

**Golden State Water Company:
Clear Lake Watershed Sanitary Survey Update -
Review of Clear Lake Plans and Reports**

Technical Memorandum

July 5, 2017

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Project Background

The California Surface Water Treatment Rule requires that all water systems update their watershed sanitary survey every 5 years. In 2017, the Clear Lake Watershed Sanitary Survey (2017 Update) will be updated jointly by the 18 water systems that use Clear Lake for their drinking water supply. Rather than simply updating the information from the previous sanitary surveys, the 2017 Update will have a special focus on nutrients and expand on improving source water quality in Clear Lake to benefit the water purveyors' water quality.

Water quality in Clear Lake, the largest natural freshwater lake in California, has been significantly impacted by frequent cyanobacteria blooms, primarily in the summer and fall months. These blooms cause many serious issues for the water systems using Clear Lake for their water supply and for other beneficial uses of the lake, such as recreational uses. For the water systems, seasonal cyanobacteria blooms are associated with taste and odor episodes, increased chlorine demand, higher disinfection byproduct levels due to higher total organic carbon, high manganese levels, and other treatment challenges. The issues associated with cyanobacteria blooms can add to the cost of treating lake water to drinking water standards and can pose serious health risks if blooms are associated with significant release of cyanotoxins.

Characterizations of Clear Lake have concluded that excess phosphorus contributes to blooms of cyanobacteria and that controlling phosphorus inputs and internal phosphorus cycling should reduce the incidence of these nuisance blooms. Most sources of the external phosphorus are sediment driven and include erosion from agricultural and urban areas, instream channel erosion, timber harvesting, runoff from roads, construction, gravel mining, wildfires, control burns, off highway vehicle (OHV) use, and dredging and filling. Fertilizer use (both urban and rural) and sewer and septic overflows may also contribute phosphorus to the lake. As a result, a nutrient Total Maximum Daily Limit (TMDL) was adopted by the Central Valley Water Board in 2006 for control of phosphorus in Clear Lake from point and non-point sources (primarily through reduction of sediment loading). Despite efforts by Federal, State, and Local agencies to control phosphorus in Clear Lake, blooms of cyanobacteria continue to occur and additional efforts are needed to address this issue.

Previous research has identified internal phosphorus loading as the primary source of phosphorus in Clear Lake in the summer and fall (Winder et al. 2010). As the lake sediments become anoxic the phosphorus and manganese are released by the sediments. Internal phosphorus loading is not currently being addressed in Clear Lake.

Because of the many negative impacts of cyanobacteria blooms on Clear Lake, the most logical course of action is to implement projects to address nutrient control and reduction of sediment loading. To support this objective, the 18 Clear Lake water systems developed an approach to identify projects aimed at improving Clear Lake water quality, with a focus on nutrients, and pursuing grant funding for selected projects. The outcomes of this effort will be a key element of the 2017 Update of the Clear Lake Watershed Sanitary Survey. Specifically, the project that is

supporting this approach includes the following objectives which will be accomplished through a series of interrelated tasks:

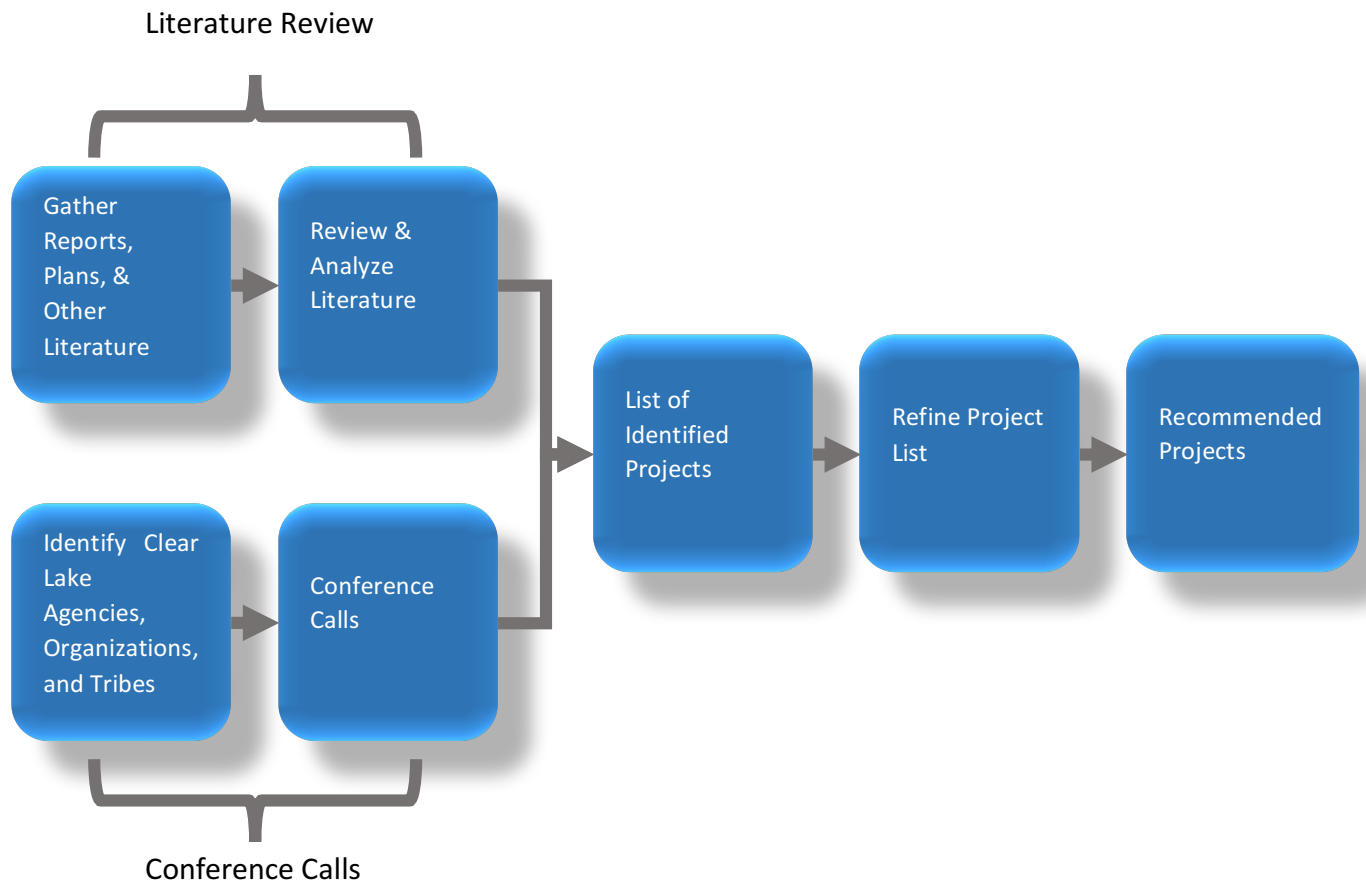
- Provide a comprehensive review of already published Clear Lake watershed plans, reports, and studies to identify potential projects.
- Select top project recommendations and matching them to funding programs.
- Presenting findings of top project recommendations and funding programs to the water systems, appropriate County representatives and regulatory agencies associated with Clear Lake.
- Submit at least two funding applications on behalf of the water systems.
- Meet with Clear Lake stakeholders to discuss identified knowledge gaps, lessons learned, and recommended next steps.

This Technical Memorandum addresses the first objective of the project. This technical memorandum provides a comprehensive overview of (1) the review of Clear Lake watershed plans, reports, and studies; (2) conference calls with agencies, organizations and Tribes associated with Clear Lake; and (3) the approach and criteria used to identify potential projects. The outcome of this task, also presented in this technical memorandum, is a summary of the lessons learned and a list of recommended projects identified through these efforts for further discussion with the water system and other appropriate Clear Lake agencies.

Approach

This project began with a broad literature review of already published reports, plans and studies of Clear Lake to identify potential projects that have been recommended for the Clear Lake watershed. In parallel with the literature review, conference calls were conducted with key agencies, organizations, and Tribes that were likely to have further insight into potential projects to address nutrients in Clear Lake. The list of projects identified through this process was refined to include projects with defined scopes or concepts that match the water quality improvement and nutrient focus of the 2017 Update. Six projects were then selected for further discussion with water systems about priorities and funding opportunities. Figure 1 provides the generalized approach taken to complete this portion of the project.

Figure 1. Clear Lake plans and reports review approach



Review of Clear Lake Reports, Plans, and Studies

Already published Clear Lake plans and reports were identified prior to the start of the project by the water systems, and the appropriate agencies were contacted to secure these documents.

Clear Lake has been studied extensively and various studies have been conducted over the years that address the causes of cyanobacteria blooms, nutrient dynamics, and historical changes in water quality of Clear Lake. Published studies that addressed issues that are relevant to the project’s objectives were also included in the review. Table 1 provides the full list of all the resources identified and reviewed as part of this portion of the project.

Table 1. Clear Lake Resources Included in the Literature Review

| Title | Reference |
|--|--|
| A Proactive Approach to Managing Emerging Contaminants in Drinking Water | (Cartnick 2014) |
| Westside Sacramento Integrated Regional Water Management Plan | (Kennedy/Jenks Consultants 2013) |
| Clear Lake Watershed Sanitary Survey | (Forsgren Associates, Inc. 2012) |
| Clear Lake Nutrient Total Maximum Daily Load Control Program 5-Year Update | (California EPA Regional Water Quality Control Board, Central Valley Region 2012) |
| Overview Middle Creek Flood Damage Reduction and Ecosystem Restoration Project | (County of Lake 2012) |
| Harmful cyanobacteria blooms and their toxins in Clear Lake and the Sacramento-San Joaquin Delta (California). | (Mioni et al. 2011) |
| Clear Lake Integrated Watershed Management Plan | (County of Lake and West Lake and East Lake Resource Conservation Districts 2010a) |
| Scotts Creek Watershed Assessment | (County of Lake and West Lake and East Lake Resource Conservation Districts 2010b) |
| Middle Creek Watershed Assessment | (County of Lake and West Lake and East Lake Resource Conservation Districts 2010c) |
| Kelsey Creek Watershed Assessment | (County of Lake and West Lake and East Lake Resource Conservation Districts 2010d) |
| Clear Lake Historical Data Analysis | (Winder et al. 2010) |
| Anthropogenic Stressors and Changes in the Clear Lake Ecosystem as Recorded in Sediment Cores | (Richerson et al. 2008) |
| Mine-Derived Mercury: Effects on Lower Trophic Species in Clear Lake, California. | (Suchanek et al. 2008) |
| Clear Lake Sediments: Anthropogenic Changes in Physical Sedimentology and Magnetic Response | (Osleger et al. 2008) |
| Amendment to the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins for the Control of Nutrients in Clear Lake | (Central Valley Regional Water Quality Control Board 2006) |
| Total Maximum Daily Load for Nutrients in Clear Lake, Lake County, California Technical Report | (TetraTech 2004) |
| Response of sediment chemistry and accumulation rates to recent environmental changes in the Clear Lake watershed, California, USA | (Kim 2003) |

| | |
|--|--------------------------|
| Evaluating and managing a multiply-stressed ecosystem at Clear Lake, California: A holistic ecosystem approach | (Suchanek et al. 2002) |
| Redistribution of Mercury from Contaminated Lake Sediments of Clear Lake, California | (Suchanek et al. 1998) |
| The Causes and Control of Algal Blooms in Clear Lake | (Richerson et al. 1994) |
| Macronutrient controls on nitrogen fixation in planktonic cyanobacterial populations | (Horne and Commins 1987) |
| Nitrogen Fixation in Clear Lake, California. Ii. Synoptic Studies on the Autumn Anabaena Bloom | (Horne et al. 1972) |

All reports and plans identified by the water systems were included in the review with the following two exceptions:

- The 303(d)/305(b) assessments were requested from the Regional Water Board. Summary information regarding the 1986 Clear Lake 303(d) listing was received which included a list of the studies that were used to support the listing. Two of the three supporting studies were already included in the review; the third was from 1966.
- The OWTS Policy Implementation – Local Agency Management Plan is currently in development and not available for review. This plan will be reviewed if it becomes available during the project.

Each of the resources listed in Table 1 was reviewed with the goal of identifying specific and general project recommendations as well as any major data gaps. A spreadsheet review matrix was used to capture and organize the information gathered during the review. Table 2 provides the review matrix structure along with a sample entry. The full matrix is being provided separately as an electronic file (Clear Lake Literature Review Matrix.xls).

Table 2 Review Matrix Structure

| Review Matrix Field | Sample Entry |
|------------------------|--|
| Item # | #1 |
| Title | Clear Lake Integrated Watershed Management Plan |
| Publication Year | 2010 |
| Authors | County of Lake Department of Public Works Water Resources Division and West Lake and East Lake Resource Conversations Districts |
| Source | County of Lake, California |
| Description | Provides a brief description of the purpose and scope of the report, plan, or study. The purpose of the CLIWMP is to describe the existing conditions of the watershed based on findings and conclusions of previous studies, to describe past and current watershed management, and to use this information to identify opportunities to improve and/or protect the health and quality of conditions in the watershed. |
| Water Quality Concerns | Provides a list of water quality issues identified in the report, plan, or study. |

| | |
|-----------------|--|
| | <ol style="list-style-type: none"> 1) Cyanobacteria and toxins 2) Sediment and nutrients 3) Aquatic plant overgrowth 4) Pesticides and other toxins |
| Recommendations | <p>Captures recommendations for addressing specific watershed issues. These may include general recommendations, projects, mitigation strategies, BMPs, studies, etc.</p> <ol style="list-style-type: none"> 1) Complete the Middle Creek Flood Damage Reduction and Ecosystem Restoration Project (Middle Creek Project) 2) Implement site remediation at the Sulphur Bank mercury mine 3) Improve Understanding of Clear Lake Limnology 4) Create a Water Resources Metadata Library for Lake County |
| Major Data Gaps | <p>Captures major data gaps identified in the report, plan, or study.</p> <p>None Identified</p> |
| Notes | <p>Additional notes that the reviewer found to be relevant or of interest about Clear Lake are captured in this field.</p> <ol style="list-style-type: none"> 1) The lake is generally well mixed with stable temperature stratification between surface and deeper waters only occurring for short periods during the hot summer periods when wind patterns are calm; maximum surface water temperatures in July and August are typically near 24°C (75°F). |

Conference Calls with Clear Lake Agencies and Organizations

In addition to the literature review, we sought input from several key regulatory agencies, City and County government agencies, and resource managers in Clear Lake watershed to identify potential projects, especially more fully developed projects that address the recommendations in the various reports and plans that have been prepared for Clear Lake. These informal conference calls were structured around the following questions:

1. What projects are considered high priority for nutrient reduction in Clear Lake?
2. Does your agency/organization have any projects planned that would be a good match for the objectives of the 2017 Update
3. What other agencies or individuals on Clear Lake should we contact?

Table 3 provides the list of the agencies and organizations that were contacted and the representatives that we spoke with about this project.

