

San Francisco Public Utilities Commission
Sunol Valley Restoration Plan Scope
7/19/2010

INTRODUCTION

The Sunol Valley Restoration Plan (SVRP) will guide restoration, conservation, and monitoring efforts in the Sunol Valley. The initial phase of work will involve a review of existing information and a scientific assessment of the area. The objective will be to determine what restoration is physically and biologically feasible in the Sunol Valley reach given existing constraints and conditions. Work will include geomorphology field work and data analysis, piezometer installation, vegetation monitoring, historical ecology, amphibian modeling and assessment, fisheries coordination and birds and mammals evaluation and assessment. These field and data analysis efforts are to be coordinated with other ongoing work in the Sunol Valley (and larger Alameda Creek watershed as appropriate). Work products include reports from data collection and analysis work as well as final restoration recommendations for the Sunol Valley riparian corridor.

SCOPE OF WORK

The Sunol Valley Restoration Plan (SVRP) will be developed to guide restoration, conservation, and monitoring efforts in the Sunol Valley Plan Reach (defined below). This document will provide an overarching framework for the environmental impact assessment, restoration and mitigation planning efforts in the Sunol Valley. These mitigation planning efforts include programs associated with the Calaveras Dam Replacement Project (CDRP), the Upper Alameda Creek Filter Gallery (UACFG), the SFPUC Alameda Watershed Habitat Conservation Plan (AWHCP), and the de Silva Sunol Quarry SMP-30. The SVRP will provide a framework for coordinating various restoration and conservation opportunities, and will use a holistic ecosystem approach.

The Sunol Valley Restoration Plan Reach will include Alameda Creek from below the Alameda Creek Diversion Dam (ACDD) to the site of the recently removed Niles Dam, and the lower portions of tributaries to this reach, such as Calaveras Creek below Calaveras Dam (CD) and San Antonio Creek below San Antonio Dam. The segment between the siphons (Portal Road) and the confluence with Arroyo de la Laguna will be a focus of more intensive study and restoration planning, but the hydrology and biology of the entire Reach will be considered when evaluating project options.

There are a number of studies completed and underway that will be used to inform the SVRP and to identify restoration opportunities and potential conflicts between management options. These studies include:

- Alameda Creek Fisheries Workgroup work products (water temperature monitoring and modeling, streamflow monitoring, fish habitat mapping, cross section and thalweg profile surveys, hydraulic and hydrodynamic modeling, etc.).
- SFPUC AWHCP work products (EDT modeling)
- SFPUC reports (Fish and Wildlife section, Limnology section)
- SFPUC Water System Improvement Program and associated Habitat Reserve Program reports (CEQA surveys, Biological Assessments, passage and habitat reports done for Calaveras Dam Replacement Project, etc.)
- Alameda Creek Historical Ecology project

The Final Draft SVRP will include:

- A synthesis of historic and existing relevant hydrological, geomorphological, and biological data that illustrates conceptual models of historic (unimpaired) and contemporary conditions in Sunol Valley
- A conceptual model of future restoration vision in Sunol Valley, including geomorphic, riparian, and ecological components
- An ecological benefit analysis of restoration options that considers multiple species, including sycamores and other riparian vegetation, birds that are dependent on riparian vegetation, amphibians, reptiles, native warm water fish and cold water fish (O. mykiss, Chinook salmon, etc).
- An accessible discussion of restoration considerations. Where restoration alternatives have tradeoffs among species, these issues will be highlighted and anticipated tradeoffs will be clearly articulated so that stakeholder groups can evaluate alternatives. Areas where ecological outcomes are difficult to predict will also be highlighted and explained so that stakeholder groups are made aware of the limitations of the information available.
- Recommended restoration actions for the riparian zone and stream channel of Alameda Creek from the Calaveras Creek confluence to the Arroyo del la Laguna confluence. Recommendations will balance needs of different species considering (to the degree practicable with available information) historical conditions, existing conditions and future conditions in Alameda Creek.
- Recommended monitoring actions, studies, and/or adaptive management experiments. These are activities that should be conducted to evaluate whether SVRP goals and objectives are being met, fill information gaps, and/or address scientific uncertainties relevant to management for ecological purposes in the Reach.

