate potential; suitable habitat present
Polygonum marinense	Marin knotweed	CRPR 3.1	Marshes and swamps (coastal salt or brackish)	Apr-Oct	0-10	No potential; no habitat present
Potamogetonaceae - Pondweed Family						
Stuckenia filiformis	slender-leaved pondweed	CRPR 2.2	Marshes and swamps(assorted shallow freshwater)	May-Jul	3-2150	No potential; no habitat present
Primulaceae - Primrose Family						
Androsace elongata ssp. *acuta*	California androsace	CRPR 4.2	Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland	Mar-Jun	3-1200	Moderate potential; suitable habitat present
Pteridaceae - Brake Family						
Aspidotis carlotta-halliae	Carlotta Hall's lace fern	CRPR 4.2	Chaparral, Cismontane woodland/generally serpentinite	Jan-Dec	3-1400	Moderate potential; suitable habitat present
Ranunculaceae - Buttercup Family						
Ranunculus lobbii	Lobb's aquatic buttercup	CRPR 4.2	Cismontane woodland, North Coast coniferous forest, Valley and foothill grassland, Vernal pools/mesic	Feb-May	3-470	Moderate potential; suitable habitat present
Rosaceae - Rose Family						
Horkelia cuneata var. *sericea*	Kellogg's horkelia	CRPR 1B.1	Closed-cone coniferous forest, Chaparral(maritime), Coastal dunes, Coastal scrub/sandy or gravelly, openings	Apr-Sep	3-200	Unlikely; marginal habitat present
Rubuaceae - Madder Family						
Galium andrewsii ssp. *gatense*	phlox-leaf serpentine bedstraw	CRPR 4.2	Chaparral, Cismontane woodland, Lower montane coniferous forest/serpentinite, rocky	Apr-Jul	3-1450	Moderate potential; suitable habitat present
Thymelaeaceae - Daphne Family						
Dirca occidentalis	western leatherwood	CRPR 1B.2	Broadleafed upland forest, Closed-cone coniferous forest, Chaparral, Cismontane woodland, North Coast coniferous forest, Riparian forest, Riparian woodland/mesic	Jan-Mar (Apr)	3-425	Moderate potential; suitable habitat present

Appendix C
Explanation of Sensitivity Status Codes

Appendix C: Explanation of Sensitivity Status Codes

Agencies

U.S. Fish and Wildlife Designations (USFWS)

FE = listed as Endangered by the Federal Government
FT = listed as Threatened by the Federal Government

California Department of Fish and Wildlife (CDFW)

SE = Listed as Endangered by the State of California
SR = Listed as Rare by the State of California

California Rare Plant Rank (CRPR)

CRPR 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
CRPR 1B = Plants rare, threatened or endangered in California and elsewhere
CRPR 2A = Plants presumed extirpated in California, but more common elsewhere
CRPR 2B = Plants rare, threatened, or endangered in California, but more common elsewhere
CRPR 3 = Plants about which more information is needed - a review list
CRPR 4 = Plants of limited distribution - a watch list

Threat code extentions and their meanings:

0.1 = Seriouisly threatended in California
0.2 = Moderately threatened in California
0.3 = Not very threatened in California

APPENDIX E-1

Cultural Resources Inventory and Evaluation Report

Technical Report

Chabot Dam Seismic Upgrade
Cultural Resources Inventory and Evaluation Report

Prepared for

East Bay Municipal Utility District
Engineering and Construction Department

August 2013

Prepared by

AECOM
300 California Street, Suite 400
San Francisco, CA 94104

Contents

Table

Figures

Appendices

Acronyms and Abbreviations

API	Area of Primary Importance
B.P.	Before Present
CDSM	Cement Deep Soil Mixing
CEQA	California Environmental Quality Act
CRHR	California Register of Historical Resources
CSUH	California State University, Hayward
cy	cubic yards
DPR	California Department of Parks and Recreation
EBMUD	East Bay Municipal Utility District
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
OHP	California Office of Historic Preservation
PDHD	Potential Designated Historic Property
PRC	Public Resources Code

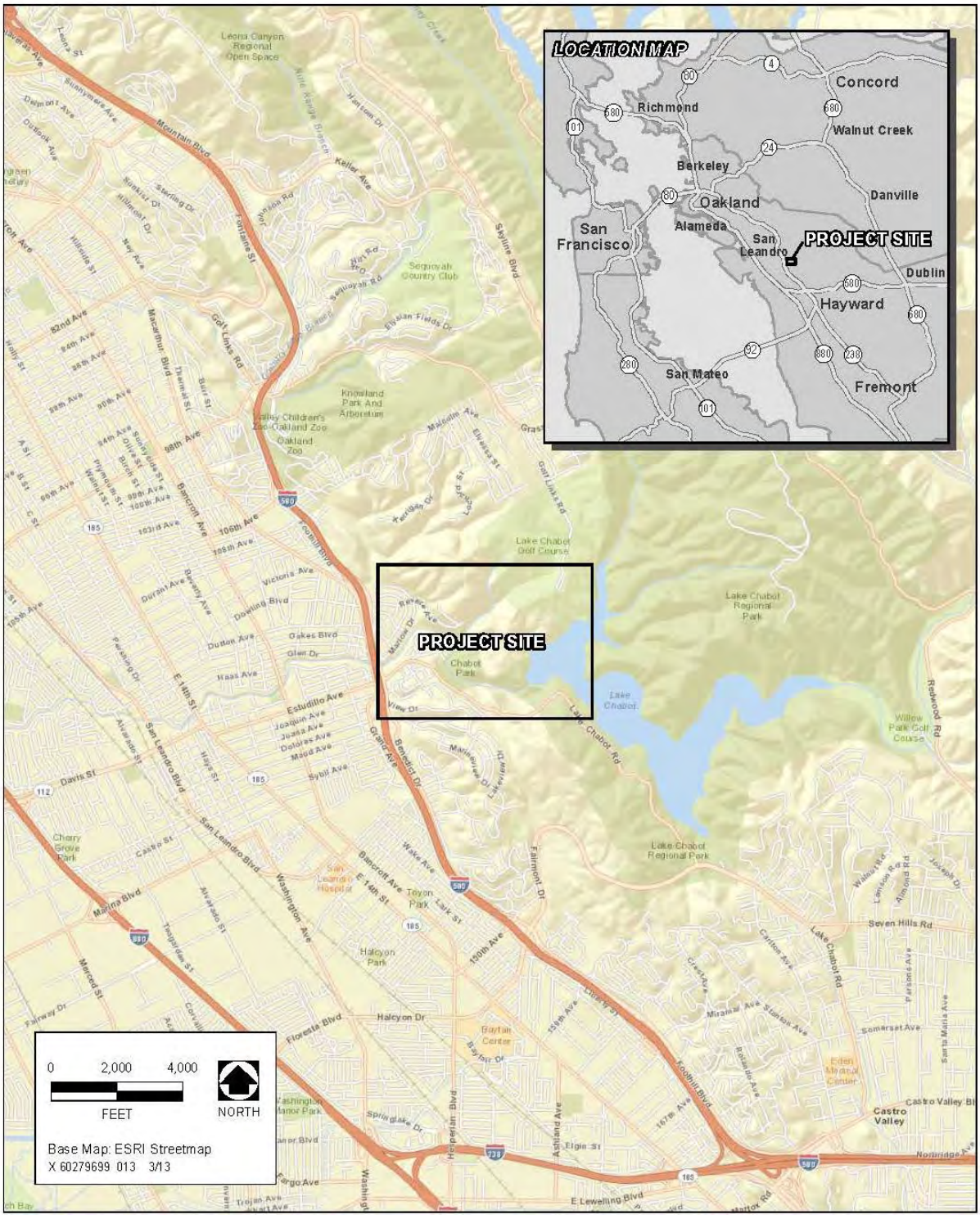
Executive Summary

This document summarizes the methods and results of a cultural resources investigation for the Chabot Dam Seismic Upgrade Project (the proposed project). The project area is located approximately 2 miles east of the City of San Leandro and 10 miles southeast of the City of Oakland in California. The project area is located within the jurisdictions of the City of Oakland, the City of San Leandro, and a portion of unincorporated Alameda County (see Figure ES-1).

The proposed project, a seismic-strengthening of the dam embankment and associated features, has the potential to physically alter structures and sites that may qualify as California Environmental Quality Act (CEQA) historical resources. This technical report inventories and documents CEQA historical resources in the project area (which encompasses the immediate project site but also extends northeast to include Spillway/Tunnel No. 3, as shown in Figure ES-2) so that potential impacts caused by the proposed project can be analyzed in the environment impact report.

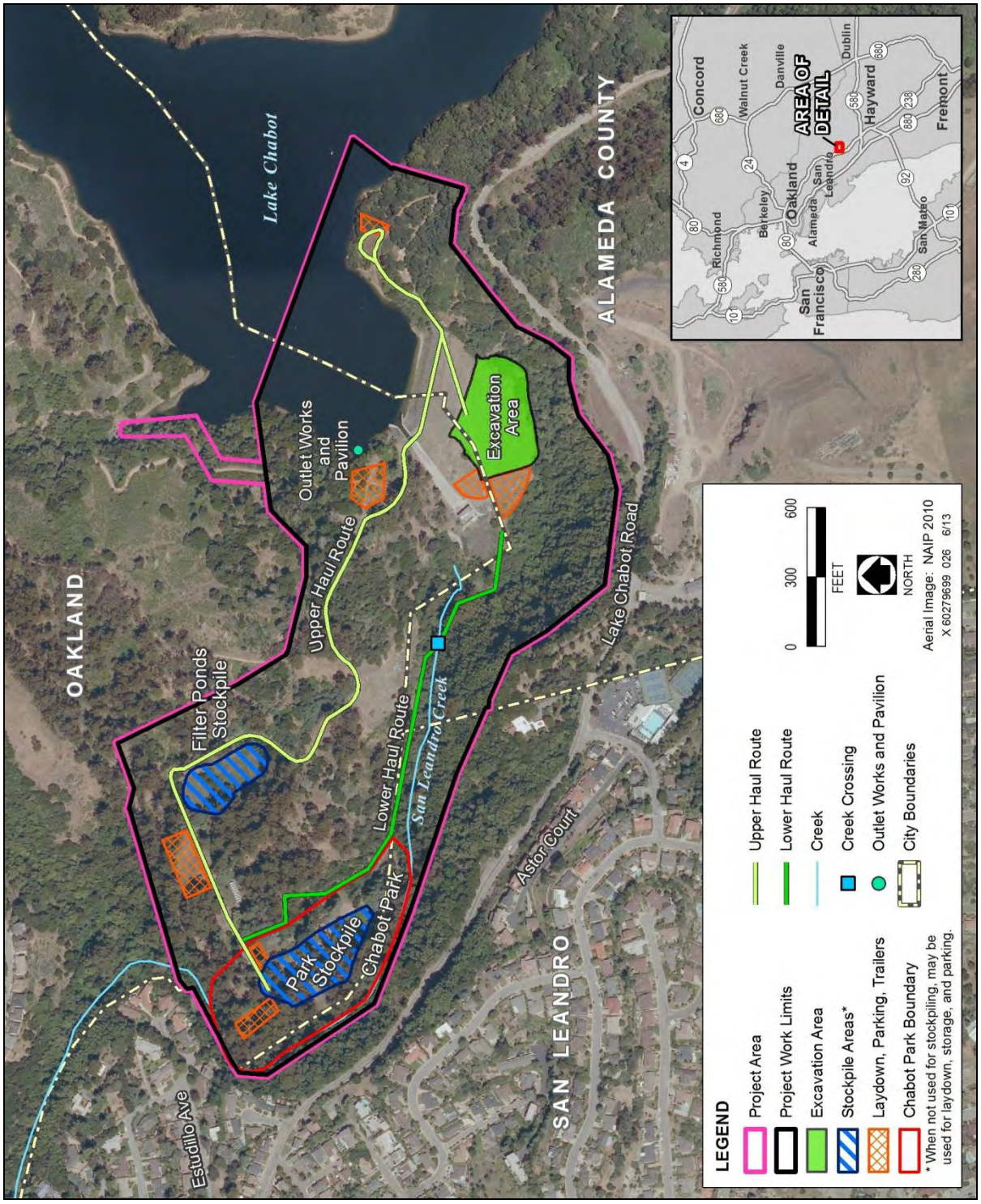
A project team of AECOM cultural resources specialists (qualified in archeology, architectural history, and history) inventoried and evaluated the cultural resources in the project area for the analysis discussed in this technical report. The analysis determined that a variety of historic-era built-environment (buildings, structures, and objects) and archaeological resources are located in the project area, and that Chabot Dam and the associated built-environment and archaeological features appear to meet the criteria for listing in the California Register of Historical Resources (CRHR) as a multiple-component historic district. The character-defining features of the recommended multiple-component historic district are discussed in detail in this report. Because of EBMUD's obligation to protect archaeological sites, the figures showing the locations of archaeological sites have been removed from the version of the Cultural Resources Inventory and Evaluation Report included here for public distribution. The following codes provide justification for not releasing information regarding archaeological sites to the public.

- Government Code section 6254.10; rationale set forth in section 6254 r
- Rationale set forth in cases such as Johnson v. Winter (App.1 Dist1982) 179 Cal.Rptr.585, 127 Cal. App.3d 435 and Black Panther party v. Kehoe (App. 3 Dist.1974)117Cal.Rptr. 106, 42 Cal. App. 3d 645."



Source: Compiled by AECOM in 2013

Figure ES-1 Location and Vicinity Map



Sources: Terra Engineers 2013; EBMUD 2013; Compiled by AECOM in 2013

Figure ES-2 Project Area

1 Introduction

The proposed project includes improvement of embankment soils on the downstream side of Chabot Dam, to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction. Improvement of embankment soils would be performed either by Cement Deep Soil Mixing (CDSM) or conventional earthwork. Both options would require transportation of excavated soil by either the Upper Haul Route or the Lower Haul Route to either the Filter Pond Stockpile or the Park Stockpile. The outlet works would be improved by lining the shaft, moving the valves and controls from the tower to the shaft, relining or installing new outlet pipes from the shaft to the lake, and removing the tower and pavilion.

The proposed project would be subject to state laws and regulations regarding cultural resources. The California Environmental Quality Act (CEQA) is intended to inform government decision makers and the public regarding potentially significant environmental impacts of proposed governmental actions. Public Resources Code (PRC) 21084.1 states, a project that may have a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment. A significant cultural resource, or historical resource, in terms of CEQA is a resource that is listed on or meets criteria for inclusion in the California Register of Historical Resources (CRHR) or the National Register of Historic Places (NRHP). The proposed project would require several permits and agreements from local and state agencies, thus it would require compliance with CEQA and the State CEQA Guidelines.

AECOM has prepared this technical report for the East Bay Municipal Utility District (EBMUD) to gain a better understanding of potential CEQA historical resources in the project area. AECOM cultural resources specialists who meet federal professional qualifications standards in archaeology, architectural history, and history (the project team) performed historical background research on the project area, conducted a reconnaissance-level pedestrian survey of the area, and completed an evaluation of whether surveyed resources meet the eligibility criteria for listing in the CRHR. Historical resources in the project area that potentially could be impacted by the proposed project were documented on California Department of Parks and Recreation 523 (DPR 523) forms. Because of EBMUD's obligation to protect archaeological sites, the figures showing the locations of archaeological sites have been removed from the version of the Cultural Resources Inventory and Evaluation Report included here for public distribution. The following codes provide justification for not releasing information regarding archaeological sites to the public.

- Government Code section 6254.10; rationale set forth in section 6254 r
- Rationale set forth in cases such as Johnson v. Winter (App.1 Dist1982) 179 Cal.Rptr.585, 127 Cal. App.3d 435 and Black Panther party v. Kehoe (App. 3 Dist.1974)117Cal.Rptr. 106, 42 Cal. App. 3d 645."

The research and survey efforts revealed that the Chabot Dam area retains a richly layered history, dating back to the 1870s when construction began on the dam and associated features. A variety of built-environment and archaeological features related to the history of Chabot Dam and its construction are extant, and—in the case of some built-environment features—still are in operation. Some of these features, including the dam itself, the reservoir, Tunnel No. 2 Intake Tower, and the road network would be used or altered as part of the proposed project.

Chabot Dam and the associated built-environment and archaeological features appear to meet the criteria listing in the CRHR as a multiple-component historic district. The California Office of Historic Preservation (OHP) defines a historic district as "unified geographic entities which contain a concentration of historic buildings, structures, or sites united historically, culturally, or architecturally" (OHP 2001). To be eligible for listing in the CRHR, a historic district must meet at least one of the CRHR criteria for significance. As discussed in Section 5, Findings: Lake Chabot Waterworks District, Chabot Dam and its associated features appear to meet all four of the CRHR criteria for significance.

2 Methods

Methods of investigation for this technical report included a records and literature search, conducted at the Northwest Information Center (NWIC) in Rohnert Park, California; archival research at local repositories pertaining to the history of the project area; and a pedestrian survey of the area. Native American consultation also was conducted. Research and evaluation conducted for this technical report complied with the OHP publication, "Instructions for Recording Historical Resources" (OHP 1995). The project team members who worked on this technical report meet the Secretary of the Interior's Professional Qualification Standards for Architectural History, History, and Archeology (NPS 2013).

2.1 Records and Literature Search

Project team members conducted a records and literature search at the NWIC for the project area. Search parameters were defined as 0.5 mile for recorded cultural resources and 1 mile for previously conducted studies. The purpose of the records search was to: determine whether built-environmental or archaeological resources have been recorded within or adjacent to the project area; assess the likelihood for unrecorded built-environment or archaeological resources to be present; and develop a context for the identification and preliminary evaluation of unrecorded built-environmental or archaeological resources. The records search examined the following documents:

- NWIC base maps: U.S. Geological Survey San Leandro 7.5-minute topographic maps, to identify recorded archaeological sites and studies as well as historic period resources of the built environment (building, structures, and objects) within a 0.5-mile radius of the project area
- California Inventory of Historic Resources (OHP 1976)
- California State Historical Landmarks (OHP 1996)
- California Points of Historic Interest (OHP 1992)
- Historic Properties Directory Listing by City (OHP 2013)

2.1.1 Previous Investigations and Reports in the Project Area

The records and literature search conducted at the NWIC resulted in the identification of six previous studies that have been conducted within 1 mile of the project area (see Table 2-1). However, none of these reports on file at the NWIC include portions of the project area. These investigations were conducted between 1982 and 2004, and methods employed included an archaeological survey along systematically placed transects, an archival review, and an intensive pedestrian inventory along transects spaced no more than 10 meters (32.8 feet) apart.

