
Proposal to San Mateo County Harbor District for Water Quality Assistance

Program Summary

This proposal by the San Mateo Resource Conservation District (RCD) to the San Mateo County Harbor District (HD) is to continue our partnership and goal of protecting water quality in Pillar Point Harbor (the Harbor).

Since 2002, the Harbor has been included on the statewide 303(d) list of contaminated water bodies due to its high Fecal Indicator Bacteria (FIB) concentrations. FIB contamination continues to cause beach postings that warn the public that the water is contaminated and not suitable for contact. FIB are indicators of the feces of warm-blooded animals and are thought to be associated with pathogens that pose a risk to public health.

When a waterbody is listed under section 303(d) of the Clean Water Act, the federal government requires the responsible state to develop a plan to ameliorate the problem. In California the Regional Water Quality Control Board (RWQCB) is that state organization. The RWQCB is developing a Total Maximum Daily Load (TMDL) to manage FIB in the beaches and contributing waters of Pillar Point Harbor. This poses major implications for the HD and for the Harbor itself. With this proposed agreement, the RCD intends to provide technical assistance in the monitoring and management of water quality issues and aid in the process and developments of the Pillar Point Harbor TMDL.

Background

In 2008, the RCD initiated the Pillar Point Harbor Source Identification Project to characterize bacterial contamination in the harbor. As a follow-up to this study, the RCD entered into an Interagency Agreement with the HD in 2012 to continue monitoring bacteria within certain areas of the harbor. This agreement was expanded upon and amended several times between FY13 and FY16 to continue monitoring the inner harbor, to monitor various pollutants from stormwater outfalls, assist with emergency spill response planning, conduct education and outreach, and provide general water quality technical assistance.

By 2016, it was clear that FIB was the highest pollutant of concern and additional information was needed to understand potential sources and hot spots of bacteria within the watersheds. A new multi-year agreement (FY17-FY19) between HD and the RCD was subsequently put into place to focus on this work as well as continue education/outreach and technical assistance (See

Pillar Point Harbor Water Quality Assistance Program Report FY17-FY19+ for a complete summary of works carried out in the FY17-FY19 cooperative agreement).

Major accomplishments in the FY17-FY19 cooperative agreement include CCTVing the entire stormwater system on HD property at PPH, which allowed the identification of two broken stormwater pipes and subsequent replacement. A large section of HD stormwater system - with a perennial creek (St. Augustine) running through it that is clogged with debris, oils, grease, and sediment - was identified and a new manhole was installed along this stormwater line to accommodate cleaning equipment. Dye testing of the sewer line to and from the HD pump station and along Capistrano Road was also carried out to see if there was cross-contamination into the stormwater system (there was no evidence of this).

FIB in the Harbor: Our Current Understanding

The RCD has been instrumental in developing the current understanding of bacterial pollution in the Harbor. To date, no “smoking gun” has been identified but, equally importantly, some potential sources have been eliminated. The Pillar Point Harbor Source Identification Project (SID) found that inflows to the harbor through creeks and stormwater lines were likely transporting bacteria into the harbor even during dry weather. The SID study found that dogs, cattle and wildlife were potential primary sources of bacteria. This study also identified secondary sources of bacteria such as biofilms and sediments where bacteria may grow and proliferate. More recently, the Source Stressor Identification Study (SSID), found the MS4 (Municipal Separated Stormwater System) not to be a major source of controllable fecal indicator bacteria from humans and dogs.

Future management of FIB in the Harbor will require an understanding of controllable sources versus non-controllable sources, and of primary sources versus secondary sources of FIB. To elaborate, wildlife such as birds and raccoons can be an important source of FIB but this source is not considered controllable. Furthermore, although feces from raccoons and birds will contribute to overall FIB concentrations, wildlife-associated FIB is thought to have a lower pathogenic potential (less likely to make people sick) than FIB associated with human or pet waste. Additionally, the pathogenic potential of secondary sources such as biofilms is also thought to be less than that of human-associated FIB. When the Regional Water Quality Control Board (RWQCB) determines the FIB water quality objectives (maximum allowable bacterial counts) for the TMDL regulation, the HD (and responsible parties within the contributing waters of the Harbor and Venice Beach) will be required to attempt to reduce those counts. The success of the TMDL and the funds allocated by the HD to reduce FIB levels in the Harbor will require an understanding of these variables.

Scope of Work

Whereas previous agreements included significant water quality monitoring to investigate potential sources of pollution to the Harbor, this will not be the main goal of this agreement. Instead, this proposal is primarily focused on making improvements. Some monitoring is proposed but monitoring is not at the forefront.

FIB source investigation in this agreement will be informed by analysis of previously collected data to determine if any hotspots or primary sources of bacterial pollution have been overlooked. