

East Bay Watershed Master Plan



2018



EAST BAY WATERSHED MASTER PLAN UPDATE

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East Bay Watershed Master Plan

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LIST OF ACRONYMS AND ABBREVIATIONS

ADA	Americans with Disabilities Act
AUMs	animal unit-months
BHAPA	Briones Hills Agricultural Preservation Area
BMP	best management practice
Board	East Bay Municipal Utility District Board of Directors
CAC	Community Advisory Committee
Caltrans	California Department of Transportation
CCCFPD	Contra Costa County Fire Protection District
Cal Fire	California Department of Forestry and Fire Protection
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
DBPs	disinfection byproducts
District	East Bay Municipal Utility District
EBRPD	East Bay Regional Park District
EBWMP	East Bay Watershed Master Plan
EIR	environmental impact report
FMU	fire management unit
GIS	geographic information system
HCP	Habitat Conservation Plan
IPM	integrated pest management
ITP	Incidental Take Permit
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
TAC	Trails Adjunct Committee
THMs	trihalomethanes
USFWS	U.S. Fish and Wildlife Service
voCs	volatile organic compounds

Section 1 Introduction

Purpose of the East Bay Watershed Master Plan

The East Bay Municipal Utility District (District) owns and manages approximately 29,000 acres of watershed land in the East Bay area (Figure 1-1). These lands surround five reservoirs (Briones, San Pablo, Upper San Leandro, Chabot, and Lafayette) and one basin area that does not contain a reservoir (Pinole Valley). The District's reservoirs store high-quality drinking water and emergency water supplies for approximately 1.4 million water users in Alameda and Contra Costa Counties. Protecting water quality is primary in importance to the District. Additionally, the District is committed to preserving and protecting the natural resources that exist on its lands and its reservoirs. Because these lands have been largely protected from

development and human disturbance, they support important and high-quality habitats and resources for a wide variety of plant and animal species.

The District has determined that managing lands and reservoirs to protect water quality and important, high-quality biological resources can best be achieved by promoting biological diversity (biodiversity). Biodiversity is defined here as "the variety and variability among living organisms and the ecological complexes in which they occur" (Office of Technology Assessment 1987).

Focus of the East Bay Watershed Master Plan



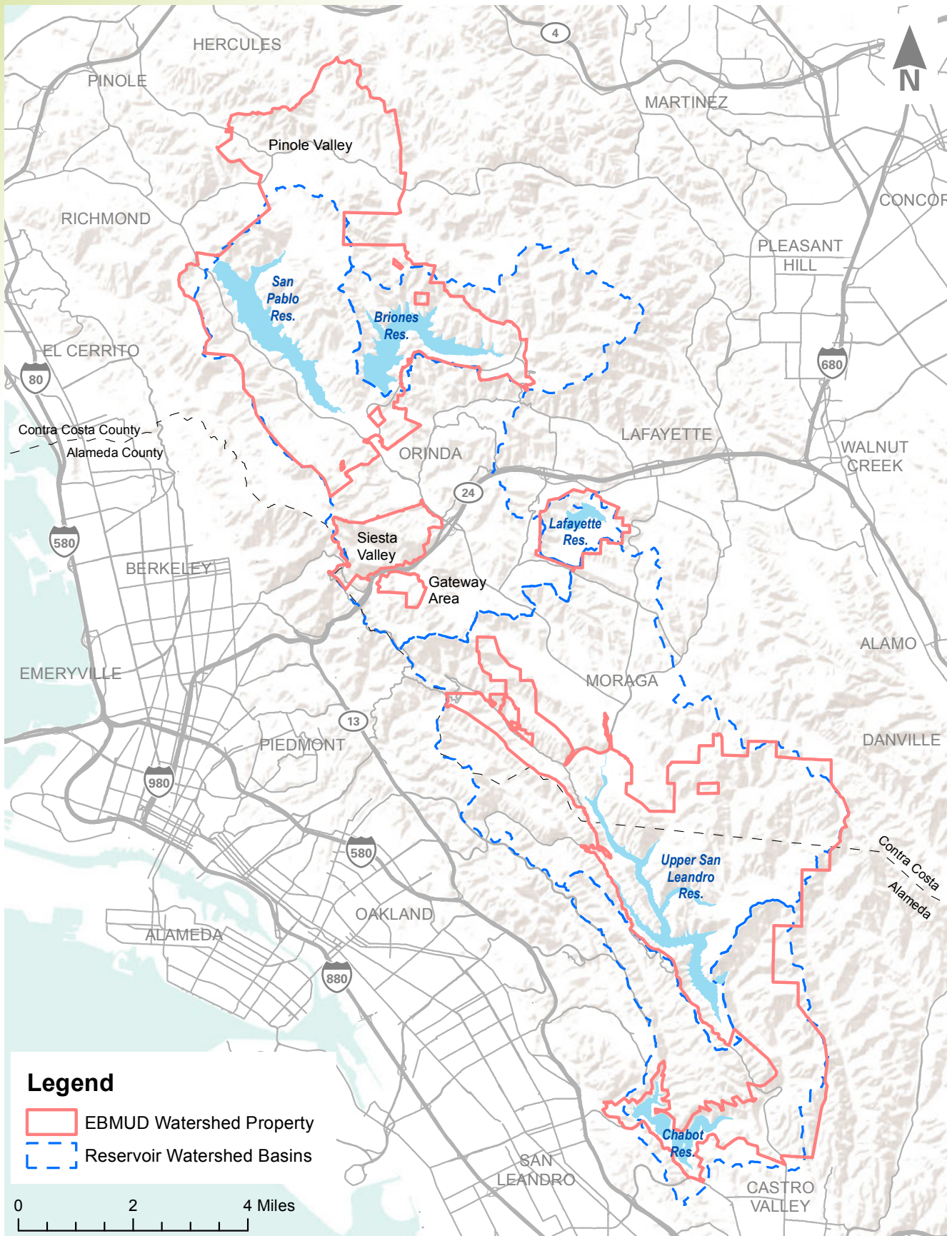


Figure 1-1 | East Bay Municipal Utility District property boundary

The purpose of the East Bay Watershed Master Plan (EBWMP) is to provide long-term management direction for District-owned lands and reservoirs that will ensure the protection of the District’s water resources and preserve environmental resources on District-owned lands. The plan also identifies public uses considered compatible or potentially compatible with the primary water quality and biodiversity goals.

The EBWMP provides clear guidance regarding the management direction on East Bay watershed lands. It is important to note that the EBWMP is not intended to require the implementation of any specific management actions and that approval of the plan by the Board of Directors (Board) does not imply or create a future commitment to fund any programs or program elements. Implementation of such actions will be determined by the Board through the routine budgeting process. If funding is approved for a specific program or program element, the EBWMP will provide the direction on how that program or program element will be implemented.



Plan Terminology

For purposes of this plan, the term “watershed” is typically used to describe District-owned lands that are the subject of the EBWMP. These areas include the:

- San Pablo Reservoir watershed,
- Briones Reservoir watershed,
- Pinole watershed,*
- Lafayette Reservoir watershed,
- Upper San Leandro Reservoir watershed, and
- Chabot Reservoir watershed.

References to “non-District watershed lands” are to those lands that are tributary to District reservoirs and lands but that are not owned by the District. When this document addresses the entire land area that is tributary to a District reservoir, including both District-owned and non-District-owned lands, the terms “hydrologic watershed” and “basin” are used.

*District-owned nonreservoir watershed (see page 13 for further description)

Board of Directors' Policy Direction

The mission statement of the District represents general management guidance regarding all lands and reservoirs owned by the District. The guiding principles, developed from the mission statement, have provided direction for the master planning process.

Mission Statement

In 1992, the Board adopted the following District mission statement for management of lands and resources:

Implicit in the District's mission statement is the commitment to exercise responsible financial management, ensure fair rates and charges, provide responsive customer service, and promote environmental responsibility. The EBWMP reflects the District's mission by using it as the basis for a plan that protects reservoir water quality for future generations through prudent management of District watershed natural resources.

To manage the natural resources with which the District is entrusted, to provide high-quality water and wastewater services for the people of the East Bay, and to preserve and protect the environment for future generations.

Guiding Principles

In 1993, the District's Board provided seven guiding principles for the EBWMP. These principles guided an integrated planning process that resulted in the adoption of the first EBWMP in 1996. In adopting the update to this plan in 2016, the Board reaffirmed the guiding principles as follows:

1. Protect water quality through sensitive natural resource and recreation management.
2. Ensure protection of the natural, cultural, and historical resources of the watershed on a long-term basis.
3. Respect natural resources; sustain and restore populations of native plants and animals and their environments.
4. Provide for appropriate public access to the watershed consistent with the protection of natural resources and water quality.
5. Maintain an open process with full public involvement in development of the master plan.
6. Provide for public safety for those who utilize the watershed and reside adjacent to it.
7. Exercise financial responsibility in the development and implementation of land use policies and minimize costs to ratepayers.



History of East Bay Watershed Land Use Planning

In 1969, the District began work on its first master plan to address the various possible uses of District-owned lands and provide a framework for reservoir and watershed management. The District adopted a Land Use Master Plan in 1970 and has been using that plan and two subsequent amendments for guidance since its adoption. District Policy Statement 21, which implemented the Land Use Master Plan, called for an approach to multiple uses of watershed lands that recognized their importance as open space as second only to the primary purpose of watershed protection.

Because of changes in drinking water regulations, demographics, recreation demand, and residential development adjacent to and near District watershed lands, it became increasingly important to revisit the land use policies for watershed lands. In 1996 the District completed the original EBWMP which updated the 1970 Land Use Master Plan and reaffirmed the District's commitment to water quality and environmental protection. The 1996

EBWMP was revised in 1999 to reflect new policies and approaches on water quality protection, in particular the need to address emerging contaminants.

In 2015, the District initiated an update of the EBWMP in recognition of the nearly twenty years that had elapsed since its first adoption and the numerous changes and developments that had occurred in that time span. These changes include adoption of several tiered management plans, policy changes, completion of numerous actions prescribed in the EBWMP, community needs, and natural phenomena. This update was adopted by the EBMUD Board of Directors on May 22, 2018.

The purpose of the EBWMP is to establish long-term management direction for District-owned lands and reservoirs that will ensure the protection of the District's water resources and preserve environmental resources on District-owned lands

Scope of the East Bay Watershed Master Plan

The District's lands in Alameda and Contra Costa Counties include approximately 50% of the total basin area that contains the five reservoirs. The remaining lands within the hydrologic watersheds are owned by the East Bay Regional Park District or local municipalities or are privately owned.

The EBWMP addresses the present and possible future uses of District-owned lands in the local counties and the District's responsibilities and management direction regarding appropriate land uses. The EBWMP also addresses management issues for lands within the hydrologic watersheds that are not owned by the District.

Public Involvement

The original EBWMP in 1996 was developed using a public involvement program that included scoping meetings, project newsletters, a water bill insert to all of the District's customers, and workshops and presentations before the District Board of Directors. Additionally, the District established a Community Advisory Committee (CAC), comprising 24 individuals appointed by the Board.

The purpose of the CAC was to review issues, address current land use policies, and explore recommendations to be incorporated into the EBWMP. The committee met approximately monthly over a 4-year period; in addition, numerous field trips were provided to familiarize the CAC with District-owned lands, reservoirs, and recreation areas. The members of the CAC represented a variety of interests, including grazing, fire protection, outdoor recreation, city and county planning, environmental conservation, Native American interests, and other citizens' coalitions.

General Public Involvement in the 2015–2018 Update

During the development of the 1996 Plan, members of the general public were encouraged to comment or ask questions regarding the EBWMP during three public scoping meetings and nine public issue workshops. The scoping meetings, which were conducted in July 1993, began the California Environmental Quality Act (CEQA) process. During these meetings, information about the project was provided and an opportunity was given to solicit information from the District about the proposed scope of work and to identify issues.

In the years after adoption of the EBWMP, members of the community approached District staff on a regular basis to inquire about potential new uses of and access to the

watershed, advocate new parcel acquisitions, or recommend other policy changes. This update was also prompted by the need to revise a number of elements in the Plan to reflect new regulatory requirements and acquired experience managing the watershed.

This update was prepared with the participation of interested stakeholders in numerous public meetings, site tours, and presentations to Board committees and to the full Board that were open to the public. Public comments were solicited in writing to a dedicated email account and by post. Further, this update complies with the requirements of CEQA as documented in Board Resolution 35089-18.

Organization and Use of the Plan

Sections 1 and 2 of this plan are introductory sections that describe the overall purpose of developing the EBWMP and summarize watershed resources. The remaining chapters of the EBWMP contain substantive provisions that

guide the District's day-to-day management of and long-term planning for its East Bay land and water holdings. The contents of each subsequent section are discussed on the following pages.



Section 3, “General Management Direction”

Section 3 contains objectives and management guidelines that apply to all of the District’s East Bay lands and management guidelines that apply to particular planning zones throughout the watershed. The management guidance is divided into three broad categories comprising 12 separate management programs, as follows:



- Natural resource management programs encompass all of the District’s actions that involve management of the watershed’s natural resources. These programs are:
 - Water Quality,
 - Biodiversity,
 - Forestry,
 - Fire and Fuels, and
 - Livestock Grazing.
- Community use management programs address District actions involving management of the following human-oriented resources on the watershed:
 - Developed Recreation and Trails,
 - Environmental Education,
 - Cultural Resources, and
 - Visual Resources.
- Property management programs are all of the District’s activities that involve management of District property, including leases, and information about the watershed. These programs are:
 - Land Ownership, and
 - Entitlements.

The discussion of each program includes a brief description of the program, the activities conducted under the program, and lists of objectives, management guidelines, and coordination needs with other programs. The discussion about coordination will then inform watershed managers of other program considerations that need to be taken into account when carrying out management activities.

Section 4, “Watershed Management Area Direction”

The organization of this section is similar to that of Section 3 but contains management guidelines that relate only to specific District watershed areas. For example, fire and fuels management program guidelines that apply only to the San Pablo Reservoir watershed are included in Section 4. Management zone guidelines that are specific to a particular watershed are also included in Section 4.



Section 5, “Management Direction for Interjurisdictional Coordination and Collaboration”

Section 5 contains management guidelines for lands that are within the hydrologic watersheds of District reservoirs but are not owned by the District. The primary purpose of this chapter is to provide District staff with guidance regarding interaction with other land use agencies to ensure that the District’s interests in water quality protection, fire and fuels management, and biodiversity are represented in local land use planning efforts. For example, Section 5 directs District staff to work closely with local land use authorities to ensure that fire and fuels management activities are incorporated

into projects that would be located adjacent to the District’s watershed lands. In the past, many developments abutting the District’s property boundary were approved with no provisions for fire and fuels management, and the District has been forced to maintain plowed control lines in these locations at ratepayer expense.

Section 5 is intended to be used primarily by the District’s watershed management staff in coordination with District planning staff when working with outside agencies and landowners.

Compliance with the California Environmental Quality Act

The District’s Board of Directors certified a programmatic Environmental Impact Report (EIR) for the EBWMP on March 26, 1996. The EIR addressed the potential environmental impacts of implementing the EBWMP. A CEQA compliance document was completed in 2018 to assess potential impacts of implementing this update to the EBWMP. Compliance with CEQA is required whenever a public agency proposes to undertake a project that requires discretionary approval.

The following are resource-specific management plans that have been completed based upon the EBWMP and their associated CEQA document that was completed:

- Fire Management Plan (October 2000)
– Negative Declaration
- Range Resource Management Plan (December 2001)
– Mitigated Negative Declaration (October 2001)

Requests for New Watershed Uses

The EBWMP has been designed to be a dynamic management tool that will allow the District to evaluate current watershed management practices and respond to requests for new uses. As part of the EBWMP, the District implements a detailed project evaluation review process to facilitate consideration of new uses not explicitly identified under management guidelines. The District’s internal review process is initiated by detailed requests for new uses and involves:

- review by District committee,
- an EBWMP guideline consistency evaluation involving responses to an evaluation checklist,
- CEQA review and permitting processes, as applicable, and
- a Board approval process.

The evaluation process recognizes the need to amend management programs to reflect the District’s priorities at the time and to accommodate uses or priorities that could not have been anticipated during the master planning process.



District Lands and Resources

Introduction

The District owns approximately 29,000 acres of land and reservoir surface areas in the East Bay area, comprising portions of the hydrologic watersheds of five reservoirs and a portion of one hydrologic watershed area that does not currently contain a reservoir. This section describes the District's lands and discusses some of the resource issues that are addressed in the EBWMP.

Overview of District Lands

History

In 1928, 5 years after the District was formed, the proceeds of a \$26 million bond issue were used to purchase the existing system of the East Bay Water Company. With the facilities came 40,000 acres of land in Alameda and Contra Costa Counties. A 1930 study of District lands indicated that 7,000-10,000 acres were not needed for watershed protection purposes and were suitable for parks and recreation use.

In 1934, the East Bay Regional Park District (EBRPD) was created to negotiate for, acquire, and manage District lands not needed for water quality protection. In 1936, the District agreed to sell approximately 2,000 acres of Wildcat

The District's East Bay watershed is a large and unique resource of semiwild, open land that is located in one of the most densely populated areas in the country.

Canyon, Roundtop Peak, and Temescal Reservoir to EBRPD. The park district has continued to acquire lands near and adjacent to District lands.

In 1966, the District opened Lafayette Reservoir to the public. Lake Chabot, which was leased to EBRPD in 1964, was opened for public use shortly thereafter. San Pablo Reservoir was opened to recreation in 1973, 65 miles of trails were opened in 1974, and 4,000 acres of property was set aside for environmental education purposes in 1976. Briones Reservoir is used for local university crew rowing practice which is strictly controlled. Upper San Leandro Reservoir remains closed to public access except for the trail system. In accordance with a comprehensive set of use rules and conditions designed to protect water quality, public access to most other District-owned lands is limited to use by permit only.

Emerging Challenges

Since the original adoption of the EBWMP in 1996, a number of significant changes have taken place that require a management response to continue protecting water quality and biodiversity on the EBMUD-owned watershed lands. This update seeks to address the primarily environmental challenges that have been recognized in the intervening years. The most prominent of these is climate change. While climate change is a global phenomenon with extremely complex impacts on the biosphere, the expected effects on the East Bay watershed include, but are not limited to:

- Increasing average temperatures (average, maximum and minimum), with more frequent, intense, and longer duration droughts;
- Impacts on water quality from intense storm events, including greater sedimentation in reservoirs;
- Erosion impacts from more intense storm events;
- Decreased soil moisture in more months of the year;
- Augmented risk of fires;
- Potentially increased stress on sensitive species;
- Potential for an increase in invasive species;
- Other changes in the vegetation mosaic and species composition; and
- New pathogens and diseases.

These effects will require an increased emphasis on monitoring and adaptive management as climatic conditions continue to change, potentially at an accelerated rate. The District will track climate change science and the potential impacts of climate change on watershed lands, and incorporate findings as appropriate into future studies and into this plan.

Other examples of ecosystem changes include sudden oak death and invasive quagga mussels, both requiring management responses that are described later in this update. Noxious weeds and invasive plants are ongoing concerns in watershed management, as well as non-native and feral animals including pigs.

A renewed emphasis on identifying and measuring contaminants within fish caught by anglers has led to health advisories being issued regarding consumption of particular species of fish. Contaminants range from the legacy of banned chemicals, such as polychlorinated biphenyls (PCBs), or those that occur both naturally and due to various industries, such as mercury. These chemicals bioaccumulate within the tissue of certain fish species, such as largemouth bass, to the point where consumption limits are established. Management actions to reduce the availability of these contaminants within reservoirs and fish populations may involve potential changes in operations and recreational fisheries management.

Adaptive management is a key element in each of the watershed management programs listed in this plan. An adaptive management process that continually evaluates the effectiveness of various avoidance, minimization, and mitigation measures is an important element of any watershed management plan. Adaptive management

improves long-term management outcomes by allowing for changes in management that may be necessary in light of new information or environmental conditions. To be successfully implemented, adaptive management provisions are linked to measurable goals and monitoring. Evaluating results and refining management based on what was learned is essential to this approach. Staff continually evaluates, and, if necessary, recommends modifications to management practices. Resource management personnel review results of ongoing monitoring programs and revise management practices as needed to meet or exceed the goals of watershed management plans.

Sustainability in broad terms will continue to be an overarching concern for the management of the watershed, with a special focus on water quality and biodiversity. Trench spoils management will be a growing concern as the District accelerates its replacement schedule for pipelines in the distribution system. Trench spoils storage sites at Briones and on Miller Road have limited capacity, and an increased emphasis will be required to achieve reduced trench spoils production, spoils recycling, and local re-use to limit use of these sites for temporary storage.

Finally, EBMUD's service area has a projected population growth of 300,000 (more than 20%) by 2040, with a commensurate expected increase in demand for open space recreation and related amenities. Although most development in EBMUD's service area will be urban in-fill, there will nonetheless be a greater number of potential recreational users for a limited amount of open space. Meeting the evolving needs of a growing population will present ongoing challenges for EBMUD as it maintains its primary commitment to water quality and biodiversity.



General Description of Watershed Lands

San Pablo Reservoir and Watershed

San Pablo Reservoir covers 750 acres. The District owns 7,900 acres in the San Pablo Reservoir watershed, which is approximately 52% of the basin (Figure 2-1). The entire basin encompasses approximately 14,950 acres, of which 52% is owned by EBMUD, 27% is residential development, 6% is undeveloped private land, 9% is public works (roads, schools, county right of ways, etc.), 3% is open space, 1% is rural and less than 1% is commercial development. It is owned and operated by the District for the storage of untreated water.

District lands within the San Pablo Reservoir basin are divided into three separate land units that are discussed below.

San Pablo Reservoir Watershed Lands

The watershed area contiguous with San Pablo Reservoir comprises coastal foothills 300-1,600 feet in elevation, interspersed with flat to gently rolling valley floors and a few level, mid-elevation benches. Vegetation consists of

grassland, hardwood forest, coastal scrub, Monterey pine, riparian woodland, and eucalyptus. Monterey pines were planted on portions of the reservoir shoreline to control erosion. The area owned by the District covers 6,750 acres.

Siesta Valley

Siesta Valley, located north of Highway 24 between the Caldecott Tunnel and Orinda (Figure 2-1), is an area of slightly more than 1,000 acres in the headwaters of the San Pablo Reservoir basin. The central section of the property is a valley between steep, U-shaped ridges of volcanic strata that dip beneath the valley floor on one side and reappear on the opposite ridge. The valley floor has gently sloping benches. Soils on the slopes are thin and of limited value

for grazing; those on the valley floor are deeper. The valley floor and western slopes support stands of eucalyptus and cypress that were planted in 1912-1915.

The soil instability of Siesta Valley, based on the geology and soils, make it an area of high erosion hazard and unsuitable for most uses. The valley does, however, have geological significance and has been used for many years as an outdoor geology laboratory by various colleges and universities.

Gateway Area

The Gateway area is a 200 acre parcel located south of Siesta Valley and Highway 24 (Figure 2-1). The land consists of moderate slopes rising abruptly to a ridge that carries over from Siesta Valley. Grasslands cover the lower

slopes of the interchange side and the west side of the ridge, near the east entrance to the Caldecott Tunnel. Upper slopes are covered with extensive stands of coyote brush, poison oak, and laurel.

Briones Reservoir and Watershed

Briones Reservoir covers 660 acres. The reservoir is owned and operated by the District for raw water storage. Briones Reservoir watershed lands in District ownership encompass 2,630 acres, or 48% of the entire basin area (5,500 acres) (Figure 2-1).

These lands range in elevation from approximately 275 feet at the base of the dam to about 1,500 feet. Primary vegetation types are grasslands, coastal scrub, and oak/bay woodland.

Lafayette Reservoir and Watershed

Lafayette Reservoir covers 110 acres. Water is stored in Lafayette Reservoir for emergency purposes only. Lafayette Reservoir and surrounding lands are managed by the District

primarily for recreation. The District owns 920 acres, which includes the entire watershed basin (750 acres) (Figure 2-1).

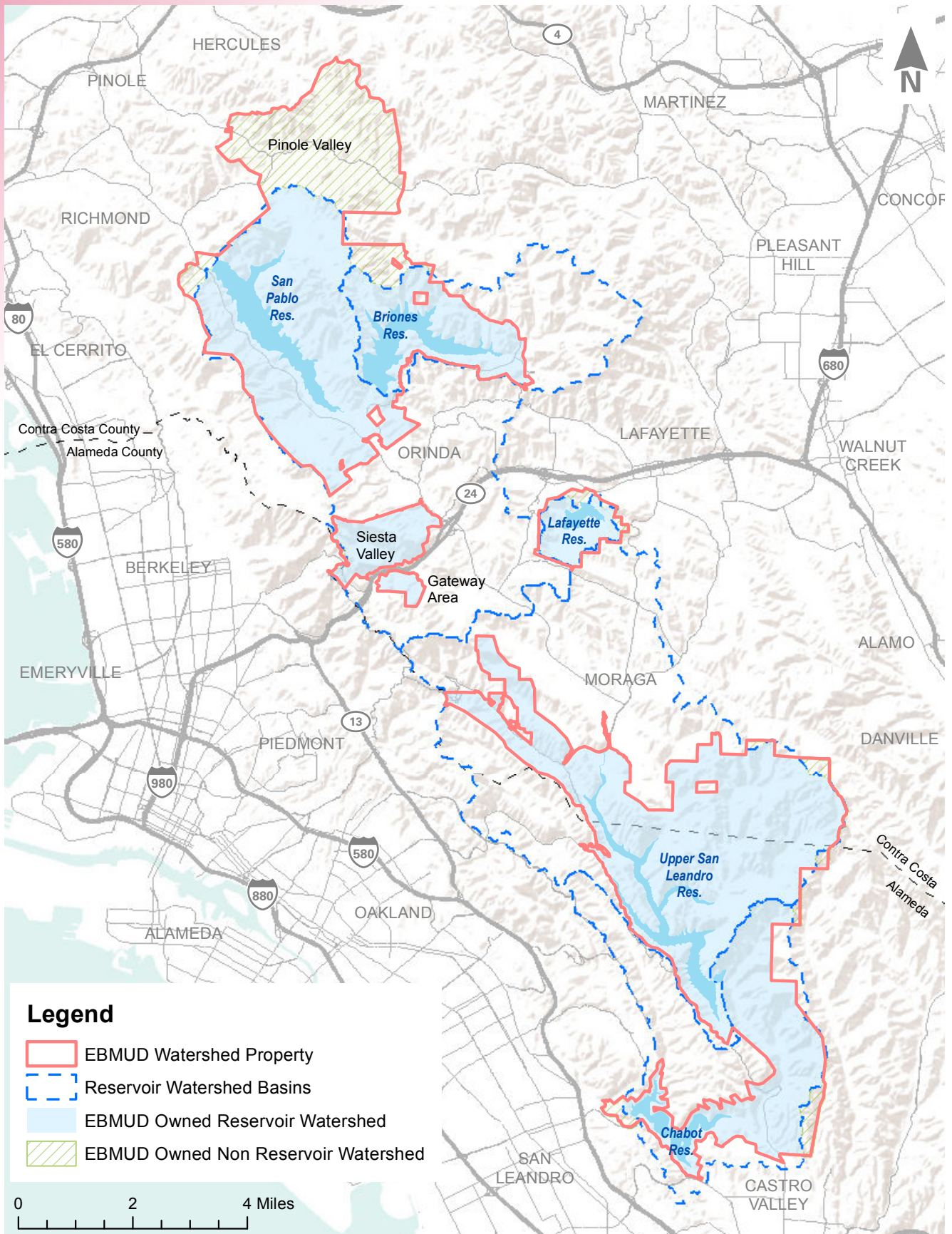


Figure 2-1 | District property and watershed boundaries

Watershed lands range in elevation from about 350 feet to more than 1,000 feet. Primary vegetation types are oak/bay

woodland, coastal scrub, and grassland habitats.

Upper San Leandro Reservoir and Watershed

Upper San Leandro Reservoir covers 680 acres and is enclosed, for the most part, in seven narrow, steep-walled canyons. The reservoir is owned and operated by the District for raw water storage.

The watershed lands in District ownership amount to 9,130 acres, which comprises 48% of the entire basin (Figure 2-1). These lands, ranging in elevation from 460 feet to 2,000 feet, are generally the most rugged and ecologically diverse of the District's East Bay land holdings. Primary vegetation types are hardwood forest, grassland, coastal scrub, riparian woodland, redwood forest, and chamise-black sage chaparral.