Table 2-1: Previous Investigations within 1 Mile of the Project Area

Northwest Information Center Report Number	Title	Year	Author
5685	*An Investigation of the Cultural Resources within the Anthony Chabot Regional Park, Alameda County, California*	1982	Banks, Peter M.
7730	*Archival Study of the Cultural Resources of Four Candidate Sites for Navy Family Housing in Alameda, Contra Costa, San Francisco, and Marin Counties*	1985	Cartier, Robert; Archeological Resource Management
8891	*Dunsmuir Heights Archaeological Reconnaissance*	1986	Holman Archaeological Consultants
11774	*Archaeological Field Inspection of the Proposed Lake Chabot Terrace Project, San Leandro, Alameda County, California*	1990	Holman Archaeological Consultants
22814	*Cultural Resource Reconnaissance for the Proposed East Bay Regional Park District Fire Mitigation Projects, Alameda and Contra Costa Counties, California*	2000	URS Corporation
30589	*Archaeological Assessment Report, ACSO Law Enforcement Facility Alternative Sites, City of Oakland and incorporated San Leandro, Alameda County*	2004	Busby, Colin; Basin Research Associates

Source: Data compiled by AECOM in 2013

2.1.2 Previously Recorded or Documented Cultural Resources in the Project Area

The record search and additional research at the City of Oakland identified two previously recorded built-environment resources in the immediate vicinity (0.5 mile) of the project area—Lake Chabot Waterworks District and Lake Chabot Clubhouse. The records and literature search identified three previously recorded archaeological resource sites that have been issued Primary numbers: P-01-149, P-01-229, and P-01-235 on file at the NWIC. A final resource, Shovel Hill, has been identified and subjected to preliminary study, but it has not been assigned a Primary number.[1]

[1] No Primary number exists for this resource at the NWIC, possibly because a record, which resulted from a graduate thesis, has not been formally submitted to NWIC.

Lake Chabot Waterworks District

In 1998, the City of Oakland Planning Department identified a historic district at the Chabot Dam facility. The district was named the Lake Chabot Waterworks District, and for the sake of continuity, that name has been used in this technical report. The Lake Chabot Waterworks District was recorded on a DPR 523A Primary Form and was given a local district rating of 1—Area of Primary Importance (API), defined as eligible for the NRHP. The City of Oakland considers the Lake Chabot Waterworks District to be a Potential Designated Historic Property (PDHP), a classification for properties that "warrant consideration for possible preservation," as defined in the Historic Preservation Element of the City of Oakland General Plan (City of Oakland 2013). The Primary Record notes that the features in the Lake Chabot Waterworks District are considered significant "for their remarkable survival and the importance of the Contra Costa Water Company to Oakland's early development" (City of Oakland 1998). The City of Oakland assigned a California Historical Resource Status Code of 7R to the Lake Chabot Waterworks District, meaning that the historic district was identified in a reconnaissance-level survey but was not evaluated formally. Therefore, the City of Oakland did not establish a formal historic district boundary.

Chabot Dam has been the subject of various honorific designations, including a California Point of Historical Interest designation in 1970, and an American Water Landmark designation in 1974 (EBMUD 1978). Chabot Dam and its associated features have not been evaluated previously as potential CEQA historical resources, and they are not listed in a local register, the CRHR, or the NRHP.

Lake Chabot Clubhouse

The one previously recorded built-environment resource within the 0.5–mile buffer zone around the project area was Lake Chabot Clubhouse, located at 11450 Golf Links Road, northeast of Chabot Dam. Lake Chabot Clubhouse was constructed under the auspices of the Works Progress Administration between 1939 and 1940, and was intended for use as a clubhouse for the Lake Chabot Golf Course, Oakland's first municipal golf course. Lake Chabot Clubhouse qualifies as a CEQA historical resource under Section 15064.5(b) of the State CEQA Guidelines because it was determined eligible for the CRHR at the local level under Criteria 1 and 2, as an "example of WPA architecture in Oakland and in the history of city operated recreational facilities" (Hill 2000). Lake Chabot Clubhouse also is significant as a "distinguished example of a Spanish Colonial Revival Style public building" (Hill 2000). Because of the distance from Lake Chabot Clubhouse to the project area, no potential exists for the proposed project to impact this historical resource, and it is not discussed further in this report.

P-01-149

This site was first recorded with the NWIC in 1980 by the Institute of Cultural Resources (Sawyer 1980) and contains the remains of a Chinese worker camp. Named Yema Po, the site is documented as having been occupied between 1874 and 1875, but it may have been in use well into the 1880s. A moderate to heavy surface scatter of nineteenth century Chinese

ceramic, glass, and metal materials as well as faunal remains were observed. First data recovery efforts were undertaken by students from the California State University, Hayward (CSUH, now California State University, East Bay) Anthropology department and resulted in identification of a brick foundation with thermally-altered soil, charcoal, clam shell, and iron artifacts. The Primary Record discusses the roadways that have been constructed across the northern and southern portions of the site, suggesting disturbance of those areas of Yema Po.

The Final Chabot Dam Seismic Upgrade: Alternative Haul Routes Constructability Report describes portions of the site as being considerably disturbed (Terra Engineers 2013). The upper terrace appears to have been periodically graded, possibly as part of EBMUD service road construction and maintenance. Miller (1981) mentioned that this has resulted in the loss of much of the primary deposit. Bulldozing activities have pushed this site's materials over the bluff, where it has been added/mixed with lower terrace deposits. Miller further states that the lower terrace also has been disturbed through the years and, although rich in artifacts, lacks stratigraphic integrity. Intact, primary deposits were noted at deeper levels (below 50 centimeters; 19.6 inches) (Miller 1981). Subsequent archaeological data recovery was performed at P-01-149 in 1981, 1983, and 1994, but updates are not on file at NWIC, and field reports are presently in draft form.

P-01-229

Resource P-01-229 was recorded with the NWIC in 1992 (Bright et al. 1992) and noted to contain the foundations of the Chabot Dam Surveyor's and Supervisor's houses. The resource encompasses an area of approximately 9,530 square meters and extends to depths between 40 to 110 centimeters. Excavations were undertaken by CSUH Anthropology students under the direction of Dr. George Miller in 1992. The most prominent feature at the site was the foundation and back decorative walkway of the Slate House, and from there the site was divided into four loci (A through D). Of these, locus B revealed portions of a brick stairway, and additional bricks and a foundation were noted adjacent to locus C. Three of the loci (A, C, and D) displayed evidence of previous pot holing activity. Artifacts identified included ceramic, glass, and metal objects dating to the late nineteenth and early twentieth centuries. The Slate House was destroyed in the 1950s, with debris pushed over the nearby slope and portions being blended into loci C and D. The record indicates that the site integrity may have been further compromised during the 1980s dam renovation and the construction of paved and dirt roads through the site.

P-01-235

Resource P-01-235 (on file at the NWIC) is located outside of the project area but within the immediate vicinity (0.5 mile). This site was interpreted as being the remains of a kiln, possibly associated with the Yema Po Chinese worker camp (P-01-149, discussed previously) (Gill 1982). Situated on a terrace, the site vicinity was excavated during a 1981 CSUH archaeological field school, led by Dr. George Miller. The site had a three compartmented brick feature, and a surface scatter of ceramic, glass, brick, and metal artifacts also were identified. Evidence of vandalism was observed. The surface collection

material was processed at CSUH, but this additional information was not on file at the NWIC.

Shovel Hill Locus

A review of available literature (not on file at the NWIC) has indicated that a fourth archaeological site is known to be present in the project area. Reported in a 1996 thesis by Jason Coleman, Shovel Hill was found to contain historic material (primarily metal) possibly dating to Chabot Dam's construction. As its name suggests, this resource contained a number of construction-related artifacts (including shovel blades and nails) in various states of preservation. Although the artifacts date to the nineteenth century, research was unable to definitively state whether the identified material indicates site-specific activities and storage, or if this is more representative of a secondary deposition resulting from later EBMUD bulldozing activities. Coleman posits, however, that this may have been an area where Chinese workers excavated soil to be used in dam construction. A pedestrian survey was conducted at this resource and surface artifacts were collected during Coleman's research, but no subsurface testing was performed (Coleman 1996). A high potential exists for additional cultural material to be present at this location.

2.2 Archival Research

To develop a context for the identification and preliminary evaluation of unrecorded built-environment or archaeological resources, the project team conducted archival research in the Oakland History Room at the Oakland Public Library; reviewed EBMUD historical drawing and photograph archives; and checked the Online Archive of California, the Calisphere Digital Archive, the Library of Congress' Chronicling America Historic Newspaper collection, and the California Digital Newspaper Collection (sponsored by the University of California Riverside). Additionally, team members reviewed previous environmental documentation about Chabot Dam and its associated features, including an Environmental Impact Report published in 1978 (EBMUD 1978).

Very little information has been written on the history of Anthony Chabot and his contributions to the development of the San Francisco Bay Area. Consequently, contextual information in this technical report relating to him relies heavily on the work of Sherwood Burgess, whose master's thesis looked at Oakland's early water supply (Burgess 1948), and who wrote a biography of Anthony Chabot (Burgess 1992). An additional source of information on Oakland's early water supply was the book, *Its Name Was M.U.D.: A Story of Water* (Noble et al. 1999). A master's thesis by Jason Coleman, *Meddling with the Past: An Historical and Archaeological Analysis of Metal Artifacts from the San Leandro Reservoir*, provided substantive historical background information on both construction history of Chabot Dam and the life of the Chinese workers who built the dam (Coleman 1996).

2.3 Native American Consultation

On April 5, 2013, correspondence with the NAHC was initiated. In a response dated June 11, 2013, the NAHC indicated that a search of the sacred land file failed to indicate the presence of Native American cultural resources in the project area. A list of Native American individuals/organizations with possible knowledge of specific resources in the area was

included in the correspondence. Consultation letters were sent to these individuals and organizations on July 30, 2013, and follow up phone calls were made as necessary. Documentation of the consultation correspondence is provided in Appendix A.

2.4 Pedestrian Survey

The project team conducted a survey of the project area on February 15, 2013, and March 21, 2013 (see Appendix E for project area photographs). Locations that were surveyed included the Lower Haul Route, the Excavation Area, the base of the spillway, and the stockpile and laydown areas. During the latter field visit, an overall field reconnaissance and visual inspection were conducted in locations outside the project area (see Figure ES-2). This inspection was performed to gain a greater understanding of those features of archaeological and historical interest that may contribute to the general area as a historical district. No cultural material was collected during these surveys. The features were photographed and identified on a map using GPS waypoints. Descriptions and an evaluation of these resources are discussed in Section 5, Findings: Lake Chabot Waterworks District, and they are documented on DPR 523 forms.

For the archaeological survey, transects[2] were placed systematically according to the parcel being inspected. For the Lower Haul Route, transects were positioned on either side of the roadway approximately 10 feet (3.08 meters) from the edge of the pavement where possible and ended at the Excavation Area, located at the route's southeastern terminus. However, proximity to standing water and vegetation often necessitated that these transects veer much closer to the roadway. Visibility generally was moderate to poor because of the presence of vegetative overgrowth. Four east-west trending transects were placed at the Excavation Area and adjacent laydown area (surveyed concurrently), connected to the Lower Haul Route. Much of the interior of this location is covered by vegetation, resulting in poor to moderate visibility. However, visibility tended to be slightly better toward the parcel margins during the field survey.

The archaeological survey of the stockpile and laydown locations involved walking two to three transects spaced approximately 20 feet (6 meters) apart, depending on the size and conditions of the parcel. Three northwest/southeast trending transects were utilized at the Filter Pond stockpile location, while the presence of park furniture and parking lots allowed for walking only two such transects at the Park Stockpile area and adjacent laydown area (surveyed concurrently).

Three east/west transects were placed at the laydown area overlooking the outlet works and its concrete pavilion. The area immediately to the north of this laydown area also was visually inspected, and two east/west transects also were placed at the laydown area at the eastern boundary of the project area footprint.

[2] Often used during archaeological survey, transects are linear sample units that are separated by specified uniform widths. By walking along these lines, the archaeologist conducts a systematic study of the landscape and reduces the potential for sample bias.

3 Evaluation Criteria

The proposed project would be subject to state regulations regarding historical properties. More detailed information for state regulations is discussed next.

3.1 California Environmental Quality Act and State CEQA Guidelines

CEQA, as codified in PRC Section 21000 et seq., is the principal statute governing the environmental review of projects in California. CEQA requires lead agencies to determine whether a proposed project would have a significant effect on historical resources, including archaeological resources. CEQA provides a broad definition of what constitutes a cultural or historical resource. Cultural resources can include traces of prehistoric habitation and activities, historic sites and materials, places used for traditional Native American observances, or places with special cultural significance. In general, any trace of human activity over 50 years in age is required to be treated as a potential cultural resource.

According to the State CEQA Guidelines (Section 15064.5), a resource generally is considered historically significant if it meets the criteria for listing in the CRHR (PRC Section 5024.1; Title 14 California Code of Regulations Section 4852). A historical resource is defined as any site that:

- is listed in or determined to be eligible for inclusion in the CRHR by the State Historical Resources Commission, or is determined to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, or cultural annals of California; or

- is eligible for listing in the CRHR (criteria noted below); or

- is included in a local register of historical resources, as defined by PRC Section 5020.1(k), or is identified as significant in an historical resource survey meeting the requirements of PRC Section 5024.l(g).

For a resource to be eligible for the CRHR, it also must retain enough integrity to be recognizable as a historical resource and to convey its significance. The seven aspects or qualities of integrity are defined as location, design, setting, materials, workmanship, feeling, and association.

A standard age threshold of 45 years is used by OHP for determining potential historical significance. Therefore, any property located in the project area that was built before 1967 may be eligible for listing in the CRHR if it meets any one of the four criteria listed above and retains sufficient integrity to convey its historical significance.

If a lead agency determines that an archaeological site is a historical resource, the provisions of PRC Section 21084.1 and Section 15064.5 of the State CEQA Guidelines will apply. If an archaeological site does not meet the State CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding "unique

archaeological resources." A unique archaeological resource is an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, a high probability exists that it meets any of the following criteria (PRC Section 21083.2[g]):

- contains information needed to answer important scientific research questions and that a demonstrable public interest exists in that information;
- has a special and particular quality, such as being the oldest of its type or the best available example of its type; or
- is directly associated with a scientifically recognized important prehistoric or historic event or person.

Section 15064.5(c)(4) of the State CEQA Guidelines notes that if a resource is neither a unique archaeological resource nor a historical resource, the effects of the project on that resource are not to be considered a significant effect on the environment.

3.2 California State Significance Criteria

The CRHR includes resources that are listed in or formally determined eligible for listing in the NRHP, as well as some California State Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (PRC 5024.1, 14 California Code of Regulations 4850). The CRHR was modeled after the NRHP, and thus it has similar eligibility criteria. To be considered eligible for listing on the CRHR under CEQA, a resource must possess integrity and demonstrate at least one of the following criteria (California Code of Regulations 15064.5):

- be associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
- be associated with the lives of persons important in our past;
- embody the distinctive characteristics of a type, period, region, or method of construction, or represent the work of an important creative individual, or possess high artistic values; or
- have yielded, or may be likely to yield, information important to the prehistory or history of the local area, California, or the nation.

4 Setting

4.1 Prehistoric Context

The earliest, well-documented entry and spread of native peoples throughout California occurred at the beginning of the Paleo-Indian Period (12,000–8000 years Before Present [B.P.]), and social units are thought to have been small and highly mobile. Known sites have been identified in the contexts of ancient pluvial lakeshores and coastlines, as evidenced by such characteristic hunting implements as fluted projectile points and flaked stone crescent forms. Prehistoric adaptations over the ensuing centuries have been identified in the archaeological record by numerous researchers working in the Bay Area since the early 1900s, as summarized by Fredrickson (1974) and Moratto (1984).

Few archaeological sites have been found in the Bay Area that date to the Paleo-Indian Period or the subsequent Lower Archaic (8000–5000 B.P.) time period, probably because of high sedimentation rates and sea level rise. Archaeologists, however, have recovered a great deal of information from sites occupied during the Middle Archaic Period (5000–2500 B.P.). By this time, broad regional subsistence patterns gave way to more intensive procurement practices. Economies were more diversified, possibly including the introduction of acorn-processing technology, and populations were growing and occupying more diverse settings. Permanent villages that were occupied throughout the year were established, primarily along major waterways. The onset of status distinctions and other indicators of growing sociopolitical complexity mark the Upper Archaic Period (2500–1300 B.P.). Exchange systems became more complex and formalized, and evidence of regular sustained trade between groups was more prevalent.

Several technological and social changes characterize the Emergent Period (1300–200 B.P.). Territorial boundaries between groups became well established, and it became increasingly common for distinctions in an individual's social status to be linked to acquired wealth. In the latter portion of this period (500–200 B.P.), exchange relations became highly regularized and sophisticated. The clamshell disk bead became a monetary unit, and specialists arose to govern various aspects of production and material exchange.

The Middle Archaic, Upper Archaic, and Emergent Periods can be broken down further, according to additional cultural manifestations that are well represented in archaeological assemblages in the Bay Area:

- *Windmiller Pattern* (5000–1500 B.P.) peoples placed an increased emphasis on acorn use and on a continuation of hunting and fishing activities. Ground and polished charmstones, twined basketry, baked clay artifacts, and worked shell and bone were hallmarks of Windmiller culture. Widely ranging trade patterns brought goods in from the Coast Ranges and trans-Sierran sources as well as closer trading partners.

- The *Berkeley Pattern* (2200–1300 B.P.) peoples exhibit an increase in the use of acorns as a food source, compared to what was seen previously in the archaeological record. Distinctive stone and shell artifacts differentiate this period from earlier or later cultural expressions. Burials were most often placed in a tightly flexed position and frequently included red ochre.

- The *Augustine Pattern* (1300–200 B.P.) period reflects increasing populations, resulting from more intensive food procurement strategies, as well as from a marked change in burial practices and increased trade activities. Intensive fishing, hunting and gathering, complex exchange systems, and a wider variety in mortuary patterns are all hallmarks of this period.

4.2 Ethnographic Context

When European explorers arrived in the San Francisco Bay area in 1769, they encountered approximately 40 tribelets speaking one of four dialects. In the East Bay, an Ohlonean[3] dialect was spoken, with groups settled along the shorelines and into the Livermore Valley (Banks 1982). The primary social organization was centered around the patrilineal family unit, with a focus on patrilocality[4], and sovereign tribelets[5] were often defined by territorial holdings (Banks 1982; Bennyhoff 1977; ESA 2006).

The region's ecological diversity allowed for a varied subsistence economy, derived from fishing (principally salmon) and hunting (deer and rabbit). A number of plant resources were gathered, such as buckeye, elderberries, strawberries, wild carrots, and manzanita berries. Acorns, however, made up the main dietary staple and were leeched of tannins and ground into a meal before consumption (Banks 1982; ESA 2006; LSA Associates 2009). Mortars, metates, lithic tools, tule balsa, and basketry have been identified in the ethnographic record as being important components of the Ohlone household.

Initially assumed to have been a constituent dialect of Ohlonean[6], a Bay Miwok dialect also was spoken by groups occupying areas from the San Francisco Bay's eastern shoreline into Contra Costa County (Banks 1982; Milliken et al. 2009). The Bay Miwok were the first of the Eastern Miwok to undergo missionization, with the first recorded Bay Miwok converts coming from the Saclan tribelet to Mission San Francisco in 1794 (Levy 1978:8.398–413). The first baptisms of Bay Miwok occurred between 1805 and 1812.

Both the Ohlone and Bay Miwok communities suffered greatly under the mission system, where traditional practices were prohibited, and epidemics killed thousands in the first half of the nineteenth century.

---

[3] Formerly titled "Costanoan," descendants of this language group generally prefer the term "Ohlone."

[4] In cultural anthropology, patrilocality refers to the structured rule that a man remains in or near his father's residence on reaching maturity and brings his wife to live with him after marriage. Therefore, under this system, daughters leave their ancestral homes to reside with or near their husband's families.

[5] Initially defined by A. L. Kroeber, the term tribelet is used to describe two or more villages (or sometimes a larger single village) that together formed an autonomous group, possessing a single speech dialect and cultural uniformity.

[6] Kroeber included this dialect in the Costanoan (now Ohlone) linguistic group. It was corrected by M. Beeler in 1955.

4.3 Historic Context

4.3.1 Development of Alameda County and Oakland

Before European arrival and settlement, the San Francisco Bay Area was occupied by Native Americans known as the Ohlone. Ohlone territory stretched from the San Francisco Bay at the north to the southern tip of Monterey Bay, extending 60 miles inland. In 1772, the Spanish, led by Juan Bautista de Anza, began exploring the inner coastal region of California. Later, Spanish settlers established a permanent presence through the construction of missions and presidios. When Mexico became independent from Spain in 1822, the Spanish missions were secularized and their lands were redistributed to private individuals by way of land grants. Large parcels were developed into cattle ranches, maintained by Mexican grantees.

After the Mexican-American War, the area became part of the United States in 1848, and in 1853 the boundaries of Alameda County were established. Early European immigrants who settled in the area after the gold rush were Dutch, Anglo, and Portuguese. Unincorporated Alameda County remained rural until after World War II, when smaller communities such as Ashland, Castro Valley, Cherryland, Fairview, Hillcrest Knolls, and San Lorenzo were developed to meet the demands of the large influx of people who settled in the area for work (Alameda County Community Development Agency 2012). The City of Oakland was incorporated in 1852. Between then and the late 1860s, when the Central Pacific Railroad made Oakland the western terminus for the transcontinental railroad, Oakland's population boomed from just over 1,500 residents to the second-largest population in the state in 1880 (CSUN 2013).

4.3.2 Chabot Dam and Reservoir

Anthony Chabot

Anthony Chabot was born in Quebec, Canada in 1813. After only a year in college, Chabot moved to the United States, where he spent time working as a farm hand, tanner, plantation overseer, and a steamboat operator. Chabot returned to Quebec for a short time before again moving to the United States, settling in California in 1849 after hearing reports of the gold rush (Burgess 1992). Chabot made a fortune mining gold in Nevada City and operating sawmills in Sierra County. He became a master at conveying water to dry mining areas, digging ditches and flumes to unearth large amounts of earth and float logs. Chabot often is credited for inventing hydraulic mining, although he developed only the basic principles of the process. Fellow miner Edward Mattison used Chabot's basic principles and made the hydraulic mining process work (Starr 2005).

Chabot left the gold country in 1856 and moved to San Francisco, where, along with two other men, he founded the city's second water company (but the first to pipe drinking water to residents). The San Francisco City Water Works Company was founded in 1857, and drinking water flowed to the residents of San Francisco for the first time in 1858. Chabot served as superintendent and president of the company until 1862, around the same time that the Spring Valley Water Company was forming a monopoly on water service to San Francisco. After leaving San Francisco and spending time on the East Coast, Chabot set his

sights on the East Bay, founding the Contra Costa Water Company in 1866 with his brother Remi and associate Henry Pierce. The goal of the Contra Costa Water Company was to provide a reliable drinking water source to residents of Oakland (Burgess 1992).

Chabot's first major water-control and conveyance project in the East Bay was Temescal Dam, completed in 1869 (Noble et al. 1999). Temescal Reservoir provided drinking water to Oakland residents until 1876, when Chabot completed San Leandro Dam (the original name of the present-day Chabot Dam), now widely regarded as his largest and most significant engineering project (Burgess 1992). While he was working on the Temescal and Chabot dams, Chabot helped found the San Jose Water Company in 1866, the Vallejo Water Company in 1867, and the Napa City Water Company in 1870. Chabot's other major water projects in the San Francisco Bay Area included construction of Lexington Reservoir near Los Gatos and a dam and catchment reservoir in Vallejo (also known as Lake Chabot). Anthony Chabot retained an interest in nearly all of his water companies throughout his life. He served as president and superintendent of the Contra Costa Water Company and was majority owner of the company until about 1876. He was a member of the board of directors until he died in January 1888.

Chabot's efforts on non-water projects were equally notable. In 1885, he helped found the California Cotton Mills in East Oakland, which helped spur the cotton industry in California. Chabot invested in and helped oversee the fledgling Judson Manufacturing Company in Emeryville, which later became the Judson Steel Company, one of the longest operating steel plants on the West Coast. He helped found the Pioneer Pulp Company in Placer County and invested heavily ($100,000) in the Puget Sound Iron Company. Chabot's interest in agriculture led him to cultivate one of the first successful cranberry bogs in the state of Washington. He owned a profitable 1,200-acre ranch near Pleasanton and is purported to have had an extensive collection of rare and exotic plants at his various "Oriental" gardens (Burgess 1992).

Chabot also was notable as a philanthropist, donating large sums of money every year to underserved communities, especially women and children. In 1887, Chabot founded an organization to house and care for homeless, widowed, or divorced women (and their children). Oakland Women's Sheltering and Protection Home, which Chabot funded for $100,000, was his largest philanthropic project. He also donated the land for Fabiola Hospital in Oakland, which was later taken over by Kaiser Permanente. He was almost wholly responsible for construction of Chabot Observatory and Science Center in the Oakland Hills, at one time the largest observatory in the world to be owned by a city. At his death, Anthony Chabot was worth over $1.3 million.

Early Water Control and Conveyance in Oakland

Throughout the middle part of the nineteenth century, water in California was controlled by individuals and private corporations. An Act passed by the California Legislature in April 1858 allowed private companies to purchase or condemn land for the purpose of supplying a local government with water. The unintended consequence of the Act was that corrupt individuals, who incorporated as water companies, purchased large tracts of land under the guise of water development and ultimately used the land for profit-generating real estate

sales (*Spring Valley Water-Works v. Schottler and others, 110 U.S. 347, 4 S.Ct. 48, 28 L.Ed. 173, February 4, 1884*). Other individuals and corporations had good intentions of providing drinking water to Oakland, but years of droughts deterred their plans. Water development in the East Bay continued to be erratic until 1866, when a larger number of water companies formed and began developing land, with legitimate plans to control water in Oakland. Anthony Chabot was part of that group.

When Chabot returned to the San Francisco Bay Area in 1865, after a brief stay on the East Coast, Oakland had grown from a dusty village of 1,500 residents during the gold rush to a thriving city with paved streets and double the population, although drinking water was still supplied by means of private wells, generated by windmills (Burgess 1992). Chabot saw a profitable opportunity in providing a modern and reliable source of drinking water to Oakland. In spring 1866, during a search for streams and watersheds in the East Bay Hills, Chabot considered three reliable watersheds: San Leandro Creek, stretching from the Moraga Valley to the San Leandro Bay (where Chabot Dam eventually would be built); Sausal Creek, 3 miles east of Oakland; and Temescal Creek, 4 miles north of Oakland. Chabot viewed Temescal and Sausal creeks as smaller watersheds that could provide drinking water quickly and San Leandro Creek as a more complicated project, but one that would be a permanent source of water for Oakland.

After forming the Contra Costa Water Company, Chabot took advantage of his strong political connections in Oakland—cultivating friends like city councilman Frank K. Shattuck and Mayor-elect John Dwinelle—and by July 1866, his company received a nearly exclusive franchise to lay water mains in Oakland streets "for the purpose of supplying pure, fresh water to the inhabitants" (Burgess 1992). The only catch was that the company had to lay 3,000 feet of pipe and provide water within 18 months. The Contra Costa Water Company completed the commission by April 1867, but the drinking water came from a small private well, not one of Chabot's major water projects (Noble et al. 1999).

Chabot's first water control and conveyance project was a small dam and reservoir in Temescal Canyon, north of downtown Oakland. Chabot obtained the water rights to Temescal Creek from a local landowner in May 1867. The water from Temescal Creek was piped to Oakland residents in summer 1867, although residents complained of low pressure and impure water. To improve pressure, Chabot built a reservoir on Hospital Hill, completed in 1868, with a capacity of one million gallons. Chabot then purchased a property higher on Temescal Creek and lengthened the water mains to Oakland, which also helped increase flow and pressure. These temporary measures provided relatively good drinking water to Oakland residents until a much larger dam was built, farther up Temescal Creek.

To build Temescal Dam, Anthony Chabot chose a site in Temescal Canyon where the valley was about 700 feet wide. Chabot and his chief engineer, William Boardman, started construction on Temescal Dam in late 1867. According to Boardman, Chabot oversaw all aspects of the dam construction and engineering, and was at the project site almost every day (Burgess 1992). Boardman merely assisted Chabot with drawings. Chabot used techniques that he mastered while mining to construct the dam, such as using ditches and flumes to move water and earth to and from the construction site. Soon after Temescal Dam was completed in 1869, it became evident that the drinking water reserves at Temescal

Reservoir were insufficient for the rapidly growing City of Oakland. The transcontinental railroad arrived in Oakland in 1869, and the city's population burgeoned from 10,000 to 25,000 in 1875 (Burgess 1992).

Chabot Dam and Associated Features: Construction History

Anthony Chabot started planning Chabot Dam even before Temescal Dam was completed. Biographer Sherwood Burgess calls it his *raison d'être* (Burgess 1992).[7] After surveying San Leandro Creek for a potential dam site, Chabot chose the location of present-day Chabot Dam (the dam was originally called San Leandro Dam). The narrow gorge with high valley walls was ideal and allowed for a narrower dam. Construction materials such as clay and rock were plentiful. Most importantly, a perennial flow of water existed and the watershed area was 50 square miles. Lake Chabot (Chabot Reservoir) at Chabot Dam is fed by many smaller creeks, but its main tributaries are San Leandro Creek from the east and Grass Valley Creek from the north.

In August 1873, Chabot formed a dummy incorporation called the California Water Company, to obtain the water rights and land for Chabot Dam. Working under the 1858 California Water Act that allowed corporations to purchase or condemn land for water conveyance, Chabot started the lengthy and somewhat contentious process of buying up tracts or negotiating with owners to use their land in exchange for water (Burgess 1992).

Anthony Chabot worked closely with his chief engineer William Boardman to design Chabot Dam and its associated features, although Boardman stated that Chabot was the driving force behind the project (Burgess 1948):

> Mr. Chabot, the projector of this enterprise, was a man of great individuality and the work I did for him was merely in an engineering capacity. He was the man that told you where the dam would be built, and how he wanted it built, and he paid for it. An engineer would tell him what he thought he ought to do, but Mr. Chabot would tell him what he would have done. He was a man of excellent judgment. He was about as much of an engineer there as I was.

Construction started on Chabot Dam and its associated features in early 1874. The first task was to build the dam.

Chabot Dam

To build a foundation for the dam, workers dug a 90-foot-wide trench, stretching 300 feet between the north and south walls of the valley. The digging stopped when the workers reached bedrock, moving approximately 16,000 cubic yards (cy) of earth in the process. Within the excavated trench, the workers carved three parallel ditches into the bedrock, running them north-south along the length of the trench. The trenches were filled with concrete to prevent future seepage under the dam, and the entire pit was covered with a thick layer of concrete. The workers then began the process of re-filling the trench with an earth and clay mixture, using a compaction technique by which horses and wagons

[7] *Raison d'être* is a French term that is used colloquially when describing a crowning achievement or a capstone project.

pounded the earth into a watertight paste. This continued until, layer on layer, the excavated trench was filled and the dam rose from the valley floor.

When it was completed in fall 1875, the dam measured 215 feet from base to peak (Schuyler 1886). From 1875 to 1888, the dam embankment was reinforced with additional material, using water to move material down sluices that were constructed on the hillsides north of the dam, a technique that Chabot mastered while mining for gold (Burgess 1992). Other devices used by the workers in construction of the dam included two-wheeled carts, wheel barrows, and mule-drawn wagons. Approximately 600,000 cy of earth were moved during the construction project (Coleman 1996). Evidence of these early earth-moving efforts is still visible today, in the deep ruts and trenches along the hillsides north of the dam.

Chabot Reservoir

To build the reservoir, the workers cleared vegetation east of the dam, in the area where San Leandro Creek would pool. "For months the Chinese employed by the company industriously cleared from the hillside skirting the reservoir every vestige of vegetable matter, burning the same so completely that a rim like a black ribbon extended all around the lake" (Oakland Daily Transcript 1876). When the dam was completed and the reservoir was filled with water, 330 acres of land, including 4 miles of San Leandro County roads, were flooded.

Spillway No. 1

After the dam was completed, the workers constructed spillways and a series of tunnels to deal with overflow and connect the reservoir to water mains that would provide drinking water to Oakland. The original spillway was completed in early 1885 (EBMUD 1969). The spillway, also known as a wasteway, was carved out of the hill where it connected to the north side of the dam. The spillway initially was 50 feet wide and was sheathed in masonry. Water poured through the spillway, connected to a wood flume, and ended up in a catch basin. The spillway reportedly was reconstructed in 1891, when the dam and spillway heights were raised (EBMUD 1969). In 1914, the People's Water Company, overseeing operations at Chabot Dam at the time, installed a structure with stop logs to control water at the spillway (EBMUD 1969) (A similar weir structure still exists at the entrance to Tunnel No. 3.). In 1925, the East Bay Water Company reconstructed the timber chute, connected to the spillway.

Between 1932 and 1933, the spillway underwent a major reconstruction, which modified the channel lining, the transition element and tunnel, stilling basin, and trashracks (EBMUD 1969). A wooden pedestrian bridge was added in 1933. Underneath the bridge, water spilled over the lip of the spillway, flowed down steep masonry dissipater steps, and then entered a narrow, 16-foot-deep, 172-foot-long, concrete-lined channel. The channel connected to a tunnel, bored through the hill west of the dam, and finally to a 10-foot-diameter steel pipe, where the water was released over a 20-foot-wide, 16-foot-high concrete apron, and eventually poured into the San Leandro Creek below (EBMUD 1978). The San Leandro Creek originally contained riprap, to assist in dissipating the water flow. A timber bridge, added in 1933, was replaced with a concrete bridge in 1949. The entire spillway was removed and reconstructed between 1979 and 1980.

Tunnel No. 1

Workers also constructed three tunnels through bedrock in the hillsides north of the reservoir—3,100 feet of tunnels in all. Stone for the tunnels was quarried from a location on San Leandro Creek, approximately one-half mile upstream from the dam, and was floated down barges on the reservoir, once it was full of water. Tunnel No. 1 (also known as Lower Tunnel) initially was used during construction of Chabot Dam, to divert water away from construction activities. The original location of Tunnel No. 1 was very close to the north side of the dam, and it was bored through material too unstable to support construction. The tunnel location was moved early in the construction process, and an 856-foot tunnel was built in the location of the present-day tunnel.

The tunnel originally was lined with redwood timbers and later was reinforced with brick (EBMUD 1969). Water entered Tunnel No. 1 through a 4-foot-wide, 50-foot-long wooden stand pipe in the reservoir (now submerged). The water flowed down the stand pipe to a 500-foot-long pipe, 8 feet in diameter, running southwest toward San Leandro Creek. The pipe ended in an open flume, dumping into the creek. On the hillside above Tunnel No. 1, a control tower, set above a 100-foot shaft outfitted with control shafts, was used to divert water through two 24-inch-diameter pipes, which fed into water mains. Tunnel No. 1 was taken out of use in 1938, when EMBUD inserted a concrete and steel bulkhead at the tunnel inlet to prevent water from entering.

Tunnel No. 2 and Tunnel No. 2 Intake Tower

When it became obvious that Tunnel No. 1 was inadequate, workers constructed Tunnel No. 2. This tunnel was 410 feet long and ended in a wasteway chute. Tunnel No. 2's configuration was changed slightly between 1885 and 1892, when Tunnel No. 2 became a supply line for a new water main to Oakland. Water entered Tunnel No. 2 through a 35-foot tunnel at the base of Tunnel No. 2 Intake Tower, and then flowed down a 60-foot shaft to a 9-foot-wide masonry tunnel, which then flowed to a 24-inch pipe or was discharged into a flume leading to San Leandro Creek. Water in the pipe flowed to a filtering basin, completed in 1892.

Tunnel No. 2 Intake Tower was outfitted with control shafts that were connected to valves at the inlet tunnel to control the flow of water into Tunnel No. 2. Early photographs of the structure show that it was a rectangular tower with a simple wooden roof; portions of the base were brick, and the gate valve shaft stems sat on timber-block seats. In late 1923, the East Bay Water Company completed a set of drawings for substantive modifications of Tunnel No. 2 Intake Tower (construction likely was completed in 1924). The new structure was constructed on top of the old Intake Tower. The floor was raised approximately 4.5 feet, and the gate valve shaft stems were extended nearly 6 feet. A roof structure was added to the tower. It was made up of twenty-four 10-foot by 15-foot-tall Tuscan columns, supporting a 5-foot-high entablature. The entablature was a simple architrave, decorated with dentil molding, a frieze with rectangular panels, two on each façade, and an unornamented cornice. Two lamp posts were constructed above the Intake Tower on the hill to the west. The new Intake Tower was just under 23 feet wide and was 15 feet tall.

EBMUD modified the tunnel inlet headworks in 1938–1939. The west portal of Tunnel No. 2 was covered with earth between World War II and 1964 (EBMUD 1969). In late 1946, a fish screen was added to the 36-inch intake pipe at Tunnel No. 2 Intake Tower. The screen was a box-shaped frame, filled with copper-mesh screens. The frame structure was affixed to the intake pipe and set on a built-up rock foundation on the reservoir floor. In 1955, new steps, walkways, and railings were constructed along the pathway leading to the Intake Tower (EBMUD 1969).

Spillway No. 3 and Tunnel No. 3

A spillway and tunnel system were constructed 1,300 feet northeast of Chabot Dam when it became apparent that the main spillway (Spillway No. 1) was overburdened during heavy rains. Tunnel No. 3 was used as a wasteway when reservoir levels rose beyond capacity. A newspaper article from 1888 describes the construction activities (Daily Alta California 1888):

> The Contra Costa Water Company has a large force of men engaged in driving a tunnel...through the hills at the west of Lake Chabot. The tunnel's inlet is twenty-three feet below the high-water surface of the lake. It is proposed to utilize this tunnel as an overflow outlet and also to introduce a large pipe from which the main supply of water will be drawn. There is a small valley at the exit of the tunnel which will be used for a settling reservoir. Its capacity will be five or six millions of gallons. It is proposed to have the tunnel finished by April and the settling reservoir by July.

In addition to Chinese labor, tunnel excavation was aided by the use of a railroad mining car. When the spillway and Tunnel No. 3 were completed in 1889, the spillway was controlled by a masonry weir with stop logs. Water flowed down a series of masonry steps and made a sharp left turn into the Tunnel No. 3 inlet. Tunnel No. 3 was over 1,433 feet in length, the longest of all three tunnels. It was bored through the northern side of the hillside and exited into a concrete and masonry-lined channel, leading to San Leandro Creek to the west. With the exception of minor modifications over time, including a new pedestrian bridge on top of the control weir, Spillway No. 3 and Tunnel No. 3 have undergone very few changes since 1889.

Filtration System

When drinking water was first sourced from Chabot Reservoir, water entered Tunnel No. 1 through the inlet opening at the bottom of the reservoir. A crude filtration system at the Tunnel No. 1 inlet removed large matter from the water but did nothing to improve taste and odor. Complaints by consumers in Oakland ultimately led to a modern filtration system.

The original filtration system, completed in 1888, involved a small dam and reservoir northwest of Chabot Dam. A pipe connected to Tunnel No. 2 moved water to the filtering reservoir, where water was filtered through a large screen. Later, Hyatt Water Filters, highly

advanced structures at the time, were installed for additional filtering.[8] A second filtration reservoir was constructed below the first, and an additional three Hyatt filters were installed (EBMUD 1969). A newspaper article from the period described one of the filtering basins (San Leandro Reporter 1889):

> The basin into which the water is now filtered is somewhat egg-shaped, of very large size, and wholly made of cement. The water is let into the basin by a filter over 100 feet in length which is surmounted by a lattice-work painted white. The water falls in miniature cascades about four feet high and over a hundred feet wide. The water comes out of these in a spray and as it flows down the side of the basin is as clear and pure as crystal. The basin has a bridge reaching to its center where there is an octagonal platform with a pagoda roof above; on this platform are the cranks by means of which the water is turned into or shut off from the pipes.

In 1907, the People's Water Company revised the filtration system and changed the upper reservoir to a settling basin. The system was modified again in 1931, and it remained in service until the late 1930s, when filtering operations stopped. Filtering resumed in the early 1940s and continued until the mid-1960s (EBMUD 1978).

Surveyor's House/Supervisor's House, Auxiliary Buildings, and Other Structures

Historic photographs and drawings reveal that a number of buildings and structures were present northwest of Chabot Dam (). These included a house (circa 1888) near the original Spillway No. 1, a small office, a large barn, and a shop. The residence and associated structures were occupied by the European-American engineers and supervisors who oversaw construction activities (Coleman 1996).

Later, a second house was added to the west of the first house. At some point, this residential area became home to supervisors, charged with overseeing operations at the dam. The supervisor's residence along with a garage, water supply, road, parking lot, and garden were demolished in 1950 (EBMUD 1969).

Historic maps and engineering drawings suggest the presence of a blacksmith shop (Coleman 1996), where the blacksmiths likely repaired horseshoes; forged nails; and sharpened and repaired the plows, shovels, and other tools used in construction of the dam, roads, and tunnels. Other than the name of Dennis Nolan, a Euro-American blacksmith, little is known of the men employed at this shop.

The maps and drawings also indicate that a wheelwright shop was located in the area. This shop would have been where carts—presumably horse-drawn and used for earth-moving activities during dam construction—were manufactured. Wheelwright shops often were staffed with highly skilled carpenters who typically worked in close association (sometimes under the same roof) with blacksmiths. The location of this wheelwright shop is presently unclear (Coleman 1996). The only wheelwright known to have been employed by the Contra Costa Water Company was a Euro-American individual named James Dorris.

[8] Hyatt Water Filters are large, metal filters developed by an inventor named John Wesley Hyatt in the late nineteenth century. Water is filtered through the structure as it percolates down through a filtration mixture composed mostly of sand.

An early site plan drawn by William Boardman in 1888 shows three small buildings or structures located near San Leandro Creek; the historic use of these features is unknown. In addition to the dam and water conveyance structures, workers constructed approximately 15 miles of roads, bridges, and fencing during construction of Chabot Dam and its associated features. (Coleman 1996)

Water Use History

In May 1876, Chabot Reservoir contained over 3 billion gallons of water and provided water service to Alameda County for the first time. By 1886, workers had laid over 5,600 feet of 24-inch mains and 25,314 feet of mains from Chabot Reservoir to High Street in Oakland (Coleman 1996). Chabot Reservoir continued to provide drinking water to the City of Oakland until about the 1960s, when the reservoir was assigned to standby service, only to be used for emergencies and during extreme drought conditions (EBMUD 1978).

The water at the reservoir was changed to standby status for a number of reasons. Beginning in 1929, water from the Mokelumne River in the Sierra Nevada mountains was channeled to the East Bay via the Mokelumne Aqueduct, providing a reliable source of good drinking water from the Pardee Dam Reservoir in the Sierra Nevada foothills. With this new source in place, Chabot Reservoir was no longer needed as a potable water source and permanent drinking-water operations at Chabot Dam ceased (Chabot Reservoir was used as a temporary drinking water source during severe droughts in the 1960s and 1970s) (EBMUD 1978). Another reason for its change in status was the "relatively high turbidity and organic content" of water at Chabot Reservoir, creating a higher potential for problems with water quality.

In June 1966, Chabot Reservoir opened to the public under the auspices of the East Bay Regional Park District. Since then, its water has been used for recreational fishing and boating. The northern area of the lake that is nearest to the Chabot Dam has always been a restricted area (EBMUD 1978).

Chinese Workers

In the mid-nineteenth century, a large influx of Chinese men, many of whom were from the Pearl River Basin, immigrated to America (principally California) in an effort to flee economic and political strife in China. An estimated 48 percent of Chinese immigrants to the United States returned to their homeland after only a short stay, a number not unlike that observed for many European immigrants during the same time period. Although the number of Chinese living in other states was increasing, the 1870 census indicates that approximately 78 percent resided in California. Most Chinese worked for mining and railroad companies where they made up about 90 percent of the labor force (Voss and Allen 2008), but they also were employed by the agricultural and maritime industries (Coleman 1996). Voss and Allen (2008) suggest that by 1870, one-tenth of California farm hands were from China, and by 1886, this number had increased to about 90 percent.

Initially, employment was obtained largely under a contract system, similar to indentured servitude (Coleman 1996). This "coolie system" usually was forced on Chinese immigrants as a form of gambling debt repayment or even through kidnapping, and the work was for a

10-year period under fixed, lower than average wages. By 1853, this system was abandoned for lack of enforcement (Coleman 1996).

As "aliens ineligible for citizenship," most Chinese immigrants were restricted from owning land. However, through partnering with legal, land-holding farmers or through tenant farming, many became property owners (Voss and Allen 2008). Also, old claims, abandoned on the assumption that the mines were spent, were acquired by members of the overseas Chinese community and yielded large quantities of gold under their diligent oversight. Such successes, however, only fueled the anti-Chinese sentiment held by Euro-Americans of the time (Coleman 1996). Discrimination continued to increase, and by the 1880s, the Chinese Exclusion Act was passed, prohibiting the immigration of new Chinese workers and preventing those that already were here from sponsoring the immigration of their families (Voss and Allen 2008:11). This Act was not repealed until after World War II (Voss and Allen 2008).

Many Chinese workers resided in Alameda County and worked on Chabot Dam and its associated features during their construction. Although the exact number of Chinese workers employed by Anthony Chabot is unknown, estimates range as high as 800, but it likely was far less (around 100) at any given time (Banks 1982; Beggs 1997; Coleman 1996; Miller 1981). Dubbed "shovel men" and responsible for moving over 600,000 cy of soil beginning in 1874, these workers earned less than a half-day's pay compared to their counterparts of European descent (Beggs 1997).

The contributions of the Chinese workers to Chabot Dam and its water conveyance system were substantial. They performed vegetation clearing and grubbing on about 330 acres before reservoir construction. Approximately 3,100 feet of tunnels were created, and two of these (Tunnels 1 and 2) were created in the initial dam construction phase, between 1874 and 1875 (Miller 1981). Miller (1981) suggests that, although part of the construction was performed with mechanical assistance, the majority of the work was done by hand. Miller further mentions that some activities were aided by machinery, but "two-wheeled carts, wheel barrows, and mule drawn wagons" and the "coolie double basket shoulder yoke" probably were employed as well. After the reservoir was filled with water and nearly 4 miles of roads in the vicinity were flooded, Chinese workers were responsible for constructing about 15 miles of new roadways and bridges in the area (Miller 1981).

During construction of Chabot Dam and its associated features, Chinese workers camped on a small plateau near Spillway No. 1 (Miller 1981). Records indicate that the campsite, also referred to as Yema Po (meaning "Wild Horse Slope" in Cantonese) was occupied between 1874 and 1875 (see P-01-149, above). However, Chinese workers are thought to have been present in the vicinity until at least 1889 (Coleman 1996; Miller 1981), and it remains unclear whether these workers continued to camp at Yema Po, or if auxiliary encampments have yet to be identified. In addition to providing the work force for vegetation clearing, earth moving, and construction, the Chinese workers also may have made up a portion of the skilled work force, assisting or performing masonry and blacksmithing tasks, as evidenced by some of the tools and implements that have been identified at Yema Po (Coleman 1996).

5 Findings: Lake Chabot Waterworks District

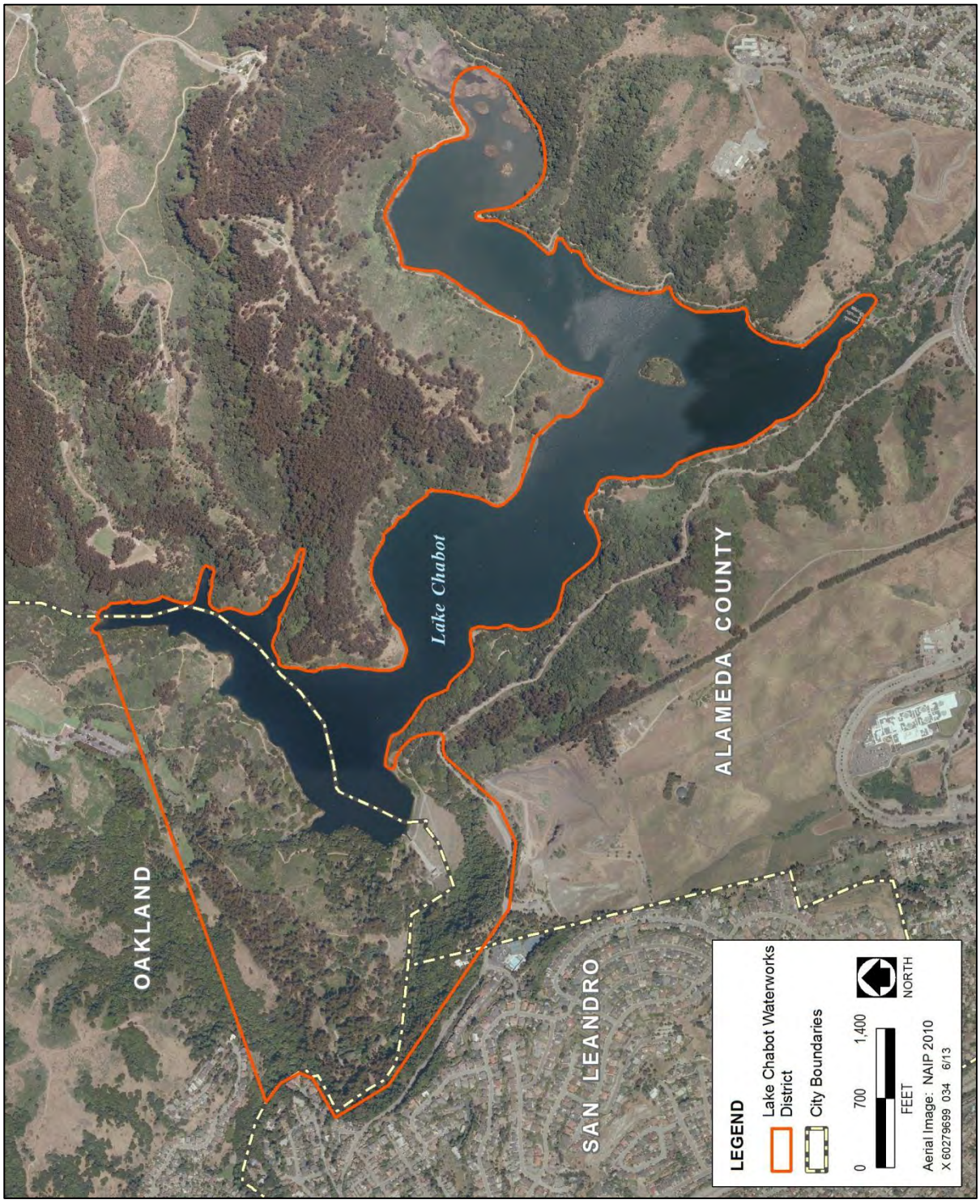
Research and survey efforts for this technical report revealed that the Chabot Dam area retains a richly layered history, dating back to the 1870s when construction began on the water system. The historic Chabot water system includes the Chabot Dam and Reservoir, various structures related to water control and conveyance, and three previously identified archaeological resources in the immediate Chabot Dam vicinity: P-01-149 (site of the Yema Po Chinese worker camp, P-01-229 (where facility managers lived and worked), and P-01-235 (a second site related to Chinese workers). A fourth archaeological resource, Shovel Hill, has been identified and subjected to preliminary study, but has not yet been assigned a Primary number. Many of the historic built-environment and archaeological features related to the history of the Chabot water system and its construction are extant, and—in the case of some built-environment features—still are in operation. Some of these features, including the dam itself, the reservoir, and Tunnel No. 2 Intake Tower, are located in the project area.

Chabot Dam and its associated built-environment and archaeological features appear to meet the criteria for a multiple-component historic district, to be listed in the CRHR at the local level of significance (see Figure 5-1). The OHP defines a historic district as "unified geographic entities which contain a concentration of historic buildings, structures, or sites united historically, culturally, or architecturally" (OHP 2001). A historic district must meet at least one of the CRHR criteria for significance. As discussed next, Chabot Dam and its associated features appear to meet all four of the CRHR criteria for significance.

5.1 Physical Descriptions

Chabot Dam and its associated features are located in the foothills east of San Leandro and span three local jurisdictions, including the City of Oakland, the City of San Leandro, and unincorporated Alameda County (Castro Valley). The boundary line between Oakland to the north and San Leandro to the south bisects Chabot Reservoir. The Lake Chabot Waterworks District is surrounded by high hills, ranging from 200 to 300 feet. One of the most important natural features of the Lake Chabot Waterworks District is San Leandro Creek. San Leandro Creek runs south from the Upper San Leandro Reservoir, through the Oakland hills east of San Leandro, and southwest into the Chabot Reservoir. Beyond (west of) Chabot Dam, San Leandro Creek runs northwest through a narrow gorge, full of dense vegetation. The area surrounding Chabot Dam is accessible to the public through the entrance to Chabot Park, a small municipal park located 700 feet downstream and west of Chabot Dam.

The Lake Chabot Waterworks District is crisscrossed by historic roadways and trails, including Estudillo Avenue, which runs west from the entrance to Chabot Park to a fork where it branches to the north, providing access to Grass Valley (now the Lake Chabot Golf Course) and east to the Supervisor's Knoll and Chabot Dam. Estudillo Avenue also branches southeast along San Leandro Creek, where it extends toward the downstream face of Chabot Dam. Two major hiking trails—Bass Cove Trail and West Shore Trail—extend along the shore of Chabot Reservoir to the northeast and southeast.



Source: Compiled by AECOM in 2013

Figure 5-1 Lake Chabot Waterworks District

For a historic water control and conveyance system like that at Chabot Dam, four types of resources are important to recognize: archaeological elements; built environment resources; natural landscape features; and designed landscape features. Archaeological elements represent material remnants of past construction and operation periods. Built environment features in the Chabot Dam project area relate to the constructed elements that controlled, conveyed, and filtered water. Natural landscape features are those that were necessary for the creation of a dammed reservoir as well as the operation of the water control and conveyance system. Designed landscape features relate to improvements for the beautification and enhancement of the area. Descriptions of individual features related to the Lake Chabot Waterworks District follow.

5.1.1 Archaeological Features

Results of the records search indicate that four archaeological resources are present at Chabot Dam and Reservoir. Three of these (P-01-149, P-01-229, and P-01-235) are on file at NWIC, and the fourth resource (Shovel Hill) was identified during a 1996 review of metal artifacts associated with the previous work performed at P-01-149 (Coleman 1996). Field verification of these resources' existing conditions is detailed below. Information obtained during the previously conducted research and the AECOM field visit assisted in the creation of an archaeologically sensitive areas map (redacted from this document).

P-01-149

Located on a small plateau was a campsite for Chinese laborers who worked on construction of Chabot Dam. The exact boundaries of P-01-149 are unclear, and the documented boundaries possibly are much larger. Resource P-01-149 is documented as being occupied between 1874 and 1875, but it may have been in use well into the 1880s. As previously stated, it is possible that the Chinese workers may have made up a portion of the skilled work force in addition to providing the labor needed for vegetation-clearing, earth-moving, and construction activities (Coleman 1996).

Previous data recovery efforts identified a brick foundation with thermally altered soil, charcoal, clam shell, and iron artifacts. A moderate to heavy surface scatter of nineteenth-century Chinese ceramic, glass, and metal materials, as well as faunal remains, were observed.

The majority of the available data recovered from P-01-149 is still in draft form. Information obtained during these investigations—including the possible configuration and parameters of the encampment as well as potential auxiliary encampments—has the potential to contribute to the resource's existing body of knowledge. During survey efforts for this technical report in 2013, the location of P-01-149 was not re-identified within the project area.

P-01-229

Resource P-01-229 encompasses an area that measures approximately 9,530 square meters and extends to depths between 40 and 110 centimeters. This area contained a number of buildings and structures—including the Chabot Dam Surveyor's house (construction date unknown, possibly circa 1888); the Supervisor's house (1904)[9]; a garage; a large barn; an office; a shop; and landscape features such as a fish pond, water supply, gardens, roads, and driveways—that were associated with construction of Chabot Dam and subsequent management of the site. Documentation is unclear about when the earlier buildings and structures were demolished, but the Supervisor's house along with a garage, water supply, road, parking lot, and garden are known to have been demolished in 1950 (EBMUD 1969).

As discussed Section 2.1.2, Previously Recorded or Documented Cultural Resources in the Project Area, Resource P-01-229 was recorded with the NWIC in 1992 (Bright et al. 1992) and was described as being the foundations of the Chabot Dam Surveyor's and Surveyor's houses. In 1992, CSUH anthropology students conducted an excavation under the direction of Dr. George Miller. This excavation resulted in the identification and recording of multiple features and historic artifacts, as well as evidence of previous pot holing.

During the field survey for this technical report, multiple features were identified that were briefly described on the Primary Record currently on file at the NWIC. Numerous building foundations, a decorative walkway possibly associated with the Supervisor's house (Bright et al. 1992), and debris (related to the destruction of the Supervisor's house) were observed. An office and a fish pond also are thought to have been located here. The Primary Record is relatively sparse, and the presence or absence of some of these features could not be confirmed during the project team's field survey. Features or structural elements related to the first residence on this site (Surveyor's House) were not identified.

P-01-235

Resource P-01-235 has been interpreted as being the remains of a kiln, possibly associated with the Yema Po Chinese worker camp (P-01-149, discussed previously) (Gill 1982). A 1981 excavation by a CSUH archaeological group, led by Dr. George Miller, identified a three-compartmented brick feature and a surface scatter of ceramic, glass, brick, and metal artifacts. The site record indicates Chinese ceramics that were contained within the historic artifact assemblage obtained from this resource create an association between this resource and nearby P-01-149. Although this resource was not field-verified, additional cultural material and/or features possibly may be present.

Shovel Hill Locus

Approximately 600,000 cy of earth were moved during construction of Chabot Dam and its associated features (Coleman 1996), and evidence of these early earth-moving efforts still can be observed today on Shovel Hill. Deep ruts and trenches are visible throughout the

[9] This building has been referred to by multiple names, including the Superintendent's House and the Slate House. This document uses the term Supervisor's House, matching what is listed on the Archaeological Site Survey Record for Resource P-01-229 on file at the NWIC.

hillsides north of the dam. Workers moved large amounts of earth using wooden sluices that were constructed on the hillsides to the northwest of Chabot Dam. Other tools and devices used to move earth included two-wheeled carts, wheel barrows, and mule-drawn wagons.

When Shovel Hill was investigated (Coleman 1996), the site contained a number of construction-related artifacts (e.g., shovel blades and nails) in various states of preservation. Although the artifacts date to the nineteenth century, research was unable to definitively state whether the identified material indicates site-specific activities and storage, or if this is more representative of a secondary deposition resulting from later EBMUD bulldozing activities. A pedestrian survey was conducted at the site and surface artifacts were collected during Coleman's study, but no subsurface testing was performed (Coleman 1996).

Historic Period Trash Dump

During pedestrian reconnaissance, a historic-period dump—containing artifacts including construction-related materials and personal use items (i.e., cosmetic and alcohol bottles)—was observed (outside of the project area). Initial inspection suggests that this material dates to the early to mid-1900s. Although the historic-period dump is located in the vicinity of Shovel Hill, it includes artifacts that are distinct from those described by Coleman (1996); therefore, it is considered to be a separate resource. Because this resource is located outside of the project area, a detailed inspection was not performed. However, the initial observation indicated that relatively little intrusion of modern cultural material exists.

Other

The pedestrian study also included a survey of the excavation area at the southeastern terminus of the Lower Haul Route. Cultural material of undetermined date was observed and included unidentifiable corroded metal, a rusted metal can, concrete rubble, small base/footing, and brick fragments. Recently deposited modern refuse also was present. Isolated artifact finds (principally corroded metal, brick, and concrete, with lesser amounts of weathered milled lumber) also were identified throughout the Lake Chabot Waterworks District.

5.1.2 Built-Environment Features (Buildings, Structures, and Objects)

Chabot Dam

Construction of Chabot Dam was completed in fall of 1875. The dam is constructed of a compacted clay and earth mixture on a concrete base (Schuyler 1886), measures approximately 135 feet high and 500 feet long, and has a 30-foot-wide crest. The dam crest elevation is 250 feet and the spillway crest elevation is 227 feet (EBMUD and URS 2005). The dam contains over 600,000 cy of fill material. The upper portion of the upstream face of the dam is reinforced with grouted riprap. The downstream face of the dam is crisscrossed by cuts, berms, and lined ditches. The dam's spillway structure at the northwestern corner of the dam has an 8-foot-tall control weir at the upstream end, a 520-foot-long concrete chute set at a 45-degree angle to the dam axis, and a dissipation structure at the downstream end (EBMUD 1978). The vertical walls on either side of the spillway chute vary from 8 to 31 feet

in height. A concrete road and bridge on the dam crest allow vehicles and pedestrians to cross the dam and spillway.

The dam has been raised and reinforced multiple times over the years. Between 1892 and 1895, the upstream face of the dam was reinforced with sandstone riprap to prevent erosion. In 1912, the dam crest was raised to 245 feet and a concrete parapet was added to the dam crest (EBMUD 1969). In 1964, 5,000 cy of fill were added to the downstream face of the dam to improve stability, and surface and subsurface drains were constructed. In the 1950s or 1960s, an access road and concrete bridge were constructed on the top of the dam wall. Between 1967 and 1969, the access road was constructed southwest of the dam, just north of Lake Chabot Road. A "borrow area" west of the new access road was used to provide fill material for road construction. A second borrow area, east of Chabot Dam, provided source material for construction of the downstream face of the dam. Drawings note that connections between the slopes and existing ditches were broken. New, unlined ditches were constructed against the dam's downstream face. Existing culverts were cleaned out or plugged.

Between 1979 and 1980, Chabot Dam underwent major modification to increase the structural integrity of the dam and spillway to withstand the maximum credible earthquake (EBMUD 1978). As part of the project, the existing spillway was demolished and rebuilt north of the dam wall. Material from the demolished spillway was used as additional embankment material. It was added to the crest and downstream face of the dam, raising the dam crest by 5 feet and widening it by 40 feet. Berms were constructed on the dam's downstream face to control erosion and provide access to new drainage ditches. A new road and bridge were constructed on the new dam crest and spillway. In 2013, during the field survey, Chabot Dam appeared to be in good condition, generally remaining unchanged since its 1979 through 1980 modifications.

Chabot Reservoir

The 315-acre Chabot Reservoir was completed in fall 1875, and by May 1876, it contained over 3 billion gallons of water. To build the reservoir, workers cleared vegetation east of the dam, in the area where San Leandro Creek would pool. When the dam was completed and the reservoir was filled with water, 330 acres of land—including 4 miles of San Leandro County roads—were flooded. Chabot Reservoir is surrounded by high hills, ranging from 200 to 300 feet. Before San Leandro Creek reaches Chabot Reservoir, it passes through the Oakland Hills, east of San Leandro.

Spillway No. 1

The original spillway was completed in early 1885, and it underwent many subsequent modifications and upgrades until it was demolished in 1979–1980. During that period, a new spillway was carved out of the hill on the north side of the dam, removing approximately 100,000 cy of rock and soil. The new spillway structure has an 8-foot-high control weir at the upstream end, a 520-foot concrete chute set at a 45-degree angle to the dam axis, and a dissipation structure at the downstream end (EBMUD 1978). The vertical walls on either side of the chute vary from 8 to 31 feet in height. The new spillway structure and associated features were completed and put into service in May 1981.

Tunnel No. 1

Tunnel No. 1 was constructed in the late 1870s. The 856-foot-long tunnel is located in the hillside northwest of Chabot Dam. Tunnel No. 1 (also known as Lower Tunnel) was initially used during construction of Chabot Dam to divert water away from construction activities. The tunnel inlet is located in the floor of Chabot Reservoir. The tunnel outlet could not be located during the reconnaissance survey. On the hillside above Tunnel No. 1, a control tower (set above a 100-foot shaft outfitted with control shafts) was used to divert water through two 24-inch-diameter pipes, which fed into water mains. Tunnel No. 1 was taken out of use in 1938, when EMBUD inserted a concrete and steel bulkhead at the tunnel inlet to prevent water from entering.

Tunnel No. 2 and Tunnel No. 2 Intake Tower

Construction of Tunnel No. 2 began in 1877. The tunnel is located north of Chabot Dam and is over 400 feet in length. Water enters Tunnel No. 2 through a 35-foot-long tunnel at the base of the Tunnel No. 2 Intake Tower, flows down a 60-foot-long shaft to a 9-foot-wide masonry tunnel, and connects to a 24-inch-diameter pipe or discharges into a wasteway chute leading to San Leandro Creek. The 24-inch-diameter pipe originally directed water to a filtering reservoir that was constructed in the late 1880s or early 1890s. The Tunnel No. 2 outlet could not be located during the reconnaissance survey.

The Tunnel No. 2 Intake Tower has a brick and concrete base with an open pavilion above. The pavilion is square in plan, measures 23 feet by 23 feet, and is 15 feet tall. The pavilion roof is held up by twenty-four 15-foot-tall Tuscan columns that support a 5-foot-tall entablature. The entablature is a simple architrave, decorated with dentil molding, a frieze with rectangular panels—two on each façade—and an unornamented cornice. Two lamp posts are located above the intake tower on the hill to the west. The floor of the pavilion is outfitted with control shafts that are connected to valves at the inlet tunnel to control the flow of water into Tunnel No. 2.

The original Tunnel No. 2 Intake Tower was a rectangular tower with a simple wooden roof; portions of the base were brick, and the gate valve shaft stems sat on timber-block seats. In late 1923, the East Bay Water Company completed a set of drawings for substantive modifications of the Tunnel No. 2 Intake Tower (construction likely was completed in 1924). The existing intake tower (which is described in the preceding paragraphs) was constructed on top of the old intake tower. In 1955, new steps, walkways, and railings were constructed along the pathway leading to the intake tower (EBMUD 1969). Currently, the Tunnel No. 2 Intake Tower is in fair condition. Aside from minor modification over time, the appearances of Tunnel No. 2 and the Tunnel No. 2 Intake Tower have not changed since 1924.

Spillway No. 3 and Tunnel No. 3

Tunnel No. 3, which was completed in 1889, is located in the hillside north of Chabot Dam. The tunnel extends over 1,433 feet in a westerly direction and empties into a concrete and masonry-lined channel that leads to San Leandro Creek. It is the longest of the three tunnels at Chabot Dam. Spillway No. 3 is located at the end of an inlet north of Chabot Dam and serves as a control structure, regulating overflow water entering Tunnel No. 3. Spillway

No. 3 consists of a 13-foot-wide masonry weir made up of stone abutments and piers with stop logs used to control water. The abutments and piers are constructed of coursed stone masonry and the south-facing stones exhibit decorative rock-faced tooling. After water passes through the control weir, it flows down a series of masonry steps into the Tunnel No. 3 inlet. The Tunnel No. 3 outlet is distinguished by an arched opening, surrounded by a combination of course, rock-faced stone. A sign above the arched opening says, "Contra Costa Water Company, 1889," and includes the names of the company's board members. With the exception of minor modifications over time, including a new pedestrian bridge on top of the control weir, Spillway No. 3 and Tunnel No. 3 have undergone very few changes since 1889, and they appear to be in fair to good condition.

Filtration System

The Chabot Dam filtration system consists of two filtration reservoirs and nine Hyatt Filters that are located northwest of Chabot Dam. The original filtration system, which was made up of a small dam and reservoir located southwest of Chabot Dam—was completed in 1888. A pipe connected to Tunnel No. 2 moved water to the filtering reservoir, where water was filtered through a 100-foot-long screen. Later, Hyatt Filters—highly advanced structures at the time—were installed for additional filtering. A second filtration reservoir was constructed below the first at an unknown date, and an additional three Hyatt filters were installed (EBMUD 1969). The original filtration basin had a bridge extending to the center; it featured an octagonal structure with a pagoda-style roof that contained water control cranks (San Leandro Reporter 1889). In 1907, the filtration system was modified and the upper reservoir became a settling basin. The system was modified again in 1931, and it remained in service until the late 1930s, when filtering operations were stopped. Filtering resumed in the early 1940s and continued until the mid-1960s (EBMUD 1978). Sometime in the last 20 years, both the settling basin and filtration basins were filled in with earth and all appurtenant structures were demolished. Although originally enclosed by a building that has been demolished, the nine Hyatt filters are still extant.

Other Features Related to Water Conveyance and Control

Other features related to water-conveyance and control include a large masonry tank on the hill northwest of the Supervisor's house, and a system of tunnel outlets/inlets and a large sunken basin lined with rock to the north of the Supervisor's house. The purpose and use of these features is undetermined.

In 1969, an emergency blowoff structure was constructed to the west of the Tunnel No. 2 portal, northwest of the spillway apron. The structure was constructed of concrete. An abutment of sacked-concrete riprap was stacked against the west face of the blowoff structure.

Visible small-scale features related to water conveyance include pipes and gutters, located throughout the Lake Chabot Waterworks District site.

Roads

In addition to the dam and water conveyance structures, Chinese workers constructed approximately 15 miles of roads, bridges, and fencing (Coleman 1996). Major features of the road system at Chabot Dam, including the existing configuration, have been in place since at least the 1880s. A bridge over San Leandro Creek has existed at the entrance to Chabot Dam since the dam's original construction. The original bridge was replaced with a pre-cast concrete bridge in 1986 (Todaro 2013).

5.1.3 Landscape Features

Natural Landscape

The Chabot Dam location was chosen specifically for its natural landscape features. The narrow gorge with high valley walls was ideal and allowed for a narrower, but higher dam. The location also was ideal for its abundance of construction materials, such as clay and rock. Most importantly, the location was chosen for the perennial flow of San Leandro Creek and a watershed area of 50 square miles. Without these natural landscape features, Chabot Dam would have never been realized.

Designed Landscape

Features related to the designed landscape include ornamental plantings, walls, and curbs. Interpretive signage at the site notes a Hayward Journal announcement in 1868 that Anthony Chabot planned to encircle the yet-to-be-built Chabot Reservoir with exotic trees, including walnuts, hickory nuts, butternuts, and other nut trees. EBMUD records show a series of landscape efforts beginning in 1886, when 200,000 trees were planted at the site (EBMUD 1969). The interpretative signage notes that in the 1910s, Frank C. Havens of People's Water Company planted millions of eucalyptus seedlings around the site. In 1922, additional trees were planted around the reservoir. In 1923, nearly 300 trees more were planted around the dam and the filtration center. In 1944, records show that 1,000 cork oaks were planted. (This presents conflicting information because only one cork oak exists and the interpretive panel at the site suggests that it may have been planted in the 1890s, by a Portuguese "vaquero" named Frank Silva who worked for the Contra Costa Water Company.) In 1955, the filtration plant was landscaped again (EBMUD 1969).

Rubble-rock walls and embankments exist in various locations throughout the Chabot Dam water system, including the hillside immediately north of Tunnel No. 2 Intake Tower. Some of the rock walls, rock gutters, and pipe culverts were added in 1940 (EBMUD 1969).

5.2 Significance of the Lake Chabot Waterworks District

As mentioned previously, Chabot Dam and its associated built-environment and archaeological features appear to meet the criteria for listing in the CRHR as a multiple-component historic district (see Figure 5-3). A historic district must meet at least one of the CRHR criteria for significance. Chabot Dam and its associated features appear to meet all four of the CRHR criteria for significance. The CRHR criteria were applied to determine

whether the built-environment and archaeological features associated with the Chabot water system qualify as eligible for listing in the CRHR.

Criterion 1: Properties associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage

Theme: Community Planning and Development

Area: Alameda County

Significant Association: Water infrastructure and the provision of drinking water to the early expansion of residential and commercial development in Oakland

Period of Significance: 1874 (beginning of construction on Chabot Dam) to 1960s (change in use from drinking water source to emergency standby water source)

Significance Summary: Historical data collected for this technical report uncovered information that links the Chabot water system to an important event or pattern of events in the history of the Bay Area. Under CRHR Criterion 1, the Chabot facility appears to have played an important role in the history of water control and conveyance in the East Bay. The Chabot water system served as a reliable drinking-water source for the City of Oakland from 1876 until it was assigned emergency standby status in the 1960s. As part of the infrastructure that was critical to the City of Oakland's development, the Lake Chabot Waterworks District is significant in local history. The Lake Chabot Waterworks District also is significant for its association with Chinese workers in nineteenth century California, specifically the hundreds of Chinese workers who constructed Chabot Dam and its associated features.

Very few new intrusions have been added to the historic district, and the relationships between its components retain the ability to convey the district's significance. Therefore, the Lake Chabot Waterworks District appears to qualify for listing in the CRHR under Criterion 1 at a local level of significance.

Character-Defining Features: All functional components of the water control and conveyance system that were operational at any time during the period of significance (1874 through the 1960s) and retain the ability to convey significance. Under this criterion, continued function is of greater importance than original appearance, in recognition of the need for engineering systems such as this to evolve over time in response to operational improvements, to continue to serve the purpose for which they were historically established.

Criterion 2: Properties associated with the lives of persons important in our past

Theme: Community Planning and Development

Area: San Francisco Bay Area

Significant Association: Anthony Chabot

Period of Significance: 1874 (beginning of construction on Chabot Dam) to 1888 (Anthony Chabot's death)

Significance Summary: The Lake Chabot Waterworks District is highly significant for its association with Anthony Chabot, one of the San Francisco Bay Area's most influential early residents. Chabot was instrumental in providing the first drinking water services to San Francisco, Oakland, San Jose, and Vallejo. He is credited with inventing the principles of hydraulic mining. He helped found some of the Bay Area's earliest industrial businesses and is credited for helping start Washington State's now-famous cranberry industry. Furthermore, he was a generous philanthropist, donating large sums of money to organizations supporting people in need, most notably women and children. The Chabot water system is significant for its association with Anthony Chabot because it is Chabot's most complex water supply system and the one he worked on directly and until his death. The Chabot water system does an excellent job of representing the magnitude and area of influence that Anthony Chabot had on Bay Area communities.

Very few new intrusions have been added to the historic district, and the relationships between its components retain the ability to convey the district's significance. Therefore, the Lake Chabot Waterworks District appears to qualify for listing in the CRHR under Criterion 2 at a local level of significance.

Character-Defining Features: All functional components of the water control and conveyance system that were constructed or operational at any time during the period of significance (1874–1888) and that retain the ability to convey significance.

Criterion 3: Properties that embody the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values

Theme: Engineering

Area: Alameda County

Significant Association: Earthen dam construction methods or techniques; early water control and conveyance structures

Period of Significance: 1874 (beginning of construction on Chabot Dam) to 1889 (completion of Tunnel No. 3 and Spillway No. 3)

Significance Summary: Chabot Dam and its associated built-environment features are an outstanding extant example of a late-nineteenth century earthen dam water system in the San Francisco Bay Area. Anthony Chabot applied unique construction techniques in building Chabot Dam, such as using horses to compact the earth and clay building materials and hydraulics to sluice material down to the dam site. Other features of the system were critical to the overall functionality of the dam and reservoir as a water supply facility.

Very few new intrusions have been added to the historic district, and the relationships between its components retain the ability to convey the district's significance. Therefore, the Lake Chabot Waterworks District appears to qualify for listing in the CRHR under Criterion 3 at a local level of significance.

Character-Defining Features: All functional components of the water control and conveyance system that were operational at any time during the period of significance (1874 to 1889) and that retain the ability to convey significance.

Criterion 4: Properties that have yielded, or may be likely to yield, information important to the prehistory or history of the local area, California, or the nation

Theme: Historic Archaeology, Ethnic Heritage, Social History, and Industry

Area: Alameda County

Significant Association(s): Chinese workers working/living conditions; presence or absence of the Chinese labor force in skilled industries; industrial superintendents working/living conditions; non-Chinese workers

Period of Significance: 1874 (beginning of construction on Chabot Dam) to 1960s (change in use from drinking water source to emergency standby water source)

Significance Summary: Historical data collected for this technical report revealed areas that contain resources dating to both the initial construction and ongoing maintenance of Chabot Dam and Reservoir. Under CRHR Criterion 4, the Chabot Dam and Reservoir area appears to be important for its ability to yield additional information regarding methods employed during dam construction, the living conditions of various people on-site at that time (including Chinese and Euro-American workers and supervisors), and the tools and items used during both work and daily life.

Although some disturbance of archaeological features has occurred throughout the area, the relationships between its components retain the ability to convey historic importance. Therefore, the Lake Chabot Waterworks District has yielded, and has the potential to yield, information important to the history of the local area, California, and the nation. Therefore, Chabot Dam and its associated archaeological features appear to qualify for listing in the CRHR under Criterion 4.

Character-Defining Features: Chinese workers living area(s), construction debris and landscapes, foundations, habitation debris, work environments (may coincide with the constructed features).

5.3 Contributing Elements of the CRHR-Eligible Lake Chabot Waterworks District

5.3.1 Archaeological Resources

In the Chabot Dam and Reservoir area, information about working and living conditions may be gleaned from both previously documented and as yet to be recorded cultural resources. The archaeological record also can add to the existing data set regarding everyday lives of laborers who constructed it as well as that of the more affluent workers and residents. Much of what is known about these people primarily concerns male workers. However, the archaeological record also has the potential to aid in understanding the everyday lives of women at Chabot Dam and Reservoir. Historic documents demonstrate the potential for additional resources to be present in the Lake Chabot Waterworks District that remain unrecorded.

The historical record indicates additional features that may have been built during the initial construction era and later during the period of significance. However, speculation remains as to whether some of these resources actually were built, merely were planned, or if any remaining evidence of them exists. Because any site that yields information or that has the potential to yield information may be considered significant, this section discusses both previously documented resources as well as those thought to be present in the Chabot Dam and Reservoir area.

P-01-149

Resource P-01-149 has been the subject of multiple field investigations and field schools, and has been disturbed by various construction projects. The Primary Record for P-01-149 notes that roadways have been constructed across the northern and southern portions of the site, suggesting disturbance of those areas. The Final Chabot Dam Seismic Upgrade: Alternative Haul Routes Constructability Report describes portions of the site as being considerably disturbed (Terra Engineers 2013). The upper terrace appears to have been periodically graded, possibly as part of EBMUD service road construction and maintenance. Miller (1981) mentioned that this has resulted in the loss of much of the primary archaeological deposit. Bulldozing activities have pushed the site's materials over the bluff, where it has been added/mixed with lower terrace deposits. The lower terrace also has been disturbed through the years and, although rich in artifacts, lacks stratigraphic integrity. Intact, primary deposits were noted at deeper levels (below 50 centimeters; 19.6 inches) (Miller 1981).

Subsequent archaeological data recovery was performed in 1981, 1983, and 1994. However, the majority of the available data recovered from P-01-149 is still in draft form. Information obtained during those investigations—including the possible configuration and parameters

of the encampment as well as potential auxiliary encampments—contains the potential to contribute to this resource's existing body of knowledge.

Despite the aforementioned data recovery efforts and disturbance caused by construction, P-01-149 retains limited integrity. Because of its strong association with the history of Chinese workers and construction of Chabot Dam and its associated features, the site is able to convey significance under Criteria 1 and 4.

P-01-229

Resource P-01-229 has been subjected to numerous disturbance episodes in recent history. In the 1950s, when the Supervisor's House and other features were demolished, debris was pushed over the nearby knoll, resulting in materials being blended into multiple loci. Additional disturbance occurred in 1992, when the site was the subject of an archaeological excavation that included data recovery. The site's integrity likely was further compromised during the 1980s dam construction project, with construction of paved and dirt roads through the resource.

Despite the aforementioned data recovery efforts and disturbance caused by construction, P-01-229 has the potential to provide additional information regarding the locations and footprints of the residences and structures described in historical documentation. Therefore, P-01-229 is able to convey significance under Criteria 1 and 4.

P-01-235

Data recovery efforts associated with a CSUH archaeological field school occurred at Resource P-01-235 in 1981. During that exercise, the site (a kiln likely associated with the nearby Yema-Po site, P-01-149) was discovered to have been previously disturbed through looting and vandalism. The site was noted to be at high risk for future vandalism. A surface scatter of historic-period material, including Chinese ceramic vessel fragments, also was noted.

Despite the aforementioned data recovery efforts and disturbance, P-01-235 has the potential to provide more information about Chinese workers and the construction of Chabot Dam and its associated facilities. Therefore, P-01-235 is able to convey significance under Criteria 1 and 4.

Shovel Hill Locus

Shovel Hill has been subjected to surface collection and also has been disturbed by EBMUD bulldozing activities. Although this resource was not revisited during the recent field reconnaissance, available data suggest that, despite the previous disturbance, information contained in this resource may lead to a greater understanding of which materials were commercially purchased versus which were manufactured on site. It also may aid in understanding the level of repairs that were undertaken on a given tool before it was discarded. This resource possesses a high potential to add to the available data set regarding the early period of construction of Chabot Dam and its associated features.

Despite data collection and various ground-disturbing activities, Shovel Hill—as documented in available data—possesses the potential for significance under Criteria 3 and 4.

Historic-Period Dump

Although this resource was not formally surveyed and recorded as part of this technical report, the initial observation is that relatively little intrusion of modern cultural material exists. Because of the types of artifacts present (food and drink containers [including alcohol], personal toiletries, and cosmetic containers, as well as building materials (primarily milled lumber]), this resource has the potential to add to the existing body of knowledge regarding the everyday living conditions of the first people who lived in the Chabot Dam area. Therefore, the historic-period dump possesses the potential for significance under Criterion 4.

Archaeologically Sensitive Areas

As discussed in Section 4.3, Historic Context, historic maps and engineering drawings have indicated that additional resources associated with the nineteenth-century construction of the Lake Chabot Waterworks District may be present. These documents point to the approximate (although unconfirmed to date) locations of buildings and structures that may have been a blacksmith shop, a wheelwright shop, a boarding house, and an office; however, no previous archaeological study has been performed and none was undertaken as part of the recent field survey. An archaeologically sensitive areas map shows the assumed locations of these resources (redacted from the present report).

The locations and conditions of these potential resources are not confirmed. However, based on historical documentation, if they were field-verified, they could contribute to the available body of knowledge regarding historical work methods and those individuals involved in such work. Therefore, these locations may convey significance under Criteria 1, 3, and 4.

5.3.2 Built-Environment Features (Buildings, Structures, and Objects)

Several built-environment features that contribute to the eligibility of the Lake Chabot Waterworks District are described in the following paragraphs. A short discussion of integrity and the ability of each feature to convey significance (described previously) is presented for each feature identified.

Chabot Dam

Despite modifications, including demolition of the original spillway and construction of a new spillway to the north during the 1979 through 1980 seismic-improvement project, the overall structure of the earthen dam retains good integrity and is able to convey significance under Criteria 1, 2, 3, and 4.

Chabot Reservoir

Chabot Reservoir was opened to the public for recreational uses in the 1960s. The reservoir provided drinking water to Oakland residents for the last time during a severe drought in

September 1977 (EBMUD 2013). Aside from a change in use, Chabot Reservoir has undergone few in any changes and retains a high degree of integrity. Chabot Reservoir is able to convey its significance under Criteria 1, 2, and 3.

Tunnel No. 1 (Undetermined Contributor)

Tunnel No. 1 was taken out of use in 1938, when EMBUD inserted the concrete and steel bulkhead at the tunnel inlet. The exact locations of Tunnel No. 1's features were not determined during the pedestrian survey of the project area. The only extant feature found was the control tower base on top of the ridge. Because the integrity of the entire Tunnel No. 1 system cannot be determined at this time, it is unknown whether Tunnel No. 1 and its related features are contributing elements of the Lake Chabot Waterworks District.

Tunnel No. 2

Aside from minor modification of the tunnel inlet, it appears that Tunnel No. 2 has not changed since its original construction. The location of the Tunnel No. 2 outlet was not found during the pedestrian survey, although it may be the structure located northeast and within close proximity of an emergency blowoff structure that was constructed in 1969. Tunnel No. 2's integrity appears to be high, and it is able to convey its significance under Criteria 1, 2, 3, and 4.

Tunnel No. 2 Intake Tower

The Tunnel No. 2 Intake Tower was modified substantially in 1924. Aside from minor modification over time, the appearance of Tunnel No. 2 Intake Tower has not changed since 1924. Because of this later modification date, the integrity of Tunnel No. 2 Intake Tower depends on the criterion for which it is significant.

Under Criterion 1, the period of significance extends to circa 1960s, thereby capturing the 1924 modifications; consequently, Tunnel No. 2 Intake Tower's integrity is high under Criterion 1, as it still is able to convey its significance as a water control and conveyance structure.

Under Criterion 2, the period of significance ends with the death of Anthony Chabot in 1888, thereby excluding the 1924 modifications. Thus, the features of Tunnel No. 2 Intake Tower that existed before the 1924 modifications (e.g., the base; the equipment; the use) retain integrity under Criterion 2, but the classical roof structure added in 1924 does not. The pre-1924 features of Tunnel No. 2 Intake Tower still are able to convey significance under Criterion 2 because of their association with Anthony Chabot and his Chabot water system.

Under Criterion 3, the period of significance ends in 1889, after the completion of Tunnel No. 3 and its spillway, thereby excluding the 1924 modifications. Consequently, the features of Tunnel No. 2 Intake Tower that existed prior to the 1924 modifications (e.g., the base; the equipment; the use) retain integrity under Criterion 3, but the classical roof structure added in 1924 does not. The pre-1924 features of Tunnel No. 2 Intake Tower still are able to convey significance under Criterion 3, as a uniquely extant example of a nineteenth-century water control and conveyance system.

In summary, Tunnel No. 2 Intake Tower is a contributing feature of the Lake Chabot Waterworks District.

Spillway No. 3 and Tunnel No. 3

With the exception of minor modifications over time, including a new pedestrian bridge on top of the control weir, Spillway No. 3 and Tunnel No. 3 have undergone very few changes since 1889. Both the tunnel's inlet and outlet features were identified during the pedestrian survey. The integrity of both structures and the entire system appears to be relatively high, and all features associated with Spillway No. 3 and Tunnel No. 3 are able to convey significance under Criteria 1, 2, 3, and 4. Despite the fact that Anthony Chabot died a year before the tunnel's completion, Spillway No. 3 and Tunnel No. 3 qualify as contributing features under Criterion 2 because Anthony Chabot likely oversaw the design and implementation of the tunnel system.

Filtration System

The original filtration system was modified extensively because it was constructed in the late 1880s. At some point, both the settling and filtration basins were filled in with earth and all appurtenant structures were demolished. Consequently, the integrity of both basins is questionable. Although the locations of the basins are readily apparent, it is difficult to ascertain their original use and association with the overall water control and conveyance system. The Hyatt Filters, on the other hand, appear to be in good condition and are able to convey their significance under Criteria 1, 2, and 3.

Because of the importance of the water filtration process to the significance of the Chabot facility, despite the diminished integrity of the filtration basins, the Hyatt Filters and filtration basins taken together are considered contributing elements of the Lake Chabot Waterworks District.

Other Features Related to Water Control and Conveyance (Undetermined Contributors)

Various other features related to water control and conveyance include a large masonry tank on the hill northwest of the Supervisor's house, and a system of tunnel outlets/inlets and a large sunken basin lined with rock to the north of the Supervisor's house. The purpose and use of these features is undetermined at this time, so it is difficult to ascertain their integrity and ability to convey their significance. Both the tank and the basin are considered potential contributing elements to the Lake Chabot Waterworks District.

Small-scale features related to water conveyance, including pipes, channels, and gutters located throughout the project area, are not considered potential contributing elements to the Lake Chabot Waterworks District, in part because of their tendency to be replaced and modified over time, resulting in a lack of direct association with a historic facility.

Roads

Major features of the road system at the Lake Chabot Waterworks District, including configuration, have been in place since at least the 1880s. The roads appear to have high integrity, especially in terms of location (configuration). The configuration of the roads appears to be able to convey their significance under Criteria 1, 2, and 3.

The road network contributes to the district through its function, more so than through its physical characteristics as a roadbed. Thus, the integrity of location, feeling, and setting are more important for this feature than physical aspects of integrity, such as materials, design, and workmanship.

5.4 Eligibility Recommendation

The California OHP defines a historic district as "unified geographic entities which contain a concentration of historic buildings, structures, or sites united historically, culturally, or architecturally" (OHP 2001). A historic district must meet at least one of the CRHR criteria for significance. A historic district retains integrity when a majority of the components that contribute to the district's character possess integrity, even if they are undistinguished as individual features. The relationship between the contributing components must remain largely unchanged since the period of significance. Additionally, a historic district must have relatively few intrusions (e.g., new construction) so that the overall sense of a historic district can be ascertained easily.

As discussed in the preceding sections, Chabot Dam and its associated features appear to meet all four of the CRHR criteria for significance, and a majority of the components that contribute to the significance retain good integrity overall. Very few new intrusions have been added to the district, and the relationships between its components retain the ability to convey the district's significance. Therefore, Chabot Dam and its associated built-environment and archaeological features appear to qualify for listing in the CRHR as a Lake Chabot Waterworks District. Lake Chabot Waterworks District should be considered as a historical resource under Section 15064.5(a) of the State CEQA Guidelines.

6 References

Alameda County Community Development Agency. 2012. Historic Preservation. Available: http://www.acgov.org/cda/planning/generalplans/historic_preservation.htm. Accessed April 2013.

Banks, P. 1982. *An Investigation of the Cultural Resources within the Anthony Chabot Regional Park*. Alameda County, California. Manuscript on file at the Northwest Information Center. Rohnert Park, CA.

Beggs, J. 1997. *The Chinese Laborers of Lake Chabot: San Leandro, California: A History of Their Contributions to the Construction of Lake Chabot Dam, 1874–1892*. Alameda County Historical Society, Oakland, CA.

Bennyhoff, J. A. 1977. *Ethnography of the Plains Miwok*. CARD Publication No.5. University of California, Davis.

Bright J., A. Marganti, and M. Williams. 1992. Archaeological Site Survey Record, P-01-229/CA-ALA-550H. Manuscript on file at the Northwest Information Center, Rohnert Park, CA.

Burgess, S. D. 1948. *Early History of the Oakland Water Supply, 1850–1876*. Unpublished Master's thesis, University of California, Berkeley.

———. 1992. *The Water King: Anthony Chabot, His Life and Times*. Davis, CA: Panorama West Publishing.

California Office of Historic Preservation (OHP). 1976. "California Inventory of Historic Resources." Sacramento: California Department of Parks and Recreation.

———. 1992. "California Points of Historical Interest." Sacramento: California Department of Parks and Recreation.

———. 1995. "Instructions for Recording Historical Interest." Sacramento: California Department of Parks and Recreation.

———. 1996. "California State Historical Landmarks." Sacramento: California Department of Parks and Recreation.

———. 2001. "California Office of Historic Preservation Technical Assistance Series #7: How to Nominate a Resource to the California Register of Historical Resources." Sacramento: California Department of Parks and Recreation.

———. 2013. "Historic Properties Directory Listing by City." Sacramento: California Department of Parks and Recreation.

California State University, Northridge (CSUN). 2013. Historical U.S. Census Populations of Places, Towns, and Cities in California, 1850–1990. *The Sourcebook for Teaching Science:*

References and Resources for Science Teachers. Available: www.csun.edu/science/ref/spreadsheets/xls/calif_historical_census.xls. Accessed April 2013.

City of Oakland. 1998. *Oakland Cultural Heritage Survey Completion Report (Citywide Reconnaissance Survey)*. Prepared by City of Oakland staff.

———. 2013. Historic Preservation Element. Available: http://www2.oaklandnet.com/Government/o/PBN/OurServices/Historic/index.htm. Accessed March, 2013.

Coleman, Jason. 1996. "Meddling with the Past: An Historical and Archaeological Analysis of Metal Artifacts from San Leandro Reservoir." Unpublished Master's thesis, California State University, East Bay.

Daily Alta California. 1988 (January 27). "Oakland." Volume 42, Number 14028.

East Bay Municipal Utility District (EBMUD). 1969. *Chabot Center Chronology and Bibliography*. Prepared by C. Zabel, Senior Clerk, EBMUD Design and Construction Division.

———. 1978. *Environmental Impact Report for Chabot Dam and Spillway Modification Project*.

East Bay Municipal Utility District (EBMUD) and URS. 2005 (October). *Dynamic Stability Analysis of Chabot Dam*. Alameda County, CA.

Environmental Science Associates (ESA). 2006 (March). *Kaiser Permanente Oakland Medical Center. Master Plan Project Draft Environmental Impact Report*. Prepared for the City of Oakland, Available: http://www2.oaklandnet.com/oakca1/groups/ceda/documents/webcontent/oak035708.pdf. Accessed April 2013.

Fredrickson, D. A. 1974. "Cultural Diversity in Early Central California: A View from the North Coast Ranges." *Journal of California Anthropology* 1(1):41–54.

