Water Enterprise

Environmental Stewardship Policy

Implementation Report

June 23, 2020

Hetch Hetchy Regional Water System

Services of the San Francisco Public Utilities Commission

Introduction

The San Francisco Public Utilities Commission (SFPUC) 2020 Strategic Plan identifies Environmental Stewardship as one of the six goals focused on achieving the SFPUC mission and vision. The Water Enterprise Environmental Stewardship Policy (WEESP) was adopted by the Commission in June 2006, and the first report focused on its implementation was submitted to the Commission in March 2017, with the intent of providing updates every two years. This report provides that update for FY17-18 and FY18-19, with some preliminary information for FY19-20.

The Natural Resources and Lands Management Division (NRLM) has previously reported on the Watershed and Environmental Improvement Program (WEIP) investments, and these updates continue to be included in this report. The WEIP was developed in parallel to the Water System Improvement Program (WSIP), which included $20 million as part of the initial commitment of $50 million over the first 10 years of WEIP implementation. The WEIP is now in its 15th year of implementation, with over $43 million invested. The WEIP is part of the WEESP implementation strategy and investments by watershed are shown in the table on the final page of this report.

The purpose of the WEESP is to establish long-term management direction for SFPUC-owned lands and natural resources that affect or are affected by operation of the SFPUC Regional Water System (RWS) within the Tuolumne River, Alameda Creek, San Mateo Creek, and Pilarcitos Creek watersheds. The SFPUC is committed to responsible natural resources management of its lands and facilities that protects and restores viable populations of native species and maintains the integrity of the ecosystems that support them for current and future generations. This report summarizes how the WEESP is being implemented, and is organized by objectives from the Environmental Stewardship goal from the draft San Francisco Water System Level of Service Goals and Objectives as presented to the Commission at its October 24, 2017 meeting:

Environmental Stewardship – maintain high environmental performance standards

- Meet all current and anticipated environmental legal requirements.
- Manage natural resources and physical systems to protect watershed lands and their ecosystems.
- Provide the public with appropriate educational opportunities by maintaining active education programs and recreational opportunities (where appropriate) in cooperation with other federal, state, and local agencies.
- Manage and operate the Water Enterprise assets consistent with the Water Enterprise Environmental Stewardship Policy.

Environmental stewardship is a fundamental component of the Water Enterprise mission, and a responsibility of all Water Enterprise employees. All Water Enterprise Divisions – Hetch Hetchy Water and Power, Water Supply and Treatment, City Distribution, Water Quality, Water Resources, and Natural Resources and Lands

Management – contribute to meeting these objectives. This report will be updated every two years to continue to better track and measure progress towards ensuring the WEESP is implemented as envisioned.

Meet all current and anticipated environmental legal requirements

The WEESP states the SFPUC will proactively manage the watersheds under its responsibility in a manner that maintains the integrity of natural resources, restores habitats for native species, and enhances ecosystem function. Compliance with current and anticipated federal and state environmental regulatory laws and policies is a fundamental requirement to support these efforts. Environmental compliance increases regulatory certainty, and therefore helps support regional water delivery reliability level of service objectives. The Water Enterprise has clarified and assigned environmental regulatory compliance roles and responsibilities to ensure this objective is achieved while conducting operations and maintenance activities throughout the RWS, including SFPUC watershed and rights-of-way (ROW) lands. The Planning and Compliance group within NRLM is the hub of environmental compliance within the Water Enterprise, and environmental compliance is achieved in collaboration with all Water Enterprise Divisions.

The Water Enterprise's environmental compliance starts with impact avoidance. SFPUC activities are reviewed and modified as needed to incorporate best management practices and environmental impact avoidance measures whenever feasible. When impacts cannot be fully avoided, permits are obtained to comply with environmental laws and regulations such as the California Fish and Game Code, the federal Clean Water Act, and the California and federal Endangered Species Acts. If a project triggers actions to comply with federal regulations, the SFPUC works with the federal lead agency to prepare any required National Environmental Policy Act documents. If Water Enterprise work needs review under the California Environmental Quality Act (CEQA), then San Francisco's Planning Department, in coordination with the SFPUC, develops the appropriate documentation. In accordance with permits and CEQA documents, the SFPUC implements mitigation to minimize and offset any unavoidable impacts.

The Water Enterprise regularly evaluates environmental compliance procedures and protocols to streamline the processes and ensure they are consistent across all Water Enterprise operations and maintenance activities. In addition to the permitting and CEQA documentation described above, compliance is also documented through: 1) the asset management system MAXIMO, in coordination with Water Enterprise maintenance planning teams, 2) the Project Review process, 3) monitoring and documentation required by CEQA documents, and 4) notification, monitoring, and reporting as required by federal and state environmental regulatory agencies.

Project Review

The SFPUC's process for reviewing its own projects, as well as proposals from other agencies, organizations, and individuals to use watershed and ROW land for construction, maintenance, vegetation management, and other purposes is called Project Review. All projects on the SFPUC's Bay Area watershed and ROW lands are reviewed by the SFPUC's Project Review Committee, which is convened by NRLM. The charge of the Committee is to vet proposed projects for consistency with SFPUC plans and policies, including its Watershed Management Plans and Environmental Stewardship Policy. During Project Review, the Committee may recommend modifications to the project and/or measures to avoid and minimize impacts. Once the project is determined by the Committee to conform to SFPUC policies, it is recommended for approval through appropriate SFPUC processes, which may include Commission review and approval. The Committee's recommendation of approval is in the form of a *Certificate of Completion of the Project Review Process*, which includes a project description, required measures to modify the project so that it conforms to SFPUC plans and policies, and is in compliance with applicable federal and state environmental laws and regulations.

Water System Improvement Program Mitigation Requirements

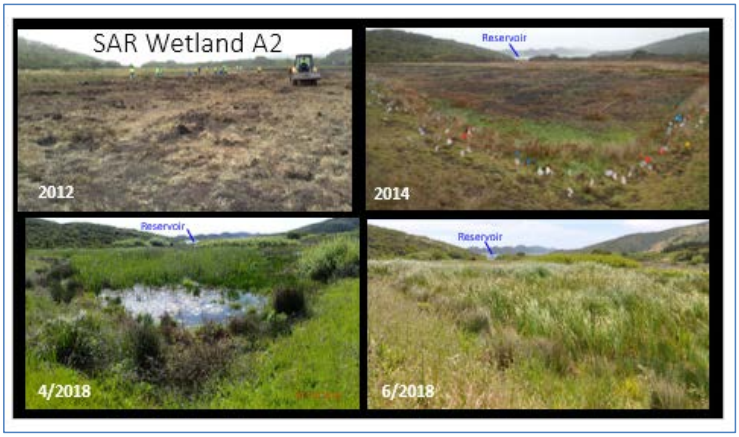
The SFPUC is implementing three major programs to mitigate for habitat and species impacts related to construction activities under the WSIP. The WSIP is a $4.8 billion dollar, multi-year capital program to upgrade the SFPUC's regional and local water systems. In order to construct the WSIP projects, the SFPUC committed, through federal and state permits, to perform on-site and off-site mitigation.

The three major programs required by the federal and state regulatory permits for WSIP are: 1) Vegetation Restoration of WSIP Construction Sites; 2) the Bioregional Habitat Reserve Program (BHR); and 3) fisheries monitoring and habitat restoration in the Alameda and Peninsula watersheds.

Vegetation Restoration of WSIP Construction Sites involves restoring temporarily disturbed areas of the WSIP construction sites and is overseen by the SFPUC's Infrastructure Bureau. The BHR and fisheries monitoring and habitat restoration are the responsibility of the Water Enterprise, and the federal and state permits require these activities in perpetuity.

The BHR employs a unique approach to compensation by using a suite of restoration projects designed to work together at the landscape level to offset combined impacts across multiple WSIP construction projects. The BHR currently includes habitat restoration and enhancements totaling over 2000 acres on property owned by the SFPUC in the Alameda and Peninsula watersheds.