Table 3 Contacted Agencies and Organizations

| Agency or Organization | Contact(s) | Date* |
|---|-------------------------------|----------------|
| EPA Region 9, Watersheds Office | Sue Keydel | March 31, 2017 |
| Central Valley Regional Water Quality Control Board | Holly Grover Michelle Wood | April 3, 2017 |
| EPA Elem Indian Colony | Karola Kennedy | April 7, 2017 |
| EPA Big Valley Rancheria Band of Pomo Indians | Sarah Ryan | |
| Lake County Water Resources Department | Philip Moy | April 19, 2017 |
| Clear Lake Resource Conservation District | Greg Dills | April 25, 2017 |
| USDA Forest Service | Hilda Kwan | April 25, 2017 |
| City of Clear Lake, Department of Public Works | Doug Herron | April 26, 2017 |

| | | |
|------------------------------------|------------------|------------------------------|
| Irrigated Lands Regulatory Program | Lynn Coster | April 27, 2017 |
| Farm Bureau of Lake County | Brenna Sullivan | April 27, 2017 |
| USDI Bureau of Land Management | Molly Nilsson | Email sent on April 26, 2017 |
| Lake County Special Districts | Jan Coppinger | April 27, 2017 |
| Lake County Supervisor District 3 | Jim Steele | May 4, 2017 |
| Lake County Public Works | Scott De Leon | April 28, 2017 |
| Scotts Valley Band of Pomo Indians | Irenia Quitiquit | Voice message on May 3, 2017 |

*Date of phone call with contact(s) unless otherwise noted.

Project Selection

The list of potential projects identified through the literature review included several focus areas (e.g., nutrients, invasive species, habitat restoration, etc.) and approaches (e.g., projects, programs, outreach/education, research, etc.). This list was refined to include projects with defined scopes or concepts that match the water quality improvement and nutrient focus of the 2017 Update. This was achieved by first excluding potential projects identified through the literature review that did not meet one of the following criteria:

- Addresses nutrient and/or sediment inputs to Clear Lake;
- Provides a strategy for managing or mitigating nuisance cyanobacteria blooms in Clear Lake.

The next step was to exclude any remaining projects that propose research, outreach/education, or programs, focusing instead on those that propose actions that are likely to reduce nutrient and/or sediment inputs to Clear Lake or improve water quality. The final step in the process was to identify projects that were at minimum in the concept/scoping stage and eliminating those that only provide general project recommendations. As is explained below (in Lessons Learned), there were some challenges identifying projects that were sufficiently developed to consider for funding opportunities. Therefore, it was necessary to develop concepts for some projects based on the priorities that have been established in the Clear Lake plans and reports and based on feedback received from Clear Lake resource managers.

Recommended Projects

The six projects presented here are recommended for consideration by the 18 water systems on Clear Lake for the 2017 Update. Four of the projects focus on sediment load reduction from various sources in the watershed and are expected to help reduce nutrient inputs to Clear Lake. Two of the projects focus on helping the water systems implement approaches to reduce the frequency and severity of nuisance cyanobacteria blooms in their source water. The next step will be to review the recommended projects with the water systems and prioritize two for grant funding applications.

Middle Creek Restoration Project

This project is succinctly summarized in the 2012 document titled *Overview Middle Creek Flood Damage Reduction and Ecosystem Restoration Project* (County of Lake 2012): “In 1995, Lake County requested the Corps assist the County in evaluating the project to reduce flood risk and to improve water quality. The Corps undertook the Project under the environmental restoration authority, where it is authorized to provide up to sixty-five percent of the construction cost. The Project consists of reconnecting Scotts and Middle Creek to the historic wetland and floodplain areas by acquiring the reclaimed land, and breaching the existing levee system to create inlets that direct flows into the historically flooded area. The Project removes the flood risk from the properties behind the levee, provides significant water quality benefits and restores large areas of shoreline and riparian habitat that were lost over two-thirds of a century ago.”

The County of Lake (County) has purchased about 51% of the property needed to complete this project and is currently seeking additional funding to complete the land acquisition phase of the project. Planning funds will also be needed to evaluate how to remove the existing levees and restore the area to a more natural state and ensure that the project is completed in a way that meets the water quality goals.