Workshop

Upon completion of the final draft SVRP, a two-hour informational workshop summarizing the SVRP will be held to engage agency staff, SFPUC staff, and other stakeholders such as the Alameda Creek Fisheries Workgroup. The workshop will highlight components of the SVRP and provide a broad overview. Experts will present summaries of their findings.

Hydrology & Geomorphology

Geomorphology

As part of the geomorphological analysis for the SVRP, the following activities will be conducted.

- Provide a historic-contemporary overview of geomorphology for the Reach, including qualitative description of sediment transport, routing and deposition, channel morphology, geomorphic surfaces, grain size, and other factors that will influence the SVRP.
- Supplement existing and ongoing SFPUC survey work as needed to inform the SVRP. A thalweg profile and 24 cross sections were surveyed by the SFPUC through the Sunol Valley in 2008, and another 40-50 cross sections are planned for the Reach in a separate contract for May 2010. Additional work may include extending the thalweg survey upstream to the Confluence or Calaveras Dam, additional documentation of grain size, and other data measured at the level of resolution needed to inform hydrological, morphological, and biological restoration planning in Sunol Valley. Up to seven new cross sections are anticipated for this scope of work, which will also be used for integrating/analyzing shallow groundwater, riparian vegetation, inundation thresholds, and foothill yellow-legged frog egg desiccation.

Groundwater Analysis

In order to inform restoration planning efforts, a greater understanding of groundwater elevations and surface water/groundwater interaction is necessary. To obtain localized groundwater information, the team will conduct field work to install up to five new piezometers to better

understand flow conditions and patterns in the subsurface environment. Groundwater activities include the following:

- Install up to five new piezometers on floodplains in the upstream portion of Sunol Valley Reach (piezometers are currently in place within and below quarry reach).
- Bore logs containing information regarding soil type, color, grain size, plasticity and other soil characteristics along with piezometer construction details, in addition to photographs will be collected during piezometer installation to provide a better understanding of subsurface soils (a complement to the soils map above).
- Install between two-to-six transducers in existing piezometers in the vicinity that do not already contain transducers.
- Analyze streamflow data from USGS and SFPUC gaging station data along with piezometer data to relate surface flows to groundwater response (and corresponding implications to riparian vegetation).
- Trend analysis and discussion, and data location maps will be included in the SVRP.

Surface Water Modeling

The SFPUC and Alameda County Water District are developing several models (HEC-HMS rainfall-runoff model, HEC-RAS hydraulic and temperature model, unimpaired and impaired flow spreadsheet models) to inform fish habitat evaluations. SFPUC will conduct additional surface water modeling to inform the Restoration Plan.

- Predict water surface elevations and water temperatures for different flow and meteorological conditions for existing channel geometry and vegetation.
- Predict water surface elevations and water temperatures for different “future restoration” scenarios, assuming changes in channel geometry and vegetation within the provided HEC-RAS model

Vegetation

Riparian Vegetation Mapping

- Field-based mapping of riparian vegetation type and density/cover throughout Sunol Valley Reach (Confluence to Arroyo de la Laguna) using Sawyer and Keeler-Wolf (1995) vegetation classification system. Riparian mapping will be either surveyed in the field with sub-meter GPS equipment, or mapped and digitized on recent orthorectified aerial photographs. Product will be a shape file of mapped plant communities, as well as tabular summarize of acreages for each vegetation community type.
- Augment, as needed, the invasive plant survey data collected in 2009 by Nomad Ecology for SFPUC to map invasive species throughout the Reach using the same data collection and mapping protocols. Incorporate into the SVRP the recommendations from the 2009 report (and any new recommendations) for invasive plant species removal and management.
- Based on the field-based riparian map above, implement a random sampling program of riparian patch types, and conduct relevé surveys to document baseline composition of vegetation for future comparison. Utilize data from the vegetation survey conducted in 2004 by URS for the SFPUC, and use, where possible, the permanent relevé plots for vegetation monitoring established in 2004.
- Develop a monitoring program to track vegetative changes in response to new flow regimes and other planned changes in Sunol Valley Reach. Coordinate with other planned monitoring efforts to track feedbacks from change in riparian vegetation to channel morphology, stream temperature, and other management actions.

Target Riparian Woody Vegetation Recruitment Studies

Develop planting and restoration/management guidelines for sycamores, or other target woody riparian vegetation, considering proposed flow schedule and other expected changes. Coordinate restoration

planning for riparian vegetation with fish and wildlife restoration goals, hydrology results, and riparian recruitment modeling effort.