This watershed also contains the only occurrence of knobcone pine forest on District lands.

The Upper San Leandro Reservoir basin contains 19,220 acres, of which 48% is owned by EBMUD, 19% is open space, 16% is residential, 7% is public works, 6% is undeveloped private land, 4% is rural and less than 1% is commercial development. EBMUD has acquired 460 acres of mitigation parcels within Indian Valley in the Upper San Leandro watershed as part of the Wilder housing development project.

Chabot Reservoir and Watershed

Chabot Reservoir covers 320 acres. Water is stored in Chabot Reservoir for emergency purposes only. The reservoir is located in EBRPD's Anthony Chabot Park, and the reservoir and a portion of District watershed land surrounding the reservoir is leased to EBRPD. Management guidance presented in this plan that applies to Chabot Reservoir watershed lands is incorporated into the Lake Chabot Recreation and Park Lease. The watershed lands owned by the District encompass approximately 3,860 acres, 50% of the entire basin (Figure 2-1). Approximately 49% of the basin is managed as open

space by EBRPD and about 2% is residential or rural.

Watershed lands range in elevation from about 60 feet to approximately 1,100 feet. Primary vegetation types are hardwood forest, grassland, and coastal scrub habitat.

The Chabot Reservoir basin, including lands owned by the District, covers approximately 7,630 acres, of which 50% is owned by EBMUD, 39% is open space, 4% is residential, 4% is rural.

District-Owned Nonreservoir Watershed Lands

Pinole Valley

Pinole Valley is located 4 miles from Pinole and 2 miles from San Pablo Reservoir. The valley is an 6,950 acre area in the northernmost planning units of the District's East Bay lands (Figure 2-1). Pinole Valley was purchased as a potential reservoir site, but currently does not contain a reservoir and is not tributary to any of the District's other reservoirs. The District owns 48% of the valley, or 3,350 acres. About 380 acres in the valley floor area are flat; much

of the flat land is cultivated for hay farming under lease. The rest of the area, with slopes of 30%–70%, rises to elevations as high as 1,000 feet. Vegetation ranges from grasslands over most of the valley to densely wooded slopes of oak and laurel on the southern rim. In 2017, the District approved the creation of the Oursan Ridge Conservation Bank, consisting of 430 acres.

Other Areas Not Tributary to District Reservoirs

The District owns approximately 1,090 acres that are not tributary to the reservoirs or part of the Pinole Valley. In general, these are small areas below dams or on ridges where runoff would not contribute to one of the five

District reservoirs. Many of these buffer lands are essential to the District's land holdings to preserve the ridgetops and scenic values in addition to maintaining lands to protect water quality.

Description of Watershed Resources

Hydrology and Water Quality

The District’s East Bay reservoirs receive water from Pardee Reservoir on the Mokelumne River through the Mokelumne Aqueduct and from local basin runoff. The 50-year average contribution of local runoff to the total reservoir inflow is shown in Table 2-1. On the average, however, only about 10% of the District’s water supply comes from local runoff. Mokelumne River water is regularly delivered via aqueducts to San Pablo, Briones, and Upper San Leandro Reservoirs. When water gets released from Briones and Upper San Leandro Reservoirs, it becomes blended and is received by San Pablo and Chabot Reservoirs, respectively. Lafayette Reservoir receives water from the local basin only. Briones, San Pablo, and Upper

San Leandro Reservoirs are all used to store water for ongoing domestic use, whereas Lafayette and Chabot Reservoirs are used only in an emergency. Lafayette has not yet been used as an emergency supply and Chabot was last used in the 1977-78 drought emergency.

With completion of construction of the Freeport Regional Water Project in 2010, EBMUD obtained the ability to access its federal contract water from the US Bureau of Reclamation as well as other supplies such as water transfers. The Freeport project was first used for supplemental water supply in 2014, and this water has been stored in Briones, San Pablo, and Upper San Leandro reservoirs.

Table 2-1 | Fifty-Year Average Contribution of Local Runoff to Total Reservoir Inflow

Reservoir	Watershed Area (acres) ^a	Local Runoff		Local Rainfall		Mokelumne Flow	
		Acre-feet	% Inflow	Acre-feet	% Inflow	Acre-feet	% Inflow
Briones	5,500	2,100	23	1,590	18	5,350 ^b	59
San Pablo	14,950	16,910	67	1,710	7	6,520 ^c	26
Lafayette	750	460	60	280	36	30 ^d	4
Upper San Leandro	19,220	15,460	66	1,470	6	6,520 ^b	28
Chabot	7,630	2,950	35	600	7	4,910 ^c	58

^a Including reservoir and rounded to the nearest 10-acre increment.

^b From Moraga Aqueduct.

^c Combined Mokelumne Aqueduct and Briones Reservoir.

^d No input from Mokelumne aqueduct since April 1977.

^e From Upper San Leandro Reservoir.

The quality of water in the District's East Bay reservoirs can vary. Local runoff in the East Bay hills is generally of poorer quality than the Mokelumne River because it contains higher levels of nutrients, organic matter and suspended solids. Some of the local reservoirs, including San Pablo, Upper San Leandro and Chabot are downstream of developed areas such as the City of Orinda and the Town of Moraga. Generally speaking, the greater the percentage of Mokelumne River water in a local reservoir, the better its quality.

The water quality in Briones Reservoir is very high, primarily because the reservoir is filled mostly from the Mokelumne Aqueducts with relatively little input from local runoff because the surrounding basin is small and relatively undeveloped. During drought, the District's supplemental water supply from Sacramento River can also be stored in Briones Reservoir and subsequently used as supply to Orinda and other District's Treatment Plants. It is essential that Briones maintain this high quality because it is regularly used at the Orinda Water Treatment plant, which does not have the ability to treat water with high levels of suspended solids, or water containing algal by-products which can create taste and odor problems.

Upper San Leandro and San Pablo Reservoirs receive a greater volume of local runoff than Briones Reservoir, including runoff from developed areas. These reservoirs exhibit higher winter turbidities, higher organic matter, and greater concentrations of taste and odor compounds than Briones Reservoir. The Town of Moraga and the City of Orinda are dominant features of the Upper San Leandro and San Pablo basins, respectively. Chabot Reservoir water quality, while still acceptable, is less pristine because it receives very little supply from the Mokelumne River.

In 1998, the District banned the use of two-stroke motors on San Pablo Reservoir after the gasoline additive MTBE (methyl tert-butyl ether) was detected in the water. This additive was later banned as a constituent in gasoline.

In the same year, the District substituted the use of chloramines for chlorine in its distribution system, thus reducing public exposure to disinfection byproducts for customers throughout the service area. In addition, a hypolimnetic oxygenation system (HOS) was installed at the Upper San Leandro reservoir in 2002 to reduce the nutrient load in reservoir, thus reducing algae production with resultant taste and odor compounds, as well as total organic carbon concentrations.



Table 2-2 | Constituents of Concern in San Pablo and Upper San Leandro Watersheds

Constituent	Basis for Concern
Blue-green algae	Blue-green algae can produce cyanotoxins that threaten aquatic and terrestrial wildlife, as well as domestic animals.
Mercury	This is a naturally occurring chemical element that can be introduced into water supplies by the weathering of rocks and soils and the process of atmospheric deposition of combustion pollutants. Concerns about its toxicity have led to a reduction in its use, although it is still used in some electrical components. The proper handling and disposal of mercury containing components is critical to minimizing its release into the environment and water supplies.
Metals	Aquatic life and drinking water standards for copper, chromium, lead, nickel, and zinc are exceeded in runoff to reservoirs, but no exceedances in the reservoirs have been noted.
Nutrients	Nutrients encourage growth of algae, which leads to taste and odor problems, potential THM precursors formation, and fish kills. Taste and odor control requires treatment using ozone, which is very expensive. Shoreline vegetation can also contribute to nutrient loading as water levels increase.
Pathogens	Runoff samples have extremely high amounts of fecal bacteria, as is typical of developed watersheds. Other pathogens have been detected, including giardia and cryptosporidium. Although these pathogens have been detected, the District treated drinking water is in compliance with all regulations. Future regulations are anticipated that may require further controls.
PCBs	Polychlorinated biphenyls are a group of chemical compounds used in electrical components as a dielectric or coolant. Because of their toxicity and persistence in the environment these compounds were banned in 1979. The proper handling and disposal of PCB containing materials is critical to minimizing their release to the environment and water supplies.
Pesticides	Drinking water goals for most routinely used pesticides are less than the analytical detection limit. However, pesticides have been detected in District reservoirs. These pesticides have not been detected in treated drinking water.
Polynuclear aromatic hydrocarbons (PAHs)	PAHs are carcinogens for which drinking water standards have been established. Those standards are being attained in District reservoirs, although runoff from developed areas exceeds drinking water regulations. Treated water meets all current regulations.
Solids	Solids depositing around a treatment plant intake can reduce the operational capability of the intake and degrade the quality of the water supply to the plant.





Water is stored in Lafayette Reservoir for emergency use only. Lafayette Reservoir water has a relatively high mineral content and lower turnover rate because it receives only local runoff and is not used for water supply. Like Lake Chabot, this small reservoir exhibits substantial incidence of algal blooms. From time to time, warnings for the presence of blue-green algae have been posted at Lafayette and Chabot reservoirs. In 2015, algal toxins in Lake Chabot reached levels that resulted in prohibitions on public contact with the water.

Although local basin runoff contributes only a portion of the total inflow into East Bay reservoirs, it contributes most of the total contaminant load entering these reservoirs.

Nitrogen is important because it can stimulate the growth of algae, which has been documented to cause taste and odor problems in District reservoirs.

Developed portions of the basins contribute more contamination per acre than undeveloped portions. Such areas are typically controlled by land use management agencies other than the District, whereas the District manages a substantial portion of the relatively undeveloped lands in East Bay basins.

Undeveloped land (such as that managed by the District) contributes the greatest quantity of contaminants because this is the dominant land classification. For example, undeveloped land generates about 14,400 pounds of phosphorus per year in the Upper San Leandro Reservoir basin, whereas residential land produces about 5,700 pounds per year, even though residential areas produce phosphorus at a rate per acre that is three to 10 times that of undeveloped land.

The types of pollutants that accumulate on land (and thus in runoff) typically reflect the types of activities that occur in the area. For example, petroleum-based hydrocarbons (which include some carcinogens) accumulate on roadway surface, such as parking lots, gas stations, roads, and freeways, as a result of crankcase oil drips and fuel handling.

Runoff can flow directly across the reservoir with virtually no dilution when the density of the runoff is greater than the density of the surface layer but less than that of the lower layer in a stratified reservoir. Under such conditions, the plume of runoff plunges to the thermocline separating the two layers, then travels quickly across the reservoir. If the withdrawals are occurring at the approximate elevation of the runoff plume, then the plume with its contaminants will be withdrawn with relatively little dilution.

Soils and Geology

The geology of the District's East Bay watershed lands is quite varied. The topography of the area ranges from broad valleys and low rounded hills to steep, narrow drainages and ridge tops. Several faults have been mapped through the area. Some of these are geologically young thrust faults, but most are likely part of the regional fault system. Some may be active. The primary geologic hazards on District lands are landslides and seismic hazards that could potentially affect District facilities. Sediments from landslides and debris slides may enter the reservoirs (thereby affecting water quality) and, to a lesser extent, affect roads, trails, and recreational areas.

Most of the District's East Bay lands lie within the Millsholm-Los Gatos-Los Osos soils association. This association is characterized by steeply sloping and eroding soils. Approximately 49% of District lands have soil erosion hazard ratings of high or very high (Figure 2-2).

Issues related to soils and geologic resources on District lands involve the potential for water quality degradation in District reservoirs (particularly Briones, San Pablo, and Upper San Leandro Reservoirs) from landslides, debris slides, and soil erosion.

Vegetation and Wildlife

Vegetation and wildlife habitat types of the watershed lands include native and non-native forests and woodlands, shrublands, grasslands, riparian woodland and scrub, and wetlands. These habitats support special-status plants that are known or have potential to occur on watershed lands. A detailed description of the acreage and location of

vegetation and wildlife of watershed lands is contained in the Natural Resources Inventory (EA Engineering, Science, and Technology 1994a).

The distribution of vegetation and wildlife habitats throughout the watershed is shown in Figure 2-4.





Native Forest and Woodland

Native forest and woodlands on District lands cover approximately 11,960 acres and include redwood, knobcone pine, mixed hardwood, composed of coast live oak, mixed oak, and black oak woodlands, and oak savanna, composed of mixed oak and valley oak.

The redwood forest and knobcone pine forest are both located in the Upper San Leandro Reservoir watershed. The **redwood forest** is considered a locally uncommon plant community because of its limited range in the East Bay area. Although this forest was logged more than a century ago, it has recovered and displays many characteristics of a mature forest that are important to wildlife.

Large trees, moderate to dense canopy cover, and snags provide nesting habitat for raptors, woodpeckers, and cavity-nesting birds. A thick litter layer provides cover for amphibians and small mammals.

The **knobcone pine forest** is unique in that it is one of only two stands located in the East Bay area. Knobcone pine communities require periodic fire for regeneration. The stand is mature and has not burned in several decades. Dense manzanita chaparral forms the understory. The knobcone pines in this stand are of varied size and form a sparse to open canopy. Knobcone pines produce closed cones that are used by some bird and mammal species. Snags provide nest cavities, and the dense chaparral understory and a thick litter layer offer cover to shrub-nesting birds and small animals.

Hardwood forest is the predominant forest type of the watershed lands, covering approximately one-third of the area owned by the District. The mixed hardwood forest (comprising coast live oak, California bay, and madrone) is the most common subtype. Mixed oak woodland is less common, occurring mostly around the margins of San Pablo and Briones Reservoirs. Black oak woodland is the least common subtype. Hardwood forests provide habitat for approximately 175 species of wildlife. These forests provide snags and cavities for nesting birds, a food supply of acorns used by many birds and mammals, a litter layer ranging from small leaves and twigs to large downed logs, and, in damp sites, a lush herbaceous understory. Hardwood forests on watershed lands often encompass the riparian zones of intermittent and perennial creeks.

Oak savanna consists of patches of widely spaced oak trees growing on rolling, grassy hillsides. It is dominated by coast live oak and valley oak. Oak savanna is distributed throughout the watershed but is most common in Alhambra Valley. Oak savanna provides nesting and roosting sites in a relatively open landscape for birds that forage in the open. Oak trees provide snags and cavities for cavity-nesting birds, downed logs for small mammals and reptiles, and an acorn crop used by many species. Many wildlife species associated with hardwood forest or open grassland also use oak savannas.

Sudden Oak Death (SOD) is a forest disease caused by the pathogen *Phytophthora ramorum*, which has reached epidemic levels in some coastal forests of central and

northern California. Isolated occurrences of SOD have been found on the East Bay watersheds. Infested sites are natural areas characterized by Coast live oak, California bay laurel, and Willow riparian woodland. Because the areas where the infection is occurring in the watershed are remote, there is relatively low risk for spread or related fire hazard. SOD does not adversely impact source water quality. While eradication is improbable, specific SOD BMPs will help slow the spread of the disease: www.suddenoakdeath.org/diagnosis-and-management/best-management-practices/.

Non-Native Forest

Non-native forest on District watershed lands consists mostly of Monterey pine and eucalyptus plantations.

The largest acreage of *Monterey pine* is in the northern portion of the watershed around San Pablo Reservoir. These stands exhibit little natural regeneration. Monterey pine plantations support a wildlife community similar to that occurring in hardwood and native conifer stands.

Eucalyptus plantations are found scattered throughout the watershed, with the largest acreages being in the San Pablo Reservoir and Chabot Reservoir watersheds. These stands are now naturalized communities that maintain their

California Senate Bill 1334, the Oak Woodlands Conservation Act, became law on January 1, 2005 and was added to the CEQA statutes as Section 21083.4. This law, applicable to counties but not to cities or other public agencies, protects oak woodlands that are not protected under the State Forest Practice Act. Preservation of oak woodlands is a management objective for EBMUD.

populations through natural regeneration. Eucalyptus trees provide a source of nectar and pollen that attracts insects, which in turn serve as a prey base for birds and other animals. Hummingbirds and many migratory bird species feed extensively on the nectar. In addition, eucalyptus trees produce an abundant seed crop. These tall trees are used as roosting sites for birds. Bald eagles have roosted in eucalyptus groves in the San Pablo Reservoir watershed, and a great blue heron rookery exists in the eucalyptus trees at Watershed Headquarters in Orinda. A great blue heron and great egret rookery was active near the northern arm of Chabot Reservoir in the recent past.



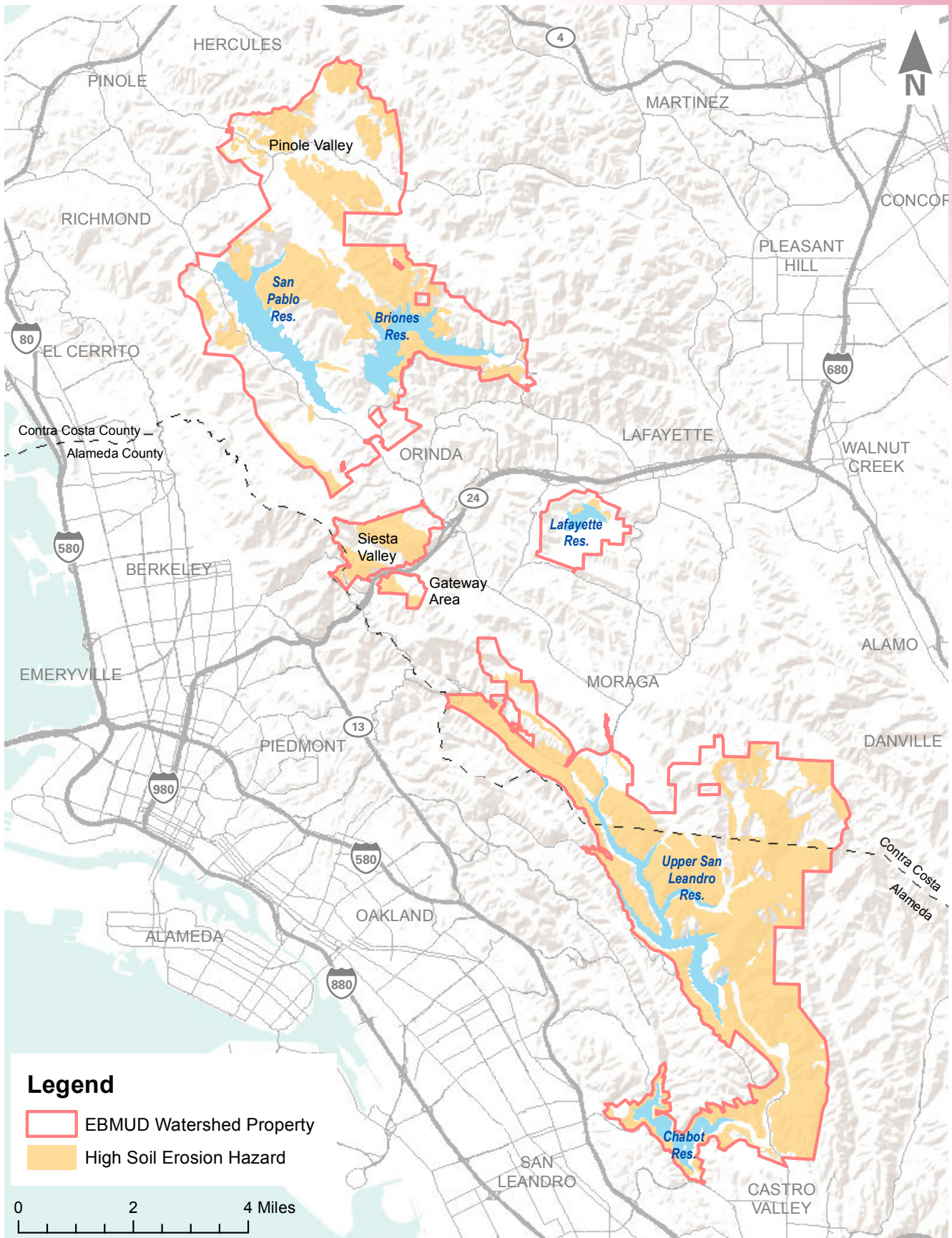


Figure 2-2 | Areas of high to very high soil erosion hazard

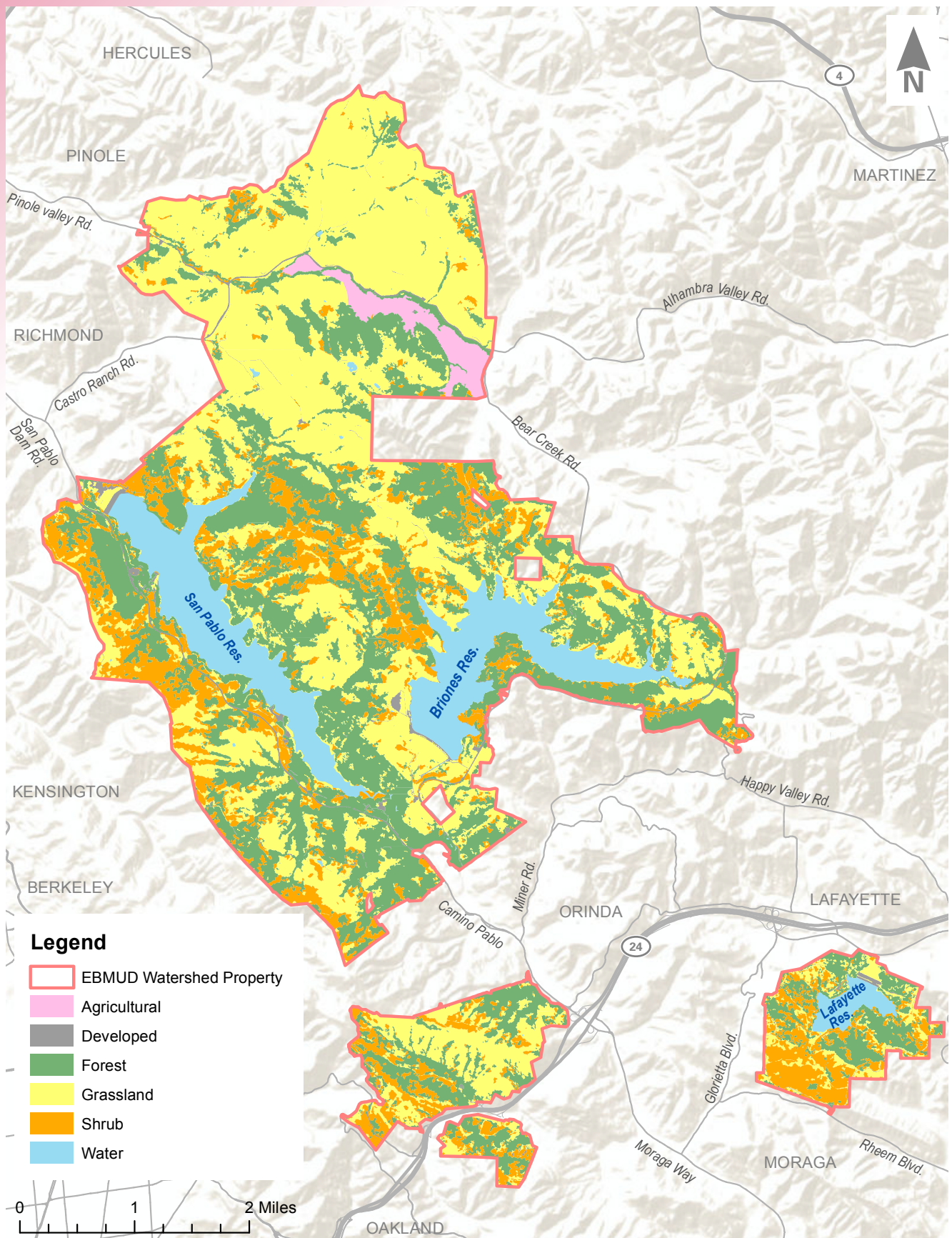


Figure 2-3 (North) | Distribution of vegetation on East Bay watershed lands

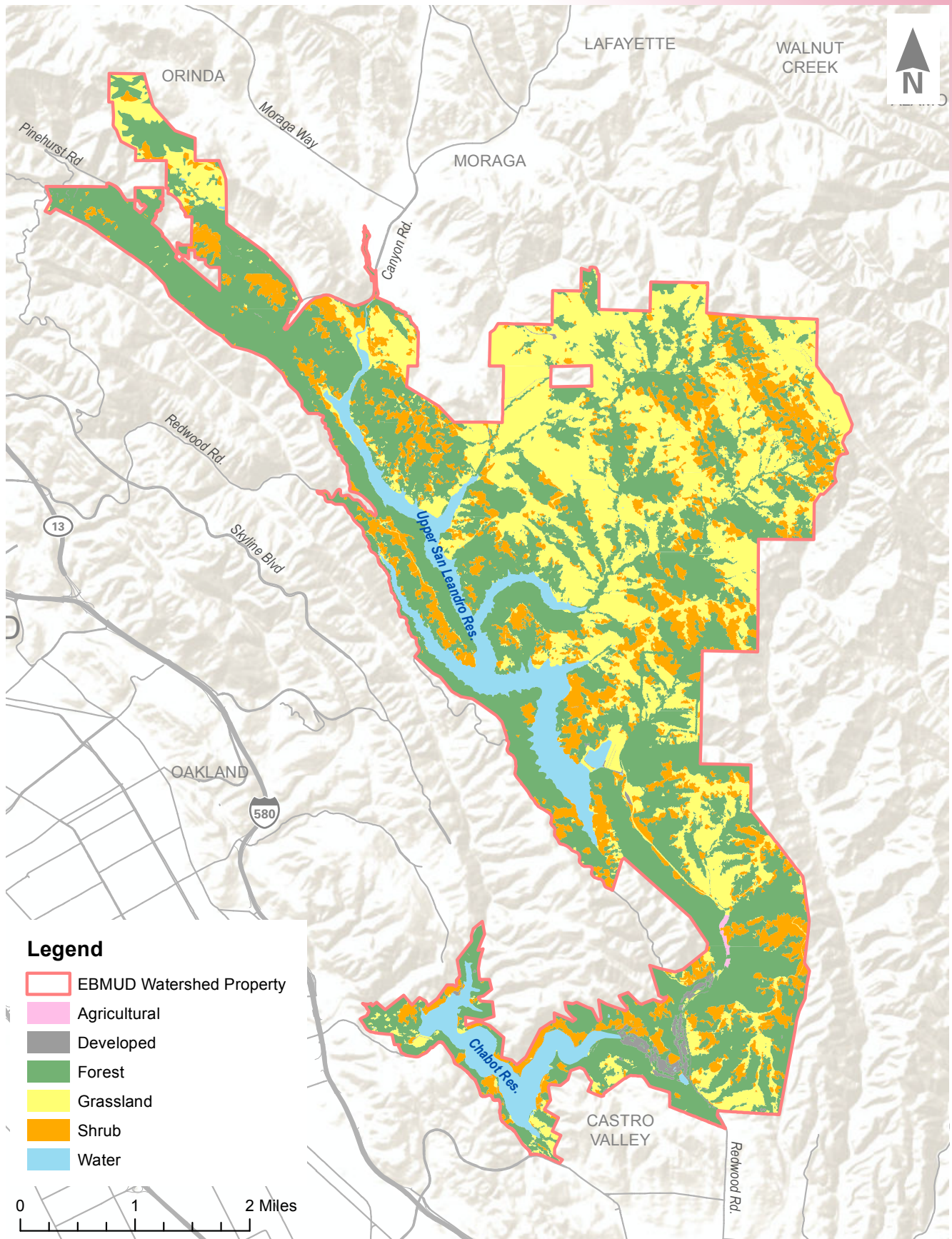


Figure 2-3 (South) | Distribution of vegetation on East Bay watershed lands

Shrublands

A wide variety of natural shrub types occur on watershed lands. The three major types of shrubland are coastal scrub, chamise-black sage chaparral, and manzanita chaparral. Shrublands cover approximately 4,260 acres of watershed lands.