Storm Water System Improvement Study

The storm drains around Clear Lake feed directly into the lake with no contaminant or sediment reduction systems in place. The City of Lakeport, the City of Clear Lake and the County have responsibility for these storm drains. This project would study the costs and benefits of improving the storm drain systems to address sediment and contamination. In addition to studying the costs and benefits this project would provide enough funding to get through conceptual design of the improvements, and a budgetary estimate to use in the second phase of funding.

The Eight Mile Valley Sediment Reduction and Habitat Enhancement Project, Phase II

Eight Mile Valley, on BLM land at the headwaters of Willow Creek, is a mountain valley where stream modifications have caused major erosion and sedimentation. A major restoration project was attempted in the summer of 2005 to stop the gully erosion and restore hydrologic function to the valley. Major storms in December 2005 and January 2006 (which resulted in state and federal disaster declarations in Lake and Mendocino Counties) led to a failure of the restoration efforts.

In 2012, a collaborative partnership of the Scotts Valley Band of Pomo Indians, BLM, and the West Lake Resource Conservation District (now part of Lake County RCD) developed a plan and applied for funding from the California State Water Resources Control Board. The Eight Mile Valley Sediment Reduction and Habitat Enhancement Project will design and implement restoration management practices to reduce sediment loading to Clear Lake. The project is composed of two phases consisting of (1) design planning and (2) implementation of restoration practices to

capture upstream sediment and impede active erosion from developing gullies in the valley. Funding was awarded for the design planning phase of the project. Additional funding is required for the implementation phase of the project.

The Eight Mile Valley Sediment Reduction and Habitat Enhancement Project will reduce sediment erosion and transport to Clear Lake. The area contributes 10% of the sediment load for Scotts and Middle Creeks, which drain 30% of the Clear Lake Watershed.

Kelsey Creek Restoration and Erosion Control Study

Kelsey Creek is one of the major tributaries to Clear Lake contributing approximately 16% of the stream flow to the lake. Sediment studies to date have measured the total sediment load from the Kelsey Creek watershed to Clear Lake. There have not been studies to determine whether sediment sources are localized within the watershed and what activities are causing accelerated erosion. The Kelsey Creek Watershed Assessment (2010) noted the need for the documentation of current conditions and areas with accelerated streambank erosion. Funding is necessary to conduct stream channel and sediment source inventories in the Kelsey Creek Watershed and to for identification, prioritization, design, and implementation of restoration and erosion control projects.

This project is aimed at reducing sediment loads and associated phosphorous to Clear Lake from Kelsey Creek. The first phase of the project will determine current conditions in Kelsey Creek and areas with accelerated streambank erosion and identify meaningful opportunities for restoration and erosion control to reduce sediment loads to Clear Lake. The second phase would implement prioritized projects for restoration and erosion control in Kelsey Creek.

Nutrient Input and Cycling Study and Chemical Treatment

This project has two phases, the first of which is to study the sediment and phosphorus inputs and cycling in Clear Lake. Once that phase is complete, a chemical treatment can be applied to the lake to bind up the free phosphorus and limit the internal cycling of phosphorus in the lake.

A better understanding the phosphorus inputs would be helpful for several projects. It will help identify and prioritize different activities within the watersheds for remediation and Total Maximum Daily Load (TMDL) enforcement. It is critical to determine how much phosphorus is coming into the lake versus how much is due to internal seasonal release. Previous studies have shown phosphorus release from sediment is the primary source in the summer and early fall (UC Davis, 2010). Additional lake cores and water quality samples are needed to better understand the spatial and temporal variation in water quality. The internal loading is attributed to anaerobic conditions in the lake which causes phosphorus and manganese release. Chemical application can be used to bind up the phosphorus. Chemical treatment of phosphorus is not expected to address the manganese release.

Physical Treatment (Aeration/Ultra-Sonic)

The first part of the project would be to more thoroughly investigate the costs and benefits of the different physical treatment types, as well as solicit quotes from a variety of vendors to more accurately assess how much funding would be required for implementation. At least one technology will be selected to move into a demonstration phase at one utility, prior to implementation at any other utilities. The demonstration project can be accomplished during the first phase of the project.