The BHR is comprised of two categories of mitigation: restoration areas where degraded habitats are established, re-established, or rehabilitated; and enhancement areas where existing habitats are managed and protected. BHR establishment activities include actions such as constructing wetlands and planting native species. BHR enhancement activities include grazing management, invasive species control, and protection of naturally recruiting native trees from herbivory.



Bioregional Habitat Restoration – San Andreas Reservoir Wetland Restoration

Note the evolution of vegetation growth over a six-year time frame.

The specific success criteria for the BHR program was established by the environmental permits for WSIP projects. Depending on the habitat type, the SFPUC is required to initiate a 5 or 10-year performance monitoring period. During this initial period, extensive habitat management, monitoring, and reporting efforts are required to ensure that these mitigation efforts meet the permit obligations. After reaching performance requirements, the SFPUC will maintain and monitor these areas in perpetuity. Some of the wetland and willow habitats in BHR sites met the final (Year 5) performance goals during the 2018 monitoring year, and so the SFPUC is shifting to long-term monitoring and maintenance activities at these locations. Long term BHR monitoring and maintenance activities are required to be supported by an endowment, and conservation easements must be recorded to protect these habitats in perpetuity. The establishment of the endowment and specifics of the conservation easements are still under development.

Fisheries monitoring and habitat restoration are integral components of the federal and state permits associated with the Calaveras Dam Replacement and Lower Crystal Springs Dam Improvement Projects (CDRP and LCSDIP, respectively), and obtaining these permits in a timely manner to allow construction to start on schedule was a major accomplishment. The Water Enterprise led these negotiations in close coordination with the WSIP project teams, and the WEESP provides specific policy direction that established the foundation upon which these commitments were developed.

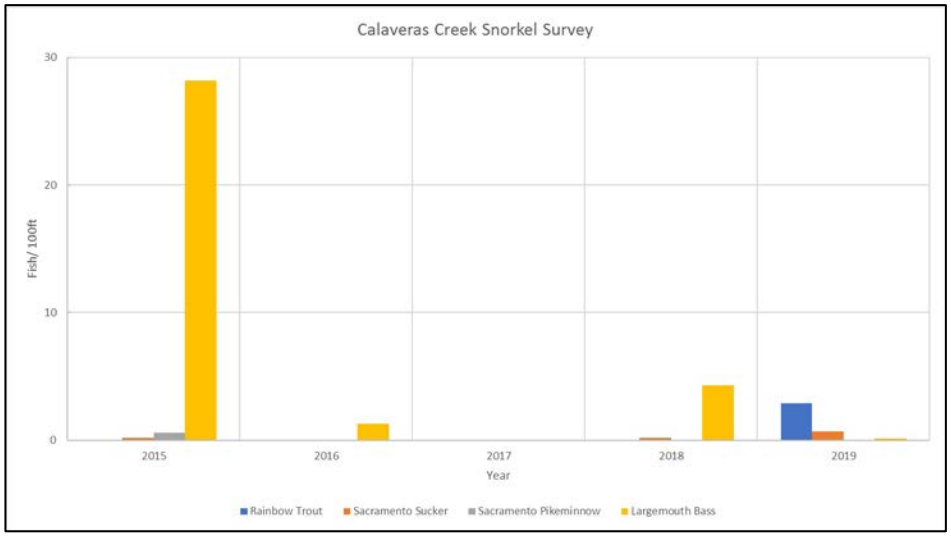
Per the WEESP, it is the policy of the SFPUC to operate the RWS in a manner that protects and restores native fish and wildlife downstream of dams and water diversions, within reservoirs, and on watershed lands. Specifically, consistent with the SFPUC's mission, releases from SFPUC reservoirs will mimic the variation of the seasonal hydrology (e.g., magnitude, timing, duration, and frequency) of their

corresponding watersheds in order to sustain the aquatic and riparian ecosystems upon which these native fish and wildlife species depend.

Accordingly, the Water Enterprise developed proposals for consideration by the federal and state agencies – National Marine Fisheries Service, US Fish and Wildlife Service, and California Department of Fish and Wildlife – that are consistent with the WEESP. These proposals were informed by years of hydrologic and biologic monitoring conducted by Water Enterprise staff, and in coordination with the federal and state resource agencies and local community groups in an open and transparent manner. In particular, the CDRP federal and state permit conditions were developed in coordination with the Alameda Creek Fisheries Restoration Workgroup and focused on steelhead. These proposals are based on water year types and vary by season to support different life stages of the key species downstream of the dams. Agreements were reached in 2010 with the federal and state resource agencies, releases from Lower Crystal Springs Dam started in January 2015, and releases from Calaveras Dam and bypasses from Alameda Creek Diversion Dam started in January 2019.

Water released from Calaveras Dam downstream to Calaveras Creek

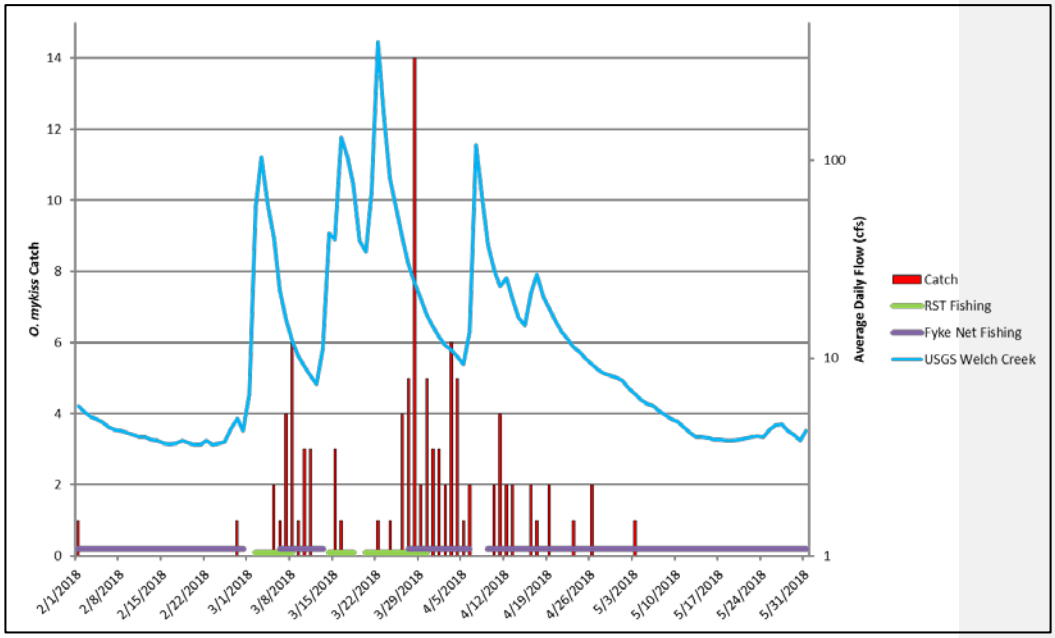
Although it's too early to draw conclusions regarding the effect of the releases from Calaveras Dam, it is worth noting some of the preliminary data collection. Prior to the releases starting in January 2019, Calaveras Creek downstream of the dam was a series of warm water (70-75 degrees Fahrenheit) pools hosting mostly non-native fish species. After the releases started, temperatures plunged (52-57 degrees Fahrenheit) and the fish distribution shifted, as illustrated by the chart below which was generated by NRLM annual snorkel surveys. Prior to the releases starting, rainbow trout, the freshwater component of the steelhead population which was one of the main species that drove development of the release schedule were not found at all in Calaveras Creek. Now they are the dominant species, and the canyon below Calaveras Dam provides a cold water refugia for these fish during the hot summer months.



Calaveras Creek Snorkel Survey Data 2015-2019

Another component of Alameda Creek fisheries monitoring is tracking the juvenile fish as they move downstream towards San Francisco Bay. The NRLM staff use rotary screw traps (RST) and fyke nets for this purpose, and data from 2018 provided the first real evidence that as the juvenile fish migrate out of the watershed they are preparing to enter salt water environments. While this is common in other similar watersheds in central California, it confirms that the resident fish already in the watershed will contribute to steelhead recovery once downstream barriers are laddered for adults to return.

Rotary Screw Trap installed in Alameda Creek to monitor juvenile fish



Alameda Creek Rotary Screw Trap and Fyke Net Monitoring 2018

When the juvenile fish are caught in the RSTs and fyke nets NRLM staff insert passive integrated transponder (PIT) tags, which are small radio transponders that contain a specific code which allows individual fish to be assigned a unique identification so they can be tracked at other locations in the watershed as juveniles, or even as adults returning from San Francisco Bay and the Pacific Ocean years later. The Alameda Creek Diversion Dam fish ladder includes PIT tag readers, and in March 2020 one of these readers recorded the first juvenile fish tagged earlier by NRLM staff. This same technology has been deployed along San Mateo Creek, and recently one of these PIT tag readers picked up an adult that was tagged years before by NRLM staff as it returned to the area below Lower Crystal Spring Dam. These are very encouraging and important results, and over time the monitoring data collected will illustrate the benefit of investments made to support steelhead recovery in Bay Area creeks, and also direct future investments that may be necessary.

Juvenile Rainbow Trout (Oncorhynchus mykiss)

Consistent with the WEESP, and as required by the BHR and fisheries-related permit requirements as well as Watershed Management Plans and associated EIRs, the Water Enterprise develops annual reports that include more detail than the summary of information provided above to the federal and state resource agencies that describe these efforts to monitor the health of terrestrial and aquatic habitats and key species these habitats support.

Operations and Maintenance Activities

There are two other important areas where the WEESP provides guidance to the operation of SFPUC dams that are not related to WSIP – O'Shaughnessy Dam (OSD) and Pilarcitos Dam.

Tuolumne River below O'Shaughnessy Dam

Releases from OSD are governed by stipulations with the U.S. Department of Interior under the Raker Act, and the Water Enterprise works closely with Yosemite National Park Service, US Fish and Wildlife Service, and the Stanislaus National Forest regarding their implementation. Although there are no WSIP projects related to OSD,

the WSIP Programmatic Environmental Impact Report (2008) included a project-level analysis on meeting future water supply reliability objectives. This triggered a discussion with the federal agencies and other interested parties focused on updating the operational criteria for OSD which are based on agreements from the 1980s. The Water Enterprise convened the Upper Tuolumne River Stakeholders Group and worked within this collaborative forum to develop the OSD Instream Flow Management Program (2014), which will be submitted for federal and state environmental review before these proposed changes can be fully implemented. In the interim, annual spring releases from OSD targeted on specific ecological objectives downstream continue to be developed in coordination with this group, which meets twice annually to ensure ongoing coordination with all parties.

Since October 2006, the Water Enterprise has operated Pilarcitos and Stone Dams to ensure that at a minimum approximately 1-2 cfs are released continuously below Stone Dam to support steelhead in Pilarcitos Creek. This work was included in the Pilarcitos Integrated Watershed Management Plan (2008), developed by the Pilarcitos Creek Restoration Workgroup under a State Water Resources Control Board grant to the SFPUC and administered in coordination with the San Mateo County Resource Conservation District. The Water Enterprise continues to operate this part of the RWS to meet this target and conducts annual monitoring along the creek. All of this work will inform a potential future rehabilitation project at Pilarcitos Dam and permit conditions similar to what now exist at Calaveras and Lower Crystal Springs Dams.

Water Enterprise environmental permitting and compliance efforts related to operations and maintenance also include:

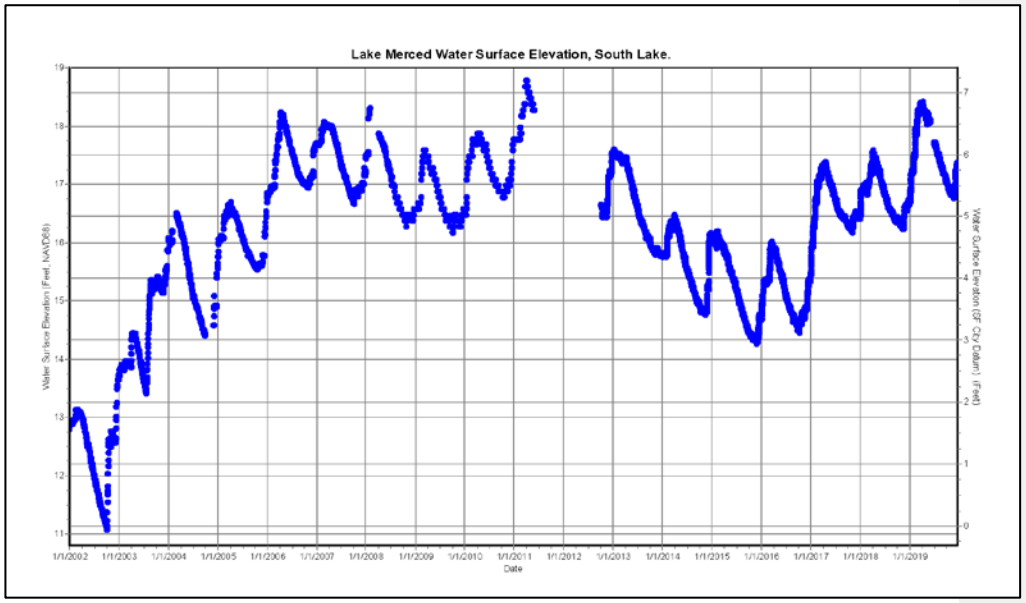
- Routine Maintenance Agreements and Lake and Streambed Alteration Agreements with the California Department of Fish and Wildlife for the Alameda and Peninsula Watersheds;
- Permits for compliance with Sections 401, 402, and 404 of the Clean Water Act; Alameda and Peninsula Watershed Management Plans and associated EIRs; California Air Resources Board permits;
- Compliance with hazardous materials regulations; and
- Federal special use permits with the Yosemite National Park Service, the Stanislaus Forest Service, and the Bureau of Land Management**.**

Training and communication are fundamental to ensuring environmental compliance, and Water Enterprise staff are required annually to attend tailgates and other regular meetings to ensure work order conditions are being met and that environmental stewardship principles are integrated into daily operations and maintenance activities.

Lake Merced Water Level Restoration Project

Lake Merced is an emergency water source for the SFPUC, and as a result of groundwater pumping and efforts in the 20th century to disconnect the lake from its watershed (to protect its quality as a drinking water source at the time), the water level was severely reduced in the early 1990s. Since then, the SFPUC has been working to

bring recycled water to surrounding entities that previously relied on groundwater, and to reconnect the lake to storm water sources. The Vista Grande Drainage Basin Improvement Project is a key project to bring storm water from portions of Daly City to Lake Merced, and the SFPUC is working closely with Daly City to implement this project. The SFPUC also monitors water quality quarterly throughout the water column at four separate locations on Lake Merced. Parameters such as pH, dissolved oxygen, water temperature, nutrients, metals, bacteria, and phytoplankton are monitored and tracked. Recently a pilot aeration system for water column mixing was installed in South Lake to determine the feasibility of such a system for reducing anoxia in the lower portions of the water column.



Lake Merced Water Levels, 2002-2019

Water Resources Division

The SFPUC provides a comprehensive water conservation program to all customers, and constantly strives to diversify the SFPUC water supply portfolio to ensure regional and in-City delivery reliability level of service objectives are met. Diversifying our sources of water also reduces our reliance on surface water sources to meet current and future demands. For more information, please see the Water Resources Annual Report at: http://sfwater.org/conservation.

Manage natural resources and physical systems to protect watershed lands and their ecosystems

The RWS relies on 428,116 acres of watershed lands in 5 different counties to provide high quality source water for our customers. Watershed land management across the RWS is described generally in the SFPUC Framework for Land Management and Use Policy, adopted by the Commission in March 2013. The "watershed" system map below was created as part of our Alameda Creek Watershed Center interpretive program work and provides this context.