Gill, A. L. 1982. Archaeological Site Survey Record, P-01-235/CA-ALA-429H. Manuscript on file at the Northwest Information Center, Rohnert Park, CA.

Hill, W. 2000. "Lake Chabot Clubhouse DPR Form."

Levy, R. 1978. Eastern Miwok. In *California*, Robert F. Heizer, ed., Volume 8 of *Handbook of North American Indians,* William C. Sturtevant, general editor. Washington, DC: Smithsonian Institution.

LSA Associations Inc. 2009. *EBRPD Wildlife Hazard Reduction and Resource Management Plan EIR*. Prepared for East Bay Regional Parks Division. Available: http://www.ebparks.org/Assets/files/fireplan/ebrpd_whrrm_plan_eir/4e-CulturalResources.pdf. Accessed April 2013.

Miller, G. 1981. *Preliminary Report of Excavations at Yema Po (Ca-ALA-423H), A Nineteenth Century Chinese Labor Camp at the Lake Chabot Dam*. Department of Anthropology, California State University, Hayward. Submitted to East Bay Municipal Utility District.

Milliken, R., L. H. Shoup, and B. R. Ortiz, 2009. *Ohlone/Costanoan Indians of the San Francisco Peninsula and Their Neighbors, Yesterday and Today*. Archaeological and Historical Consultants, Oakland, California, for National Park Service, Golden Gate Recreation Area, San Francisco.

Moratto, M. 1984. *California Archaeology*. Academic Press, Inc. Reprint 2004. Coyote Press, Salinas, CA.

National Park Service (NPS), U.S. Department of the Interior. 2013. Professional Qualification Standards for Archeology and Architectural History. Available: http://www.cr.nps.gov/local-law/gis/html/quals.html. Accessed April 2013.

Noble, J. W., I. McClendon, and G. B. Montgomery. 1999. *Its Name Was M.U.D.: A Story of Water*. Oakland, CA. Published by the East Bay Municipal Utility District.

Oakland Daily Transcript. 1876 (July). "A Stupendous Enterprise."

San Leandro Reporter. 1889 (June). "The Water Works."

Sawyer, M. J. 1980. Archaeological Site Survey Record, P-01-149/CA-ALA-423H. Manuscript on file at the Northwest Information Center, Rohnert Park, CA.

Schuyler, J. D. 1886. "Report of J.D. Schuyler Civil Engineer on Contra Costa Water Works." Contained in the report, *Chabot Center*, available at East Bay Municipal Utility District, Engineering Department, Oakland, CA.

Starr, K. 2005. *California: A History*. New York: Modern Library.

Terra Engineers Inc. 2013. *Chabot Dam Seismic Upgrade: Alternative Haul Routes Constructability and Environmental Review*. Prepared for East Bay Municipal Utility District by Terra Engineers Inc., in association with AECOM. On file at the East Bay Municipal Utility District, Engineering and Construction Department, Oakland, CA.

Todaro, Sean. East Bay Municipal Utility District (EBMUD). June 28, 2013—comment on draft technical report delivered to Susan Yogi, Environmental Planner with AECOM.

Voss, B. L., and R. Allen. 2008. "Overseas Chinese Archaeology, Historical Foundations, Current Reflections, and New Directions." *Historical Archaeology* 42(3):5–28.

7 List of Preparers

7.1 Lead Agency

East Bay Municipal Utility District
375 Eleventh Street (Mail Slot 701)
Oakland, CA 94607-4240

7.2 EIR Consultants

AECOM
300 California Street, Suite 400
San Francisco, CA 94104

Appendix A
Consultation Letters

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

April 8, 2013

Debbie Pilas-Treadway
California Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

Subject: Chabot Dam Seismic Upgrade

Dear Ms. Pilas-Treadway:

AECOM is conducting a Draft Cultural Resources Inventory and Evaluation Report for the above-referenced East Bay Municipal Utility District project. The proposed project extends from Lake Chabot and Lake Chabot Park in the north to Lake Chabot Road in the south, and from Estudillo Avenue in the west to Lake Chabot Road in the east located within the Chabot Regional Park. The project area is located in Township 2S, Range 2W of the San Leandro, CA 7.5' USGS topographic quadrangle map and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction. Improvement of embankment soils will be performed either by Cement Deep Soil Mixing (CDSM) or Conventional Earthwork. Both options will require transportation of excavated soil by either the Upper Haul Route or the Lower Haul Route to either the Filter Pond Stockpile or the Park Stockpile. The Outlet Works upgrade will consist of pavilion demolition, relining or replacement of pipes, valve installation, and filling of the outlet tower with low-strength flowable fill or concrete.

As part of this endeavor we would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American values that may be present near or within this project area. We would appreciate your checking the Sacred Lands Files to see if there are any culturally sensitive areas within the project vicinity. If you have any concerns regarding Native American issues related to the overall project, please contact me at (415) 955-2892 or by mail at your earliest convenience. You may also contact me at kerry.boutte@aecom.com

Your project comments and concerns are important to us. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte

Enclosure
cc: Gwen Alie, EBMUD

Sacred Lands File Request

NATIVE AMERICAN HERITAGE COMMISSION
915 Capitol Mall, RM 364
Sacramento, CA 95814
(916) 653-4082
(916) 657-5390 – Fax
nahc@pacbell.net

Information Below is Required for a Sacred Lands File Search

Project: Chabot Dam Seismic Upgrade

County Alameda

USGS Quadrangle San Leandro 7.5 Minute Series

Name

Township 2S Range 2W Section(s)

Company/Firm/Agency:
AECOM

Contact Person: Kerry Boutte

Street Address: 300 California Street

City: San Francisco Zip: 94104

Phone: 415-955-2892

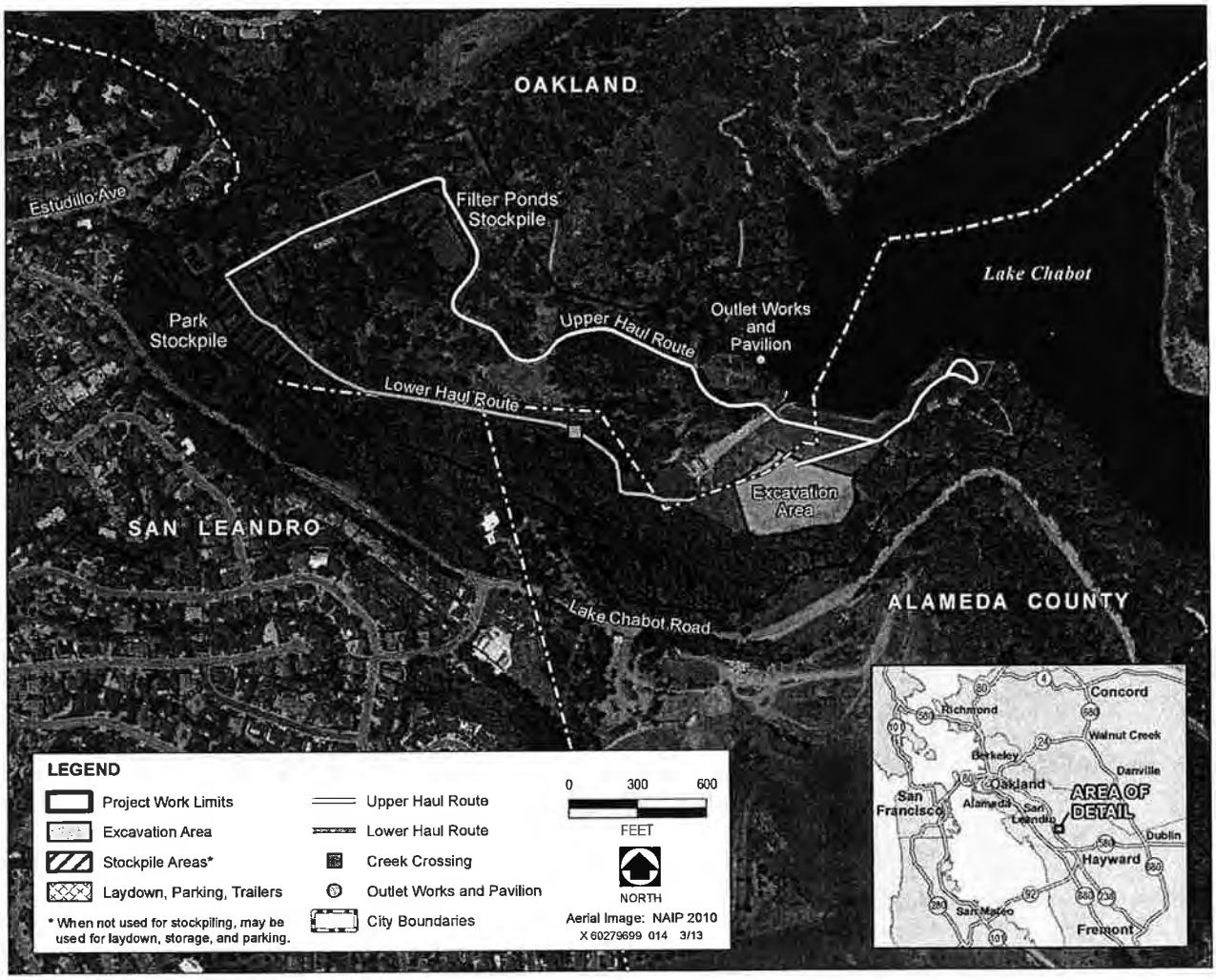
Fax: 415-788-4875

Email: kerry.boutte@aecom.com

Project Description:

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction. Improvement of embankment soils will be performed either by Cement Deep Soil Mixing (CDSM) or Conventional Earthwork. Both options will require transportation of excavated soil by either the Upper Haul Route or the Lower Haul Route to either the

Filter Pond Stockpile or the Park Stockpile. The Outlet Works upgrade will consist of pavilion demolition, relining or replacement of pipes, valve installation, and filling of the outlet tower with low-strength flowable fill or concrete (site map attached).



Source: AECOM 2013, Terra Engineers 2013, EBMUD 2013

General Site Plan

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd.
West SACRAMENTO, CA 95691
(916) 373-3710
Fax (916) 373-5471

June 11, 2013

Kerrry Boutte
300 California Street
San Francisco, CA 94104

Sent by Fax: 415-788-4875

Number of Pages 2

Re: Chabot Dam Seismic Upgrade project, Alameda County

Dear Mr. Boutte:

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3713.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
Alameda County
June 13, 2013

Jakki Kehl
[redacted]
Ohlone/Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
[redacted]
Ohlone/Costanoan

Katherine Erolinda Perez
[redacted]
Ohlone/Costanoan
Northern Valley Yokuts
Bay Miwok

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
[redacted]
Ohlone / Costanoan

Amah/MutsunTribal Band
Irene Zwierlein, Chairperson
[redacted]
Ohlone/Costanoan

The Ohlone Indian Tribe
Andrew Galvan
[redacted]
Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

Amah/MutsunTribal Band
Jean-Marie Feyling
[redacted]
Ohlone/Costanoan

Trina Marine Ruano Family
Ramona Garibay, Representative
[redacted]
Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
[redacted]
Ohlone/Costanoan

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 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Chabot Dam Seismic Upgrade project, Alameda County

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
[redacted]

Subject: Chabot Dam Seismic Upgrade

Ms. Cambra:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

Coastanoan Rumsen Carmel Tribe
Tony Cerda, Chairperson
[redacted]

Subject: Chabot Dam Seismic Upgrade

Mr. Cerda:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

Katherine Erolinda Perez
[redacted]

Subject: Chabot Dam Seismic Upgrade

Ms. Erolinda Perez:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

Amah/Matsun Tribal Band
Jean-Marie Feyling
[redacted]

Subject: Chabot Dam Seismic Upgrade

Ms. Feyling:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutle@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutle
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

The Ohlone Indian Tribe
Andrew Galvan
[redacted]

Subject: Chabot Dam Seismic Upgrade

Mr. Galvan:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

Trina Marine Ruano Family
Ramona Garibay, Representative
[redacted]

Subject: Chabot Dam Seismic Upgrade

Ms. Garibay:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

Ms. Jakki Kehl
[redacted]

Subject: Chabot Dam Seismic Upgrade

Ms. Kehl:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
[redacted]

Subject: Chabot Dam Seismic Upgrade

Ms. Sayers:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

AECOM
300 California Street
Suite 400
San Francisco, CA 94104
www.aecom.com

415 796 8100 tel
415 796 8200 fax

July 30, 2013

Amah/Mutsun Tribal Band
Irene Zwierlein, Chairperson
[redacted]

Subject: Chabot Dam Seismic Upgrade

Ms. Zwierlein:

AECOM is conducting an Environmental Impact Report for the above-referenced project. Chabot Dam is located at the end of Estudillo Avenue, and on the west end of Chabot Lake (Chabot Reservoir), California and is delineated on the enclosed map.

The proposed project includes improvement of the embankment soils on the downstream side of Chabot Dam to withstand shaking generated by the maximum credible earthquake on the Hayward Fault without significant strength loss, to limit permanent deformation or settlement at the dam crest to acceptable levels, to prevent damage to the outlet works from the design level earthquake, and to continue reservoir and outlet works operation during construction.

We are pleased to bring this activity to your attention and would appreciate any information you can provide regarding prehistoric, historic, or ethnographic Native American land use. We are also interested in any contemporary Native American values that may be present near or within the project area.

If you have any questions or comments, please contact me at (415) 955-2892 or by mail, expressing your concerns at your earliest convenience. You may also contact me at kerry.boutte@aecom.com. I look forward to hearing from you in the near future.

Respectfully yours,

Kerry L. Boutte
Senior Archaeologist

Enclosure

Appendix B
California Department of Parks and Recreation
523 Forms

Not Included for Public Circulation

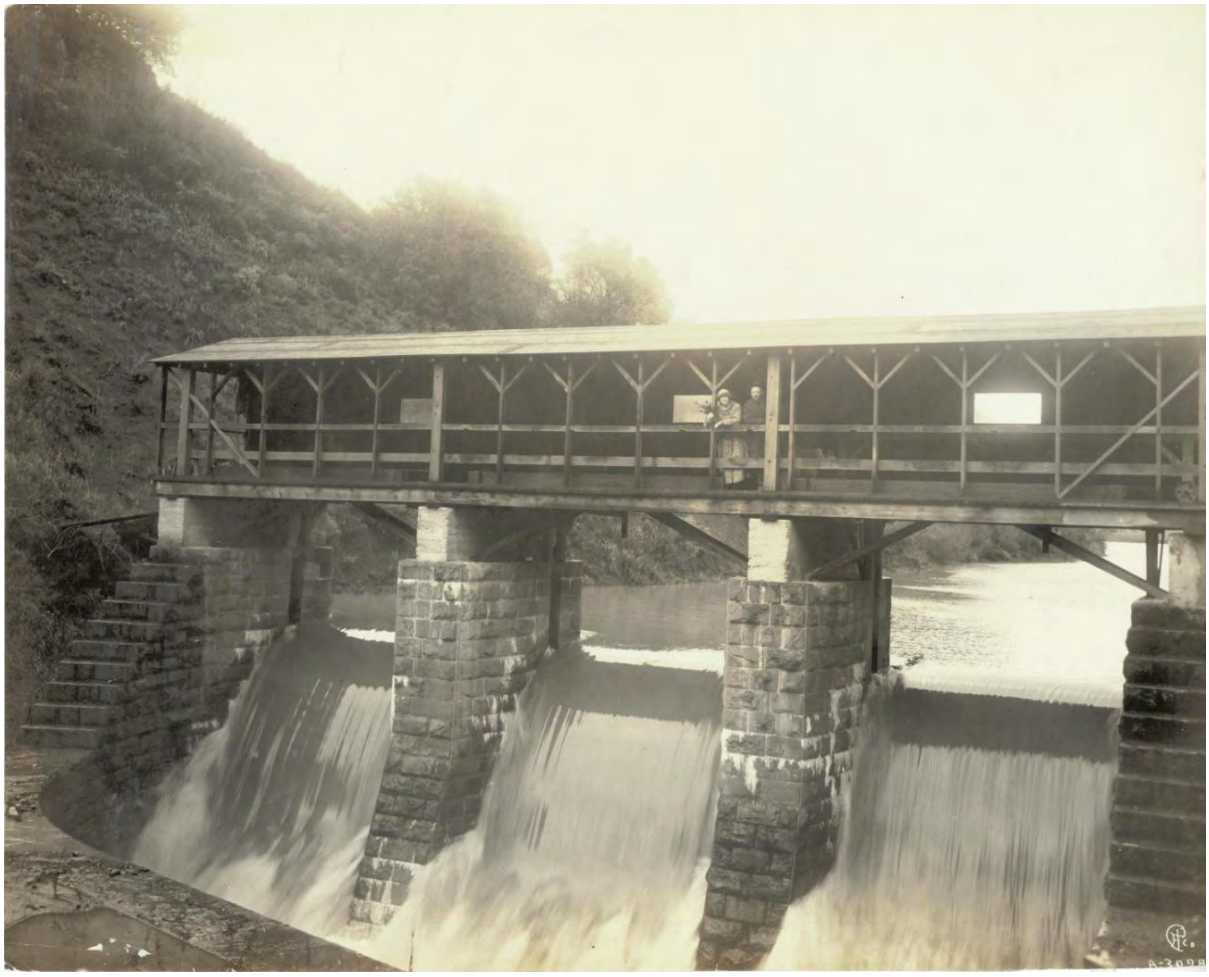
Appendix C
Historic Photographs

Chabot Dam at right, with original Spillway No. 1, date unknown but likely early 1880s
(Source: Frank B. Rodolph, Photograph Collection Album 2: BANC PIC 1905.17147-PIC, UC Berkeley, Bancroft Library)

Spillway No. 1 at lower left, Surveyor's Knoll at center, and Tunnel No. 2 Intake Tower at lower right, 1905
(Source: EBMUD)

Spillway No. 1 at lower left, Surveyor's' Knoll at center, and Tunnel No. 2 Intake Tower at lower right, 1909
(Source: EBMUD)