Two categories of physical treatment will be further evaluated and tested, aeration and ultra-sonic. There are many pre-engineered aeration and reservoir mixing solutions available. The aeration unit prevents the sediment at the bottom of the lake from becoming anaerobic and releasing phosphorus and manganese. This can result in rapid improvement in water quality. Because the lake is so large it is not realistic to treat the entire lake, rather treatment would be located near the drinking water intakes.

Ultra-sonic approaches cyanobacteria control by emitting ultrasonic waves that impact the buoyancy of the algae, preventing them from rising to the surface which limits photosynthesis. Without photosynthesis, algae cells do not proliferate and effectively die off. One available brand is LG Sonic. The LG Sonic equipment, for example, relies on tuning of ultrasonic frequencies based on real time water quality results for reliable cyanobacterial identification. The MPC Buoy is equipped with water quality monitoring, specifically chlorophyll-a, phycocyanin, and dissolved oxygen and data are uploaded continuously to LG Sonic servers, to inform the appropriate treatment frequency. This technology would not lower the phosphorus or manganese concentrations in Clear Lake.

Project and Grant Summary

Table 4 summarizes the recommended projects, along with estimated cost, project development status (conceptual or developed), potential grant funding sources, project partners, and the likelihood of improving source water quality. Since some of the projects have only been conceptually developed the cost has yet to be determined. In instances where there is a planning phase listed, one of the goals of the planning phase will be to determine the cost of implementation. Any projects that are moved into the grant funding application task will have more fully developed costs.

Table 4. Recommended Projects

| Project | Middle Creek Restoration | Storm Water System Improvement Study | The Eight Mile Valley Sediment Reduction and Habitat Enhancement Project, Phase II | Kelsey Creek Restoration and Erosion Control Study | Nutrient Input and Cycling Study and Chemical Treatment | Physical Treatment (Aeration & Ultra-Sonic) |
|--|---|---|--|--|---|---|
| Planning ask | \$2M | TBD* for planning | Complete | ~\$0.2-0.3M | ~\$2M | ~\$0.25-0.5M |
| Implementation ask | \$15M for land acquisition | TBD* for implementation | ~\$0.75-1.5M for implementation | TBD* for implementation | TBD* for chemical treatment | TBD* for implementation |
| Development status | Developed | Conceptual | Developed | Conceptual | Conceptual | Conceptual |
| Grants to pursue | Prop. 1 technical assistance, and or planning and implementation | Prop. 1 technical assistance, and or planning | Prop. 1 implementation | Prop. 1 technical assistance, and or planning | Prop. 1 drinking water program, planning and implementation | Prop. 1 drinking water program, planning and implementation |
| Potential partners | County, USDA Forest Service, USDA Natural Resource Conservation Service, USDI Bureau of Land Management, East and West Lake Resource Conservation District, Army Corps of Engineers | County, City of Lakeport, City of Clear Lake | Scott's Valley Band of Pomo Indians, BLM | Multi-agency involvement | UC Davis, County, Tribes, Utilities | Utilities |
| Ability to improve source water quality | Likely | Requires further study | Moderate | Requires further study | Likely | Likely |

*To Be Determined is abbreviated as TBD

The most likely source of grant funding for any of these projects is Proposition 1 funding. Systems with a population of less than 10,000 that are considered Severely Economically Disadvantaged (SDAC) are eligible for planning and technical assistance and planning grants, as well as project funding where 100% of the principal can be forgiven. There are funding maximums, but systems partnering on projects increases the maximum application amount. For example, planning grants for a single system are capped at \$500,000, however, if three systems apply with a cooperative project the maximum would be \$1,500,000.