Coastal scrub community is composed of coyote brush scrub, California sagebrush, and bitter cherry scrub. Coyote brush is the most common subtype in the watershed. California sagebrush is less common but supports the highest biological diversity of the coastal shrub subtypes. Bitter cherry is the most limited subtype and has developed to a substantial degree on only one site in the Upper San Leandro Reservoir watershed.

Grasslands

Three types of grassland, covering approximately 9,720 acres, are found on watershed lands: non-native grassland, coastal prairie, and perennial bunchgrass.

Non-native grassland is the dominant annual plant species on watershed lands. Most of these species are native to the Mediterranean region.

Coastal prairie is found in areas where the influence of coastal fog is strong. Most known localities of coastal prairie are along San Pablo Ridge.

Native perennial bunchgrass is scattered throughout the annual grasslands and as understory patches in shrublands

Riparian and Wetland Vegetation

Riparian and wetland vegetation are important components of watershed lands and account for approximately 800 acres of that area. This vegetation community is composed of mixed deciduous riparian woodland, coast live oak, California bay, and willow riparian woodland, willow riparian scrub, herbaceous and bare cover, freshwater marsh, and seep and spring wetlands.

Mixed deciduous riparian woodland occurs along minimally disturbed segments of perennial streams in the Pinole, San Pablo, Upper San Leandro, and Chabot Reservoir watersheds. Streamside woodlands consist of broadleaved deciduous trees, especially white alder and black cottonwood. This community typically occurs as a narrow ribbon winding through upland communities. The presence of water, moist soils, and a moist litter layer provided by this habitat type is important for amphibians such as frogs and newts.

Coast live oak, California bay, and willow riparian woodland occurs along small, intermittent tributaries on

Chamise-black sage chaparral community is found mostly within the Upper San Leandro Reservoir watershed along Rocky Ridge, but it is also found in the Pinole watershed.

Manzanita chaparral is distributed irregularly throughout the watershed lands. The largest stands are located in the Briones and Upper San Leandro Reservoir watersheds.

Shrubland habitats provide nesting sites for shrub-nesting birds and a dense substrate for small mammals and reptiles. Shrublands are considered core habitat for the Alameda whipsnake.

and woodlands. Most of these patches are only a few meters in diameter. Several dozen locations in the watershed that have geographical protection from disturbance, such as cliffs, some roadsides, and ravines, support larger patches of this community.

Grasslands are used by a variety of wildlife species. Small mammals and birds forage on grass seeds and find cover in the denser grass stands. Carnivores such as coyotes, foxes and bobcats, and hawks and owls prey on these small mammals. Insects inhabiting grasslands are eaten by birds, including shrikes and swallows. Scavengers, such as turkey vultures, forage in open grasslands.

moderate to steep slopes. This community covers is found in all watersheds except that of Lafayette Reservoir, with the greatest acreage found in the San Pablo and Upper San Leandro Reservoir watersheds.

Willow riparian scrub occurs in scattered patches throughout the watershed area. This community occurs along perennial and intermittent streams and is characterized by streamside thickets. It occurs in all watersheds, with the greatest concentration being in the San Pablo and Upper San Leandro Reservoir and Pinole watersheds.

Herbaceous and bare (unvegetated) riparian areas account for nearly and encompass all riparian areas not dominated by trees or shrubs. These areas are found in all the watersheds except that of Lafayette Reservoir. The community occurs naturally along small intermittent and ephemeral streams. In some cases, herbaceous and bare riparian areas are created as a result of disturbance by livestock grazing.

Freshwater marsh is uncommon on watershed lands and is found primarily around the five reservoirs. The largest freshwater marsh occurs along the edges of Upper San Leandro Reservoir. Dense emergent vegetation provides nesting habitat and cover for waterfowl, wading birds, and passerine birds. Standing water and saturated soils provide drinking water and moist habitat for various mammals, reptiles, and amphibians.

Seep and spring wetlands are scattered throughout the watershed. Vegetation typically occurs in small patches around water sources and consists of freshwater marsh,

herbaceous or bare riparian areas, and willow scrub. More than 130 herbaceous plant species and 20 species of woody plants have been identified in these areas.

Jurisdictional wetlands are protected under Sections 401 and 404 of the Clean Water Act and Sections 1600–1616 of the California Fish and Game Code. EBMUD consults with and obtains permits from the U.S. Army Corps of Engineers, the Regional Water Quality Control Board and the California Department of Fish and Wildlife prior to conducting activities that may impact jurisdictional wetlands.



Special-Status Species

The watershed supports many plant and animal species that have been identified by state and federal agencies and scientific organizations as uncommon or declining regionally or statewide (Table 2-3, on pages 32-41). Collectively, these species are referred to as special-status species. Special-status species may be protected by the California Environmental Quality Act, the Federal Endangered Species Act, the California Endangered Species Act and the Migratory Bird Treaty Act.

Under the Federal Endangered Species Act (ESA), the Secretary of the Interior and the Secretary of Commerce jointly have the authority to list a species as threatened or endangered (16 United States Code [USC] 1533[c]). The purpose of the ESA is to protect and recover imperiled species and the ecosystems upon which they depend. The ESA is administered by the U.S. Fish and Wildlife Service and the Commerce Department's National Marine

Fisheries Service (NMFS). EBMUD adopted the East Bay Low Effect Habitat Conservation Plan (HCP) in 2008 to protect ESA listed species and their habitats on watershed lands. Seven special-status species are covered for incidental take under the plan including: California red-legged frog, rainbow trout, Alameda whipsnake, pallid manzanita, Santa Cruz tarplant, western pond turtle and pallid bat. The HCP establishes biological goals and objectives for each of the covered species and outlines avoidance and minimization measures designed to reduce or eliminate take of species from watershed activities. The HCP also requires monitoring and enhancement of habitat for these species on the watershed.

The California Endangered Species Act (CESA) protects and preserves all native species of fishes, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction or significant

decline. The CDFW has the responsibility for maintaining a list of threatened or endangered species. The CDFW also maintains a list of candidate species, which are species that the CDFW has formally noticed as under review for addition to the threatened or endangered species lists. Additionally, CDFW maintains lists of species of special concern, fully protected species and special plants or animals, which receive consideration by CDFW and under CEQA.

Visual Resources

The visual environment of the District's East Bay watershed lands is defined primarily by the five reservoirs and the surrounding uplands, which provide the central visual element in each reservoir watershed. Visual resources in Pinole Valley are distinguished by the valley floor and its surrounding uplands. The water levels of three of the five reservoirs do not fluctuate substantially (Chabot, Lafayette, and, to a lesser extent, Briones), so their shorelines maintain a more natural character than is typical at most reservoirs. San Pablo and Upper San Leandro Reservoirs experience substantial annual drawdown.

The visual character of the watershed lands changes dramatically throughout the year. In winter and early spring, they are green and lush as annual grasses grow in response to seasonal rains and cool temperatures. During spring, wildflowers cover portions of watershed lands, providing a colorful display. In summer, the annual grasses

Cultural Resources

- A total of 47 archaeological and historic resource sites have been mapped within the District's East Bay watershed lands (EA Engineering, Science, and Technology 1994a). The primary issues related to cultural resources on District lands are to prevent disturbance of presently unknown cultural resources due to implementation of any future management action in the watershed, and the need to coordinate with representatives of the Native American community to assess impacts of these actions.

The San Pablo Reservoir watershed has 19 known cultural resource sites. Nine are prehistoric archaeological sites, of which five also have a historic component. Nine are historic archaeological sites, two of which also have associated structures, and one of which is a historic structure with no known or suspected archaeological component. This historic structure is the Orinda Filter Plant and has been identified as a significant historic resource. In addition to this significant site, eight archaeological sites (both prehistoric and historic)

EBMUD consults with CDFW for all projects that have the potential to impact sensitive species.

The Migratory Bird Treaty Act prohibits killing, possessing, or trading in migratory birds, except in accordance with regulations prescribed by the Secretary of the Interior. EBMUD has adopted best management practices to protect nesting birds in compliance with the Migratory Bird Treaty Act.

dry and turn golden brown until seasonal rainfall begins in late fall and winter.

Watershed lands are primarily steep to rolling hillsides that contrast sharply with the level water surfaces of the reservoirs themselves. The expanse of these lands is visually impressive, particularly when combined with the substantial parklands that adjoin a large portion of the watershed, including EBRPD lands, the open space areas outside nearby cities, and the public open space and undeveloped areas within adjoining communities. This landscape stretches across a significant portion of the East Bay area and forms a unified, high-quality visual landscape.

EBMUD has established a conservation bank in the Pinole watershed with conservation/preservation credits associated with California red-legged frog and Alameda whipsnake. The CDFW and USFWS approved the bank in January 2017.

have been determined not to be significant resources, and the significance of 10 sites is unknown.

Three known cultural resources are located in the Briones Reservoir watershed. One is a prehistoric archaeological site that appears to have little research potential and is not considered significant. Another site is the historic Hampton's Grave site, the significance of which has not been determined. The third site is the Felipe Briones Adobe, a historic archaeological site that is considered a significant resource.

Five cultural resources are located in the Pinole watershed. Three are prehistoric sites: One is a well-documented midden site with good depositional integrity and research potential, the second consists of isolated artifacts, and the third is a possible site where shell fragments have been observed. The significance of these resources has not been determined. The other two resources (Mohring Homestead and Tormey Homestead) are historic sites.

One cultural resource is known to be present in the Lafayette Reservoir watershed. The Lafayette Reservoir dam is a historic feature but is not considered to be a significant resource.

A total of 12 known cultural resource sites are located in the Upper San Leandro Reservoir watershed. Nine are historic archaeological sites, one of which has a prehistoric component. Eight of the sites have associated structures or features. Two sites are historic structures and one is a prehistoric site. Four

of the sites are considered not to be significant, and the significance of eight sites is unknown.

Seven known cultural resources are present in the Chabot Reservoir watershed. One is a prehistoric archaeological site, the significance of which is unknown. Four of the sites are historic structures or features, one of which has a historic archaeological component. One of the sites is considered not to be significant, and the significance of the other sites is unknown.

Recreation and Facilities

The District's East Bay watershed is a large and unique resource of semi-wild, open land that is located in one of the most densely populated areas in the country. District lands provide wildland recreational opportunities for Bay Area residents while serving as a biological preserve containing rich and diverse plant and animal habitats. The proximity of this semi-wilderness to a major urban area is rare. With the District's commitment to the two primary goals of protecting water quality and biodiversity, it will remain a priority to preserve the more remote, interior areas of the watershed as a refuge for intact undisturbed habitat particularly important to special status species. The District has historically restricted human access and disturbance in these areas, including strictly limiting public recreation.

Watershed lands and reservoirs are an important recreation resource because they provide opportunities for appropriate use of unique terrestrial features, reservoir water bodies, and open space areas adjacent to District property (Figure 2-4).

Watershed lands offer recreation that is oriented toward enjoyment of a natural landscape with few artificial artifacts and a sense of remoteness. The lands provide expansive open space views, wildlife viewing opportunities, hiking and equestrian trails, and limited vehicular access.

District-owned reservoirs also provide varying degrees of water-dependent and water-enhanced recreational opportunities. San Pablo Reservoir provides opportunities for shoreline and boat fishing and other forms of motorized and nonmotorized boating. Briones Reservoir allows only limited water-dependent use for college crew team practice. Lafayette Reservoir allows only use of "cartop" boats (sailboats, canoes, row boats, paddle boats, and electric motor boats) and fishing from docks and the shoreline. The Upper San Leandro Reservoir is located in a pristine setting with no water-dependent recreation allowed on or near the reservoir. Lake Chabot is located in the Anthony Chabot Regional Park and is operated by EBRPD under a





long-term lease with the District. Water-dependent uses allowed at the lake include fishing and many types of nonmotorized boating.

District lands also offer a unique regional recreational opportunity by virtue of their geographic position. They are surrounded by large land parcels belonging to EBRPD and are reached from paved roads and trails that connect regional open space lands. The watershed provides experiences of greater solitude and quiet that complement those of adjacent regional parks where more general access and a wider variety of recreational opportunities are available.

Within District lands, three developed regional recreation areas were designed to serve large numbers of people at San Pablo, Lafayette, and Chabot Reservoirs. Although facilities vary at each recreation area, they generally include marinas, boat docks, boat launch ramps, fishing docks, picnic areas, informal play areas, parking, and supporting facilities (e.g., restrooms, bait and tackle shops, and food services). Substantial facilities exist at all of these recreation areas to serve the disabled community. A recreational trail system also provides controlled public access to a large portion of the watershed. Further information on the watershed trail system can be found at: www.ebmud.com/recreation/east-bay/east-bay-trails/.

Description of Watershed Planning Zones

Watershed planning zones are used to identify District lands that have similar site conditions and require similar management direction. Planning zones are designated only for watershed property and are intended to help watershed staff implement management guidelines and watershed land use programs.

Conditions Used to Define Watershed Planning Zones

Specific conditions used to define planning zones are watershed status, development status of adjacent lands, and development status of District property.

Watershed Status of District Lands

The location of District-owned watershed lands in relation to the basin boundaries for each District reservoir is the primary consideration in designating planning zones. District property outside a reservoir basin is recognized as a separate zone because water quality protection is not as high a priority for that property.

Development Status of Adjacent Basin Lands

The land use and development status of land adjacent to District property is used to identify interface zones, in which public safety (especially fire protection), water quality management (including urban runoff problems), and urban encroachment are high-priority issues. Two levels of interface zones are recognized where adjacent lands are developed. These zones differ based on whether adjacent lands are within or outside District reservoir basins.

Development Status of Watershed Property

Watershed lands contain a variety of facilities for water service operations, recreation, and maintenance. The operation and management requirements of these differ from those of undeveloped, open space lands. Therefore, these developed watershed assets are recognized as a separate zone.



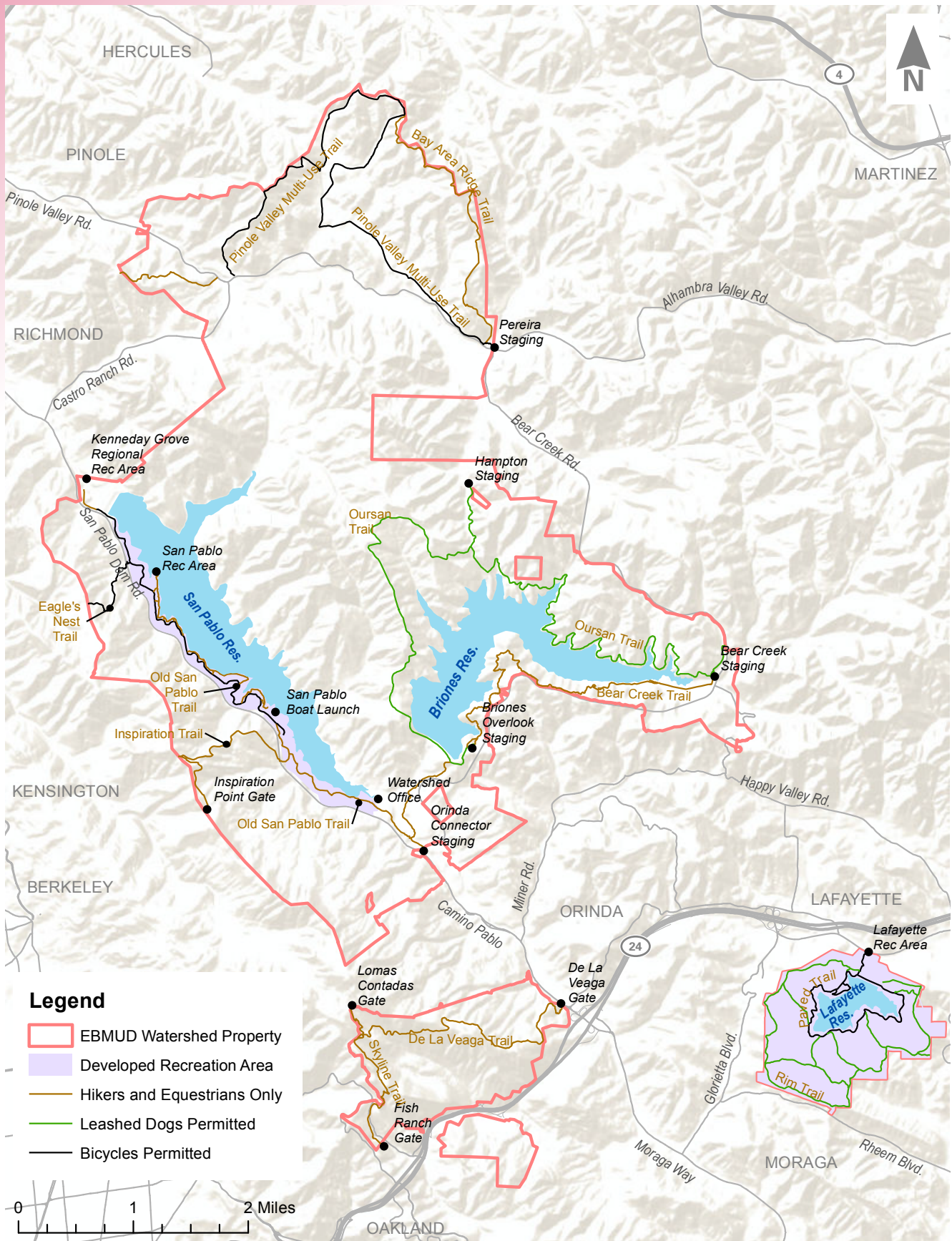


Figure 2-4 (North) | Major recreation sites and trails

Section 2 District Lands and Resources

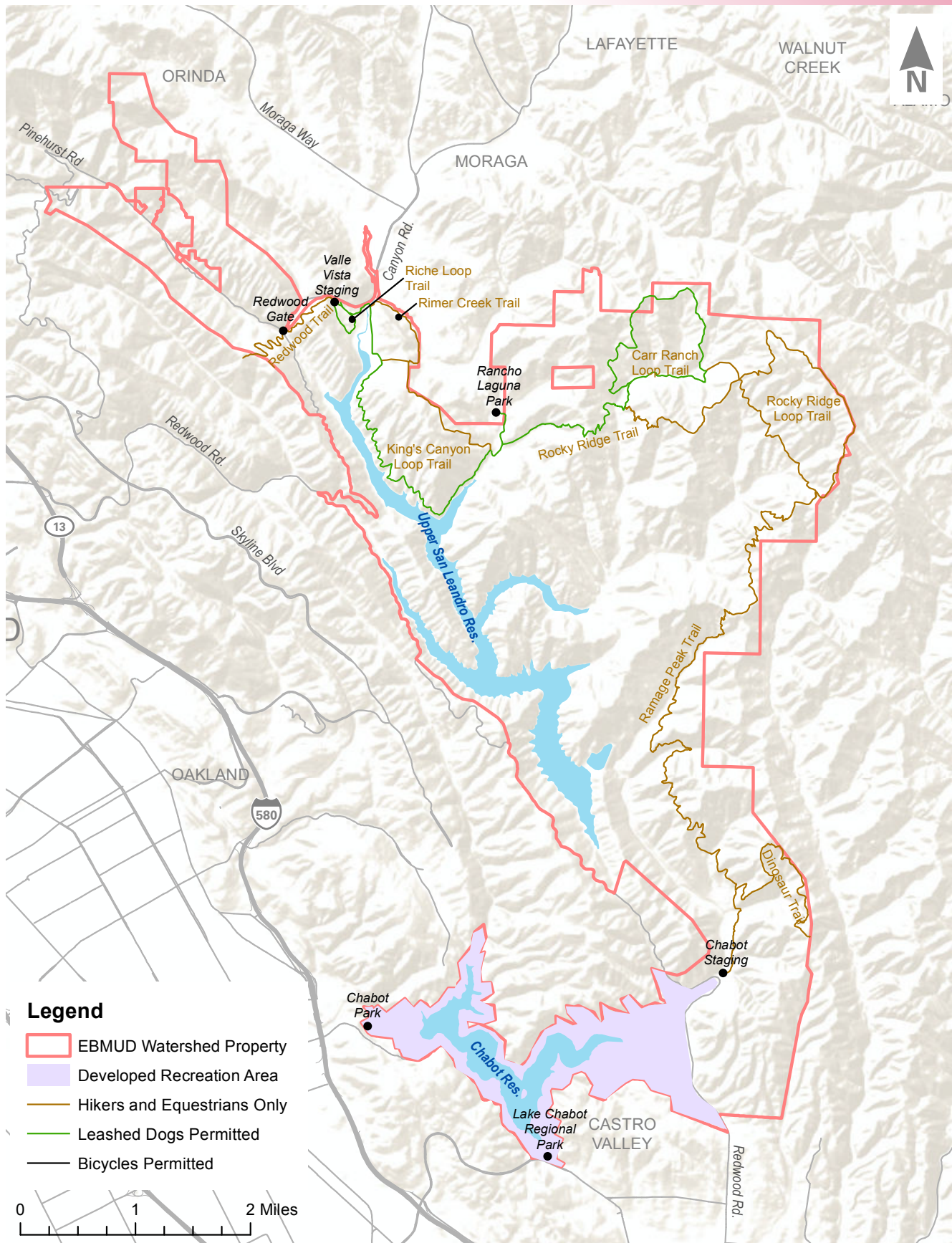


Figure 2-4 (South) | Major recreation sites and trails

Table 2-3 | Special-Status Plant and Animal Species Known to Occur on East Bay Watershed Lands

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
Plants				
Box elder	<i>Acer negundo</i> <i>var. interius</i>	-/-A2	Prefers bright sunlight, growing on floodplains and riparian habitats	Grows in San Leandro Creek near Redwood and Pinehurst Rd (USL)
Five-fingered fern	<i>Adiantum</i> <i>aleuticum</i>	-/-A2	Prefers fertile, moist soil in rock crevices near streams. It tolerates serpentinite rock well, and is confined to this mineral-rich rock in some areas.	Found in Huckleberry Preserve along creek near Pinehurst Rd and in Siesta Valley (SP, USL)
Hall's bentgrass	<i>Agrostis hallii</i>	-/-A2	Open woodland and forests of the coastal mountain ranges	San Pablo Ridge, 1.6 mile N of Inspiration Point (SP)
California amaranth	<i>Amaranthus</i> <i>californicus</i>	-/-A2	Moist flats and near bodies of water	Found near Briones and San Pablo Reservoirs (B, SP)
Bent-flowered fiddleneck	<i>Amsinckia</i> <i>lunaris</i>	-/-1B.2	Open woods and valley and foothill grasslands; 50-100 m	Found in many locations throughout the watersheds (B, SP, L, USL)
California androsace	<i>Androsace</i> <i>elongata</i> ssp. <i>Acuta</i>	-/-4.2	Grows in a variety of habitats, including chaparral, scrub, and woodland	Found on Vollmer Peak and in Siesta Valley (SP)
Woodland madia	<i>Anisocarpus</i> <i>madioides</i>	-/-A2	Forests and woodlands in the coastal range	Flicker Ridge in Canyon (USL)
Pallid manzanita	<i>Arctostaphylos</i> <i>pallida</i>	F/T/SE/1B.1	Broadleaved upland forest, chaparral, and open woods on siliceous shales of slopes and ridges in the Berkeley-Oakland Hills; 200-350 m	One population on former Goldberg property in Canyon adjacent to Pinehurst Road (USL)
Wild ginger	<i>Asarum</i> <i>caudatum</i>	-/-A2	Rich moist habitats	Grows on Flicker Ridge, Gateway, and near Tilden on Wildcat Canyon Rd (SP, USL)
Milkweed	<i>Asclepias</i> <i>speciosa</i>	-/-A2	Well drained soils in near full to full sun, pastures, meadows, etc.	Grows near Kaiser Creek, Rimer Creek, and near Miller Canyon (USL)
California ground-cone	<i>Boschniakia</i> <i>strobilacea</i>	-/-A2	Parasite of Madrone and manzanita. Grows in chaparral and woodlands	Flicker Ridge and Briones Reservoir (B, USL)

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
Mt. Diablo fairy lantern	<i>Calochortus pulchellus</i>	-/-/1B.2	Wooded slopes, chaparral, and valley and foothill grasslands; 200-800 m	Grows on Rocky Ridge, Cull Hill Ridge, and Mendonca Ranch (USL)
Oakland star-tulip	<i>Calochortus umbellatus</i>	-/-/4.2	Chaparral, broadleaved upland forests, and valley and foothill grasslands; 100-700 m	Grows on Rocky Ridge, Kaiser Creek, Eureka Peak, and Ramage Peak, as well as Gateway, and San Pablo Creek (SP, USL)
Hill sun cup	<i>Camissonia graciliflora</i>	-/-/A2	Valley grassland and foothill woodland habitats	Grows on Skyline Trail in Siesta Valley (SP)
Dense sedge	<i>Carex densa</i>	-/-/A2	Wetland species that grows in meadows and on slopes with wetland habitat	Grows at San Leandro Reservoir and Siesta Valley (USL, SP)
Dudley's sedge	<i>Carex dudleyi</i>	-/-/A1	Grows on hillsides, usually in wetland habitats	Grows in streambanks near head of Siesta Valley (SP)
Few-ribbed sedge	<i>Carex lenticularis</i>	-/-/A1	Riparian habitats and wetlands	NW end of San Pablo Reservoir (SP)
Franciscan Indian paintbrush	<i>Castilleja subinclusa</i> ssp. <i>Franciscana</i>	-/-/A2	Grows in a variety of habitats including chaparral	Grows on Flicker Ridge (USL)
California lilac	<i>Ceanothus thyrsiflorus</i> var. <i>thyrsiflorus</i>	-/-/A2	Typically found in chaparral habitats	Grows on San Pablo Ridge (SP)
Golden chinquapin	<i>Chrysolepis chrysophylla</i> var. <i>minor</i>	-/-/A2	Typically found in woodland habitats in the coastal ranges	Grows on Flicker Ridge (USL)
Franciscan thistle	<i>Cirsium andrewsii</i>	-/-/1B.2	Broadleaved upland forests and coastal scrub; <100 m	Grows at Lily Spring on San Pablo Ridge (SP)
Brownie thistle	<i>Cirsium quercetorum</i>		Coastal grasslands and open woodlands	Grows in Gateway and Vollmer Peak areas (SP)
Purple clarkia	<i>Clarkia purpurea</i> ssp. <i>Purpurea</i>	-/-/A2	Grows in many habitat types throughout the coast ranges	Found in Hampton Preserve and Pinole Peak (P)
Coast range montia	<i>Claytonia gypsophiloides</i>	-/-/A2	Typically found in moist areas with rocky soils, often in serpentine soils	Flicker Ridge (USL)
Torrey's cryptantha	<i>Cryptantha torreyana</i>	-/-/A2	Dry to moist, sparsely vegetated soil of open forests at low to mid-elevations.	Siesta Valley (SP)

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
California dodder	<i>Cuscuta californica</i> var. <i>californica</i>	-/-A2	Usually found in grassland or chaparral habitats	Grows along south end of San Pablo Reservoir (SP)
Bush poppy	<i>Dendromecon rigida</i>	-/-A2	Dry slopes and washes, prefer areas that have been burned	Grows near Briones Reservoir and on Flicker Ridge (B, USL)
Tufted hairgrass	<i>Deschampsia cespitosa</i> ssp. <i>holciformis</i>	-/-A2	Wetland and riparian habitats	Grows on Flicker Ridge, Lily Spring and San Pablo Ridge (SP, USL)
Bleeding heart	<i>Dicentra formosa</i>	-/-A2	Moist woodland, forest, and streambanks	Grows in Canyon and near San Pablo Reservoir (SP, USL)
Western leatherwood	<i>Dirca occidentalis</i>	-/-1B.2	Moist, partially shaded slopes; broadleaved upland forests, closed-cone conifer forests, riparian habitats, and chaparral; 50-300 m	Grows near San Pablo Creek and in Gateway Valley (SP)
Burhead	<i>Echinodorus berteroi</i>	-/-A2	Aquatic plant	Grows in San Leandro Reservoir (USL)
Waterwort	<i>Elatine brachysperma</i>	-/-A1	Found in muddy shores and shallow pools	Grows in San Pablo Reservoir (SP)
Blue wildrye	<i>Elymus glaucus</i> spp. <i>jepsonii</i>	-/-A2	Foothill grasslands	Found on Flicker Ridge (USL)
Hansen squirreltail	<i>Elymus X hansenii</i>	-/-A2	Open exposed grasslands	Found at Briones Reservoir (B) and San Pablo Ridge (SP)
Coast coyote-thistle	<i>Eryngium armatum</i>	-/-A2	Typically grows along beaches and coastal bluffs	Found at Briones Reservoir (B)
Trifid bedstraw	<i>Galium trifidum</i> var. <i>pacificum</i>	-/-A2	Found in forested habitats, often in wetlands	Grows on Flicker Ridge (USL)
Western manna grass	<i>Glyceria occidentalis</i>	-/-A2	Found in freshwater marsh habitats	Grows in ponds near Briones Reservoir (B)
Diablo sunflower, or helianthella	<i>Helianthella castanea</i>	-/-1B.2	Open, grassy areas, often associated with broadleaved upland forests, riparian woodland, chaparral, and coastal scrub; 200-1,300 m	Grows at several locations on San Pablo Ridge, Rocky Ridge, Lafayette Reservoir, Siesta Valley, and in Pinole Valley (L, P, SP, USL)
Santa Cruz tarplant	<i>Holocarpha macradenia</i>	FT/SE/1B.1	Coastal prairie and valley and foothill grasslands; prefers sandy clay soil; < 100 m	A planted species on the watershed; not found during recent surveys, likely extirpated

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
Douglas iris	<i>Iris douglasiana</i>	-/-A2	Typically found in grasslands	Siesta Valley (SP)
Northern California black walnut	<i>Juglans hindsii</i>	-/-1B.1	Riparian forests and woodlands; requires deep alluvial soil associated with a creek or stream; 50-200 m	Known at Kaiser Creek just upstream of Upper San Leandro Reservoir (USL)
Woodland layia	<i>Layia gaillardioides</i>	-/-A2	Grows in a variety of habitats, including woodlands	Grows near Hampton Rd, San Pablo Ridge, and Sobrante Ridge (P, SP)
Tall layia	<i>Layia hieracioides</i>	-/-A2	Found in chaparral, scrub, and woodland habitats	Grows at Lafayette Reservoir, San Pablo Ridge, and Vollmer Peak (L, SP)
Pacific lovage	<i>Ligusticum apiifolium</i>	-/-A1	Grows in meadows and shaded forests	Found near the boundary of Sibley Regional Park (SP)
Leopard lily	<i>Lilium pardalinum</i> ssp. <i>pardalinum</i>	-/-A2	Typically found along streamsides and wetland habitats	Flicker Ridge, Lily Spring, and San Pablo Ridge (SP, USL)
Rush lotus	<i>Lotus junceus</i> var. <i>bioletti</i>	-/-A1x	Typically grows in coastal sand and chaparral habitats	Historic find at Flicker Ridge (USL)
Yellow bush lupine	<i>Lupinus arboreus</i>	-/-A2	Found in coastal scrub and dune habitats	Grows on San Pablo Ridge (SP)
Wooly malacothrix	<i>Malacothrix floccifera</i>	-/-A2	Occurs in forest, woodland, and chaparral habitats	Grows on Flicker Ridge (SP) and at Hampton Rd (P)
California meconella	<i>Meconella oregona</i>	-/-1B.1	Occurs on sandy bluffs, meadows, and streambanks	Grows on San Pablo Ridge and near Sibley Regional Park (SP)
California sandwort	<i>Mimuartia californica</i>	-/-A2	Grows in chaparral, vernal pools, and roadside habitats, among others	Found at Hampton Rd and possibly Flicker Ridge (P, SP)
San Antonio monardella	<i>Monardella antonina</i> ssp. <i>antonina</i>	-/-3	Open rocky slopes in chaparral and open woods; 500-900 m	Reported from South Hampton Road on the watershed (P)
Wax myrtle	<i>Morella californica</i>	-/-A2	Grows in coastal forests	Found at Lily Spring and near the southwest end of San Pablo Reservoir (SP)
California broom-rape	<i>Orobanche vallicola</i>	-/-A2	Found in forests and woodlands	Found on Sobrante Ridge (SP)

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
Fire poppy	<i>Papaver californicum</i>	-/-A2	Grows in chaparral, oak woodlands, and other habitats, usually following fires	Found in Siesta Valley (SP)
Foothill penstemon	<i>Penstemon heterophyllus</i> var. <i>purdyi</i>	-/-A2	Dry rocky habitats	Found in Siesta Valley (SP)
Pentachaeta alsinoides	<i>Pentachaeta alsinoides</i>	-/-A1	Typically occurs in scrub and grassland habitats	Grows on Rocky Ridge Trail (USL)
Coltsfoot	<i>Petasites frigidus</i> var. <i>palmatus</i>	-/-A1	Prefers moist shaded ground, typically along streambanks and seeps	Grows in Canyon, along San Leandro Creek (USL)
Phacelia	<i>Phacelia egena</i>	-/-A1x	Grows on slopes, streambanks, flats, chaparral, woodland	Historical record along Hampton Rd. (P)
Stinging phacelia	<i>Phacelia malvifolia</i>	-/-A2	Grows in forest and scrub habitats	Found on Rocky Ridge (USL)
Knobcone pine	<i>Pinus attenuata</i>	-/-A2	Prefers dry rocky soils, often found on ridgetops	Grows on Flicker Ridge (USL)
Elongate piperia	<i>Piperia elongata</i>	-/-A2	Typically found in mountain forests and scrub habitat	Found near San Pablo Reservoir (SP)
Michael's rein orchid	<i>Piperia michaelii</i>	-/-4.2	Coastal plains, hills and mountains	Grows at Briones Reservoir and Ramage Peak (B, USL)
California milkwort	<i>Polygala californica</i>	-/-A1	Grows in woodlands and chaparral habitat	Found in Canyon and on Flicker Ridge (USL)
Selfheal	<i>Prunella vulgaris</i> var. <i>lanceolata</i>	-/-A1	Typically grows in wetland and riparian habitat	Found at Gateway (SP)
Round wooly-marbles	<i>Psilocarphus chilensis</i>	-/-A1	Usually found in dune, vernal pool and coastal habitat	Growing in the fire road on San Pablo Ridge (SP)
Lobb's aquatic buttercup	<i>Ranunculus lobbii</i>	-/-4.2	Aquatic plant found in shallow water habitat	Found in a small pond on Rocky Ridge Trail (USL)
Curvepod yellowcress	<i>Rorippa curvisiliqua</i>	-/-A2	Found along lakeshores and riverbanks, meadows, roadsides, and mudflats	Grows at Briones and San Pablo Reservoirs (B, SP)
Marsh yellowcress	<i>Rorippa palustris</i> var. <i>occidentalis</i>	-/-A2	Found along lakeshores and riverbanks, meadows, roadsides, and mudflats	Grows at Briones and San Pablo Reservoirs (B, SP)

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
Golden dock	<i>Rumex maritimus</i>	-/-A2	Typically occurs in wetland and wet habitats	Found at San Pablo Reservoir (SP)
Scouler's willow	<i>Salix scouleriana</i>	-/-A2	Grows in recently disturbed areas, also called fire willow	Grows in Canyon (USL)
Coast sanicle	<i>Sanicula laciniata</i>	-/-A2	Typically occurs in closed cone pine forest and mixed evergreen forest	Found on Flicker Ridge and near San Leandro Reservoir (USL)
California skullcap	<i>Scutellaria californica</i>	-/-A2	Grows in a variety of habitats, including scrub, mixed evergreen and pine forests	Grows in Siesta Valley, near San Pablo Reservoir, and near San Leandro Reservoir (SP, USL)
Golden-eyed grass	<i>Sisyrinchium californicum</i>	-/-A1	Typically grows in wet areas, including freshwater marsh habitat	Grows at Lily Spring and in Siesta Valley (SP)
Stephanomeria	<i>Stephanomeria elata</i>	-/-A2	Occurs in a variety of habitat types, including chaparral, grassland, and woodland	Grows on Flicker Ridge (USL)
White trillium	<i>Trillium ovatum</i> <i>ssp. ovatum</i>	-/-A2	Typically found in cool woodland habitat (i.e., redwood forest)	Grows in Canyon (USL)
Venus looking-glass	<i>Triodanis biflora</i>	-/-A2	Occurs in a variety of habitat types, including chaparral, grassland, and woodland	Grows on Pinole Peak and near San Leandro Reservoir (P, USL)
Stream violet	<i>Viola glabella</i>	-/-A2	Found along streams and in moist wooded areas	Grows in Canyon (USL)
Invertebrates				
Bridges' Coast Range shoulderband snail	<i>Helminthoglypta nickliniana bridgesi</i>	-/CSC/-	Typically found in moist, often riparian areas under rocks, logs, woody debris, and leaf litter	Found in various locations throughout the watershed (B, P, SP, USL, C)

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
Mammals				
Pallid bat	<i>Antrozous pallidus</i>	-/CSC/-	Typically found in arid to semi-arid areas. Roosts in buildings and rock crevices.	Known to occur within the watershed at one location only (April Creek Barn (P))
Western mastiff bat	<i>Eumops perotis</i>	-/CSC/-	Mostly a desert species. Require large vertical faces with at least 20 feet of drop from roost site	May occur anywhere on the watershed
Big free-tailed bat	<i>Nyctinomops macrotis</i>	-/CSC/-	Frequents rocky or canyon country where it roosts in crevices	May occur anywhere on the watershed
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	-/CSC/-	Typically found near rocky areas with caves or abandoned mines are present. Occasionally use old buildings	May occur anywhere on the watershed
Western red bat	<i>Lasiurus blossevillii</i>	-/CSC/-	Typically roost in trees, hanging off branches.	May occur anywhere on the watershed
Ringtail	<i>Bassariscus astutus</i>	-/SP/-	Inhabits chaparral and foothill canyons, preferring riparian areas	Occurs on the watershed (SP, USL)
San Francisco dusky-footed woodrat	<i>Neotoma fuscipes annectens</i>	-/CSC/-	Prefers moderate canopy cover in a variety of habitats. Typically found in woodlands and riparian habitat.	Occurs throughout the watershed (B, C, L, P, SP, USL)
Birds				
Common loon	<i>Gavia immer</i>	-/CSC/-	Requires deep freshwater lakes with sufficient food; needs at least 18 m (60 ft) of water for running take-off from water	A winter migrant on the watershed (SP, B, USL, C)
California brown pelican	<i>Pelecanus occidentalis</i>	-/SP/-	Nesting colonies and communal roosts are protected. Winters on large lakes and estuaries. Similar to white pelican	A winter migrant on the watershed (B, C, P, SP, USL)

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
American white pelican	<i>Pelecanus erythrorhynchos</i>	-/CSC/-	Winters on salt ponds, large lakes, and estuaries; loafs on open water during the day; roosts at night along the water's edge on beaches, sandbars, or driftwood	A winter migrant on the watershed (P, SP, B, USL)
Double-crested cormorant	<i>Phalacrocorax auritus</i>	-/CSC/-	Found along the coast in estuaries and salt ponds; also frequents reservoirs and lacustrine habitats in the coastal slope lowlands and Central Valley	Occurs on the watershed (B, C, L, P, SP, USL)
White-tailed kite	<i>Elanus leucurus</i>	-/SP/-	Inhabits herbaceous lowlands with variable tree growth	Occurs on the watershed (B)
Bald eagle	<i>Haliaeetus leucocephalus</i>	-/SE, SP/-	Nests and winters along ocean shorelines, lake margins, and river courses; roosts communally in winter	A winter resident on the watershed (SP, B, L, USL)
Northern harrier	<i>Circus cyaneus</i>	-/CSC/-	Inhabits coastal and freshwater marshes; nests on ground in shrubby vegetation and grasslands; forages in grasslands	Occurs on the watershed (P, SP, B, USL)
Golden eagle	<i>Aquila chrysaetos</i>	-/CSC/-	Nests usually found on cliff ledges; prefers nesting in trees in hilly areas	Breeds and winters on the watershed (P, SP, B, USL)
American peregrine falcon	<i>Falco peregrinus anatum</i>	-/CSC, SP/-	Inhabits riparian areas and coastal and inland wetlands throughout the year	Occurs as a migrant on the watershed (SP, B, USL)
Long-eared owl	<i>Asio otus</i>	-/CSC/-	Frequents dense, riparian and live oak thickets near meadows; requires riparian or other thickets with small, densely canopied trees for nesting or roosting	Winters on the watershed (SP, B)
Short-eared owl	<i>Asio flammeus</i>	-/CSC/-	Frequents open, treeless areas with elevated perches and dense vegetation for roosting and nesting	Winters on the watershed (B)

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
Loggerhead shrike	<i>Lanius ludovicianus</i>	-/CSC/-	Inhabits open brushy areas with lookout posts (e.g., wires, trees, and scrub)	Breeds and winters on the watershed (P, SP, B, L, USL, C)
Yellow warbler	<i>Setophaga petechia</i>	-/CSC/-	In breeding season, frequents open to medium-density riparian zones, woodlands, and forests with a brushy understory; in migration, found in a variety of sparse to dense woodland and forest habitats	Occurs on the watershed during migration (SP, USL); may breed, migratory habitat available; breeding habitat limited.
Tricolored blackbird	<i>Agelaius tricolor</i>	-/SE/-	Frequents fresh emergent wetlands; roosts in large flocks in emergent vegetation or trees	Winters on watershed (P, SP); limited marginal breeding habitat available
Reptiles				
Western pond turtle	<i>Emys marmorata</i>	-/CSC/-	Inhabits permanent or nearly permanent bodies of water in many habitat types at <6,000 feet elevation; requires basking sites such as partially submerged logs, vegetation mats, or open mud banks	Western pond turtle is known to breed on the watershed; northwestern and southwestern subspecies intergrade in the watershed region (P, SB, B, L, USL, C)
Coast horned lizard	<i>Phrynosoma coronatum frontale</i>	-/CSC/-	Frequents a wide variety of habitats; most common in lowlands along sandy washes with scattered low bushes; requires open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects	Collected on Hampton Road in 1992 by R. Nuzum; occurred in the late 1960's in the Berkeley Hills (B)
Alameda whipsnake	<i>Masticophis lateralis euryxanthus</i>	F/T/ST/-	Restrict to valley-foothill hardwood habitat of the Coast Ranges; inhabits south-facing slopes and ravines where shrubs form a vegetative mosaic with oak trees and grasses	Many documented occurrences in the watershed (P, SP, B, USL)

Common Name	Scientific Name	Status ^a Federal/ State/ CNPS	Preferred Habitat	Occurrence on Watershed ^b
Amphibians				
California red-legged frog	<i>Rana draytonii</i>	FT/CSC/-	Inhabits marshes, ponds, streams, lakes, and reservoirs; prefers permanent sources of water with cattails or other plants to provide cover	Breeds on the watershed (P, SP, USL); several documented occurrences
Fishes				
Steelhead -central California coast DPS	<i>Oncorhynchus mykiss</i>	FT/-/-	Inhabits streams and rivers with cool, clean water; requires appropriate gravels and hydrology for spawning habitat and cool pools or riffles with cover for juvenile rearing	Known to occur within the watershed (P)
Resident rainbow trout	<i>Oncorhynchus mykiss</i>	-/-/-	Landlocked resident rainbow trout occur in USL Reservoir and its upstream tributaries. While this species has no legal protection, it is treated as protected under the HCP	Found in Upper San Leandro Reservoir, Redwood Creek, and other tributaries to USL

^a Status explanations

Federal

- FE listed as endangered under the federal Endangered Species
- FT listed as threatened under the federal Endangered Species
- FPE proposed for listing as endangered under the federal Endangered Species Act.
- C1 Category 1 candidate for federal listing. Category 1 includes species for which the U.S. Fish and Wildlife Service (USFWS) has on file enough substantial information on biological vulnerability and threat to support proposals to list them.
- C2 Category 2 candidate for federal listing. Category 2 includes species for which USFWS has some biological information indicating that listing may be appropriate but for which further biological research and field study are usually needed to clarify the most appropriate status. Category 2 species are not necessarily less rare, threatened, or endangered than Category 1 species or listed species; the distinction relates to the amount of data available and is therefore administrative, not biological.
- C3C no longer a candidate for federal listing. Category 3C species have been dropped from the candidate list because they are too widespread or not threatened at this time.

State

- SE listed as endangered under the California Endangered Species Act.
- ST listed as threatened under the California Endangered Species Act.
- SP fully protected under the California Fish and Game Code.
- CSC species of special concern.

California Native Plant Society

- 1B List 1B species: rare, threatened, or endangered in California and elsewhere.
- A1 CNPS A1 species
- A2 CNPS A2 species
- 3 CNPS list 3 species
- 4 CNPS list 4 species

^b Watersheds

- P Pinole
- SP San Pablo
- B Briones
- L Lafayette
- USL Upper San Leandro
- C Chabot

Source: EA Engineering, Science, and Technology 1994a; updated based on Federal Register 219: 58982-59028.



Section 3

General Management Direction

Introduction

This section provides a general level of management guidance for the EBWMP and overarching guidance in eleven program areas:

- Water quality
- Biodiversity
- Forestry
- Livestock grazing
- Fire and fuels
- Developed recreation and trails
- Environmental education
- Cultural resources
- Visual resources
- Land ownership
- Entitlements

This section provides the goals, objectives and management guidelines for each of these programs, and also describes the need for coordination between management programs that have overlapping goals.

Table 3-1 shows the program categories included in this plan, the management programs in each category, and the page on which each management program can be found.

Table 3-1 | Management Program Categories Discussed in the EBWMP

Program	Guideline Acronym	Page
Water Quality	WQ	46
Biodiversity	BIO	50
Forestry	FOR	53
Livestock Grazing	LG	55
Fire and Fuels	FF	57
Developed Recreation and Trails	DRT	64
Environmental Education	EE	70
Cultural Resources	CR	72
Visual Resources	VR	73
Land Ownership	LO	75
Entitlements	ENT	77

Natural Resources Management Programs

Water Quality

The water quality management program involves activities that the District will undertake to maximize drinking water quality.

Drinking water quality is affected by the quality of original supply, how the geographic basin is managed, and what treatment techniques are used. Aggressive protection and management of water quality is necessary to control treatment costs and to comply with drinking water regulations.

The water quality management program includes

assessing how human activities and land and water uses may affect water quality, and implementing measures, when necessary, to maintain water quality.

The District's water quality goal is to maximize reservoir water quality to comply with current and anticipated future drinking water regulations.

Program Direction

Goal

Maximize reservoir water quality to comply with current and anticipated future drinking water regulations to provide the best possible source of supply to EBMUD customers.

Objectives

- Maintain the high quality of water stored in District reservoirs.
- Ensure that surface water runoff from District lands meets state water quality standards.
- Restore degraded areas on the watershed that are a source of excessive sediment.
- Address existing and potential water quality impacts for lands within the reservoir basins that are not owned by the District.



Management Guidelines

General Guidelines

- WQ.1 Identify and quantify contaminant sources before developing management and control strategies and prioritizing implementation. Monitoring programs should identify sources of the following water quality constituents: particulates, microorganisms, general minerals, metals, DBP precursors, nutrients, and synthetic organic compounds (including volatile organic compounds [VOCs], pesticides, and herbicides). Patrol watershed lands to identify potential sources of contamination and take action to minimize pollutant impacts on watershed lands and source water quality.
- WQ.2 Assess water quality impacts of various management practices before developing comprehensive management strategies (e.g., water quality impacts of different grazing regimes or vegetation management/fuel reduction techniques).

- WQ.3 Establish or continue the following prohibitions to protect public water supplies:
- Prohibit body-contact recreation in reservoirs and tributary streams.
 - Prohibit untreated sewage from entering reservoirs or tributary streams, through either surface or subsurface flow.
 - Prohibit new easements or rights-of-way for pipelines and/or conveyances transmitting hazardous substances through District watershed lands.
 - Prohibit the use of motorboat engines on reservoirs that have the potential to discharge fuel pollutants into the water in quantities of concern for human consumption or the environment.
 - Prohibit watercraft not inspected for invasive species, e.g., quagga and zebra mussels, from launching in District water bodies in accordance with state and federal regulations.
 - Prohibit the disposal of materials (bait and aquaria) that may contain invasive species into District reservoirs.
- WQ.4 Implement management measures, standard plans and specifications, and best management practices (BMPs) as appropriate for land uses, activities, and District watershed control and management techniques that provide water quality protection guidelines for livestock grazing, equestrian stables, and other concentrated animal facilities, fishing, boating, and marina management, golf courses, residential neighborhoods, onsite waste systems, stormwater runoff from roads and parking lots, commercial zones, hazardous materials storage and transfer facilities, erosion control, fire road and hiking trail routing, construction, and maintenance, vegetation management, forestry, and fire and fuels management. Relevant BMPs are identified in the Range Resource Management Plan, Fire Management Plan, and Low Effect HCP.
- WQ.5 Maintain an updated list of prioritized parcels for water quality protection (e.g., potential sites for stormwater management, wetland treatment, protection from development) that are candidates for restrictions (via conservation easements) or land acquisition because of the soils, slope, and/or location within the hydrologic system.
- WQ.6 Review pet access policy and conditions on watershed trails to ensure water quality protection.

Erosion Control

- WQ.7 Implement erosion control standards and BMPs to reduce soil erosion, sedimentation, and nutrient impacts throughout the watershed. Standards and BMPs should be adhered to by all staff, contractors, researchers, recreationists, visitors, and others performing construction, maintenance, or other activities on watershed lands.
- WQ.8 Conduct erosion control analysis and planning before initiating construction or other land disturbance activities.
- WQ.9 Identify sediment sources and their contribution to the reservoirs and watercourses on District lands (e.g., active landslides and debris flows). Prepare a sediment budget, develop BMPs, set priorities for remediation, and implement measures. Give priority to Briones, San Pablo, and Upper San Leandro Reservoirs and their tributaries, and then Chabot and Lafayette Reservoirs. Identify management strategies and BMPs to minimize pollutant loading to tributary streams and reservoirs.
- WQ.10 Inspect erosion-prone sites within the watershed annually and implement erosion control measures when and where necessary. Locate existing landslides, gullies, trail damage, or other sources of excessive sediment. Stabilize and vegetate streambanks and floodplains. Use drainage structures, grading, planting, or other site-specific methods to control erosion when needed.
- WQ.11 Prevent construction-related water quality impacts such as erosion from exposed soil and pollutants from equipment.

Nonpoint-Source Pollution Control

- WQ.12 Coordinate as necessary with other land use management agencies, the National Pollution Discharge Elimination System stormwater permittee, and the Regional Water Quality Control Board to ensure proper selection and implementation of nonpoint-source control management practices on non-District lands in reservoir basins, including the gunnery range on Miller Road.

Grazing

- WQ.13 Under the guidance of the Range Resource Management Plan (2001), implement annual grazing plans and specific BMPs for all livestock leases, including horse pastures, which include provisions for protection of water quality and supply. Integrate equestrian use practices with other range management practices. Conduct a census of the number of horses stabled in the watershed and the number of equestrian users.
- WQ.14 Eliminate livestock grazing from unstable streambanks and protect unstable streambanks from other land-disturbing activities.
- WQ.15 Ensure, where the watershed interface zones are grazed (e.g., for fire management), that animal waste and erosion control measures are implemented to prevent water quality impacts.
- WQ.16 Ensure that grazing animals (e.g., cattle, horses, goats, and llamas) are managed to prevent overgrazing, direct access to water bodies, and erosion.

Fire and Fuels

- WQ.17 Under the guidance of the Fire Management Plan (2000), evaluate water quality impacts of fire and fuels management practices such as prescribed burning, equipment use, and firebreaks. Identify BMPs to minimize and mitigate water quality impacts. Prioritize and implement selected measures and include a water quality specialist in fire and fuels management planning.
- WQ.18 Consider alternatives to plowing firebreaks, including use of existing roads, mowing, spot-grazing, controlled burning, or natural firebreaks. Firebreak lines will be plowed along, rather than across, contour lines where feasible, and drainage structures will be installed where necessary to prevent gully formation.
- WQ.19 Evaluate the impacts of fuel breaks on sensitive natural communities and habitats. Where feasible, adjust fuels management practices to conserve ecologically sensitive areas.
- WQ.20 Restore vegetation (using native vegetation where feasible) whenever possible in burn areas and timber harvest areas throughout the reservoir watershed to provide erosion control and habitat enhancement.

Recreation, Roads, and Trails

- WQ.21 Identify and evaluate the effects of recreational activities such as hiking, horseback riding, cycling, boating, shoreline fishing, and water-based recreation on water quality. Implement measures to reduce water quality impacts.
- WQ.22 Provide adequate safeguards to reduce water quality impacts from facilities developed for recreational users of the watershed. Appropriate monitoring and pollution prevention measures should be implemented at parking areas, picnic grounds, restrooms, boat launches, stables, and other facilities.
- WQ.23 Inventory and evaluate unsurfaced fire roads and trails and eliminate those that are not necessary to management objectives or requirements. Develop design criteria for fire roads, trails, and stream crossings, and implement BMPs and standard maintenance practices to minimize erosion and other water quality impacts.
- WQ.24 Evaluate stream crossings with respect to water quality. Identify and implement measures to control sediment, pollutants, or other sources of water quality degradation from entering watercourses.
- WQ.25 Design and construct roads, trails, and fire roads to minimize disruption of natural hydrology.
- WQ.26 Revegetate permanently closed roads with ecologically suitable vegetation.
- WQ.27 Implement management practices on trails to minimize erosion and runoff containing animal waste. Curtail access to trails during wet weather and in areas vulnerable to erosion and runoff.
- WQ.28 Monitor water quality impacts from trail use. Erosion may result on trails from use by cyclists, hikers and horses. Sediment loads from trail erosion are greatest during the first rains of the wet season and may continue to impair water quality throughout the season.

Buffer Areas

- WQ.29 Establish buffer zones or setbacks from watershed margins along sensitive urban interface areas to ease the encroaching development pressures on the watershed core and to protect the watershed, tributary streams, and reservoirs. Identify areas that are likely to be developed and consider alternative protection strategies.
- WQ.30 Review alternatives and establish standards to protect land/water interface areas. Develop a program for protecting riparian corridors, wetlands, seeps, springs, ponds, banks of reservoirs, tributary streams and corridors, and other water bodies.
- WQ.31 Identify activities adjacent to the developed watershed interface that may affect water quality, such as agriculture, construction, recreation, and rights-of-way. Implement pollution prevention practices (e.g., improving the vegetative buffer between District lands and urban development).
- WQ.32 Protect riparian corridors from direct and indirect water quality impacts. Direct impacts include cattle access, trail crossings, and loss of vegetation. Indirect impacts may include overgrazing, runoff from prescribed burns, animal waste, and runoff from trails and roads.

Biodiversity and Ecological Management

The biodiversity management program involves activities that the District will undertake to protect and enhance habitats and species. The District's commitment to maintain and enhance biodiversity will be achieved by actively maintaining natural ecosystem processes, especially those that also protect or enhance water quality. The East Bay Municipal Utility District Low Effect East Bay Habitat Conservation Plan enhances watershed biodiversity through the protection and enhancement of threatened and endangered species habitat.

The District's biodiversity goal is to maintain and enhance biological resource values on District lands through active management and careful coordination with other resource management programs.

Program Direction

Goal

Maintain and enhance biological resource values on District lands through active management, HCP compliance and careful coordination with other resource management programs.

Objectives

- Maintain, protect, enhance, and where feasible, restore plant and animal communities, populations, and species.
- Implement an ecosystem management approach that maintains, protects, and enhances natural ecological processes.
- Apply an adaptive management strategy using inventory, management, monitoring, and research.
- Coordinate all resource management programs to ensure that biological resources are protected.
- Seek opportunities to develop mitigation banks or conservation areas on watershed lands, consistent with maintaining biodiversity and other resource values.

Guidelines

Threatened, Endangered, and Other Special-Status Species

BIO.1 Enhance habitat for threatened and endangered species

BIO.2 Regularly update species lists with conservation status changes for use in project planning.

BIO.3 Monitor listed species populations and conduct site surveys using established protocols. Incorporate survey results into the District's GIS database.

Habitats and Vegetation Types of High Biological Value

BIO.4 Adaptively manage sensitive species and their habitat utilizing data from species monitoring and research projects on the East Bay watershed.

BIO.5 Design and control management activities to limit fragmentation of common vegetation types.

BIO.6 Protect heritage native trees and trees with outstanding characteristics, and ensure that grazing does not prevent sustainable growth of new trees in the grazed areas.