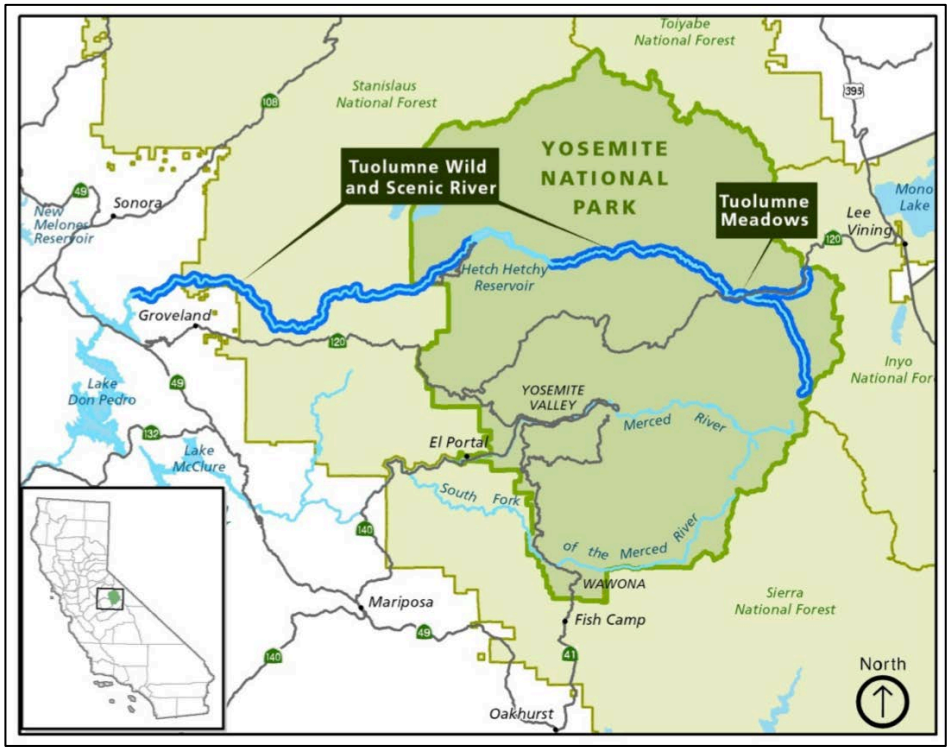
The Watershed and Environmental Improvement Program (WEIP) was initiated in FY05/06 as a 10-year, $50 million program to proactively manage, protect and restore environmental resources that affect or are affected by operation of the RWS. The intent of this program is to supplement existing efforts to manage and protect watershed lands, and the purpose of this funding commitment was to bring additional resources required to ensure that these ecosystems are being managed in a sustainable manner to support native plant and animal species. The WEIP spans the Tuolumne, Alameda, San Mateo, and Pilarcitos watersheds, as well as SFPUC lands in San Francisco. The funding has been appropriated and tracked from multiple fund sources, and NRLM staff will continue to track WEIP investments as part of annual WEESP reports. The FY 17/18, FY 18/19, and estimates for FY 19/29 are attached (See "WEIP Projects by Watershed" table, last two pages).

Hetch Hetchy Regional Water System, Service Area, Watersheds

Tuolumne River watershed

The vast majority of the Hetch Hetchy watershed (293,760 acres) is designated as federal wilderness and is managed by the National Park Service (NPS) under a multi-year agreement with the SFPUC. This agreement includes provisions to address water quality, environmental stewardship, and security issues – and is required to ensure Hetch Hetchy source water maintains its filtration avoidance status. Cherry and Eleanor watersheds are permitted as standby drinking water sources. The Eleanor watershed is part of Yosemite National Park, and its management is also governed by the multi-year agreement with the NPS and its wilderness designation. The Cherry watershed is managed under a multi-year agreement with the Stanislaus National Forest.

The Tuolumne River is also designated under the federal Wild and Scenic Rivers Act and is managed by the NPS in Yosemite National Park and by the U.S. Forest Service in Stanislaus National Forest, accordingly.



In the spring of each year, the NPS and NRLM staff co-host an annual science symposium where researchers working in the watershed describe their water quality

and environmental stewardship projects and present findings based on their field work. This event has expanded each year, and now includes Water Enterprise staff from multiple divisions, the U.S. Fish and Wildlife Service, the U.S. Forest Service, and university researchers. This forum has allowed researchers to learn from each other, and increasingly focus collective efforts to prioritize future investments.

Bay Area watersheds

In the Bay Area, approximately 40% of the Upper Alameda Creek watershed (89,408 acres) above San Antonio and Calaveras Reservoirs is protected by public ownership and/or conservation easements. The SFPUC owns 38,306 acres in the watershed, and some of this is downstream of the two reservoirs. On the Peninsula watershed, the SFPUC owns 22,854 acres, which protects 98% of the San Mateo Creek and Pilarcitos Creek watersheds that deliver water to Pilarcitos, San Andreas, and Crystal Springs Reservoirs. The Alameda Creek watershed is managed under the Alameda Watershed Management Plan, adopted by the Commission in September 2000. The San Mateo and Pilarcitos Creek watersheds are managed under the Peninsula Watershed Management Plan, adopted by the Commission in June 2001. The goals and objectives of both watershed management plans are identical – the primary goal is to maintain and improve source water quality to protect public health and safety. There are six secondary goals, and one of these is to preserve and enhance the ecological and cultural resources of the watersheds. NRLM manages the Bay Area watershed and ROW lands and is responsible for operations and maintenance of the Water Enterprise's "natural assets" (fuel breaks, roads, fences, culverts).

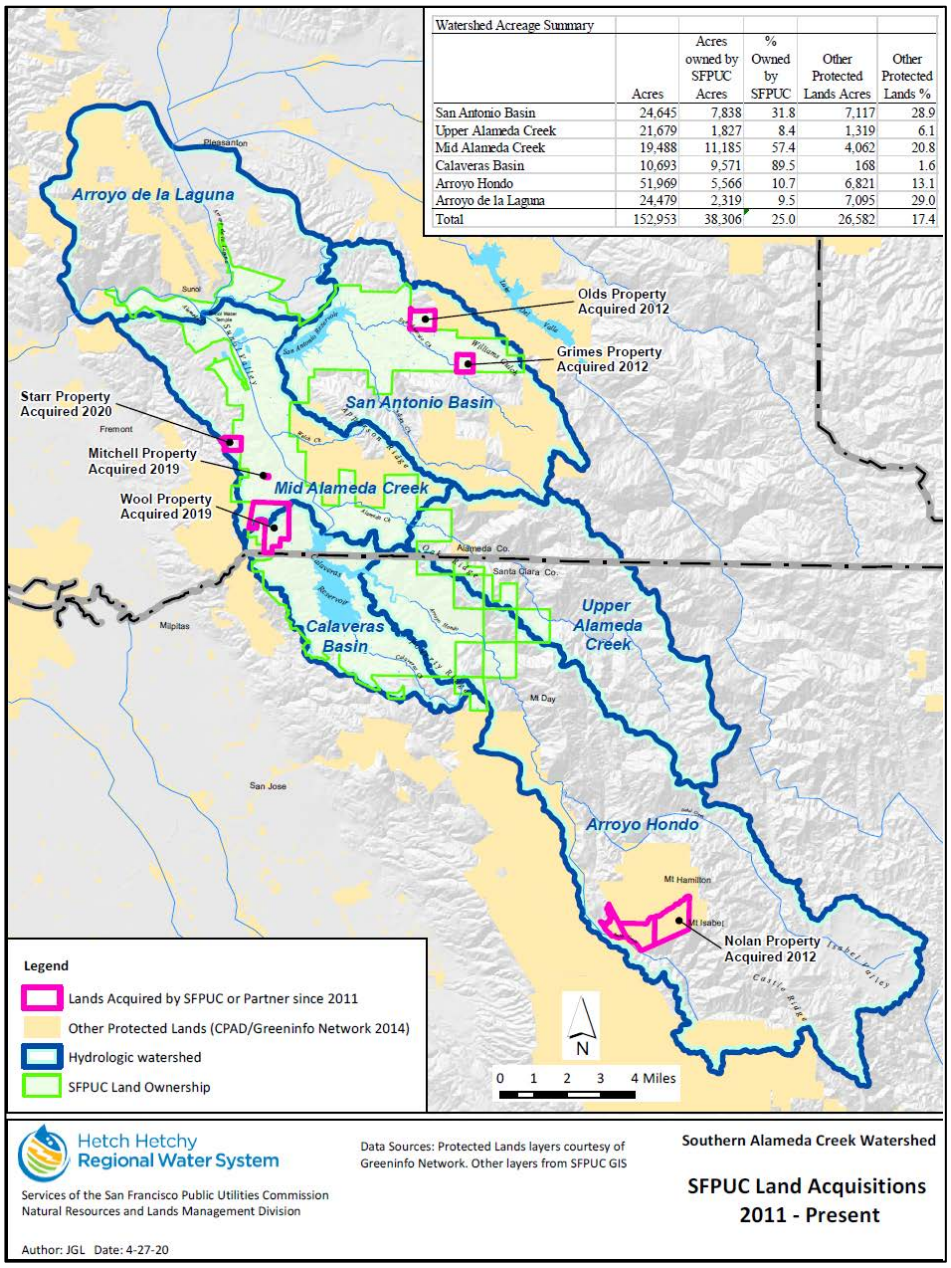
The SFPUC is the second largest landowner in both Alameda and San Mateo Counties, and managing the watershed and ROW lands owned by the SFPUC is a high priority for the Water Enterprise. The SFPUC relies heavily on our public agency neighbors and colleagues for many aspects of land management, including fire protection, public access, and public safety. We are members of TOGETHER Bay Area (formerly the Bay Area Open Space Council) and participate in regular regional meetings with the East Bay Regional Park District, San Mateo County Parks, and the Golden Gate National Recreation Area. These collaborative forums provide opportunities for coordinated operation, and also address environmental stewardship activities (e.g., biological monitoring, native species restoration, etc.).

Given the relatively unprotected nature of the upper Alameda Creek watershed, the SFPUC participates in the Upper Alameda Creek Watershed Partnership (Partnership). The Partnership convenes under the terms of a Memorandum of Understanding approved by the Commission in July 2011 among the SFPUC, The Nature Conservancy, California Rangeland Trust, Trust for Public Land, Alameda County Resource Conservation District, and the Natural Resources Conservation Service. The goal of the Partnership is to coordinate watershed protection projects in the Mount Hamilton area of the Diablo Range, including the upper Alameda Creek watershed. This area supports important natural resources including significant native fish, plants and animal populations, and the Partnership helps present a unified and cohesive vision to landowners and provides them with a clear understanding of land protection

options in the watershed. The Partnership has also helped to facilitate discussions with potential funders in order to leverage existing funds and continues to be a priority for WEIP investments. In 2019, the SFPUC acquired Wool Ranch, a 787-acre property that drains to Calaveras Reservoir. This is the largest parcel the SFPUC has purchased from a single owner since 1962. The SPFUC also purchased the 5-acre Mitchell Property in 2019 and the 164.5-acre Starr Property in 2020 (see map below).

Wool Ranch with Calaveras Reservoir in the background

Protected Lands in Alameda Watershed



Another secondary goal from the watershed plans is to protect the watersheds, adjacent urban areas, and the public from fire and other hazards. In May of each year Water Enterprise staff from the Alameda and Peninsula watershed each host First Responder Liaison meetings and invite all first responders, including local CALFIRE staff, County Sheriff's offices, and other local law enforcement, to gather and share information related to fire protection and other emergency response so we can minimize our risk to catastrophic fires. CALFIRE conducted prescribed burns at San Andreas Dam in 2017 and 2019 in coordination with Water Enterprise staff, and additional prescribed burns are in the planning stages for the watersheds in future years. Prescribed fires not only reduce the risk to catastrophic fires, but also reintroduce a natural disturbance upon which many native plant species have evolved.

Prescribed burn at San Andreas Dam – June 2019

NRLM and Water Quality staff conduct all of the sampling and analysis of SFPUC reservoirs to inform Water Supply and Treatment system operations, including water treatment at the Sunol Valley and Harry Tracy Water Treatment Plants and the Hypolimnetic Oxygenation Systems (HOS) in Calaveras and San Antonio Reservoirs. The operation of HOS facilities improves water quality conditions by increasing the oxygen concentration in the deepest part of the reservoirs, thus limiting nutrient release from the sediments to the water column, which reduces the risk of algal blooms and the unpleasant taste and odors associated with these events. The increased oxygen concentration also helps maintain the cold-water habitat in the reservoirs for the landlocked rainbow trout populations.

Non-native invasive species management

The inadvertent and sometimes illegal introduction of new species into a water body or terrestrial habitats can have devastating effects on ecosystems and/or the SFPUC infrastructure. One of the most recently discovered aquatic nuisance species to

threaten waters of the Western United States, the quagga mussel (*Dreissena bugensis*), can alter aquatic food webs and foul water intake structures. Another aquatic nuisance species, the New Zealand mudsnail (*Potamopyrgus antipodarum*), has been documented on SFPUC watershed lands in portions of Alameda Creek in Alameda County and Polhemus Creek in San Mateo County. This particular species is mostly indigestible by fish but can outcompete native invertebrates that are a food source to fishes residing in the creek. Other species that could threaten our aquatic ecosystems include: chytrid fungus (*Batrachochytrium dendrobatidis*), whirling disease (*Myxobolus cerebralis*), didymo or rocksnot (*Didymosphenia geminate*), zebra mussels (*Dreissena polymorpha*), Eurasian watermilfoil (*Myriophyllum spicatum*), water hyacinth (*Eichhornia crassipes*), and Brazilian waterweed (*Egeria densa*). While this is by no means a comprehensive list, it serves to illustrate that aquatic nuisance species have a range of forms, sizes, and types of impact. These species can cling to wading equipment and hiking sticks, or attach to boats and trailers. Some species capable of living in moist environments near the edges of aquatic habitats (including muddy areas) can also be moved in the mud on boots or other gear.

In response to these developments and new state requirements in 2007 (amendments to California Fish and Game Code related to aquatic invasive species), the NRLM developed a decontamination for aquatic surveys protocol that all SFPUC staff, consultations, and access permit holders must comply with to prevent the introduction or spread of organisms that might negatively impact aquatic resources.

NRLM staff decontaminate their boots as part of a standard protocol for preventing the spread of plant pathogens

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As part of our efforts to collaborate with other Bay Area open space agencies and nonprofits, and to better inform our operations and maintenance, we developed an initial agreement with the U.S. Forest Service (January 2008) to collect the insight of university researchers and other experts with experience in plant pathogens (e.g., Sudden Oak Death). The Commission recently authorized a new agreement (Sustaining Plant Health for Restoration and Management of Vegetation on SFPUC

lands) with the U.S. Forest Service (August 2017) to continue this work, which has expanded in scope to include additional partners, to address emerging concerns with new plant pathogens, and develop educational material that can be used by SFPUC staff to minimize the risk of additional damage done by plant pathogens to SFPUC watersheds. The SFPUC has been participating in the *Phytophthoras* in Native Habitats Work Group, which is a diverse multi-stakeholder group that aims to protect native vegetation in California wildlands from introduced plant pathogens. With input from this work group, the SFPUC is developing a standard operating procedure for decontamination of non-aquatic tools, vehicles, and attire to minimize risk of introduction and spread of invasive plants, and plant pests and pathogens.

Native species restoration

The WEESP provides direction for the Water Enterprise to proactively restore native species and their habitats, which means taking actions that are not otherwise required by federal or state regulations. An example from the Peninsula watershed is the work being done to protect and restore Hillsborough Chocolate Lily, a rare plant which is not currently protected by federal or state laws. We also work in partnership with the federal and state resource agencies to protect and restore native plants on our lands that are protected by laws and regulations when there is not a permit requirement for our participation. An example of this work is the effort to protect and restore San Mateo Thornmint.

Hillsborough Chocolate Lily

San Mateo Thornmint

Healthy, resilient watersheds produce high-quality water, and in the fall of 2018, SFPUC's commitment to environmental stewardship led to the construction of the Sunol Native Plant Nursery. This one-of-a-kind facility uses strict, laboratory-like procedures to produce healthy, disease-free stock, and shortly after opening, the nursery grew over 30,000 plants that have already been planted at the Sunol Yard and in habitat restoration projects on SFPUC managed lands. An additional 50,000 plants slated for planting in the Alameda Creek Watershed Center garden and other habitat restoration projects are now being propagated and nursery and biology staff have collected over 100,000 seeds from 100 different species of plants on SFPUC lands in support of these projects. Since the nursery opened 48 volunteers have helped with plant propagation, seed cleaning, planting and 63 local residents and garden club member have participated in nursery tours.

Sunol Native Plant Nursery

San Francisco lands

The SFPUC is also contributing to the improved management of our natural landscapes in San Francisco. The San Francisco Recreation and Parks Department (RPD) has an interdepartmental work order with the City Distribution Division to assist with management of SFPUC properties in San Francisco. This includes Lake Merced, which is now managed under a MOU between the SFPUC and RPD approved by the Commission in July 2013. Specific to environmental stewardship, the RPD Natural Areas Program staff work on SFPUC properties at Twin Peaks, Laguna Honda, O'Shaughnessy, and Lake Merced to protect and restore native plants.

Provide the public with appropriate educational opportunities by maintaining active education programs and recreational opportunities (where appropriate) in cooperation with other federal, state, and local agencies

Given the large and diverse landscapes spanned by the RWS – from the Sierra Nevada, through the Central Valley, across the Alameda watershed, around and under San Francisco Bay and along the Peninsula watershed, and into San Francisco – the Water Enterprise strives to provide education opportunities related to environmental stewardship. Specific to the Bay Area watersheds, another secondary goal of the watershed management plans is to continue existing compatible uses and provide

opportunities for potential compatible uses on watershed lands, including education, recreational, and scientific uses. Existing and new public access to trails on the watersheds presents opportunities to deliver and expand education programs related to environmental stewardship. These opportunities need to be weighed against the implications of potential new impacts associated with recreational access.

There is some level of recreational access to all of the source watersheds. Yosemite National Park manages access in the upper Tuolumne River watershed, including the High Sierra back country which allows permitted access to the wilderness areas. East Bay Regional Park District (EBRPD) leases SFPUC lands as part of their Sunol Regional Park and the Ohlone Trail. San Mateo County Parks manages the Crystal Springs Regional Trail on the Peninsula watershed which is used by over 300,000 visitors annually. The examples provided below highlight some of the SFPUC environmental stewardship education efforts.

Yosemite National Park and Interpretive Programs

The Water Enterprise works closely with Yosemite National Park staff to develop water quality and environmental stewardship messaging to incorporate into their interpretive programs for the public. A Resource Guide was developed to assist Yosemite National Park staff in delivering water quality messaging to diverse audiences, and new signage has also been developed and strategically placed to inform the public about potential water quality impacts resulting from visitor activities and about mercury-contaminated fish in lakes and reservoirs.

Sunol AgPark

The Alameda County Resource Conservation District (ACRCD) continues to manage the Sunol AgPark, a unique urban edge farm that integrates sustainable agriculture, natural resource stewardship, as well as public education focused on the agricultural, natural, and cultural resources of the Sunol Valley. The ACRCD continues to implement the "Farming in the Watershed" 4th- 8th grade curriculum, developed by SAGE and the SFPUC. Construction of the new Sunol Yard during the last few years made bringing schools ~~programs~~ to the Sunol AgPark more difficult, but even with reduced site access 7633 students participated in Sunol AgPark programs, including 3,513 students who visited the AgPark in the last three years (Carla – please confirm time frame)

Commented [SC2]: This covers FY17/18, 18/19 and 19/20

Sunol AgPark

Alameda Creek Watershed Center

The SFPUC approved the construction contract for the Alameda Creek Watershed Center (Center) in December 2019 as part of the Sunol Yard Long Term Improvements Project, and the Center is scheduled for completion in Spring 2022month/season/year (Carla). The Center will include an interpretive exhibit hall, a watershed discovery lab to support public education programs, a community gathering space, staff office space, and a watershed discovery garden and trail. The Interpretive Master Plan for the Center was finalized in February 2014, which led to the design of the Center interpretive displays. In May 2017, the SFPUC completed an Education Master Plan (Plan) for the Center. The Plan will guide the development of new education programs at the Center and AgPark, including field trips, classes, workshops, and seminars.

Vargas Plateau Trail

The SFPUC is working with EBRPD to develop a trail from the newly opened Vargas Plateau Regional Park to the Center. The approximately 6-mile multi-modal trail will provide access to hikers, bikers, and equestrians and need to cross Alameda Creek. The SFPUC and EBRPD staff are currently developing a conceptual alignment.

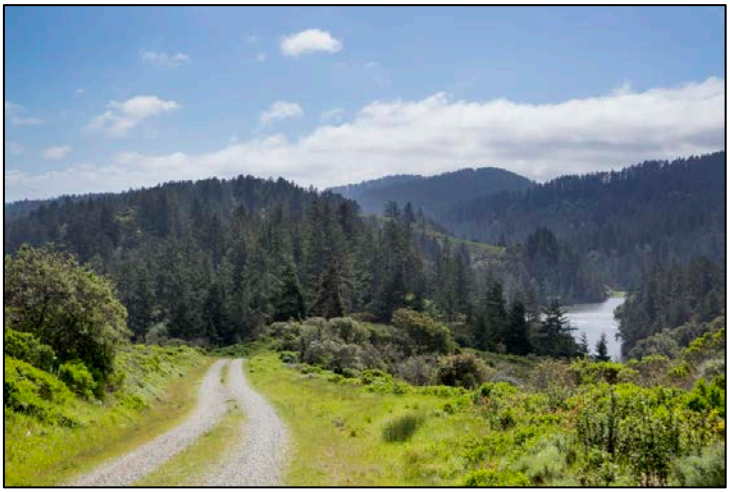
Niles Canyon Trail

The SFPUC partnered with EBRPD, Alameda County Public Works Agency and the Alameda County Water District to conduct a feasibility and preliminary engineering study for a proposed EBRPD trail traversing Niles Canyon in Alameda County. This trail will provide important transportation and recreational amenities for the local communities. The goal of the project is to develop a paved, non-motorized trail through Niles Canyon from Mission Boulevard to the town of Sunol. The Niles Stroll and Roll was held on September 8, 2017 and September 22, 2019. This biennial event gives walkers and cyclists a chance to enjoy Niles Canyon Road free of vehicular traffic and is an opportunity to update local residents on the status of the planning process for the trail. Planning for the trail is moving forward with the development of more refined plans which will provide key information for the Environmental Impact Report.

SFPUC Peninsula Bay Area Ridge Trail

The proposed Southern Skyline Boulevard Ridge Trail Extension (SSBRTE) project includes: (1) construction of a new 6-mile trail from Highway 92 south to the Golden Gate National Recreation Area (GGNRA) Phleger Estate along the east side of Upper Skyline Boulevard State Highway 35; (2) acquiring an easement from the Bay Area Ridge Trial Council for the existing section of trail on the Skylawn Cemetery; (3) operation of the entire Bay Area Ridge Trail on the SFPUC Peninsula Watershed; (4) trailhead construction at the intersection of Highways 92 and 35 to support the new 6-mile trail, and also trailhead improvements just south and around Cemetery Gate north of Skylawn Cemetery; (5) a new “universal access” loop trail (ADA loop) that will be ADA-accessible and accommodate school programs starting at Cemetery Gate; and (6) development and installation of interpretive signs along the ADA loop, Fifield/Cahill Ridge Trail, and the new SSBRTE.

Since it opened in 2003, approximately 11,665 hikers, mountain bikers and equestrians have used the Fifield/Cahill Ridge Trail under the docent program. The Draft Environmental Impact Report is scheduled for release and public comment in June 2020, and the environmental review process is scheduled for completion by the end of 2020, which would allow construction to start in 2021.



Fifield-Cahill Ridge Trail looking north towards Pilarcitos Reservoir

While planning, design, and environmental review for the SSBRTE project has been ongoing, the Peninsula Trail Interpretive Master Plan (Trail Plan) (which covers the existing Fifield-Cahill Ridge Trail and the new SSBRTE) was developed. The Trail Plan builds on the existing docent program, and includes themes, key concepts and interpretive goals for the Bay Area Ridge Trail on the Peninsula watershed. The final Trail Plan was completed in 2019 and has informed the design of the interpretive displays that are part of the SSBRTE project and will inform new docent program training materials to support the operation of the public education and access program.

The Trail Plan was informed by the Peninsula Historical Ecology Study and Rare Plant Survey. All three of these efforts are being carried out by the Aquatic Science Center under a Memorandum of Understanding approved by the Commission in October 2016. In the same manner that the previous Alameda Creek Watershed Historical Ecology Study (February 2013) supported the Interpretive Master Plan for the Alameda Creek Watershed Center, the Peninsula Historical Ecology Study will provide important information regarding how the Peninsula Watershed landscape has changed over time and will inform the Trail Plan and future management and restoration efforts.

San Francisco Bay Area Ridge Trail

The SFPUC and RPD staff, under the interdepartmental work order with the City Distribution Division, have been working with the Bay Area Ridge Trail Council to re-align the Bay Area Ridge Trail near Twin Peaks and Summit Reservoirs. The conceptual alignment is still under development and has been discussed in two community meetings hosted by RPD and the SFPUC. Once finalized the SFPUC and RPD staff will organize additional meetings to get further input from the surrounding communities. This is a significant opportunity to provide education regarding Water

Enterprise operation of the drinking water and high-pressure fire-fighting water systems.

Manage and operate the Water Enterprise assets consistent with the Water Enterprise Environmental Stewardship Policy

Water Enterprise assets include the traditional "hard" infrastructure assets that are part of the RWS, and also the "natural" assets that are important components of the SFPUC-owned watershed and ROW lands. These natural assets include all of the native plants and animals that are part of these ecosystems. The watershed assets include these natural assets, and also hard assets necessary to manage the land such as the roads, fences, fuel breaks, and culverts.

An important element of proactive stewardship of watershed lands is collecting and maintaining information on the status of watershed assets. Water Supply and Treatment and NRLM have initiated an effort to improve watershed asset tracking and maintenance planning in the Bay Area. The hard assets are increasingly getting mapped and assessed for proactive routine maintenance. Natural assets are also being tracked through a variety of efforts that generally take the form of ecological monitoring and study.

Ecological monitoring and study on SFPUC watershed lands provides vital information to watershed managers. For example, maintaining up to date location information for rare plants, rare butterfly host plants, wetlands, and other sensitive resources allows the SFPUC to plan project and maintenance activities in a manner that avoids environmental impacts, with a secondary benefit of minimizing regulatory risk and reducing the need for permits and reporting. Mapping and monitoring information for invasive species allows the SFPUC to strategically deploy control efforts to maximize efficacy and benefits to watershed ecosystems. A geographic database of selected plant species also allows the SFPUC to plan seed collections to supply restoration projects with locally sourced native plants. This same database also provides the tracking necessary to prevent overcollection of these resources.

The San Francisco Estuary Institute is working with SFPUC staff to perform two new important ecological studies. The first is the Peninsula Historical Ecology Study, briefly described above. On the eastern boundary of the Peninsula watershed, like in many other parts of California, native grasslands have been lost to development. The undeveloped remnants of native grassland here are highly biodiverse and support numerous special status species. However, the historical ecology study demonstrates that development is not the only threat to these habitats. Over the course of many decades, these grasslands have also been gradually displaced by non-native trees. These same trees increase the fire risk to the adjacent homes, utilities, and other infrastructure in the area. The SFPUC has an ongoing effort to remove these trees with the dual benefit of protecting native watershed ecosystems and reducing the risk of

loss of human life and property to wildfire. The final Peninsula Historical Ecology Study Report should be available by the end of 2020 (Carla – please confirm).

Commented [SC3]: This is correct

The second large scale ecological study underway with SFEI is on the Alameda Watershed. This study will provide a baseline condition assessment of carbon stocks in the soils and plants on the Alameda Watershed. The results of this study will provide important insights into how current and future land management activities may affect carbon sequestration in the watershed. This study is just getting started and preliminary results should be available in 2021.

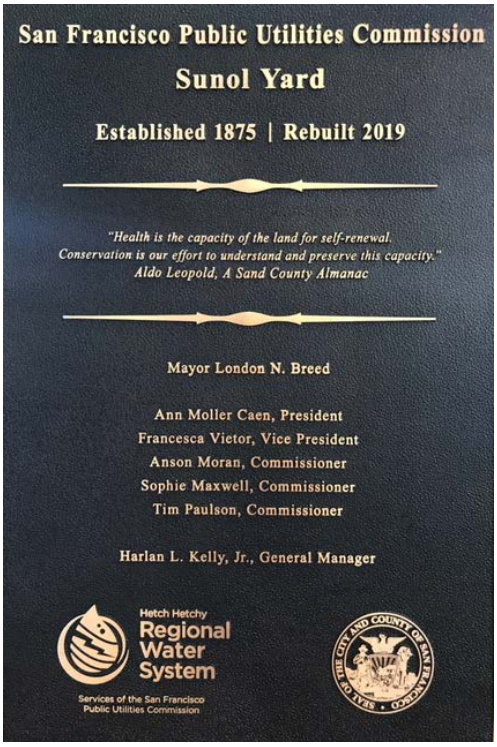
Conclusion

These landscape level efforts to track the condition of watershed assets, supported by the specific project-level monitoring and maintenance activities, will continue to inform RWS and watershed land and ROW operations. As the San Francisco Water System Level of Service Goals and Objectives are refined and finalized, this framework will continue to be used for the context in which WEESP implementation is assessed.

The Water Enterprise is committed to proactive environmental stewardship and developing measures to assess our performance. In acknowledgement of this ongoing commitment, a quote from Aldo Leopold (1887-1949) was included on the plaque installed as part of the new Sunol Yard dedication in 2019. Aldo Leopold long championed environmental stewardship, which he articulated in *A Sound County Almanac* (1949):

"Health is the capacity of the land for self-renewal. Conservation is our effort to understand and preserve this capacity."

The SFPUC is a very large public landowner and has an equally large obligation to manage the RWS and the natural resources the affect or are affected by our operation to support the native plants and animals that depend on them for future generations. These efforts also support our ability to continue providing high quality drinking water to our 2.7 million customers. We hope this report provides an overview of our work, and increasingly a measure of our progress.