Utility Project Ranking

On May 11th, 2017, a meeting was held to present the six recommended projects to the Clear Lake utilities and other stakeholders. Representatives from 11 of the water utilities on Clear Lake were present at the meeting. After the projects were presented, the utilities ranked the projects in order of priority based on two categories – planning and implementation. Projects were ranked on a scale from 1-5 for planning and 1-6 for implementation, with lower numbers indicating higher priority. Each utility was given a weighted rank based on the number of service connections in that area. Table 5 presents the results of the ranking process by project. The projects are listed in order of priority based on the final average weighted ranking.

Table 5 Project Ranking Summary

| Project | Average Weighted Ranking | |
|--|--------------------------|----------------|
| | Planning | Implementation |
| Physical Treatment (Aeration and UltraSonic) | 1.22 | 0.84 |
| Nutrient Input and Cycling Study and Chemical Treatment | 0.98 | 1.22 |
| Storm Water System Improvement Study | 1.64 | 1.27 |
| Eight Mile Valley Sediment Reduction and Habitat Enhancement, Phase II | - | 2.4 |
| Kelsey Creek Restoration and Erosion Control Study | 3.07 | 3 |
| Middle Creek Restoration | 3.15 | 3.2 |

The top two voted projects were “Physical Treatment (Aeration and Ultrasonic)” and “Nutrient Input and Cycling Study and Chemical Treatment,” followed closely by the ‘Storm Water System Improvement Study.’ The utilities were overwhelmingly in favor of pursuing a nutrient input and cycling study, but were not in support of pursuing chemical treatment. Therefore, the nutrient input and cycling study will likely be combined with one of the two other projects depending on feedback received from the Department of Financial Assistance and the Division of Drinking Water.

Lessons Learned

Several Clear Lake reports and plans have been prepared over the years which provide recommended actions to address sediment and associated nutrient loading in the Lake. In general, recommended actions provided in these reports and plans are broad in nature and require that they be matched to specific and actionable projects for grant funding to be pursued. One exception is the Integrated Regional Watershed Management Plan (IRWMP) which provides a list of projects which are at minimum in the concept/scoping stage and, as such, can be evaluated for funding opportunities. All the IRWMP projects for the Clear Lake watershed which addressed the focus area of this project were included for consideration. For the broad recommended actions, we used the conference calls with various Clear Lake agencies and organizations to try to identify specific and actionable projects that address the objectives of the recommendations. While we were successful in identifying some additional projects in this way, in many cases the resource and government managers that we spoke with did not have specific projects identified – either because they had already completed projects that had been planned or because of funding limitations, particularly for planning-related activities. Another reason that was mentioned is that the focus on the Middle Creek Flood Damage Reduction and Ecosystem Restoration Project has meant that other smaller projects that could benefit water quality in Clear Lake have not been pursued.

Below we provide recommendations on a strategy to continue address the source water quality issues in Clear Lake: _____

- Convene a set of meetings of Clear Lake watershed agencies, organizations, and Tribes, including resource managers and the water systems, to identify potential and planned projects to address sediment and associated nutrient loading in Clear Lake, scope of the projects, lead and partner agencies, current planning and funding status, the required planning resources (if needed), and potential funding mechanisms.
- These meetings can also be used to identify the most significant barriers to project implementation and strategize on how to overcome these challenges.
- Maintain a “living” list of these projects and for those that have been successfully funded include the funding mechanism.
- Maintain a list of potential funding mechanisms and their requirements that can be used to identify funding opportunities for planned projects.
- Establish an annual meeting group with these stakeholders to identify, coordinate, and prioritize project activities for the upcoming year, address funding strategies, and update the project list.
- Identified projects should be included in the IRWMP whenever updates are made to that plan.

Next Steps

Corona staff, Lidia Gutierrez, along with Golden State Water Company staff, will meet with the Division of Drinking Water and the Department of Financial Assistance to determine how the selected projects can best be funded. Full project scopes and budgets are currently in development, as well as the content necessary for the funding applications. Because of the economic status of the communities around Clear Lake, and value of these projects to all the users of Clear Lake, it is probable that grant funding can be successfully attained through the Proposition 1 program. At least two projects will move into the grant funding application task.

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