- BIO.7 Maintain and, where necessary, enhance habitat suitability for wildlife movement in key corridors.
- BIO.8 Participate in coordinated resource management planning efforts with other local land management agencies to conserve regional biodiversity by maintaining regional movement corridors (e.g., the Caldecott Tunnel corridor) and management of large landscape units. Include a water quality specialist during coordinated resource management planning.
- BIO.9 Identify high priority sites for habitat restoration based primarily on water quality protection and on the value of restored habitats for sensitive fish and wildlife species.
- BIO.10 Identify key habitat areas necessary for protection and management of special-status plants and animals. Provide buffer areas to reduce disruption of nesting and roosting areas for raptors, herons, egrets, and other sensitive wildlife species.
- BIO.11 Recognize the ecological value and likely permanence of certain non-native species and habitats (e.g., annual grassland), and incorporate the management of these species and habitats into biodiversity planning efforts.
- BIO.12 Where annual grazing has been eliminated from grassland habitats and grassland retention is a biodiversity priority, use prescribed fire, periodic grazing, or other means to discourage invasive species encroachment and maintain grassland conditions.
- BIO.13 Continue to use prescribed fire under carefully controlled conditions to maintain and enhance biodiversity values in fire-dependent plant communities (e.g., knobcone pine, chamise-black sage chaparral, and manzanita chaparral).
- BIO.14 During revegetation of areas burned by wildfire or prescribed fire, emphasize maintenance and enhancement of biodiversity, commensurate with other critical resource needs (e.g., water quality protection).

Noxious Weeds, Invasive Plants, and Feral Animals

- BIO.15 As required by law, control noxious weeds and pest animal species using the most conservative, least toxic, but effective methods available (BIO.18).
- BIO.16 Prepare and periodically update a list of noxious weeds, other invasive, non-native plant species, and feral animals that warrant control on District lands.
- BIO.17 Emphasize control of noxious weeds, invasive plants, and feral animals in or near important wildlife areas, corridors, or other sensitive habitats.
- BIO.18 Apply integrated pest management (IPM) strategies, eliminating pesticides where feasible, ensuring negligible impacts on water quality, biodiversity, and other resources and without increasing fire risk.
- BIO.19 Control, using approved methods, rodent populations at dams, recreation facilities, and other areas where burrowing and disease could pose threats to human safety, contaminate the water supply, or where control is mandated by a regulating agency.
- BIO.20 Avoid use of non-native species for erosion control and other revegetation efforts that are invasive or that inhibit recovery of native habitats.
- BIO.21 Identify and cooperatively obtain change in those procedures implemented by other agencies on District land that have a known deleterious effect on biodiversity (e.g., vegetation management near PG&E infrastructure, introduction of mosquito fish by mosquito abatement districts).

Management Coordination Procedures

- BIO.22 While planning and implementing resource management actions, apply the following coordination guidelines to meet state and federal legal requirements for threatened and endangered species:
- if listed species are likely to be affected, consult with the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW) as required; and
 - implement measures in the EBMUD Low Effect East Bay Habitat Conservation Plan and CDFW Lake and Streambed Alteration Agreements to minimize and avoid take of special-status species and their habitat.
- BIO.23 In conducting management activities, evaluate effects on species (prioritized according to guideline BIO.1) of proposed management activities (e.g., changes to water system operations, watershed management activities, construction of new facilities and public access) according to the following guidelines:
- identify species or sensitive habitats that could potentially be affected by the proposed action based on known species' occurrences, the habitat type within which the project occurs, and the habitats used by the species (see Table 2-3 for habitat occurrences of species), and
 - evaluate project impacts and identify opportunities to avoid, mitigate, or compensate for impacts, including species- and project-specific buffers to protect plant and animal species from adverse effects of management activities; evaluate consistency with other EBWMP direction.
- BIO.24 Ensure that all District projects that affect wetlands or waters of the United States as defined under Section 404 of the Clean Water Act receive appropriate permits prior to disturbance.
- BIO.25 Ensure that all District projects that directly impinge on streams, as defined under California Fish and Game Code Sections 1601 and 1603, receive appropriate permits from CDFW prior to disturbance.



Forestry

The District's lands support a substantial area of native and non-native forest habitats. Native forest communities include redwood, knobcone pine, and several hardwood-dominated forest types, and represent one of the most valuable natural resource assets on the watershed. Most of the non-native forest stands consist of monocultures (i.e., even-aged, single-species stands) of Monterey pines and eucalyptus planted during the 1930s and 1940s to provide stability to watershed soils.

Forest management is defined in this plan as activity undertaken to manage woody vegetation in non-native forest stands (i.e., Monterey pine and eucalyptus) on District watershed lands. Management of the native forests is provided for under "Biodiversity".

The District's forestry goal is to develop and implement a long-term management program for non-native forests to maintain and enhance other environmental resources, including water quality, fire protection, biodiversity, visual quality, and recreation use.

Forest management will be achieved through selective management of the non-native forests, where necessary and financially feasible, to maintain and increase the vigor of the stands and to encourage the replacement of non-native forests with native species over the long term. Priorities for conversion will be based on the need to reduce fire risks, maintain and enhance biological values, and protect water quality. Native forests will be managed to encourage natural regeneration processes and maintain and enhance biological values.

Program Direction

Goal

Continue the ongoing long-term management program for non-native forests to maintain and enhance other environmental resources, including water quality, fire protection, biodiversity, visual quality, and recreational use.

Objectives

- Implement a long-term plan for managing non-native forest species that includes maintenance of stand health and vigor and phased conversion of selected stands of non-native forests to native forests or other ecologically suitable habitats.
- Use forest management as a tool to achieve strategic fire management goals, biodiversity goals, and other resource goals.
- Protect water quality, biodiversity, and other resource values during forest management program implementation.
- Manage trees in areas of high public use to ensure visitor safety and maintain aesthetic values.

Guidelines

- FOR.1 Discourage or prevent establishment of new stands of non-native woody vegetation and the expansion of existing stands.
- FOR.2 Establish priorities for implementing non-native forest management based on fire risk to public safety and water quality degradation, stand vigor, opportunities for habitat enhancement, and visual impacts.
- FOR.3 Avoid clear-cutting and other even-aged harvest techniques for areas greater than 2 acres in size to reduce impacts on water quality and other resources.
- FOR.4 Follow standard practices and BMPs for forest management to reduce resource damage during harvest and subsequent management and to protect water quality (i.e., minimize sediments, nutrients, and organic matter in runoff).
- FOR.5 Follow management measures outlined in the HCP for non-native forest areas that support special-status wildlife species and manage these areas to avoid disturbing associated special-status species.
- FOR.6 Consider minimum management prescriptions, including retaining non-native forests, in areas where stands cannot be removed without significant impacts on water quality, biodiversity, visual quality, or other resource values.
- FOR.7 Where replacement of non-native forest (Monterey pine and eucalyptus) with native forest is not feasible because of site conditions, habitat value, impacts on water quality or biodiversity, or fire risk, establish site-specific management objectives to restore other native habitats or continue managing non-native forest.
- FOR.8 Evaluate the fire risk of immediate harvest and resulting long-term stand modifications when developing silvicultural prescriptions and management plans for individual forest stands. Ensure consistency with management directions for other resources in forest management plans.
- FOR.9 Retain dead and downed material for use by special-status wildlife species, except where removal is required for strategic fuels management, fire control, water quality protection, habitat regeneration, public safety, or for other justified reasons.

Eucalyptus Management

- FOR.10 Implement a long-term phased program to remove eucalyptus stands and restore native woodland or other natural habitats to reduce fire hazards in areas where eucalyptus poses a significant fire risk.
- FOR.11 Prior to any harvest activities, ensure that adequate stump-sprouting control methods are available to reduce fire hazards and protect water quality. Herbicides will not be used to control stump resprouts.

Monterey Pine Management

- FOR.12 Implement silvicultural treatments necessary to maintain the short-term vigor of Monterey pine forest stands and to meet long-term stand management objectives.
- FOR.13 Where feasible and appropriate, implement long-term management to replace Monterey pine forest with native species to reduce fire hazards, enhance biological values, and maintain water quality.

Livestock Grazing

Much of the District's land supports annual grassland vegetation. Grasslands stabilize soils from erosion that can degrade water quality and reduce reservoir capacity. They provide important habitat for wildlife and plant species. Grasslands also produce more runoff than any other vegetation type.

Many District grasslands have been grazed by livestock for 100 years or more. Grazing has been managed to prevent brush encroachment, reduce fire hazard, provide leasing revenue to the District, and increase runoff.

The livestock grazing program focuses on reducing impacts

on water quality and biodiversity and using grazing selectively to reduce fire risk, promote biodiversity, and provide revenues to the District. The Range Resource Management Plan (East Bay Municipal Utility District 2001) incorporated the goals and objectives identified in the EBWMP, in addition to management measures taken to minimize pollution of raw water by livestock. Primary contaminants of concern are sediments, pathogens, nutrients, and total organic carbon.

Conducting livestock grazing to help achieve other resource management goals is a goal of the District.

Program Direction

Goal

Conduct livestock grazing to help achieve other resource management goals.

Objectives

Conducting livestock grazing to help achieve other resource management goals is a goal of the District.

- Use grazing by domestic livestock (e.g., horses, cattle, llamas, sheep, and goats) as a tool to manage vegetation for other resource needs.
- Eliminate or restrict grazing in areas where substantial impacts on water quality, biodiversity, fire control, or other management objectives may result.
- Generate livestock grazing revenue for the District where consistent with other resource values.



Guidelines

- LG.1 Establish grazing units to exclude use within buffer zones established around sensitive species locations, riparian zones, other sensitive habitats, reservoirs, and sensitive cultural resource areas. Grazing should occur in these areas only when fully compatible with management priorities for each area.
- LG.2 Over time and as funding and staff resources are available, modify the grazing program to reduce the grazing extent over the watershed as a whole, while ensuring continued use where needed to meet fire and fuels, biodiversity, and other resource management objectives.
- LG.3 Preferentially use controlled grazing as a cost-effective technique to reduce fuels in the urban/watershed interface.
- LG.4 Prepare annual grazing plans for each lease area to ensure that land will be grazed consistent with EBWMP goals. The grazing plans should specify annual stocking rates, required management actions, and monitoring to evaluate adherence to lease conditions.
- LG.5 As a general standard, establish livestock stocking rates (in animal unit-months [AUMs]) to maintain approximately 140% of minimal residual dry-matter standards (modified U.S. Soil Conservation Service Standards). Stocking rates for individual areas may vary significantly from this standard to meet site-specific management objectives and may need to be higher or lower in strategic fuels management areas.
- LG.6 Monitor effects of different grazing regimes on water quality and biodiversity and adjust grazing intensity, timing, and species as needed to meet resource objectives.
- LG.7 Reduce grazing levels or eliminate grazing from areas that generate acute water quality impacts, including elevated levels of sediments, pathogens, nutrients, or other contaminants.
- LG.8 Designate “banked” (i.e., typically ungrazed) areas available for use during years of low forage production to relieve pressure on areas that are grazed annually.
- LG.9 Maintain leases on a 5-year renewable basis to allow the District flexibility in modifying grazing to meet watershed management objectives. Incorporate substantial penalties, including termination of the lease for violations of lease terms.
- LG.10 Identify standard practices, BMPs, and other measures in annual grazing plans to resolve grazing conflicts with other resources, such as:
- erosion on highly erodible sites,
 - discharge of nutrients, pathogens, sediments, and other contaminants into reservoirs and tributaries,
 - interference with vegetation recovery following prescribed fire or wildfire,
 - damage to or destruction of sensitive plant species and communities,
 - excessive impact to fish and wildlife habitat, and
 - damage to roads, trails, and recreation areas.
- LG.11 Ensure that developed water sources are designed or modified to permit use by wildlife.
- LG.12 Develop BMPs for concentrated animal facilities such as paddocks, corrals, and riding arenas and incorporate them into annual grazing plans or leases as appropriate.

Fire and Fuels

The fire and fuels management program involves activities conducted to protect lives and property on and adjacent to District lands and to manage natural resources. The District has a wide range of land management responsibilities and must make decisions that balance fire prevention considerations with water quality, natural resource, and recreation program considerations on a case-by-case basis. The Fire Management Plan (East Bay Municipal Utility District, 2000) incorporates the goals and objectives identified in the EBWMP. Fire management activities to be undertaken in the EBWMP include:

- conducting fire management planning,
- treating vegetative fuels to reduce fire hazards,
- conducting fire prevention and suppression activities, and
- using prescribed fire to manage other resources.

The following key assumptions were used in developing fire and fuels management direction:

- Fire hazards occur throughout the watershed area; therefore, the primary fire management strategy is to locate fires as soon as possible after ignition and suppress and contain wildfire within designated fire management units.
- Although wildfire can occur and cause damage anywhere, the risk is highest in wildland/urban interface areas (Figure 3-1) during periods of extreme fire danger and hazardous weather conditions (e.g., dry, windy summer and fall days, particularly from hot east winds).
- Fire and fuels must be managed strategically to provide adequate fire protection while reducing impacts of fire prevention, fuels management, and fire suppression activities.
- Firefighting response times and effectiveness can be improved by establishing “firesafe” access routes associated with strategic fuelbreak networks and managing areas to provide defensible open space.

The District alone cannot feasibly prevent all wildfires that occur on or spread through watershed lands from reaching adjacent properties. Providing adequate fire protection, therefore, depends on implementing prevention activities to contain fires within watershed boundaries. The spread of wildfire across shared property boundaries can be minimized through cooperative planning and issues in the interface area are considered in local land use planning implementation with other landowners in each reservoir watershed. This strategic planning approach will improve fire management efficiency and effectiveness by setting priorities that reflect key fire management goals and available fire suppression resources.

In many areas, urban encroachment near the District’s property boundary is occurring without adequate consideration for fire risks and fire protection needs. These conditions have placed a substantial burden on the District and must be corrected. Protecting life, public safety, and property at this interface requires a combination of coordinated resource management and planning, public education, and strategic fuel management. Increased communication between the District and local planning agencies is required to ensure that fire management issues in the interface area are considered in local land use planning.

The District’s goal for fire and fuels management is to protect human life and property and provide for public safety, and protect and enhance water quality, other natural resources, and watershed land uses.

Program Direction

Goal

Protect human life and property and provide for public safety, and protect and enhance water quality, other natural resources, and watershed land uses.

Objectives

- Provide an appropriate level of fire protection for all watershed lands, emphasizing protection of life, public safety, and property values in interface areas.
- Implement measures to reduce fire hazard to protect water quality from wildfire-related soil erosion, sedimentation, and nutrient impacts.
- Use a strategic planning approach to fire management that ensures fire and fuels management activities are consistent with the objectives for other resources to the extent practicable.
- Recognize the importance of fire as a natural ecological process and use prescribed burning and other techniques to reduce hazardous fuel loads under carefully selected conditions to achieve long-term fire safety, water quality protection, and biodiversity management objectives.
- Cooperate with other agencies, adjacent property owners, and homeowner groups and participate actively in planning processes to develop coordinated resource management plans (CRMPs) and other cooperative multiagency agreements for fire hazard reduction and fire incident management.
- Maintain fire management program funding that supports implementation of adopted plan elements.
- Maintain firefighting capability, equipment, and patrols to retain the basic level of fire safety and initial response necessary.

Providing adequate fire protection depends on implementing prevention activities to contain fires within watershed boundaries.

Guidelines

Prescribed Burning

- FF.1 Continue to develop and implement appropriate prescribed burning procedures to safely and cost-effectively meet fuel reduction and other management objectives. Test approaches such as burning during the growing and nongrowing seasons, varying fire intensities, and using varied prescription cycles, and follow California Department of Forestry and Fire Protection (Cal Fire) regulations and standards for prescribed burning when and where applicable.
- FF.2 Conduct site-specific interdisciplinary resource planning and prepare an environmental analysis document for all prescribed burns. Involve appropriate watershed, recreation, and fisheries and wildlife management staff in these planning efforts.
- FF.3 As part of the annual fire management plan update (see FF.32), prepare a description of the annual burn program including individual plans for each proposed prescribed burn.
- FF.4 Comply with federal, state, and local air pollution laws and regulations in developing and implementing fire management plans.
- FF.5 Develop and implement a monitoring program to evaluate impacts of prescribed burning on water quality and other resources.

Fuels Management

- FF.6 Utilize fire management units (FMUs) established in the Fire Management Plan for presuppression fire and fuels management planning, strategic fuelbreak networks, firebreaks, road access, and predicted containment areas for wildfires that may ignite in each FMU.
- FF.7 Continue to use livestock in all grassland interface areas where fuel reduction is necessary. In areas of natural resource conflict, construct additional fencing to confine grazing to key fuel reduction areas.
- FF.8 Identify barriers (e.g., reservoirs, grazed areas, greenbelts, roadways, trails, oak woodlands, and riparian areas) that help retard wildfire spread and use them as baselines in establishing a strategic fuelbreak network to protect water quality and reduce environmental impacts and fuel treatment costs. Incorporate information in the GIS database.
- FF.9 Design and construct new fuel modification areas of the strategic fuelbreak network to meet other resource constraints.
- FF.10 Recognize prescribed fire, vegetation management, grazing, manual and mechanical fuels treatments, and possibly minimal or limited chemical treatment of vegetation as effective tools for reducing fire hazards. The most appropriate method or combination of methods will be selected based on consistency with public safety, natural resource management objectives, priorities for each land management zone, and cost. Utilize appropriate guidelines from the Fire Management Plan (2000).
- FF.11 Maintain strategic fuel treatment areas, fuelbreaks, firebreaks, and other vegetative manipulations in high-risk areas where funding is available.
- FF.12 Identify environmentally sensitive areas and develop site-specific fuel treatments to address fire hazard and wildfire risk in these areas. Identify areas where mechanical treatments (e.g., bulldozing, plowing, disking, and mowing) are inappropriate.
- FF.13 Follow Fire Management Plan guidelines for a strategic grazing and plowing program that addresses the need to protect sensitive wetlands and wildlife refugia.

Plowed Control Lines

- FF.14 Consider the strategic value of plowed control lines and firebreaks for fire suppression activity and fire control. Strategic value is higher when plowed control lines are linked with the fuelbreak network and areas with firesafe road access. Balance strategic value with environmental sensitivity of the surrounding area in determining use of this technique.
- FF.15 Locate plowed control lines where they can function effectively in fire control and reduce surface disturbance and erosion potential. Existing plowed control lines should be retained unless substantial water quality or other resource damage is occurring.
- FF.16 Existing trails and fire roads should be maintained and used as control lines whenever possible to reduce the need for additional site disturbance.
- FF.17 Coordinate with the District's Fisheries and Wildlife Division and other qualified District staff for sensitive species before constructing and maintaining plowed fire lines within 300 feet of sensitive habitats or species.
- FF.18 Avoid locating plowed fire lines within cultural or archaeological sites. Relocate plowed lines outside designated sites or use alternative methods of securing control (e.g., handline construction or hose lays).
- FF.19 Locate plowed fire lines outside riparian buffer zones around streams, wetlands, or springs and seeps unless connecting to such areas at designated points is essential and can be done with minimal disturbance.

Fire Prevention

- FF.20 Actively address arson on watershed lands (through direct District watershed fire patrols) and continued coordination with the East Bay Fire Chiefs' Consortium.
- FF.21 Implement strategic firesafe treatments along roadways, public access routes, and trails in areas of high fuel hazard to reduce the potential for wildfires to ignite and spread.
- FF.22 Utilize a fire danger rating system based on weather and fuel moisture conditions and implement use restrictions on roadways, trails, and other District facilities during extreme hazard conditions. Work with adjacent jurisdictions to plan strategic closures of public roadways and trails during periods of extreme fire hazard.

Fire Protection

- FF.23 Participate in cooperative multiagency education programs (with EBRPD, local fire departments and districts, and homeowner associations) to educate homeowners in the urban/wildland interface on how to reduce fire hazard and risk in those areas. Provide the District's booklet "Firescape - Landscaping to Reduce Fire Hazard" to interested landowners.
- FF.24 In conjunction with other District departments, evaluate the feasibility of developing dedicated water supply systems for fire suppression in urban/ watershed interface areas.
- FF.25 Continue annual maintenance of all necessary fire roads (refer also to guideline FF.6). Assign strategic values to roads based on linkage with the strategic fuelbreak network, and base the annual road maintenance schedule on these strategic values. Consider firesafe vegetation treatments along the highest priority fire roads.
- FF.26 Annually assess the safety program for staff participating in prescribed burning and wildland fire suppression and revise as necessary.

Cooperative Fire Protection and Presuppression Planning

- FF.27 Coordinate with other local fire suppression organizations, especially in areas of mutual jurisdiction. Continue District participation in the Hills Emergency Forum, VMC, and East Bay Fire Chiefs' Consortium.
- FF.28 Review and update, as necessary, memoranda of agreement for cooperative wildland fire suppression with Cal Fire and local fire control agencies.
- FF.29 Annually review the training program for the District's Natural Resource Department field staff regarding response to wildland fire incidents, and continue active participation in emergency interagency wildfire suppression assistance (mutual aid).
- FF.30 Continue to develop and implement cross-training with cooperative fire suppression organizations (i.e., Cal Fire, EBRPD, and local fire control agencies).
- FF.31 Annually provide a fire response plan for all East Bay watershed lands and operational units. Coordinate with participating fire suppression organizations to select and adopt design criteria, standards, and BMPs for strategic fuelbreak networks, firebreaks, road access, and predicted containment areas for wildfire to minimize erosion and protect water quality.

Fire Suppression

- FF.32 Maintain District watershed headquarters access to regional fire information sources, annually review and update, as needed, a comprehensive fire management plan including the procedures for red flag operation and fire response. Annually review and update, if needed, a comprehensive fire management plan.
- FF.33 Use contain-and-control strategies to suppress wildfires consistent with personnel safety, land and resource management objectives, and fire and fuels management objectives.
- FF.34 During fire suppression activities, emphasize indirect attack strategies that use existing breaks, barriers, and burn-out procedures when feasible. Use automatic, direct attack, and plow operations for fire suppression when required by specific burning conditions.
- FF.35 Achieve appropriate mop-up standards and patrol procedures as established by the Incident Commander before a wildfire is declared out and suppression crews are permitted to leave the site.
- FF.36 Coordinate with other resource programs to ensure that fire and fuels management program direction is achieved during project work (e.g., fuels treatment in forest management, achieving required fuels reduction through livestock grazing).
- FF.37 Coordinate closely with District resource staff to ensure that water quality and resource values are protected during planning and implementation of fire and fuels management strategies.
- FF.38 Review any chemicals used in fire suppression for ultimate impacts on water quality. Substitute fire suppression chemicals that minimize water quality impacts, if possible.



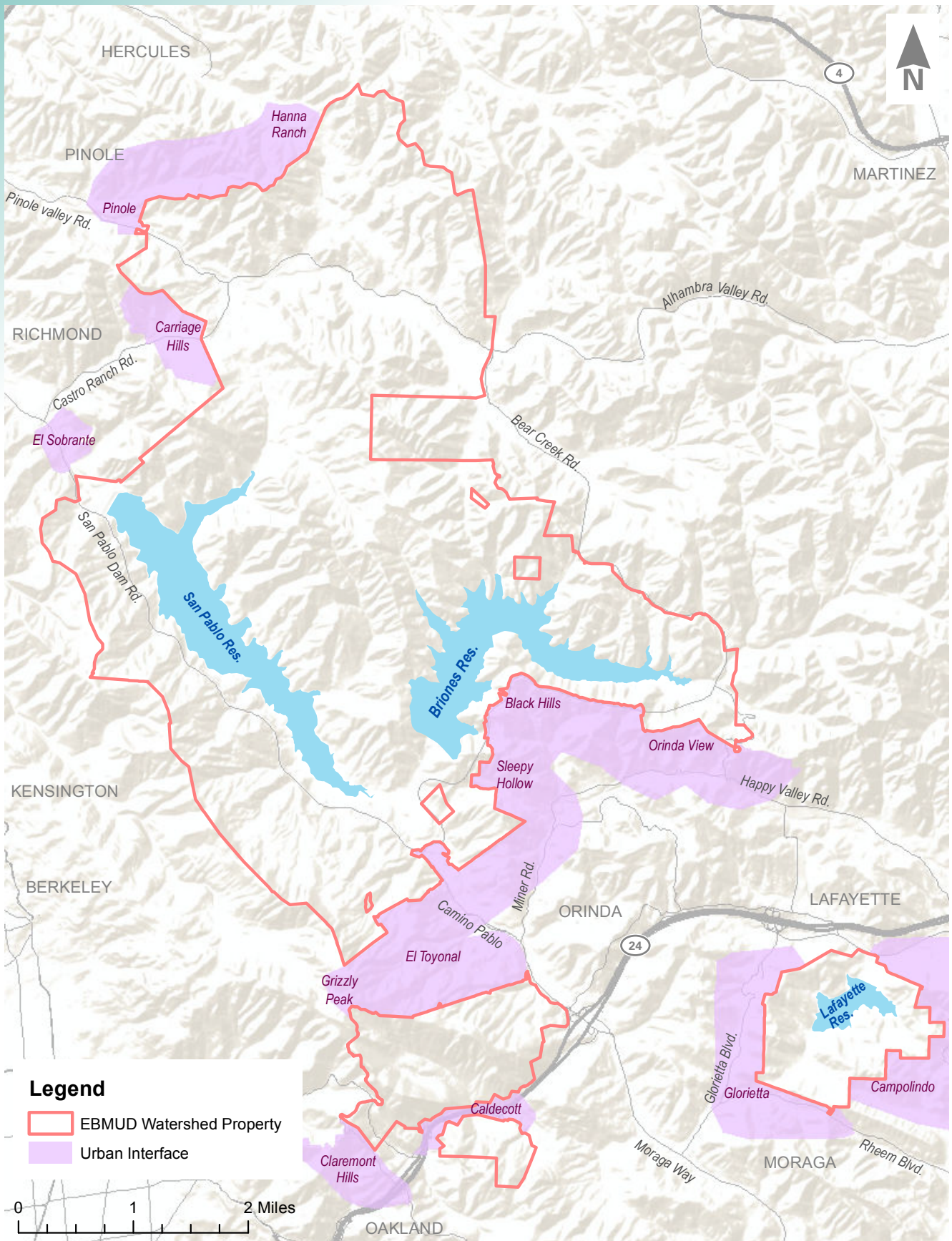


Figure 3-1 (North) | Interface lands with high priority for fires and fuels management

Section 3 General Management Direction

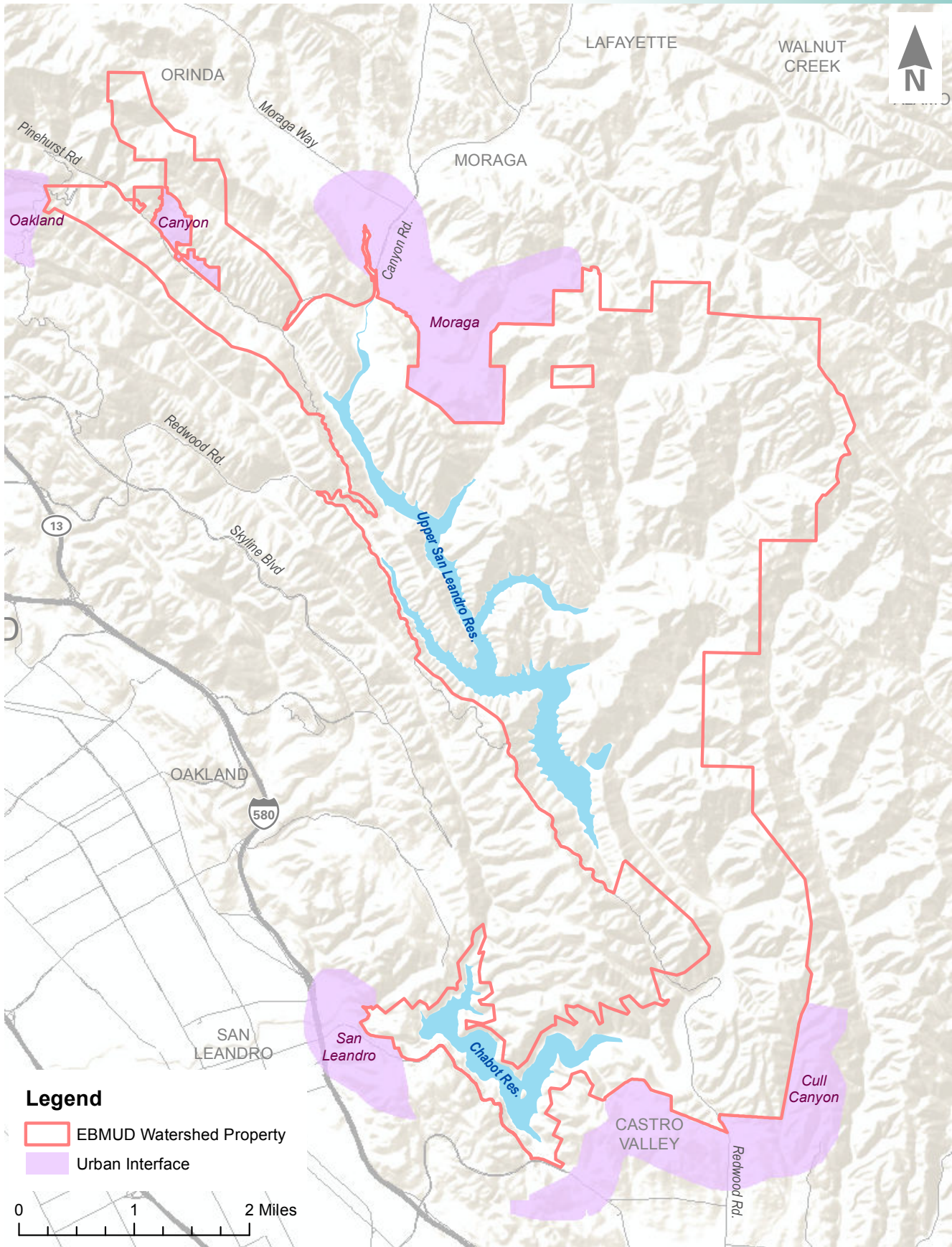


Figure 3-1 (South) | Interface lands with high priority for fires and fuels management

Community Use Management Programs

Developed Recreation and Trails

Recreation on East Bay watershed lands is provided at developed recreation areas and on the recreational trail system. Recreation areas serve large numbers of people and are used extensively. Trail use occurs at a low intensity, and user numbers are relatively small (currently, there are nearly 8,000 trail permit holders). However, the District encourages all members of the public to enjoy the recreational amenities of the watershed, including the trail system as well as boating and fishing opportunities.

The District's developed recreation and trails management program addresses recreational uses of watershed lands that are consistent with the District's water quality and biodiversity protection goals. The program defines the types of recreational experiences that are compatible with watershed resources and describes the ongoing uses that will be allowed to continue as well as the types of new uses that the District will consider.

Developed recreation under this program includes all activities associated with developed facilities and use areas currently operated by the District or its concessionaires. Trails management applies only to established or proposed trails and staging areas on District-owned property.

Since the adoption of the original master plan, a new concern about invasive Dreissenid mussels has emerged, affecting reservoir operations throughout California and many states. Quagga and zebra mussels are invasive freshwater bivalves that encrust hard surfaces, attaching to boats, trailers, and motors.

If a boat has been in infested waters it can transport invasive

mussels to non-infested waters. An adult female zebra mussel can release up to one million eggs in a year. Invasive mussels can ruin boats, motors, and equipment. When mussels invade a reservoir they can clog water intakes and pipes causing extensive damage. To prevent the spread of zebra/quagga mussels the District has implemented a vessel inspection program at the terminal storage reservoirs. Prior to launching boats are subject to a two-part inspection that includes a history survey and a physical inspection. Boats failing the inspection are not allowed to launch..

The District's goal for developed recreation and trails is to provide a high-quality recreation experience to users of watershed lands that does not compromise the District's goals for water quality and biodiversity.

Program Direction

Goals

Continue to provide a high-quality recreational experience to users of watershed lands that does not compromise the District's goals for water quality, biodiversity, and watershed management protection. Provide reasonable access routes between watershed lands and adjacent open space areas consistent with all District resource management goals.

Provide equal access to recreational opportunities for users from a wide range of socioeconomic backgrounds and physical abilities where feasible and practical. Ensure that the continuation or modification of recreational use creates as little financial burden on the District and its ratepayers as is practical.

Objectives

- Offer recreational experiences that complement and are consistent with the protection of District watershed lands and water bodies. Provide opportunities for reasonable use of natural watershed attributes.
- Give priority to those recreational uses that serve the broadest spectrum of the population while maintaining consistency with water quality, biodiversity, fiscal responsibility, and public safety goals.

- Ensure a high quality of recreational experience on District lands by reducing user conflicts, promoting safety and courtesy, and controlling overcrowding.
- Promote environmental values in recreational use and management.
- Ensure that currently permitted or new recreational activities do not increase the potential for additional soil erosion, landscape modification, or pollutant loading, or adversely affect other watershed or reservoir resources.
- Where feasible, provide trail links to the surrounding regional open space network that do not conflict with resource protection priorities.
- Assess the comprehensive financial consequences associated with recreational proposals. Evaluate cost parameters related to initial capital expenditure, District staffing and administration requirements, initial program development costs, and long-term operation and maintenance costs.
- Ensure that no net increase in adverse environmental effects will result from additions to or modifications of District recreation management programs, and prioritize protection of the interior watershed areas that serve as a refuge for plants and animals.

General Recreation and Trails Guidelines

- DRT.1 Maintain consistency in evaluating recreational proposals. Reject uses that require undesirable or substantial visible alteration of the natural character of the lands or create excessive nuisances that could affect other recreationists, resource values, or neighboring residential areas (e.g., intrusive noise levels or overcrowding). Allow nonintrusive uses and activities (e.g., day use events, llama use), subject to individual permit, that would have minimal impact on the watershed environment.
- DRT.2 Where feasible and practical, review and update development and management standards to ensure that recreational facilities and activities are in compliance with current codes and standards.
- DRT.3 Avoid overutilization in the developed recreation areas. Monitor use levels and modify as necessary.
- DRT.4 Close recreational facilities and trails as needed to protect sensitive wildlife species (e.g., nesting birds) and special-status species, curtail soil erosion, protect water quality, reduce fire hazards, and address other public safety concerns.
- DRT.5 Coordinate recreational programs with environmental education programs to provide recreationists with information about protecting public water supplies, source control and pollution prevention, watershed and natural resource management, and related water delivery system operations.
- DRT.6 Incorporate the standards of the Americans with Disabilities Act (ADA) in all facility upgrades and new developments as required by law. Incorporate the requirements of whole-access trails for persons with disabilities as required by law.
- DRT.7 Evaluate the personnel and maintenance requirements for administering, operating, patrolling, and supporting proposed new recreational uses or related infrastructure.
- DRT.8 Identify potential risks related to new recreational use of watershed lands, and exercise caution when considering new development or modifications to lease agreements. Recreational proposals that would result in water quality deterioration or excessive safety or financial risks will not be approved.
- DRT.9 Evaluate existing recreational use and trails development according to the same criteria used to evaluate new proposals for recreational use. Review uses periodically and consider modifications to reduce or eliminate adverse effects, if found, and protect water quality.

Developed Recreation Guidelines

- DRT.10 Separate potentially conflicting uses in recreation areas wherever possible to enhance recreational experiences among users. Prohibit use of firearms, sport hunting weapons, or fishing weapons on District property.
- DRT.11 Evaluate proposals for special events on District lands and reservoirs, such as music, theater, races, and boating, on a case-by-case basis. Give priority to those events that are temporary, use existing facilities, impose minimal conflicts with normal use, and have minimal impact on staffing and District resources. Events that could create intrusive noise levels, major traffic and parking conflicts, water quality deterioration, or increased fire risk should be considered carefully and be subject to special nuisance abatement conditions.
- DRT.12 Evaluate the cost of personnel and maintenance needs to administer special events on District property. Organizations requesting use of District property for special events should incur the total direct and indirect costs of event administration, law enforcement, equipment use, cleanup, and any additional related activities.
- DRT.13 Prohibit swimming or other forms of human or domestic-animal body contact in reservoir waters.
- DRT.14 Prohibit new recreational facilities and uses on District-owned land that would require grading or paving (including graveling) areas of the natural landscape larger than 1/2 acre, unless appropriate CEQA documentation is completed and concludes that no significant impacts would exist after mitigation.
- DRT.15 Ensure that group uses of District recreational facilities are based on nondiscrimination in selection of participants, equity in and equal access to the approval process, recovery of all District staff costs associated with the use, and fair economic return to the District. Uses that preclude or disrupt public access to park facilities that are normally designated “nonreservable” will not be permitted unless authorized by the Board of Directors.
- DRT.16 Ensure reasonable accessibility for major public facilities, including the visitor centers, restroom facilities, parking, marina and launching areas, group picnic areas, and main trails.
- DRT.17 Consider initial capital costs and long-term maintenance costs when evaluating new public or private recreational development proposals. Appraise the potential restitution, grant reimbursement, or settlement that could be required if approved recreational uses were to be suspended in the future. Carefully review recreational uses that involve high initial capital costs that may eventually create financial risk for the District.
- DRT.18 Require preparation of feasibility and environmental analyses, as applicable, for non-EBMUD recreational proposals related to modification or expansion of existing or new facilities or uses. The applicant will have responsibility for providing adequate information required for these analyses.

Trails Guidelines

- DRT.19 Support regional trail linkages in District-designated trail corridors that would be accessible to the regional trail use community and that are consistent with District trail use rules, regulations, rates, and charges.
- DRT.20 Where feasible, offer opportunities for volunteers to participate in maintaining watershed trails and recreation areas.
- DRT.21 Retain the current trail permit system and identify opportunities to provide wider accessibility of permits for regional trail users.





DRT.22 Conform to trail maintenance standards to ensure that public safety is optimized and safety hazards are minimized. Grade multipurpose trails only as required to ensure safety. Require annual review of all trails and trail uses on District property, and correct eroded areas and eliminate hazardous trail segments or uses.

DRT.23 Minimize public access and recreational facilities in areas where potential for trespass from and fire hazards on adjacent private lands are substantial. Do not allow entry to District lands from adjacent private residences, except at Lafayette Reservoir.

DRT.24 Allow community access points (staging areas) to the Bay Area Ridge Trail where such access is not precluded by environmental, operational, political, or fiscal constraints.

DRT.25 Use of designated unpaved roads or trails shall be limited to hiking and equestrians with restrictions as provided in the watershed rules and regulations and by signage at trailheads, except in those portions of the Lake Chabot watershed that are leased to EBRPD or as required under the ADA. Bicycle access shall be allowed only on designated portions of the Pinole Valley and Eagle's Nest trails consisting of fire roads and a disced firebreak (Figure 3-2). The EBMUD Board of Directors reserves the right to revoke bicycle access on these trails at any time and for any reason.

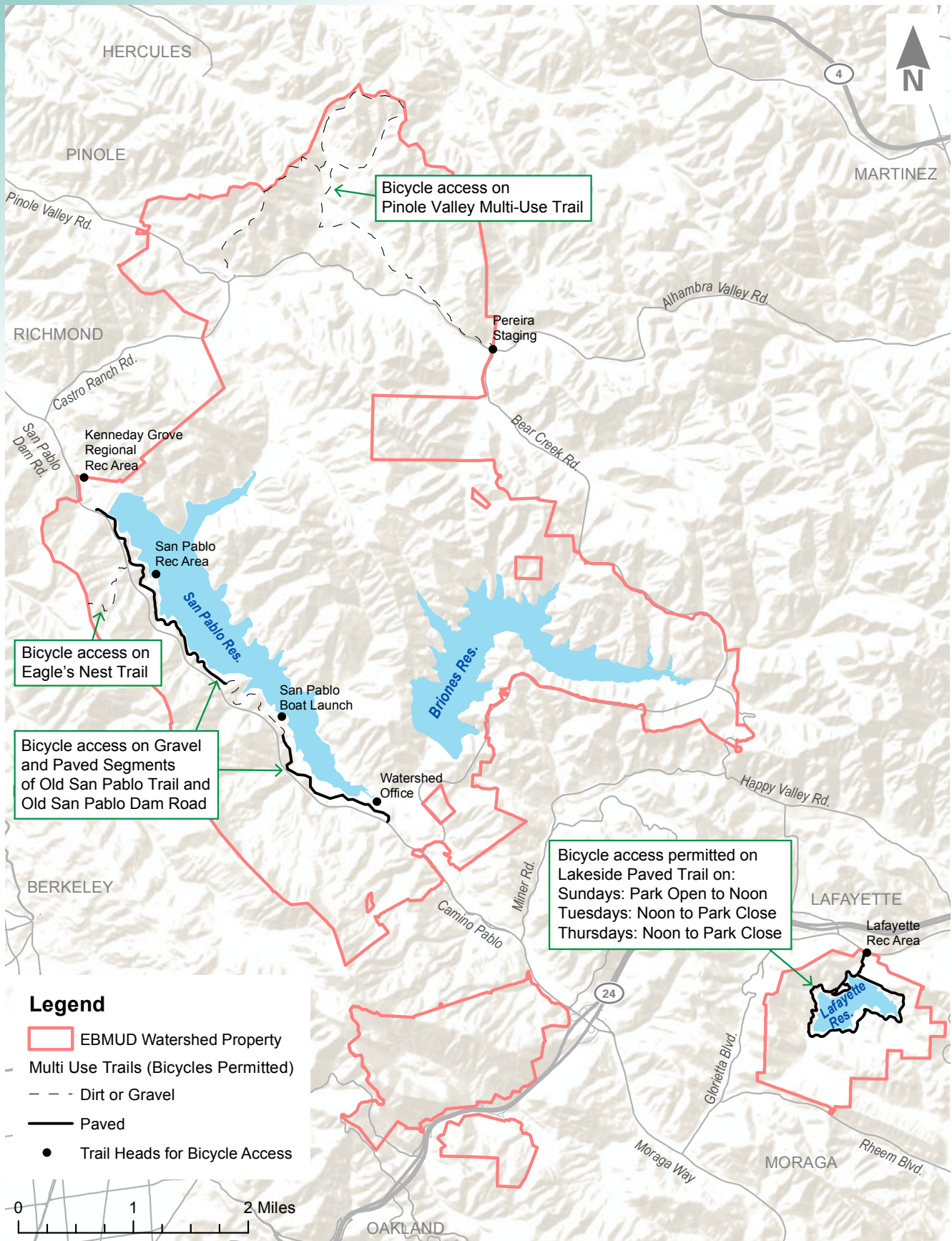


Figure 3-2 | Regional trail connectors proposed or in place on district property

Section 3 General Management Direction

Environmental Education

The environmental education program encompasses education, interpretation, and research uses of watershed lands. Public education programs sponsored by the District are informal, and specific sites for these activities are considered in the EBWMP. The program promotes activities that contribute to the District's basic understanding and knowledge of watershed resources and educates the public regarding the importance of protecting water quality and the importance of watershed lands, resources, and management activities.

The District's goal for environmental education is to encourage educational uses of District watershed lands and to identify lands suitable for environmental education uses.

Program Direction

Goal

Encourage educational uses of District watershed lands and identify lands suitable for environmental education uses.

Objectives

- Provide an educational program to inform the public about the importance of protecting water quality and the purpose of the District's watershed lands, resource management practices, and water conservation.
- Promote research on watershed lands and resources that could be used in the District's management practices and add to the District's watershed resource database.
- Incorporate environmental education into appropriate District actions and activities.

Guidelines

- EE.1 Conduct an environmental education program that is focused on water quality protection, watershed management, resource protection, and water conservation.
- EE.2 Conduct an outreach and educational program that emphasizes school participation in watershed restoration projects. Elements of the outreach program may also include visits by District staff to or placement of public information displays in adjacent communities and local classrooms.
- EE.3 Consider a "docent" volunteer program to supplement and support District staff in conducting environmental education programs. Such a volunteer program should not increase overall program costs. Consider developing a newsletter to educate residents, neighbors, friends, and the general public on issues of concern in the East Bay watersheds.



- EE.4 Incorporate interpretive information, on signs or by other appropriate means, and place this information where the public is likely to encounter it on District lands, to describe District management practices, interpret special watershed resources, or point out special management challenges.
- EE.5 Develop and distribute public information materials that inform visitors using watershed lands about the potential effects of their activities on watershed resources and ways to avoid or reduce adverse effects (i.e., appropriate disposal of human and pet wastes, reduction of trail erosion, and introduction of exotic species). Require the distribution of such materials by staff and concessionaires.
- EE.6 Prepare public information materials on special management issues facing the District (e.g., urban runoff and sewage overflow problems, soil erosion, the encroachment of development into viewsheds, and the impacts of development on wildfire and risks of wildfire), and use this information in public outreach, especially in communities that share these management challenges because of their urban/wildland interface with District lands.
- EE.7 Prepare public information materials on gains made and agreements reached with surrounding communities on special management issues facing the District, and use these materials for public outreach, especially within communities that share these issues because of their location near District lands.
- EE.8 Develop and conduct a research monitoring program that promotes college and university research on District watershed lands, and ensure that the District obtains the data and results of this research.
- EE.9 Utilize the Internet to enhance environmental education and outreach to the public. Provide content over the Web and interactive opportunities for instruction about the local watershed.



Cultural Resources

The District's watershed lands contain numerous archaeological and historic resources. In addition, as-yet-undiscovered cultural resources may be present. These resources include remnants of Native American occupation and historic ranching and farming operations. Cultural resources will be protected by policies requiring review of existing documentation before undertaking management actions and by complying with existing laws and regulations.

The District's goal for cultural resources is to avoid adversely affecting sensitive cultural resources while implementing District activities on watershed lands and to establish relationships with local Native American groups.

Program Direction

Goal

Avoid adversely affecting sensitive cultural resources while implementing District activities on watershed lands, and establish relationships with local Native American groups.

Objectives

- Identify, preserve, and protect significant cultural resources.
- Provide for appropriate research and educational uses of District lands with respect to cultural resources.
- Maintain an ongoing relationship with Native Americans who have ancestral ties to District lands.

Guidelines

- CR.1 Designate staff contact persons to act as liaisons with the Native American community. The contact persons' roles are to convey to District employees the need to protect the cultural resources of District watershed lands and to determine the appropriate level and timing of further coordination with interested Native Americans.
- CR.2 Negotiate, as needed, with local Native American groups regarding the disposition of Native American artifacts and remains, should any be discovered.
- CR.3 Include cultural resource protection and management into the District's training program for Natural Resource Department staff.
- CR.4 Identify resources that have a high potential for vandalism and ensure that they are protected.
- CR.5 Avoid disturbing significant cultural resource sites and sites of unknown significance, where feasible. Require fire management and other watershed personnel to protect known cultural resource sites during management activities.
- CR.6 Follow the requirements of CEQA Section 21083.2 when undertaking or approving watershed activities.
- CR.7 Conduct records searches and surveys before beginning ground-disturbing activities.
- CR.8 Maintain an inventory of cultural resources in compliance with applicable laws and regulations, including confidentiality requirements.
- CR.9 Document the procedures to be used if potentially significant cultural resources or human remains are discovered accidentally.

- CR.10 Designate areas that are sensitive because of their potential to contain buried cultural resources and ensure that these areas are monitored during surface-disturbing activities.
- CR.11 If sites cannot be avoided or if the boundaries of a site are unknown, consult a qualified archaeologist (including tribal experts designated by the tribe) for recommendations. Recommendations may include covering or “capping” sites with a protective layer of material, recovering data through research and excavation, performing subsurface testing to determine the extent of a site, and relocating or reconstructing historic structures.
- CR.12 Continue to maintain vestiges of early county settlement on District-owned property, especially where land deeds require protection.

Visual Resources

The natural features of the District’s watershed lands provide a valuable visual resource to people who use those lands, as well as to people who pass through them or who reside, work, and recreate on adjacent lands.

Vegetation removal, facility construction, operational activities, road placement, utility easements, fuelbreak construction, and erosion are all activities that can have negative visual effects on District watershed resources.

The District’s goal for visual resources is to limit the negative visual effects of District activities on watershed lands by ensuring that valuable and rare visual resources are protected from degradation during other management activities.

The visual resource management program addresses important, sensitive visual areas and prescribes management of those key resources. This program also addresses the development of consistent and systematic methods to ensure consistency in structures, signs, and other improvements on watershed lands.

Program Direction

Goal

Limit the negative visual effects of District activities on watershed lands by ensuring that valuable and rare visual resources are protected from degradation during other management activities.

Objectives

- Maintain and protect the general character and visual qualities of watershed lands.
- Maintain and protect the visual qualities experienced from reservoir surfaces on which public access is permitted.
- Maintain and protect the visual qualities viewed from specific public use areas, public trails, and public roads within watershed lands.
- Maintain and protect the visual qualities viewed from key public viewpoints located adjacent to District lands.
- Maintain and develop a unified visual quality and unity in structures, signs, and other improvements on watershed lands.

Guidelines

- VR.1 Review new land use proposals to ensure that they are consistent with the watershed’s visual character, outside of important viewing areas, or screened from important views from reservoir surfaces, shoreline locations, public trails, roads, and key public viewing areas.
- VR.2 Retain viable shoreline vegetation where it occurs on reservoirs.
- VR.3 Control public access along reservoir edges to designated use areas or facilities as needed to prevent visual degradation of important shoreline resources.
- VR.4 Ensure that all facility construction or modifications meet District design standards, or an acceptable alternative, and all regulatory requirements.
- VR.5 Specify the use of natives in plant restoration standards, where available and appropriate.
- VR.6 Cluster watershed development and uses to reduce visual intrusions into natural watershed lands and to reduce adverse visual effects on intervening watershed lands.
- VR.7 Coordinate with fire management personnel to ensure, to the extent practicable, that fire management needs (e.g., pruning and clearing) and fire management patterns are consistent with visual management guidelines. Avoid the use of “vista pruning” along trails and public roads and around use areas, and avoid the use of firebreaks or the establishment of “fuel cells” as wildfire management techniques except where other mitigation measures are not effective and as a last resort.
- VR.8 Avoid controlled burns in developed public use areas during peak use periods (generally June through September). Coordinate the timing of controlled burns with recreation staff.
- VR.9 Coordinate with EBRPD, Alameda and Contra Costa Counties, and other adjacent jurisdictions that have significant open space resources to develop common goals and guidelines for preserving and strengthening the regional visual landscape.
- VR.10 Consider installation of renewable energy facilities that are consistent with the District’s Strategic Plan and with the overall management direction of the East Bay Watershed Master Plan. Consistency with the EBWMP shall be assessed in the project-level CEQA document for any such facility.



Property Management Programs

Land Ownership

The District's Real Estate Services Division is responsible for acquiring lands identified as critical to the operation of the District and for the sale of District property identified as surplus. Private holdings within the reservoir watersheds are acquired on a priority basis designed to protect water quality.

The District's goal for land ownership is to apply a consistent procedure for identifying and evaluating potential watershed land acquisitions, consistent with the District's goal of protecting water quality and natural resource values.

Program Direction

Goal

Apply a consistent procedure for identifying and evaluating potential watershed land acquisitions to protect water quality and for evaluating the current and future need to dispose of District property, consistent with the District's goals of protecting water quality and natural resource values.

Objectives

- Ensure long-term protection of District-owned watershed lands through a systematic program of land retention, acquisition, and disposal.
- Identify high-priority basin parcels not currently in District ownership that should be acquired by purchase, trade, or sale to ensure protection of watershed lands, reservoir water quality, wildland fire protection, and biodiversity.
- Increase revenues generated by the use of District facilities and land, consistent with water quality and natural resource protection priorities.

Guidelines

- LO.1 Consider the use of land gifts, cooperative protection agreements by local jurisdictions, acquisition by other groups, and conservation easements for water quality and watershed protection when considering acquisition.
- LO.2 Develop a watershed classification system that clearly outlines property characteristics important to the District for maximizing water quality protection and water supply operations and for optimizing biodiversity.
- LO.3 Use the watershed classification system to evaluate lands that are being considered for acquisition or disposal. Set as high priorities the protection of watershed lands that:
 - contribute important hydrologic and water quality functions to reservoir waters (e.g., parcels suited for stormwater management or that contain important water bodies),
 - are important to protect from urban encroachment,
 - contain pristine resources that are important to the continued health of watershed lands, including "connectivity" to protect biodiversity,
 - are strategically important for fire and fuels management, and
 - have a high probability of general strategic District use in the future.

- LO.4 Develop a watershed protection program that provides the following options:
- coordinate a broad regional program of land protection and acquisition that supports the District’s resource management priorities, in cooperation with EBRPD, other public agencies, and nonprofit land trusts,
 - identify key watershed parcels that could be protected consistent with District watershed management goals by local jurisdictions as open space in lieu of purchase by the District,
 - identify resource protection measures that could be implemented by adjacent jurisdictions to protect high-priority watershed areas adjacent to District-owned property,
 - coordinate with owners of land adjacent to District-owned property to obtain land donations or to designate conservation easements in strategic watershed locations,
 - analyze the feasibility of preserving strategically important lands by acquiring easements and using other resource protection mechanisms, and
 - attempt first to purchase strategically important lands in fee title. If that is not possible, attempt other forms of protection, including conservation easements, title restrictions, donation or “less-than-fee” acquisition.



- LO.5 Perform a periodic review of District-owned properties that are not tributary to a reservoir to determine their value with respect to watershed protection, including consideration of a “take line” approximately 80 feet on the other side of the ridgetop to prevent physical and visual encroachment on watershed property.
- LO.6 District watershed lands are generally not sold. However, in those instances where sale may be in the District’s best interest, the following guidelines shall be adhered to:
- Rank District-owned properties that could be disposed of to generate funds to acquire watershed lands that are within the reservoir basins and that are important for protecting water quality, biodiversity, fire and fuels management, or other critical issues.
 - Do not allow permanent rights-of-way across District watershed property except for necessary utilities.
 - Evaluate lands that are appropriately considered for disposal to ensure that they are not strategically important for water operations, water quality, biodiversity, or fire and fuels management now or in the future.
 - Segregate the proceeds from any sale of District watershed lands and subsequently use those proceeds for the sole purpose of acquiring similar watershed lands that are necessary or desirable to protect water quality, biodiversity, and other related District interests.
 - Watershed land that is sold must be sold at fair market value.
- LO.7 District watershed lands may be used for the purpose of environmental mitigation or conservation banking. Mitigation areas are improved and held in perpetuity under conservation easements. Mitigation parcels have been enhanced and preserved within the Pinole, San Pablo, Lafayette and Upper San Leandro Watersheds.
- Mitigation sites should enhance the ecological integrity and biodiversity of the area.
 - Conservation banking agreements will promote the biodiversity objectives identified within the East Bay Watershed Master Plan and the East Bay Low Effect Habitat Conservation Plan.

Entitlements

The entitlements program allows for review and modification of lease agreements and permits when these entitlements are to be renewed. It also allows for formal agreements where desirable to allow other entities to maintain, continue, or conduct appropriate activities on District watershed lands and reservoirs.

The entitlements program allows for formal agreements where desirable to allow other entities to maintain, continue, or conduct appropriate activities on District watershed lands and reservoirs.

Program Direction

Goal

Provide administrative flexibility for natural resource managers while ensuring that leases and permits do not create excessive management costs, conflict with reservoir operations or other high-priority management programs, or create unacceptable watershed conditions.

Objectives

- Administer current and proposed lease agreements and access, research, and land use permits to ensure that lessees/permittees are complying with District priorities to maintain reservoir water quality and protect sensitive natural resources.
- Ensure that all lease agreements and land use permits consider potential public safety or nuisance issues that could result from lessee/permittee operations.
- Ensure that the District receives an appropriate percentage of revenues generated from entitlements for use of District watershed property.



Guidelines

- ENT.1 Limit discretionary right-of-way leases, other lease proposals, and land use permits on watershed lands that could adversely affect watershed resources such as reservoir water quality, sensitive habitat areas, sensitive visual resources, or ongoing District management programs.
- ENT.2 Require mitigation of all adverse effects that result from nondiscretionary right-of-way actions (e.g., construction of transmission lines) on District lands.
- ENT.3 Prohibit or restrict lease agreements or land use permits that are proposed near populated watershed areas to reduce conflicts, nuisances, or trespass complaints with uses on District lands, except those intended to address urban interface problems (e.g., cattle and goat grazing for fire hazard reduction).
- ENT.4 Review all lease agreements and land use permits at the time of renewal and modify agreements as necessary to correct problems identified during the lease/permit period. All lease agreements should require conformance with standard District practices, such as erosion control, vegetation management, and fire and fuels management. Leases should include operation plans that are updated annually and allow modification of required management practices, as needed.
- ENT.5 Ensure that an appropriate application fee schedule, approved by the Board of Directors, is implemented to offset staff costs for processing entitlement applications.
- ENT.6 Ensure that all leases contain provisions stipulating that the District receives an appropriate percentage of any revenues generated from use of District property.