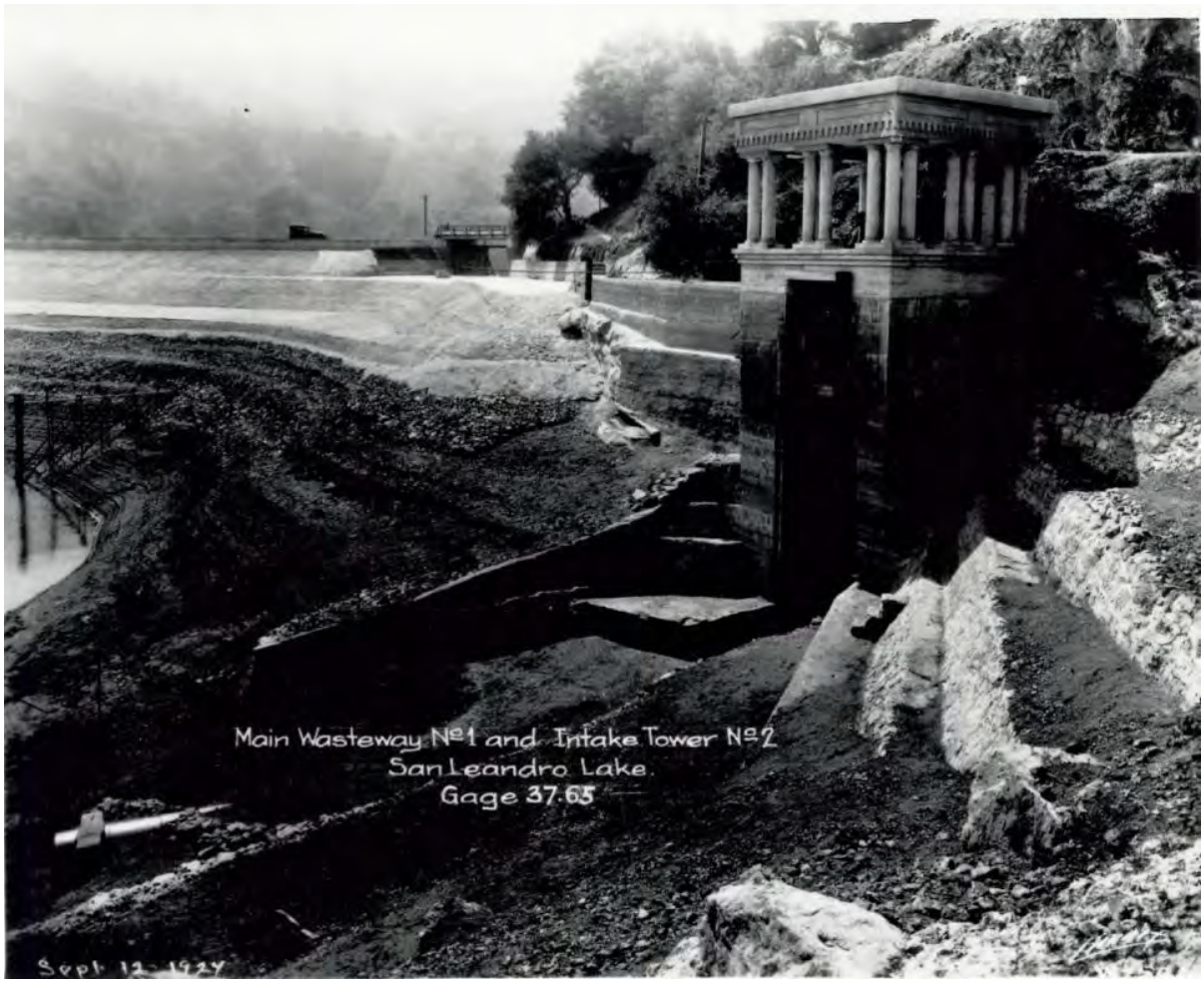
Chabot Dam and Spillway No. 1 at left, Surveyor's Knoll and Tunnel No. 2 Intake Tower above, and Spillway No. 3 at center right, 1919
(Source: EBMUD)



Spillway No. 3, 1920
(Source: EBMUD)

Chabot Dam at right, original Spillway No. 1, and chute at center, 1922
(Source: EBMUD)

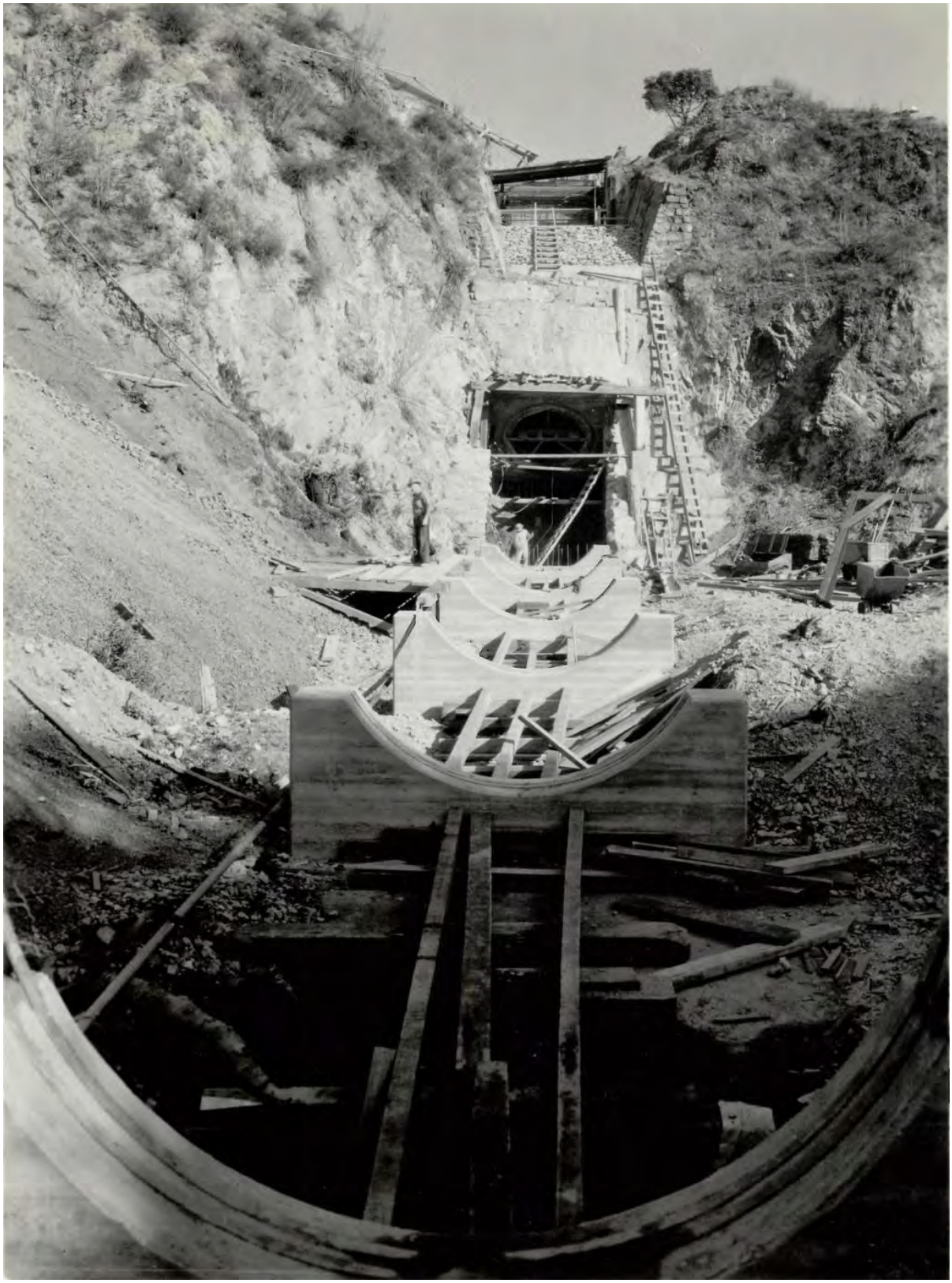
Tunnel No. 2 Intake Tower, circa 1924. (Note circular pipe inlet at lower center and rubble-rock wall at upper right.)
(Source: EBMUD)



Original Spillway No. 1 at center left, Tunnel No. 2 Intake Tower at right, September 1924
(Source: EBMUD)

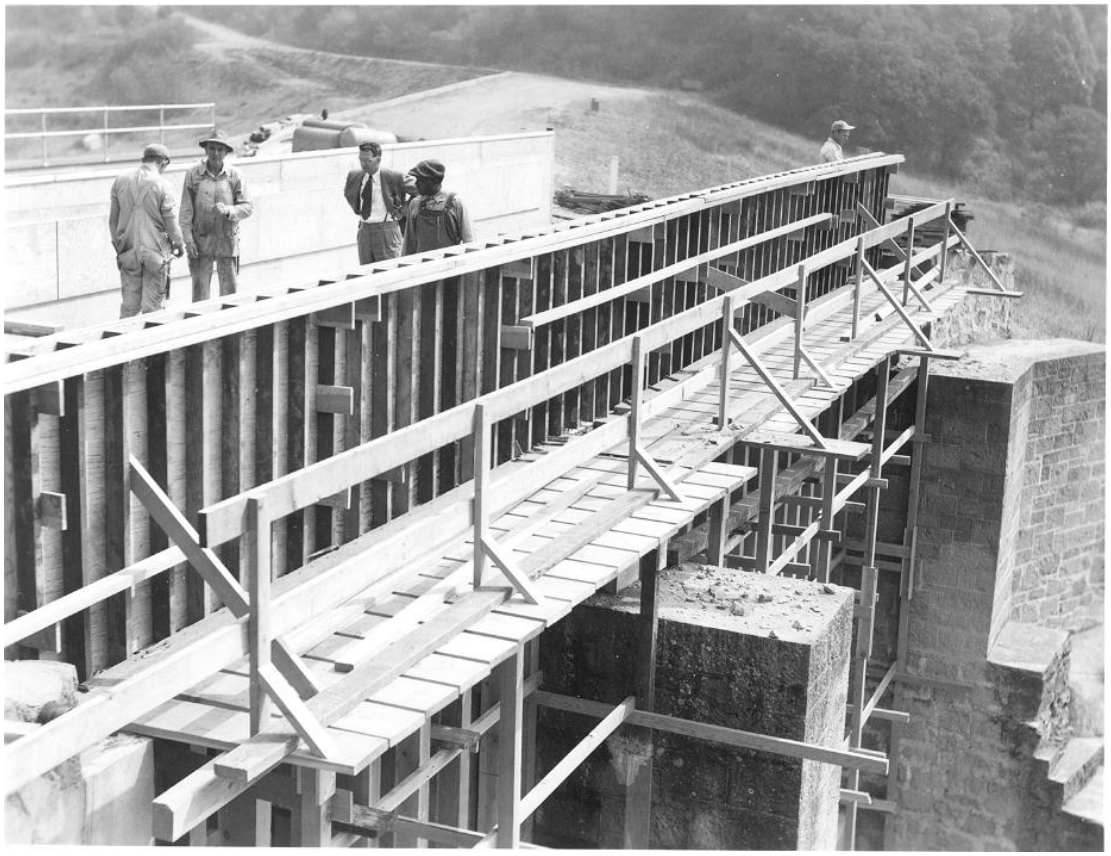
Chabot Dam at left, Chabot Reservoir right, and Tunnel No. 2 Intake Tower at upper right, circa 1924
(Source: EBMUD)

Chabot Dam in foreground (note concrete parapet wall), Tunnel No. 2 Intake Tower (at upper left), and Spillway No. 3 (at upper right), circa 1924
(Source: EBMUD)



Construction of new Spillway No. 1 Chute, 1932
(Source: EBMUD)

New concrete trashrack structure at Spillway No. 1, 1933
(Source: EBMUD)



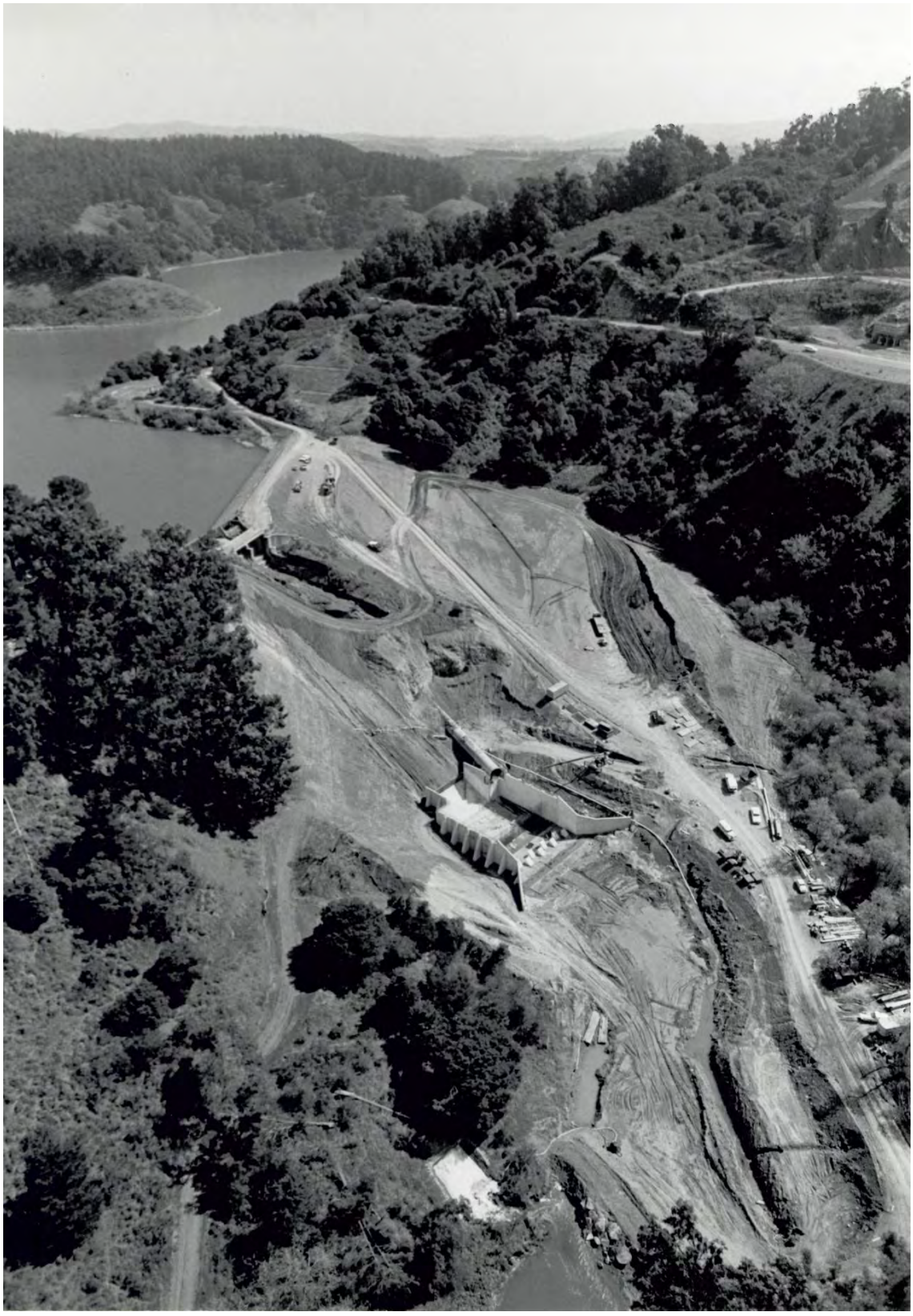
Construction of New Pedestrian Bridge over original masonry weir at Spillway No. 1, 1933
(Source: EBMUD)

Spillway No. 1 wasteway tunnel and stilling basin above, 1933.
Note small building at upper right.
(*Source: EBMUD*)

Unknown feature, 1933 (possibly Tunnel No. 3 inlet)
(*Source: EBMUD*)

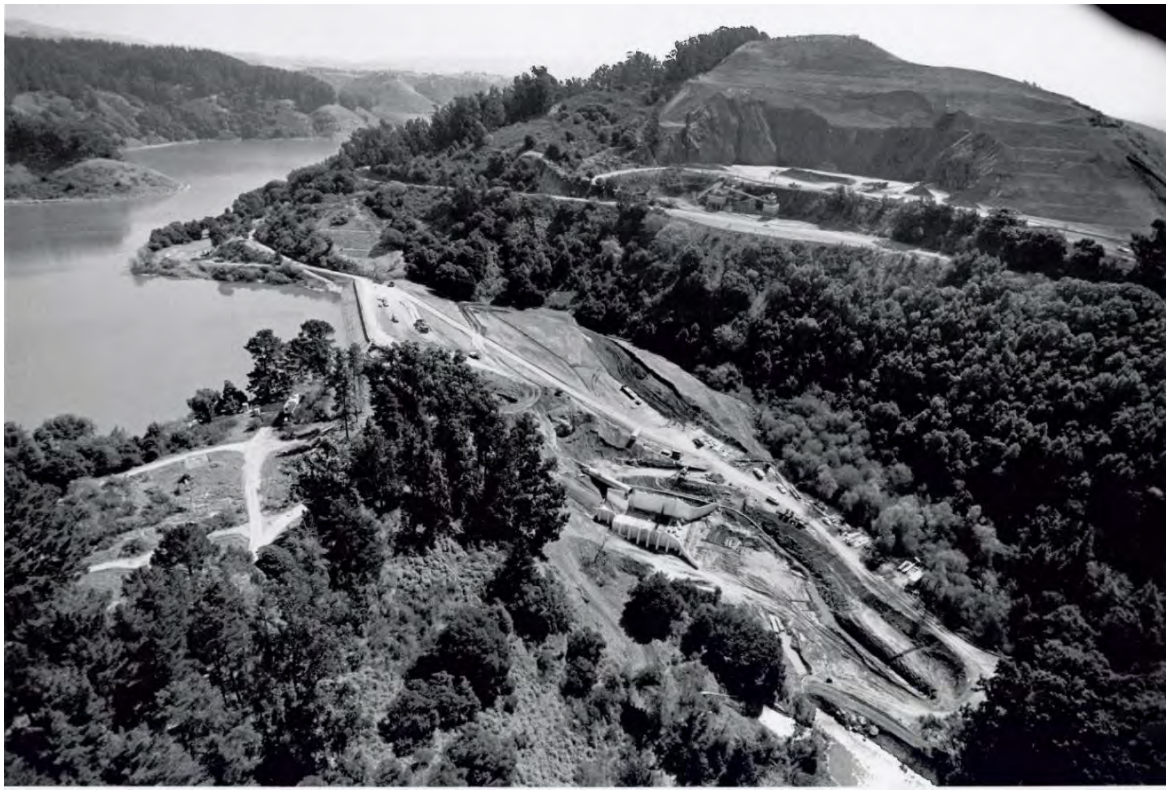
Chabot Dam and Reservoir, 1938
(Source: EBMUD)

Original Spillway No. 1 at left, Chabot Dam at right, 1946
(Source: Oakland History Room Oakland Public Library)



Construction of new Spillway No. 1, 1980
(Source: EBMUD)

New Spillway No. 1 under construction, 1980
(*Source: EBMUD*)



Construction of new Spillway No. 1, 1980
(Source: EBMUD)

Construction of new Spillway No. 1, 1980
(Source: EBMUD)

Construction of new Spillway No. 1, 1980
(*Source: EBMUD*)