San Francisco Public Utilities Commission
Sunol Yard
Established 1875 | Rebuilt 2019
"Health is the capacity of the land for self-renewal.
Conservation is our effort to understand and preserve this capacity."
Aldo Leopold, A Sand County Almanac
Mayor London N. Breed
Ann Moller Caen, President
Francesca Vietor, Vice President
Anson Moran, Commissioner
Sophie Maxwell, Commissioner
Tim Paulson, Commissioner
Harlan L. Kelly, Jr., General Manager
Hetch Hetchy
Regional
Water
System
Services of the San Francisco
Public Utilities Commission

WEIP PROJECTS BY WATERSHED							
Project	Description	FY05/06 - FY14/15	FY15/16	FY16/17	FY17/18	FY18/19	FY19/20 est
Alameda Creek Watershed							
Nolan Ranch Acquisition and Conservation Easement	Purchased 1,157 acres in the upper Alameda Creek Watershed in partnership with TNC and SCC and provide funding for an endowment for TNC to monitor the conservation easement on the property	$999,817					
Olds Property Acquisition	Purchased approximately 200 acres in the San Antonio Watershed	$1,300,000					
AC Watershed Protection Project	Outreach to property owners regarding purchase of property or conservation easements	$83,300					
Conservation Easement Education/Facilitation	Educate landowners about conservation easements and assist in developing conservation easements	$99,115	$8,439	$8,000			
Alameda Creek Watershed Center In Sunol	Interpretive Master Plan and exhibit design and education program development	$294,224			$100,000	$74,741	$40,000
Alameda Creek Watershed Center in Sunol	Construction of the Alameda Creek Watershed Center						
Alameda Creek Watershed Center Education Master Plan	Develop education master plan to guide development of education programs at the ACWC			$67,440			
Native Plant Nursery	Construct Native plant nursery and collect native seeds and propagate native plants		$2,375	$287,477	$2,150,894	$500,000	
SAGE	Develop implement Sunol Ag Park 4th-8th grade curriculum	$440,004			$39,784		
AgPark Transition	SAGE and ACRCD work together to transition management of the AgPark from SAGE to ACRCD		$63,498	$103,000			
ACRCD AgPark Management	Management of the Sunol AgPark				$128,686	$130,000	$120,000
Rare plant survey	Conduct focused rare plant surveys of the Alameda Watershed	$52,000					
Niles Gage Weir Assessment	Determine the structural integrity of the weir and provide recommendations and alternatives	$91,000					
Alameda Creek Fisheries Restoration Workgroup	Flow studies	$182,246					
Historical Ecology Study	Partner with ACFC&WCD to fund SFEI to conduct a Historical Ecology study of the AC Watershed	$250,000					
Rangeland Monitoring	collect spring season species composition data to complete baseline data	$65,000					
Weed Survey	Conduct non-native plant species inventory and mapping	$62,298					
Niles/Sunol Dam Removal	Dam removal to provide fish passage	$1,505,000					
Arroyo de la Laguna Restoration #1	Creek bank stabilization	$467,821					
Calaveras Reservoir HOS	Installation of a Hypolimnetic Oxygenation System (HOS) at Calaveras Reservoir	$1,381,600					
San Antonio Reservoir HOS	Installation of a Hypolimnetic Oxygenation System (HOS) at San Antonio Reservoir	$2,375,663					
New Zealand Mud Snail Survey	Conduct surveys in Alameda Creek to determine the presence of the New Zealand Mud Snail	$13,000					
Wool Ranch Property Acquisition	Purchased 767 acres in the Alameda Creek Watershed						$9,850,000
Mitchell Property	Purchased acres in the Alameda Creek Watershed						$1,690,000
Starr Property Acquisition Acquisition	Purchased acres in the Alameda Creek Watershed						$1,282,500
	Total	**$9,662,088**	**$74,312**	**$465,917**	**$2,419,364**	**$704,741**	**$12,822,500**
Peninsula Watershed							
USFS MOU	Provide technical assistance to improve watershed health and improve the success rate of restoration activities in the San Mateo Creek and Pilarcitos Creek watersheds	$417,660	$100,000		$187,000	$111,111	$111,111
San Mateo thommint Restoration	Introduce thommint at two locations in the Watershed and monitor for 7 years	$100,000			$10,933	$25,000	
Pilarcitos Creek IWMP	Develop Watershed Management Plan for the Pilarcitos Creek Watershed	$96,532					
Pilarcitos Stream Gage Operation	Provide funding with CCWD and SAM to operate the lower Pilarcitos Creek Stream Gage	$20,575					
Pilarcitos IWMP Administration	Provide funding with CCWD and SAM for SMRCD to continue to oversee administration of the IWMP	$15,000					
SFPUC Bay Area Ridge Trail Extension	Planning, design and permitting for project alignment	$1,800,000	$545,587	$1,596,384	$734,215	$502,719	$398,480
Sneath Lane to N. San Andreas Trail Extension	1.25 miles of new trail from North San Andreas Trail to GGNRA Sneath Lane gate	$50,000	$10,406	$18,257	$9,664	$2,350	$2,765
Weed Survey	Conduct non-native plant species inventory and mapping	$62,297					
Pulgas Interpretive Signs	Design and install several interpretive signs near the Pulgas Temple	$24,000					
Crystal Springs Regional Trail	Project funds trail improvements on the Crystal Springs Regional Trail	$300,000					
Historical Ecology Study	Historical Ecology Study of the Peninsula Watersheds				$88,865	$56,328	$150,000
Peninsula Trails Interpretive Master Plan	Develop IMP for interpretive signs along the Fifield-Cahill Trail and the planned SSBRTE				$11,223	$71,278	$65,000
Rare Plant Survey	Conduct focused rare plant surveys of the Peninsula Watershed				$55,134	$37,007	$42,165
		$2,886,064	**$655,993**	**$1,614,641**	**$1,097,034**	**$805,793**	**$769,521**
San Francisco Properties							
Lake Merced Watershed Management Plan	Develop watershed Management Plan for the Lake Merced Watershed	$250,000					
Lake Merced Infrastructure	Planning and design of upgrades to stormwater system in the Sunset Circle Parking Lot	$500,000					
Laguna Honda Scrub Restoration	Restoration of the native coastal scrub that occurs within a portion of the Laguna Honda reservoir.	$252,198					
Rec and Park Natural Areas Program	Includes Twin Peaks, Laguna Honda, O'Shaughnessy and Brotherhood Way	$350,000	$167,191	$200,000	$200,000	$200,000	$200,000
	Total	**$1,352,198**	**$167,191**	**$200,000**	**$200,000**	**$200,000**	**$200,000**
Upper Tuolumne River (above Don Pedro Reservoir)							
Amphibian Survey	Conduct amphibian surveys between O'Shaughnessy Dam and park boundary	$242,581	$41,057	$82,952	$60,999	$60,999	$60,999
Looking Downstream	Conduct a comprehensive assessment of the riverine and riparian ecosystem b/w O'S Dam and Early Intake	$1,405,228	$167,974	$167,974	$167,974	$167,974	$167,974
Upper TR Ecosystem Project	A collaborative, science-based effort to improve stewardship of the Upper Tuolumne River	$2,143,500	$215,000	$215,000	$215,000	$215,000	$215,000
Invasive Plant Treatment	Comprehensive Himalyan blackberry removal along 6 miles of the Tuloumne River	$312,028	$95,446	$92,120	$93,720	$88,103	$91,627
Economic Impact of the 2013 Rim Fire on Natural Lands		$30,000					
	Total	**$4,133,337**	**$519,477**	**$538,046**	**$537,693**	**$532,076**	**$535,600**
Lower Tuolumne River (below Don Pedro Reservoir)							
Dos Rios Ranch Acquisition	Provide funding to develop conservation easements and/or acquire property to protect water quality	$2,000,000					
	Total	**$2,000,000**					
Planning/Project Management							
Planning/Project Management	staff time(NR, RES, CAO) to plan, implement and manage WEIP projects	**$1,521,589**	**$165,194**	**$200,000**	**$232,727**	**$230,000**	**$235,000**
	TOTAL	$20,033,687	$1,582,167	$3,018,604	$4,486,818	$2,472,610	$14,562,621
	AC Watershed Total	**$26,148,922**					
	Peninsula Watershed Total	**$7,829,046**					
	San Francisco Total	**$2,319,389**					
	Upper TR Total	**$6,796,229**					
	Lower TR Total	**$2,000,000**					
	Total Project Management	**$2,584,510**					
	All WEIP RnR Projects	**$25,295,759**					
	All WEIP Bond (Prop A only) Funded Projects	**$17,797,827**					
	All WEIP Projects Grand Total	**$43,093,586**					