Section 4 Watershed Management Area Direction

Introduction

Watershed management areas are defined as District-owned lands within each reservoir basin boundary (Figure 2-1). Reservoir basins encompass both the District-owned watershed lands and basin lands not owned by the District. Watershed management areas on District lands are addressed in this section. Section 5 contains a discussion of management direction for basin lands not owned by the District.

Watershed management areas consist of portions of the basins of San Pablo, Briones, Upper San Leandro, Chabot, and Lafayette Reservoirs. The Pinole watershed, which is not tributary to a District reservoir, is also addressed as a watershed management area.

Watershed management area guidelines are provided because issues, sensitivities, and land management practices differ for each watershed. Specific management area direction is consistent with the broader guidance provided for management programs described in Section 3. The

watershed management area for each reservoir has been assigned a relative sensitivity based on the quality of water in the terminal reservoir, watershed conditions, and the water treatment facilities available for each reservoir. Sensitivities are used to identify specific management area guidelines for each reservoir basin.

Watershed management area guidelines are provided in recognition that issues, sensitivities, and land management practices differ for each watershed.

Watershed Management Area	Management Direction						
	Water Quality	Biodiversity	Fire and Fuels	Developed Recreation and Trails	Visual Resources	Land Ownership	Entitlements
San Pablo Reservoir (SP, page 78)	•	•	•	•	•		
Briones Reservoir (B, page 81)	•	•	•	•	•		
Upper San Leandro Reservoir (USL, page 83)	•	•	•	•	•	•	•
Chabot Reservoir (C, page 85)	•	•	•	•	•		
Lafayette Reservoir (L, page 87)		•	•	•	•		
Pinole (PW, page 89)	•	•	•	•	•		•

The watershed management areas are important for maintaining or enhancing natural resources and water quality. Some management areas have high sensitivities related to water quality while others have sensitivities related to sensitive species and their habitat.

The Briones Reservoir basin is considered the most sensitive watershed for water quality because of its relatively pristine condition, its status as a high-quality source of water, its small watershed area, the cost of pumping water up to it, its regular use at the Orinda Water Treatment Plant, and its ability to gravity-feed the District's water supply system. The Briones management area has good species diversity. Species management efforts in this basin focus on control of invasive species such as bullfrogs.

The San Pablo and Upper San Leandro Reservoir basins are also sensitive for water quality because these facilities regularly serve as water supply reservoirs. Water quality is somewhat lower in these reservoirs, requiring more extensive treatment because of runoff they receive from extensive urban areas. Despite this urban influence, these watersheds provide considerable habitat for sensitive species and are a high priority for species management.

The Pinole Valley watershed is sensitive for water quality due to the presence of steelhead/rainbow trout in Pinole Creek but the watershed does not currently contribute to the District's water supply and there are no plans to use this watershed for future water supply. The Pinole watershed has high biodiversity and supports the most threatened and endangered species of EBMUD's watersheds. Thus, Pinole Valley is a high priority for sensitive species management and habitat enhancement under the EBMUD HCP.

The Chabot and Lafayette Reservoir basins are considered the least sensitive for water quality because these reservoirs are emergency standby sources of water to be available only during extreme droughts. However, Chabot Reservoir is used seasonally for irrigation at nearby golf courses and thus reduces the need for water from other sources. These reservoir watersheds are a priority for biodiversity values despite the urban influences in these watersheds.



San Pablo Reservoir Watershed Management Direction

Water Quality

- SP.1 Collect data on water quality impacts of horse stables. Coordinate with agencies and other responsible entities to develop, select, and implement BMPs.

Biodiversity

- SP.2 Coordinate fire and fuels management activities with other agencies in the Caldecott Tunnel corridor to maintain the biological viability and integrity of the corridor for wildlife movement, especially for large mammals.
- SP.3 Continue watershed monitoring and habitat restoration as guided by the EBMUD Low Effect East Bay Habitat Conservation Plan. Ensure the long-term protection of sensitive fish and wildlife species through wise management that meets the species conservation goals of state and federal recovery plans.
- SP.4 Monitor oak regeneration in oak woodland habitats and identify those factors that limit oak regeneration; initiate restoration if necessary and financially feasible.

Fire and Fuels

- SP.5 Collaborate with the Moraga-Orinda Fire Protection District to conduct homeowner training in defensible space to increase awareness, involvement, and support from home owner associations and individual homeowners in the El Toyonal interface areas.
- SP.6 Continue livestock grazing in and adjacent to the El Toyonal Road interface areas. Where compatible with natural resource objectives, continue to mow grass to a 4-inch height (or disc) within a 30-foot-wide strip along all District property lines adjacent to the urban interface development (e.g., Mistletoe Fire Road area).
- SP.7 Continue District participation in cooperative interagency efforts to develop a fuels management network along the west boundary of the watershed that maintains important biological and other resource values.
- SP.8 Continue livestock grazing on the grassy slopes and in the light brush fuels located in the northwestern portion of the watershed (Eagle's Nest and Woodchopper areas).
- SP.9 Continue to allow grazing of the grassy slopes and light brush fuels adjacent to Fish Ranch Road and Highway 24 to link this low fuel-volume vegetation to fuel modification activities in the area of Highway 24 near the Caldecott Tunnel corridor. Fuel treatment in this area should support the management objectives of the wildlife corridor, and adequately protect water quality.
- SP.10 Continue to assess fire management needs within the Caldecott Tunnel corridor area to evaluate wildfire control issues and explore opportunities for and constraints on the use of a mosaic pattern of prescribed fire treatments as a fuel reduction tool and to enhance natural resource habitat.

SP.11 Continue to participate in cooperative planning efforts for the entire Caldecott Tunnel corridor area to reduce fire hazard and protect biological integrity. Other participants should include EBRPD, California Department of Transportation (Caltrans), Contra Costa County, fire districts, the Cities of Oakland and Berkeley, University of California, Berkeley, water quality specialists, and private landowners. Fire and fuels management treatments to be considered should include:

- treatment by Caltrans of the fuels on both sides of Highway 24,
- treatment by Caltrans or appropriate landowners of the fuels immediately over the east tunnel opening, and roadside fuels on each side of Old Tunnel Road, and
- continuation of the road treatment along each side of the road connecting Old Tunnel Road to Skyline Boulevard.

Roadside fuel treatment should involve a combination of goat grazing, hand pruning and thinning of vegetation, and roadside mechanical brushing. The rest of the open space area can be left in its natural state.

SP.12 Consider strategic closure of Fish Ranch Road, Wildcat Canyon Road, Upper Grizzly Peak Boulevard, and Lomas Cantadas Road during extreme fire weather.

SP.13 Evaluate opportunities to reduce fire ignitions and risks by partially or completely closing portions of the watershed to public use during very high to extreme fire weather conditions.

SP.14 Prohibit public access on the east side of San Pablo Reservoir beyond the shoreline fishing boundary to reduce the likelihood of accidental wildfire ignition.



Developed Recreation and Trails

SP.15 Maintain shoreline fishing control at the San Pablo Reservoir recreation area to reduce trespass in restricted shoreline areas. Control measures include posting signs and installing barriers to clearly delineate the appropriate area available for shoreline fishing. Consider measures to stabilize and revegetate eroded areas.

SP.16 Locate picnic areas away from steep shorelines in wooded settings. Plan the circulation in picnic areas carefully to provide relatively direct access to destination points (e.g., fishing docks and cleaning facilities, restrooms, and open-play meadows). Locate picnic pads away from shoreline to discourage uncontrolled traffic down steep shoreline embankments.

- SP.17 Maintain and enforce a 25-mph boat wake zone and a 5-mph no-wake zone currently designated at San Pablo Reservoir.
- SP.18 Ensure that concessionaire contracts are consistent with the District’s water quality and natural resource protection goals.
- SP.19 Provide direct District management oversight of concessionaire staff to ensure adequate contract compliance with quality and quantity control, retail pricing, operation standards, and District water quality and natural resource management priorities.
- SP.20 Maintain the District recreational trail system in the current configuration and with the current use rules and regulations and a permit system.
- SP.21 Prohibit the use of motorboat engines that have the potential to discharge fuel pollutants into the water in quantities of concern for human consumption or the environment.
- SP.22 Coordinate with the county public health department to maintain up to date postings regarding any health risks posed by consumption of fish caught in the reservoirs or body contact with the water.

Visual Resources

- SP.23 Prohibit management practices, with the exception of the phased elimination of the Monterey pines surrounding the reservoir, or development proposals that would require large-scale modifications to portions of the San Pablo watershed landscape that are highly visible from San Pablo Dam Road, the San Pablo Dam recreation area, Old San Pablo Dam Road, Inspiration Trail, proposed regional trail connectors, and the reservoir surface.
- SP.24 Consider effects on visual quality when proposing watershed management activities in high-priority visual resource areas on Sobrante and San Pablo Ridges.
- SP.25 When feasible, codify visual quality guidelines with EBRPD that emphasize protection of visually sensitive areas on San Pablo Ridge at Tilden Regional Park/Nature Area, Wildcat Canyon Regional Park, and Kennedy Grove Park.



Briones Watershed

Management Direction

Water Quality

- B.1 Consider restoration of Bear Creek upstream of Briones Reservoir to reduce livestock impacts and accelerated erosion.
- B.2 Prohibit use of the Briones trench soils site except for those uses specifically approved by the Board of Directors under the Trench Spoils Management Plan. To ensure that the trench spoils site will continue to meet and support District water quality objectives and regulatory requirements, site operation will require a security plan that will allow only authorized access to the site, including the crest and spillway of Briones Dam, and will prohibit any unauthorized dumping.

Biodiversity

- B.3 Cooperate with universities and other agencies to evaluate adequacy of oak regeneration in oak woodland habitats and identify those factors that limit oak regeneration. Initiate restoration if necessary and financially feasible.
- B.4 Continue watershed monitoring and habitat restoration as guided by the EBMUD Low Effect East Bay Habitat Conservation Plan. Ensure the long-term protection of sensitive fish and wildlife species through wise management that meets the species conservation goals of state and federal recovery plans.

Fire and Fuels

- B.5 Encourage and participate in collaborative efforts for fire and fuels management activities along Bear Creek Road (from San Pablo Dam Road to Hampton Road), which surrounds much of the Briones Reservoir watershed. The Black Hills/Happy Valley homeowners should be encouraged to link their self-protection (defensible space and roadside fuel reduction) efforts into the Bear Creek Road fuel treatment program. These efforts will provide a regional strategic fuel reduction zone around the critical fire hazard areas within the watershed, as well as provide protection for the Black Hills/ Happy Valley interface area. Other potential participants (and their roles) include:
 - Contra Costa County Road Department (proposed Bear Creek Road fuel treatment),
 - Moraga-Orinda Fire Protection District (enforcement and leadership roles),
 - Contra Costa County Fire Protection District (CCCFPD) (coordination and leadership role),
 - Black Hills/Happy Valley homeowners association(s) and individual homeowners (defensible space and access roadside fuel treatment), and
 - EBRPD (fuels treatment) at Bear Creek Road/Briones Regional Park.
- B.6 Explore opportunities for District, EBRPD, CCCFPD, and Moraga-Orinda Fire Protection District to conduct seminars for homeowners about defensible space self-protection to increase public awareness and elicit involvement and support from homeowner associations and individual homeowners in the Black Hills/Happy Valley interface area and surrounding areas.

- B.7 Seek opportunities to reduce fuels in the Sobrante Ridge area in the northern and western portions of the Briones Reservoir watershed, especially along Oursan Fire Road. Vegetation here consists mostly of grass and short, light, brushy fuels. When linked with additional road side clearance along Oursan Fire Road (western flank), this treatment would provide a fuel reduction zone extending from Boy Scout Creek (northern section) through Sobrante Hill (western flank) to Bear Creek Road (southern, eastern, and northeastern portions) of the Briones Reservoir watershed.

This fuel reduction approach provides a strategic wildfire containment zone completely around the reservoir. The Sobrante Ridge/Oursan Fire Road fuel reduction zone could be the principal area for suppressing large, east wind-driven wildfires originating east of Briones Reservoir.

- B.8 Continue Bear Creek Road fuel reduction efforts to the San Pablo Dam Road fuel treatment to maintain the strategic regional fuel treatment network into the San Pablo Reservoir watershed.

- B.9 Evaluate opportunities to reduce fire ignitions and risks by partially or completely closing portions of the watershed to public use during very high to extreme fire weather conditions.



Developed Recreation and Trails

- B.10 Maintain or reduce current levels of recreational access to the Briones Reservoir water surface consistent with water quality and natural resource protection priorities.
- B.11 Review and modify, if appropriate, lease agreements with college crew teams for use of Briones Reservoir. Review of leases must focus on ensuring that current activities do not create adverse water quality, soil erosion, team safety, or other detrimental effects on watershed lands or the reservoir or compromise team safety.

Visual Resources

- B.12 Prohibit management practices, with the exception of the phased elimination of the Briones Overlook Monterey pine grove, that would require large-scale modification of portions of the Briones Reservoir watershed landscape that are highly visible from the Bear Creek Road, the Bear Creek Trail, or the Oursan Trail, public use areas near the reservoir shoreline, and other public viewpoints.
- B.13 Consider effects on visual quality when proposing watershed management activities in high-priority visual resource areas on hillsides and ridgelines surrounding Briones Reservoir.

Upper San Leandro Reservoir Watershed Management Direction

Water Quality

- USL.1 Monitor surface runoff and groundwater water quality of the abandoned spoils disposal site at the north end of the reservoir. Develop and implement BMPs, if appropriate.
- USL.2 Develop and stipulate BMPs for horse stables and other concentrated animal facilities if needed.

Biodiversity

- USL.3 Continue to prohibit stocking of fish and any type of angling, and actively control poaching in Upper San Leandro Reservoir and all of its tributaries to protect the native land-locked steelhead rainbow trout.
- USL.4 Continue HCP monitoring of spawning and rearing habitat for the historically unique land-locked steelhead rainbow trout, and monitor road crossings of spawning streams to ensure that adequate fish passage is provided.
- USL.5 Rank streams suitable for habitat restoration based on their contribution to water quality, biodiversity, and steelhead rainbow trout management goals, and conduct restoration in cooperation with resource agencies and other interested groups as financially feasible.
- USL.6 Develop a long-term strategy for managing the knobcone pine forest on Flicker Ridge, emphasizing the use of all available tools to promote ecosystem health while improving fire safety in the community of Canyon.
- USL.7 In cooperation with universities and other agencies, evaluate adequacy of oak regeneration in oak woodland habitats and identify those factors that limit oak regeneration. Initiate restoration if necessary and financially feasible.
- USL.8 Continue watershed monitoring and habitat restoration as guided by the EBMUD Low Effect East Bay Habitat Conservation Plan. Ensure the long-term protection of sensitive fish and wildlife species through wise management that meets the species conservation goals of state and federal recovery plans.

Fire and Fuels

- USL.9 Evaluate management needs in the forest west of Miller Road, between Upper San Leandro Reservoir and the Chabot Staging Area. This stand has high biological value and supports high fuel loadings. A fire under infrequent extreme fire weather conditions could drastically alter biological values in this stand.

Additional analysis should include fuel moisture and loading studies (to more precisely determine potential fire intensity and risk), assessment of risk to water quality and adjacent lands, and documentation of biological values and potential effects of hazard reduction. The analysis would provide guidance for a site-specific management option, including restricting human access to reduce fire ignition risk, fuel modification within the stand, increased suppression capability, or treatment of fuel hazards on adjacent lands.

USL.10 Collaborate with stakeholders for fire and fuels management activities along Camino Pablo Road to protect the Old Moraga Ranch and Rancho Laguna Park/King Canyon interface areas.

Other potential participants (and their roles) are:

- Town of Moraga Park and Recreation Department, which manages Rancho Laguna Park (maintaining defensible space),
- area homeowner associations (defensible space),
- Moraga-Orinda Fire Protection District (enforcement and leadership role),
- individual homeowners (defensible space), and
- the District (continue strategic area grazing, mowing, or discing along the interface and lower King Canyon drainage).

USL.11 Participate in opportunities to conduct homeowner training on defensible space self-protection with the Moraga-Orinda Fire Protection District. Training should be designed to increase public awareness and to encourage involvement by homeowner associations and individual homeowners in the Old Moraga Ranch, Rancho Laguna Park, and King Canyon areas within the Town of Moraga.

USL.12 Work with responsible agencies, if requested, to implement strategic closures of portions of Pinehurst Road and Redwood Road during extreme fire weather.

USL.13 Continue efforts to treat fuels along Skyline Road at Pine Hills Court in cooperation with EBRPD and the City of Oakland.

USL.14 Evaluate opportunities to reduce fire ignitions and risks by partially or completely closing portions of the watershed to public use during very high to extreme fire weather conditions.

Developed Recreation and Trails

USL.15 Maintain current limitations on recreational access to the reservoir and maintain the District recreational trail system in the current general configuration with current use rules and regulations and a permit system.

USL.16 Provide annual maintenance of trails to ensure that trail hazards are minimized.

Visual Resources

USL.17 Prohibit management practices or development proposals that would require large-scale modification of the Upper San Leandro Reservoir watershed landscape, especially in areas that are highly visible from Redwood Road, Anthony Chabot Regional Park, and other public viewpoints.

USL.18 Minimize the effects on visual quality when proposing watershed management activities in high-priority visual resource areas on Rocky Ridge.

Land Ownership

USL.19 Pursue opportunities to consolidate ownership in the Canyon area to improve fire management effectiveness and water quality protection through land exchange, acquisition, and disposal.

Entitlements

USL.20 Prohibit introduction of other types of agricultural production on the watershed, except those that meet EBMUD's mission, vision, and values for providing public education about the importance of protecting water quality and how EBMUD's resource management practices preserve the watershed and advance water conservation.

Chabot Reservoir Watershed

Management Direction

Chabot Reservoir and portions of the watershed are managed by EBRPD under a lease with the District. The District has incorporated the relevant guidance from this plan into the lease.

Water Quality

- C.1 Prohibit use of the Miller Road trench soils site except for those uses specifically approved by the Board of Directors under the Trench Soils Master Plan. To ensure that the trench soils site will continue to meet and support District water quality objectives and regulatory requirements, site operations will include controlled access to permit authorized use of the site via Miller Road and prohibit any unauthorized dumping. Monitor surface water runoff down-gradient of the trench soils site, as required by stormwater regulations, and develop BMPs, if appropriate.
- C.2 Collaborate with EBRPD to evaluate and implement actions to minimize the production of algal toxins, and ensure that EBRPD takes all measures necessary to ensure that recreational users of the watershed are adequately informed and protected from algal toxins.



Biodiversity

- C.3 Continue watershed monitoring and habitat restoration as guided by the EBMUD Low Effect East Bay Habitat Conservation Plan. Ensure the long-term protection of sensitive fish and wildlife species through wise management that meets the species conservation goals of state and federal recovery plans.

Fire and Fuels

- C.4 Participate when appropriate with EBRPD and Alameda County Fire Department in conducting homeowner training in defensible space self-protection to increase awareness, involvement, and support from homeowner associations and individual homeowners in the Lake Chabot area.
- C.5 Explore opportunities for a joint venture with EBRPD to conduct fuel hazard reduction along Redwood Road from Proctor Staging Area northward, using Willow Park Golf Course, to Chabot Staging Area. This effort will link with the Upper San Leandro Reservoir fuel modification zones.

Developed Recreation and Trails

- C.6 Any future amendments to the Lake Chabot lease or subsequent subleases should be consistent with District priorities for reservoir water quality and watershed natural resource protection and public health and safety standards.
- C.7 Conduct an annual mid-management tour and review of Lake Chabot operations with EBRPD that addresses water quality, trails, fire and fuels management, public safety, and lease compliance.
- C.8 Future amendments to the lease agreement with the City of San Leandro for Chabot Park should be modified to improve safety for park users and the adjacent residential area, and be consistent with District priorities for watershed natural resource protection and public health and safety standards.

Visual Resources

- C.9 Coordinate with EBRPD to identify priority visual resources in Chabot Reservoir watershed and work in partnership to establish appropriate restrictions on development or use of the watershed that is consistent with guidelines implemented on other District lands.



Lafayette Reservoir Watershed

Management Direction

Water Quality

- L.1 Evaluate and implement actions to minimize the production of algal toxins, and take all measures necessary to ensure that recreational users of the watershed are adequately informed and protected from algal toxins.

Fire and Fuels

- L.2 Continue to modify as necessary and implement the Lafayette Reservoir watershed fire management plan, which has been approved by CCCFPD.
- L.3 Continue to maintain fire access roads in the watershed. Lafayette Reservoir has a very good road system that fully surrounds the reservoir, and most adjacent spur ridges provide road access for fire equipment.



- L.4 Continue to assess fire management needs in the areas of heavier fuels in the Lafayette Reservoir watershed to evaluate wildfire control issues, and explore opportunities and constraints for the use of prescribed fire and other techniques for fuel reduction and natural resource habitat enhancement. The western and southwestern portions of the watershed are the highest priority areas.

- L.5 Explore opportunities for the District, Contra Costa County, and Moraga-Orinda Fire Protection Districts to conduct homeowner training in defensible space self-protection to increase awareness, involvement, and support from homeowner associations and individual homeowners. Encourage homeowners to link their defensible space zones into the grassy, low fuel-volume vegetation adjacent to the urban/wildland interface areas.

- L.6 Implement restrictions or closure of the recreation area, when warranted, to reduce fire ignitions and risks, especially the areas above the paved surface road, to public use during very high to extreme fire weather conditions.

Developed Recreation and Trails

- L.7 Monitor use levels and changes in use patterns to minimize user conflicts.
- L.8 Review use of the recreation area for day camps. Consider conflicts among users and impacts from large day-camp user groups, and permit such use only within the facility's carrying capacity. Evaluate District costs for administration, operation, and maintenance of day camp events compared to the revenue generated by the events, and ensure that District permit fees are commensurate with incurred direct and indirect costs. (See guideline DRT.15 in Section 3.)

- L.9 Permit special events only in strict accordance with general recreation guidelines. Screen event proposals to reduce their impacts on adjacent residential areas and other general recreation area users. Avoid events that close the areas to the general public. (See guideline DRT.15 in Section 3.)
- L.10 Consider developing a daily and annual use fee and permit for dogs or other means to encourage compliance with requirements for keeping dogs on leash and picking up fecal matter.
- L.11 Coordinate with the county public health department to maintain up to date postings regarding any health risks posed by consumption of fish caught in the reservoirs or body contact with the water.

Visual Resources

- L.12 Maintain the current visual character of the Lafayette Reservoir watershed by restricting additional recreational development (with the exception of the food service facilities), maintaining and improving existing watershed facilities and signs to reflect a unified recreation area design
- L.13 Use California “site natives” in any supplemental plantings of woody species in the undeveloped areas of the park. Use appropriate District-recommended drought-tolerant species in the developed areas. Give highest priority to fire-resistant species.
- L.14 Consider installation of water conservation demonstration gardens in locations that will have high visibility with the public but not significantly impact the natural character of the park, or otherwise cause significant environmental impacts.



Pinole Watershed Management Direction

Water Quality

- PW.1 Maintain appropriate creek buffers in agricultural use areas.
- PW.2 Where appropriate, implement corrective measures on Pinole Creek to rectify streambank instability as time and resources allow.

Biodiversity

- PW.3 Continue watershed monitoring and habitat restoration as guided by the EBMUD Low Effect East Bay Habitat Conservation Plan. Ensure the long-term protection of sensitive fish and wildlife species through wise management that meets the species conservation goals of state and federal recovery plans.
- PW.4 Continue ongoing efforts to protect and restore riparian stream ecosystems.
- PW.5 Prohibit use of pesticides in the watershed, except for spot treatments of pest plant species where other methods of pest control are not feasible.
- PW.6 Watershed lands may be used for the purpose of environmental mitigation or conservation banking where those uses are consistent with the East Bay Watershed Master Plan's biodiversity objectives.
- PW.7 Use the watershed for mitigation projects/banks that are consistent with the HCP and further enhance habitat for sensitive species while generating revenue and offsetting impacts from District projects in other areas.



Fire and Fuels

- PW.8 Follow the fuel treatment guidelines for Pinole Valley established in the Fire Management Plan (October 2000).
- PW.9 Continue livestock grazing in the less sensitive portions of the Pinole watershed. Where compatible with natural resource objectives, graze or mow grass to a 4-inch height (or disc) within a 30-foot-wide strip along all District property lines adjacent to the urban/wildland interface.
- PW.10 Where appropriate, consider opportunities for the District, the City of Richmond and Pinole Fire Departments, the Rodeo-Hercules Fire Protection District, and CCCFPD to conduct homeowner training in defensible space self-protection to increase awareness, involvement, and support from homeowner associations and individual homeowners. Encourage homeowners to link their defensible space zones into the grassy, low fuel-volume vegetation adjacent to the interface areas.

Developed Recreation and Trails

- PW.11 Consider recreational use of watershed lands in Pinole Valley on a case-by-case basis consistent with the water quality, biodiversity, fiscal responsibility, and public safety goals of the EBWMP.

Visual Resources

- PW.12 Maintain or improve the current visual quality in areas visible from Castro Ranch, Alhambra Valley, and Pinole Valley Roads by limiting new structures and providing appropriate levels of agriculture and grazing use near these public roads.
- PW.13 Prohibit development or structures near the Bay Area Ridge Trail regional connector to preserve current open space views of Pinole Valley.
- PW.14 Consider visual quality guidelines when coordinating with the Cities of Pinole, Hercules, and El Sobrante to ensure that high-priority visual resources located near the current or planned urban interface are protected. Encourage visual resource policies to be incorporated into the general plans of each city.

Entitlements

- PW.15 Initiate organic farming in the Pinole Valley for vegetable or flower production if farming practices are consistent with IPM practices that provide for water quality and other environmental protection. In the interim, current agricultural uses will continue under strict controls.

Section 5

Management Direction for Interjurisdictional Coordination

Introduction

Some land uses in the areas that surround District-owned East Bay watershed lands can have substantial adverse impacts on District water quality and watershed management. Development and use of these adjacent lands require special management consideration because the jurisdictions involved have differing land use goals and objectives. In addition, allowable uses of District-owned watershed lands are influenced by the local land use policies of jurisdictions whose planning boundaries coincide with District ownership. District watershed lands are located primarily in unincorporated portions of Alameda and Contra Costa Counties. Small portions are located within the Cities of Orinda, Lafayette, and Oakland and adjoin the incorporated Cities of Hercules, Lafayette, Moraga, Oakland, Orinda, Pinole, Richmond, and San Leandro and the unincorporated communities of Castro Valley and El Sobrante. In addition, substantial portions of District land are bordered by EBRPD lands (Figure 5-1).

Each of the eight incorporated cities and both counties set their local land use and development policies through the general plan process. County land use and development policies apply to unincorporated areas, just as city policies apply to incorporated areas.

In addition to these local jurisdictions, regional agencies can also affect management of District lands. The California Department of Transportation (Caltrans) and the Metropolitan Transportation Commission enact the plans

and policies of the state and federal governments. The Regional Water Quality Control Board, the Bay Area Air Quality Management District, and Cal Fire set policy for fire management throughout the state. EBRPD also has numerous parklands that adjoin the District's watershed lands. Because EBRPD is the largest adjacent landowner, its actions can have a substantial effect on management of District watershed lands. The history of cooperation and coordination between the District and EBRPD has been important in addressing issues of concern.





Figure 5-1 | Adjacent EBRPD lands

Major Management Issues

Management direction for lands adjacent to District-owned watershed lands recognizes that some of these areas are within the hydrologic basins of District reservoirs and drain into them and that others do not. Issues related to the use and development of adjacent lands extend well beyond land use, but these issues can be addressed nonetheless through a land use and management coordination program involving the District and the various agencies responsible for adjacent jurisdictions. The major management issues resulting from the use and development of adjacent lands are the following:

- **Water Quality Protection:** Protection of water quality is foremost among management considerations. Land use and development have been shown in District studies to adversely affect the quality of water draining onto District watershed lands and into District reservoirs (see the water quality management discussion in Section 3).
- **Wildfire and Public Safety:** Use of adjacent lands raises significant concerns regarding the risk of wildfire. The pattern of adjacent development affects the District's ability to manage the risk of wildfire or its spread onto or off from District watershed lands.
- **Public Encroachment:** Use of adjacent lands, particularly for residential development, could substantially increase public encroachment onto watershed lands. Public encroachment can lead to violations of District management objectives, adverse effects on sensitive watershed habitats, increased incidence of trespass and vandalism, and increased degradation of the environment and views along the urban/wildland interface.
- **Viewshed Protection:** Locally approved urban encroachment on adjacent lands could disrupt or degrade the visual qualities of District watershed lands and the regional visual environment.
- **Biodiversity:** Because plants and animals do not recognize political or planning boundaries, biodiversity planning must occur between adjacent public and private landowners to maintain connectivity between large patches of habitat and avoid maintenance practices that result in inadvertent mortality of species. Close coordination between landowners to discuss the offsite impacts of maintenance activities and projects, both within and outside the context of the CEQA process, is essential to preserve regional biodiversity.

These major issues also apply to the management of adjacent lands not tributary to a reservoir. On those lands, however, water quality issues, although still important, are not emphasized as heavily as they are on basin lands that are tributary to District reservoirs.

Summary of Land Use Conditions on Adjacent Lands

Land use conditions, particularly those relating to water quality, public safety, and watershed protection, are summarized in this section for each jurisdiction having property adjacent to District-owned watershed lands. The relationship between land use conditions and issues of concern to the District has been developed through focused studies conducted by the District and the evaluation conducted specifically to support the EBWMP.



Adjacent Basin Lands

Contra Costa County

Lafayette

Except for very small areas at the extreme western edge of the city that drain into San Pablo Reservoir, the City of Lafayette does not include lands that drain into District reservoirs. The Lafayette Reservoir watershed is essentially

self-contained. The watershed is within the jurisdiction of the City of Lafayette but is entirely under District ownership and management.

Moraga

Much of the western half of the Town of Moraga is within the Upper San Leandro Reservoir basin. King Canyon, Moraga, and Rimer Creeks and their tributaries flow southward to Upper San Leandro Reservoir. Las Trampas Creek and its tributaries in the eastern part of town flow northward to join Lafayette and Walnut Creeks and finally discharge into Suisun Bay.

According to the Moraga general plan, much of the town consists of steep, undevelopable slopes whose “open space characteristics contribute to the Town’s high quality environment”. The community maintains its small-town character through one- and two-story structures that incorporate landscaping and open space into their design. Much of the town is designated for open space, and most of the remaining areas are developed with single-family residential units. Together, these uses make up nearly 90% of the land use in Moraga. Cluster housing is permitted in areas designated for open space or residential uses, but the town’s goal is “to permit a limited amount of cluster housing where it does not impinge upon or adversely affect existing detached single-family environments”.

Most of the growth planned in Moraga is on lands that are already designated for residential uses. Much of the land available for residential development is on steep slopes or in areas within 100-year floodplains. Streambank erosion is acknowledged as a long-term problem. Moraga does not allow industrial uses, and only about 100 acres of land are zoned for office and commercial activities, with much of that land remaining vacant. The general plan does not designate land uses for District watershed lands, which are outside of the city limits.

Although the potential for development anywhere along the watershed interface has implications for managing water

quality, fire and fuels, public encroachment, and visual quality of District lands, several areas of the interface involve special land use management issues.

According to the Moraga general plan, much of the town consists of steep, undevelopable slopes whose “open space characteristics contribute to the Town’s high quality environment”

Palos Colorados. A proposal exists for development of 123 single-family dwelling units on 476 acres of land southeast of Lafayette Reservoir. Approximately 100 acres in the northwestern portion of the development area are within the Moraga Creek basin, which drains to the Upper San Leandro Reservoir. The portion of the proposed development that would be located on District watershed lands would accommodate approximately 27 dwelling units, and a portion of a school site. It is understood that grading of the project site for development will direct drainage away from Upper San Leandro Reservoir and thereby eliminate water quality conflicts. This proposed grading modification should be approved by the city and county to protect water quality. The development is also an important wildlife corridor into Lafayette Reservoir, and buildout may curtail wildlife movements in the Lafayette Reservoir watershed.

Larch Avenue Area. A 65-acre vacant parcel is located between Larch Avenue and Sanders Drive near Canyon Road. A conceptual development plan exists to subdivide 58.2 acres of the property into six single-family residential lots ranging in size from .96 acre to 1.38 acre plus one remainder 51.45 acre common parcel. The Larch Avenue area is in the drainage of Moraga Creek, which drains to Upper San Leandro Reservoir.

Orinda

Almost the entire city of Orinda lies either within the San Pablo Reservoir or Upper San Leandro Reservoir basin. According to its general plan, Orinda is a nearly built-out semi-rural community.

Orinda's general plan seeks to preserve the semirural character of the city by keeping development densities low, limiting development on highly visible, undeveloped ridges and hillsides, retaining vegetation during project construction; limiting site grading, preserving creeks and creekbeds, clustering development, and protecting the open space north and west of the city. Much of this open space is District-owned watershed land.

The District watershed lands adjacent to Orinda are outside of the city limits but within the planning area boundary. The general plan designates these lands for "utility" uses, defined as being appropriate for utility, watershed, open space, and public recreation and for cultural uses where specifically designated. The California Shakespeare Festival site on District-owned land in Siesta Valley is one such use. The general plan designates most development adjacent to watershed lands for very low-density to low-density single-family housing (e.g., a maximum of one to two units per acre).

Although the potential for development anywhere along the watershed interface has implications for managing water quality, fire and fuels, public encroachment, and visual quality of District lands, several areas present special management issues.

El Toyonal Interface. A portion of the City of Orinda extends into the area generally between El Toyonal Road (to the north) and the District's de Laveaga Fire Road (to the south). This area could accommodate new residential development and the construction of approximately 47

Unincorporated Area

Contra Costa County has jurisdiction over all lands located outside incorporated areas, including District watershed and EBRPD lands.

The District watershed lands north of Orinda are within the Briones Hills planning area, which is subject to the Briones Hills Agricultural Preserve Area Compact. The compact was made in 1988 between the county and the Cities of Martinez, Pleasant Hill, Walnut Creek, Lafayette, Orinda, Richmond, Pinole, and Hercules. The county's general plan strongly supports the intent of this agreement, in which the signatories agree not to annex lands in the

The Contra Costa County General Plan designates District watershed lands as "watershed", a designation intended to safeguard the public water supplies stored in District reservoirs.

single-family dwelling units on 30 acres of residentially zoned land. Access to this area is very limited because of a road closure at the north end of El Toyonal Road. Land configuration, limited access, narrow roadway, vegetative cover, and fire risks associated with this area and with urban development in general make management of this area extremely important. The opportunity for development is limited due to the steep slopes in the El Toyonal area.

California Shakespeare Festival Facility. The California Shakespeare Festival leases a portion of the District's watershed lands in Siesta Valley (north of the Gateway Boulevard interchange on Highway 24) as a site for the California Shakespeare Festival and Bruns Amphitheatre. This permanent facility (reconstructed in 2010) is currently used for performances primarily during the summer months. Management activities required under the lease address wildfire ignition and public encroachment onto adjacent District watershed lands.

Black Hills. Residential development on the northern edge of Orinda has occurred along the ridge of the Black Hills, close to Bear Creek Road and encroaching into the Briones Reservoir watershed where it has crested this ridge. Development in these areas already has serious implications for wildfire hazard and visual resource impacts on District lands. Any further development in this area must meet strict fire and fuels management requirements to fully mitigate the potential impact. This area is currently under construction. Encroachment on District land by occupants will need to be monitored regularly.

Briones Hills planning area for urban development. This area also includes EBRPD lands and large tracts of agricultural land east of District watershed lands.

The Contra Costa County General Plan designates District watershed lands as "watershed", a designation intended to safeguard the public water supplies stored in District reservoirs. Permitted on lands designated as "watershed" by the county are agricultural uses that do not rely on pesticides or chemical fertilizers, such as grazing and Christmas tree farming, passive, low-intensity recreational uses, such as hiking and biking, and small-scale commercial uses that

support picnicking, boating, and fishing activities on adjacent reservoirs.

The general plan specifies that the county shall cooperate with other regulatory agencies to control point and non-point water pollution sources to protect adopted beneficial uses of water.

Although the potential for development anywhere along the northern and northwestern urban/wildland interface between Contra Costa County and District lands could have implications for managing water quality, fire and fuels, public encroachment, and visual quality of District watershed lands, several areas of the interface present special land use management issues.

Community of Canyon. Development in the unincorporated community of Canyon consists primarily of houses, a school, and a post office. District watershed lands surround this small community and the District owns many small

parcels within the community. Critical wildland management issues of land configuration, septic tanks and leach fields, limited access, narrow roadways, dead-end roads, and fire and fuels associated with the interface of wildlands and rural residential use must be addressed. Potential development of the McCosker Ranch property could intensify wildland interface issues and concerns.

Indian Valley Area. Most of the private, unincorporated land that borders the eastern edge of District watershed lands around Canyon is in open space use (i.e., Indian Valley). Management of the District-owned interface focuses on the cooperative actions needed to reduce the potential risk and damage from wildfire. Scattered among these lands are residences and other development that could be damaged by wildfires and could also be considered potential sources of wildfire. In addition, these lands could be rezoned for more intensive uses in the future, which would intensify urban/wildland interface issues and concerns.

Alameda County

Castro Valley

A small portion of the unincorporated community of Castro Valley immediately adjacent to Chabot Reservoir drains into Chabot Reservoir. According to the Castro Valley Plan (part of the Alameda County General Plan), Castro Valley is extensively developed, with relatively little vacant land remaining. Castro Valley consists predominantly of single-family housing. Most of the District's watershed lands in Alameda County are within the Castro Valley planning area, but none are within the community's urban area. The Castro Valley Plan designates District lands in its

planning area as "appropriate open space", as defined by the Alameda County General Plan.

Future development anywhere along the northern and northwestern urban/wildland interface between Castro Valley and District watershed lands could have adverse implications for managing water quality, fire and fuels, public encroachment, and visual quality of watershed lands. This area should be monitored carefully for future actions even though no significant problems exist at present.

Oakland

Essentially all of the City of Oakland is west of the ridgeline of the Oakland Hills and drains into San Francisco Bay. A portion of the north shoreline of Chabot Reservoir and a portion of the reservoir itself are within the city limits, however.

This land is occupied by the City of Oakland's Lake Chabot Municipal Golf Course, portions of which drain into Chabot Reservoir. Because it drains directly into the

reservoir, the golf course presents water quality issues for management of Chabot Reservoir, especially regarding the use of pesticides and fertilizers. Also, the Grizzly Peak Estates area above the Caldecott Tunnel east portal presents difficult fire hazard mitigation challenges to downhill agencies, including the District and EBRPD. It is important that Oakland prohibit further development in this ridgetop location.

Unincorporated Area

Alameda County has land use jurisdiction over unincorporated areas of the county. The Alameda County General Plan strongly encourages that development remain within existing urban boundaries. For incorporated areas, the plan promotes efficient use of suitable vacant and infill land. For unincorporated areas, the plan establishes a limit to urban development to reduce the impacts of development on open space and the environment.

Although the potential for development anywhere along the northern and northwestern interface between Alameda County and District watershed lands has implications for managing water quality, fire and fuels, public encroachment,

and visual quality of District watershed lands, one general area of the interface presents special issues.

Cull Canyon Area Most of the private, unincorporated land that borders the eastern edge of District watershed lands in Alameda County is in open space use. Management of the District-owned interface focuses primarily on cooperative actions to reduce the potential risk and damage from wildfire. Possible future rezoning of these lands for more intensive uses could create issues typical of an urban interface. Any significant change of use could also affect the visual quality of District watershed lands and the visual character of the region.

East Bay Regional Park District

Other than the District, EBRPD is the largest single landowner within the basins of the District reservoirs. Because management activities on those lands have the potential to affect water quality and other District programs, the District retains an ongoing interest in land use modifications and proposed new uses. The District supports providing timely technical feedback on any proposed change.

The policy of EBRPD is to cooperate with other public agencies in acquiring, preserving, and managing nonpark open space lands and ecosystems and in fostering sound stewardship practices.

Almost the entire western edge of District watershed lands is bordered by EBRPD property, with the exception of the areas near the Caldecott Tunnel at Highway 24 and immediately northwest of Chabot Reservoir (Figure 5-1). Properties owned or operated by EBRPD drain into Briones, Chabot, San Pablo, and Upper San Leandro Reservoirs. The specific parks are listed below:

San Pablo Reservoir Basin

- Sibley Volcanic Preserve partial area
- Tilden Regional Park
- Wildcat Canyon Regional Park National Skyline Trail

Briones Reservoir Basin

- Briones Regional Park

Upper San Leandro Reservoir Basin

- Redwood Regional Park
- Roberts Regional Recreation Area
- Sibley Volcanic Regional Preserve partial area
- Huckleberry Botanic Regional Preserve
- Lafayette-Moraga Regional Trail
- Old Moraga Ranch Trail

Chabot Reservoir Basin

- Anthony Chabot Regional Park
- Fairmont Ridge Regional Park

In addition to the parklands within the basins, the following EBRPD parks adjoin District watershed property but are outside of the basins:

- Las Trampas,
- Kennedy Grove Regional Recreation Area
- Sobrante Regional Preserve, and
- Claremont Canyon Regional Preserve.





The policy of EBRPD is to cooperate with other public agencies in acquiring, preserving, and managing nonpark open space lands and ecosystems and in fostering sound stewardship practices. EBRPD also acts as a “good neighbor” to adjacent owners by managing its resources and planning, developing, and operating its parks in a manner that does not conflict with adjacent management practices or that reduces impacts to the greatest extent possible. The District intends to work in partnership with EBRPD, much as it has with the City of Orinda, Town of Moraga, and Alameda and Contra Costa Counties, to develop and implement BMPs that mitigate impacts on reservoir water quality that may occur from parkland runoff. An important mechanism for ensuring ongoing coordination with EBRPD is the District/EBRPD Liaison Committee, a Board-level joint committee that regularly reviews broad issues of mutual concern.

Briones Regional Park. The western half of Briones Park drains directly into Briones Reservoir via Bear Creek and several smaller drainages. Land use practices in the park can affect water quality in the reservoir. Road and trail use and maintenance, recreational development, grazing, and herbicide use are activities of concern that require monitoring.

Redwood Regional Park. Redwood Regional Park is tributary to Upper San Leandro Reservoir, and land use practices in the park can affect water quality in the reservoir. Road and trail use and maintenance, herbicide use, and vegetation management are activities that will require water quality monitoring. Mountain bike trespass onto the District’s Redwood Trail from EBRPD’s East Ridge Trail and trail damage in this sensitive area has already been documented.

Lake Chabot. EBRPD plans, manages, and operates the Lake Chabot Recreation Area under a long-term agreement with the District. Use of the reservoir and the recreational development surrounding it are managed in accordance with the terms and conditions of the Park and Recreation Lease (25-year term initiated in 2016) and according to the Provisions and Conditions of the District’s Revised Domestic Water Supply Permit. Lake Chabot provides emergency standby supply and is also used extensively for recreation.

The District has cooperated with EBRPD in the development of regional trails that link the lands of the two districts. These trails provide the public with an opportunity to enjoy a high-quality trail experience while meeting the land use constraints of both agencies.

Redwood Canyon Golf Course. The District leases land upstream of Chabot Reservoir to EBRPD to operate Redwood Canyon Golf Course which consists of an 18-hole regulation golf course, golf practice range (using floating golf balls), clubhouse, event center, and other support facilities. EBRPD leases the property as part of the Lake Chabot Master Lease from EBMUD and subleases the property to a concessionaire. EBMUD will continue to own and operate the Lake Chabot Reservoir and Dam as part of its water supply system. The District’s primary issue of concern with the management of Redwood Canyon Golf Course is the potential for pesticides and fertilizers, used for turf management, to affect the water quality of Lake Chabot. The lease provisions require compliance with the Audubon Guidelines for Golf Course Management which minimize impacts to birds, fish and wildlife. EBMUD, in coordination with EBRPD, will ensure compliance by the concessionaire.

Regional Trails System. The District has cooperated with EBRPD in the development of regional trails that link the lands of the two districts, especially the National Skyline Trail. Additional opportunities, including the Bay Area Ridge Trail, American Discovery Trail, and Mokelumne Coast to Crest Trail are in progress. These trails provide the public with an opportunity to enjoy a high-quality trail experience while meeting the land use constraints of both agencies. All future trail plans for either agency must be developed with early input from the other to identify the impacts of proposed alignments, the alternate alignments that may be required, and specific trail use conflicts requiring mitigation or prohibition.

Adjacent Lands Not Tributary to a Reservoir

Contra Costa County

The following jurisdictions are located within adjacent nontributary lands.

Hercules

The City of Hercules is within the Refugio Creek basin. District watershed lands do not drain into Hercules, and lands within the jurisdiction of Hercules do not drain into District watershed lands.

Northeast of Refugio Creek, high-density residential development adjoins District property, and some of this development abuts District property directly with no setbacks at the urban/wildland interface. Other residential developments in the area provide open space buffers adjacent to District-owned lands. Southwest of Refugio Creek, open space and low-density residential land within the City of Hercules adjoin District land. Most of these areas are essentially built out, with only a few scattered lots remaining to be developed.

Hanna Ranch Development. The Hanna Ranch Development directly abuts District property at the northwestern corner of Simas Valley. Because of the absence of law enforcement in this area, a variety of urban/wildland interface effects have occurred, including poaching, trespassing, vandalism, and mountain bike access. In addition, the District has been forced to adopt fire hazard mitigation measures on its own property because of the proximity of residential development to District watershed property. This area will require an increased level of monitoring and District presence.

Pinole

The City of Pinole is in the Pinole basin, but it is located downstream of District-owned lands.

Pinole is essentially a built-out residential community. North of Pinole Creek, the city adjoins District property primarily with low-density residential development, much of which directly abuts District watershed lands with no setbacks at the urban/wildland interface. Much of this area is undeveloped and is one of the major remaining areas in the city that are designated for residential development. South of Pinole Creek, the city's Pinole Valley Park abuts District watershed lands.

Although the potential for development anywhere along the Pinole/District watershed interface could have implications for managing water quality, wildfire hazard, public encroachment, and visual quality of District watershed lands, two specific areas present special land use management issues.

Doidge-Wright Estate. The largest parcel of land likely to undergo development is the Doidge-Wright Estate on the southern end of Pinole Valley Road, located on the Pinole side of the ridge that separates Pinole and Hercules. Development of this 185-acre parcel could affect District watershed land by increasing urban interface effects.

Richmond

Pinole Valley Park. Pinole Valley Park, which consists of a sports field complex and surrounding open space with trail use, adjoins District watershed lands. This park is owned and operated by the City of Pinole and primarily presents fire and fuels management and public encroachment management issues. The portion of the City of Richmond adjacent to District property is in the San Pablo Creek basin. Most of the interface is downstream from watershed lands and does not drain onto them. A small area of the city northwest

of the San Pablo Reservoir drains into the reservoir. The reservoir and the District watershed lands below it drain into San Pablo Creek, which flows into Richmond.

Development along the Richmond/District watershed interface has implications for managing water quality, fire and fuels, public encroachment, and visual quality of District watershed lands, several areas present special land use management issues.

Carriage Hills. The Carriage Hills area on the eastern edge of Richmond has been permitted to develop to the District property boundary without setbacks at the urban/wildland interface. This development pattern has fire and fuels, public encroachment, wildlife, and visual quality management implications for watershed lands. The area is essentially built out, and no other new development is planned for the area.

Castro Ranch. A development proposal, circa 1996, for 149 dwelling units on 33 acres south of Castro Ranch Road near Amend Road was denied. Development at this location could occur in the future, however. The form this

development takes could have implications for fire and fuels management and other facets of interface management (including wildlife habitat and trail alignments).

East of Carriage Hills. The area east of Carriage Hills is designated in the general plan for low-density residential development. Several proposals for the development of this area have been submitted, but none have been approved. Development of this area can be expected in the future, however. As with Castro Ranch, the form this development takes could have implications for fire and fuels management and other facets of interface management (including wildlife habitat and trail alignments).

Alameda County

San Leandro

Only a very small portion of the City of San Leandro is in the Chabot Reservoir basin. Most of the city drains into San Leandro Creek and San Francisco Bay. This includes Chabot Park (downstream from Chabot Dam), which is owned by the District but leased to the City of San Leandro

for a day-use park. Residents of neighboring areas have complained about the negative effect park users have on the neighborhood, including late-night activities and disturbances. The city is looked upon as the responsible land management agency in this case.

East Bay Regional Park District

Kennedy Grove Regional Park. Kennedy Grove Regional Park adjoins District watershed lands just northeast of San Pablo Dam. Kennedy Grove is well managed by EBRPD

for fire and fuels. Kennedy Grove is a source of some public trespass onto District watershed lands.

General Management Direction

This section describes the general objectives and guidelines for interagency coordination needed to manage the interface between District watershed lands and those of adjacent jurisdictions. (General direction for District watershed lands themselves is provided in Section 3.)

Management of District lands requires coordination with adjacent jurisdictions primarily for protection of water quality and fire and fuels management. Other management issues, such as providing management coordination on adjacent lands for biodiversity protection, visual resource protection, recreation, and property acquisition and disposal, are desirable secondary goals. District-sponsored inter-agency coordination will take place at three levels: policy, plan implementation, and development proposal and environmental review.



Objectives

- Encourage policy discussions between local jurisdictions to resolve common interface issues, advocate policies that address interface issues important to the District, formalize District review and comment on specific development proposals, environmental review actions, and promote District participation in overall land use planning and the decision-making processes of adjacent jurisdictions.
- Strengthen the understanding of District staff and staff of adjacent jurisdictions regarding important interface issues.
- Develop mutually agreed-upon interface guidelines that could be incorporated into the planning documents of adjacent jurisdictions, primarily for protection of water quality, emergency response, and fire and fuels management.

Management Guidelines

1. Establish and formalize a central point of contact for adjacent jurisdictions wishing to contact the District and for District contacts to adjacent jurisdictions and
 - District staff communication with adjacent jurisdictions and
 - coordinated staff review and comment on planning actions, development proposals, and environmental review in adjacent jurisdictions.
2. Formalize an internal procedure for:
 - District staff communication with adjacent jurisdictions and
 - coordinated staff review and comment on planning actions, development proposals, and environmental review in adjacent jurisdictions.
3. Designate key contact individuals as liaisons between the District and adjacent jurisdictions regarding watershed management issues.
4. Establish policy-level contacts with adjacent jurisdictions (e.g., District/ EBRPD Liaison Committee) to establish lines of communication, discuss common interface management issues, and determine actions that could be undertaken to address joint management concerns.
5. Establish staff-level contacts with adjacent jurisdictions to review and refine District interface guidelines and to work toward incorporating these guidelines into local decision making.
6. Coordinate with adjacent jurisdictions on the use of the land bridge across Highway 24 (Caldecott Tunnel corridor) to preserve its function as a wildlife corridor.
7. Continue coordination with adjacent jurisdictions and participation in coordinated efforts to maintain communication among agencies with water quality interests related to District-owned watershed lands.

Management of District lands requires coordination with adjacent jurisdictions primarily for protection of water quality and fire and fuels management. District-sponsored interagency coordination will take place at three levels: policy, plan implementation, and development proposal and environmental review.

Area-Specific Management Direction

Contra Costa County - Within Basin Unincorporated

- CC.1 Work with Contra Costa County to define a mutually agreeable process for review of planning and land use proposals on District watershed lands that are within the county's jurisdiction.

- CC.2 In coordination with the Community of Canyon and Contra Costa County agencies, develop a coordinated process for fire protection and other resource management programs.
- CC.3 Coordinate with Contra Costa County on future planning and development of the eastern agricultural interface (i.e., Canyon and Indian Valley areas) to limit degradation of water quality, wildfire hazards, public encroachment, and visual resource degradation at the interface with District watershed lands.
- CC.4 Coordinate with Contra Costa County to address water quality issues related to the county pesticide spraying program on roadsides within District reservoir watersheds, particularly San Pablo Dam Road, Bear Creek Road, and Wildcat Canyon Road.
- CC.5 Coordinate with nonpoint-source control programs to address water quality concerns.
- CC.6 Agree to a policy of non-annexation of privately held parcels within the Briones Hills Agricultural Preservation Area (BHAPA). Consistent with the BHAPA, the District may annex parcels owned by the District or other public agencies. This guideline would remain in force as long as the BHAPA is in effect. Consistent with this guideline, the District endorses the BHAPA agreement.

Moraga

- M.1 Coordinate with the City of Moraga on the planning and development of the Larch Avenue area to limit water quality effects, risk of wildfire, and degradation of views on the Upper San Leandro Reservoir watershed.
- M.2 Coordinate with nonpoint-source control programs to address water quality concerns.

Orinda

- OR.1 Coordinate with City of Orinda staff on planning and development within the El Toyonal interface to limit the effects of development on water quality, fire and fuels management, public encroachment, degradation of views, and street extensions and to improve public access and egress and emergency access to this area. Support a coordinated county- and city- sponsored process to provide important transportation improvements in this area.
- OR.2 Coordinate with the City of Orinda, EBRPD, and other agencies on use of the Caldecott Tunnel land bridge to encourage preservation of its function as an important wildlife corridor.
- OR.3 Coordinate with the City of Orinda on the planning and development of ridgeline land uses in the Black Hills and to limit the risk of water quality effects, wildfire hazards, and visual resource degradation in the Briones Reservoir watershed.
- OR.4 Coordinate with nonpoint-source control programs to address water quality concerns.

Alameda County - Within Basin Unincorporated

- AC.1 Work with Alameda County to define a mutually agreeable process for review and approval of planning and land use proposals on District watershed lands that are within the county's jurisdiction.
- AC.2 Coordinate with Alameda County on the planning and development of the eastern agricultural interface (i.e., Cull Canyon area) to limit degradation of water quality, risk of wildfire, public encroachment, and degradation of views on District watershed lands and the regional visual landscape.

- AC.3 Coordinate with Alameda County to address water quality issues related to the county pesticide spraying program on roadsides within District reservoir watersheds, particularly Redwood Road and Lake Chabot Road.
- AC.4 Coordinate with nonpoint-source control programs to address water quality concerns.

Oakland

- O.1 Coordinate with the City of Oakland to ensure that the Lake Chabot Municipal Golf Course is managed to minimize all water quality effects on Chabot Reservoir.
- O.2 Coordinate with the City of Oakland regarding any future development along Grizzly Peak Boulevard that would require fire hazard mitigation on District watershed land inside the Caldecott Tunnel corridor.

East Bay Regional Park District

- EB.1 Coordinate with EBRPD on the planning and management of all regional parks that are within or coincident with District reservoir watersheds to address issues pertaining to water quality, wildfire, public encroachment, viewshed, and wildlife movement in the Caldecott Tunnel corridor.
- EB.2 Review the leases for Chabot Reservoir and Willow Park Golf Course when they are to be renewed, and evaluate them in the context of District priorities. If the leases are renewed, adjust the terms as necessary to be consistent with management plan guidelines. Resolve any outstanding issues related to facility ownership.
- EB.3 Coordinate with nonpoint-source control programs to address water quality concerns.

Contra Costa County - Outside Basin

Pinole

- P.1 Coordinate with the City of Pinole to ensure that District interests are protected in plans for the Doidge-Wright Estate and when development proposals for the area are being formulated (including urban/wildland interface setbacks on private land).
- P.2 Coordinate with the City of Pinole on the development of neighborhood connectors to the Bay Area Ridge Trail.



Richmond

- R.1 Coordinate with the City of Richmond to develop methods for reducing the potential wildfire hazard in the Carriage Hills area.
- R.2 Coordinate with the City of Richmond to ensure that District interests are protected in planning for development of the Castro Ranch area and an area east of the Carriage Hills development (including urban/wildland interface setbacks on private land).

Section 6

Citations

Citations

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