- Observe seed dispersal for different woody riparian species, and install and monitor seed traps to document seed dispersal periods and key life history stages for target woody riparian species.
- Review recent studies on sycamore dynamics in Arroyo del Valle, as well as other pertinent riparian studies (i.e., SFEI Historical Ecology Project) that would inform restoration options for Sunol Valley.
- Use TARGETS riparian recruitment model or other life-history model to predict future recruitment as a function of ground and surface water changes due to proposed flows, as well as potential changes to channel geometry with restoration actions. Evaluate potential changes in growth of established sycamores as a function of ground and surface water changes due to proposed flows. Evaluate short and long term risks (or benefits) of proposed flows using results from groundwater analysis, location of sycamores relative to groundwater and surface water, and historical response of sycamores to hydrology, soils, and other driving variables.
- Review and summarize information from other vegetation studies being conducted by the SFPUC to be included in the SVRP.
- Determine current condition, stand health, stand age, and location of sycamores.
- Conduct up to 100 increment borer samples to document dendrochronology of sycamores within Sunol Valley.
- For up to five “representative” study sites, relate rooting elevation and age of sycamore (and other target woody riparian species) to ground & surface water dynamics, as well as soils and geomorphic surfaces. Use aerial photos, historical ecology results from SFEI, dendrochronology data, and hydraulic/hydrologic models to correlate growth and recruitment to historical hydrology (ex. relate flood events to recruitment, wet years vs dry years to growth).

Fish and Wildlife

A greater understanding of fish and wildlife habits and activities will be needed to describe patterns and plan for potential restoration activities.

Amphibian and Reptile Evaluation

Review amphibian and reptile conditions within the reach and develop an amphibian model which correlates water stage and temperature with egg desiccation during the egg incubation period.

Foothill Yellow-Legged Frog Sub-Task

Literature Review

- Develop seasonal temperature and flow requirements (or limits) using available published data and expert knowledge.
- Evaluate potential for FYLF use of the Sunol Valley Restoration Plan Reach

Evaluate Current Condition in Sunol Valley

Evaluate habitat conditions and presence/absence of FYLF in Sunol Valley Reach and tributaries (using existing data and additional surveys if needed)

Fisheries Evaluation

A considerable amount of effort is currently underway to improve conditions for native fishes in Alameda Creek. As part of this task, the SVRP will synthesize data collected as part of the larger Alameda Creek fisheries effort, and integrate management recommendations that have been developed to date for fishes (native warm-water species, O. mykiss, and Chinook salmon) into the SVRP.

- Compile and synthesis information on current conditions and recommendation for future actions from:
 - Technical fishery, habitat, and hydrologic studies and reports
 - Environmental documents such as the EIRs prepared for the Calaveras Dam project, ACWD/Flood Control District fish screen and fish ladder project, Sunol Dam removal, and others
 - Fishery Workgroup meeting notes and work products including the current habitat surveys, water temperature modeling, and hydrologic investigations
 - Information on fishery and aquatic habitat presented in the SFPUC HCP
 - Current projects and planned activities including activities associated with quarry operations and other projects designed to benefit habitat conditions for fishery resources within Alameda Creek

Information will be compiled and synthesized in a format that can be rolled into the Restoration Plan that will summarize past and current investigations and major findings as well as recommended future actions.

Birds and Mammals Evaluation

Evaluate existing conditions of bird and mammal habitat and develop restoration recommendations. As part of this subtask, the following activities will be conducted:

- Coordinate with the Bay Area Open Space Council's Critical Linkages team to identify focal mammals and birds that would use the Reach as a migration corridor. Identify habitat characteristics or special needs (if any) for the focal species that would enhance the value of the Reach as a linkage between the Mount Hamilton Range and the East Bay Hills.
- Identify focal birds that might use the Reach as primary habitat (esp. breeding). Identify vegetation or other habitat characteristics that might be targeted to enhance habitat value for these focal avian species and develop a summary list.
- Perform baseline surveys in the Reach to determine current use by birds and mammals – assumes no live trapping and a minimum of three point counts.
- Develop restoration recommendations for birds and mammals that are coordinated with the other objectives identified in the SVRP.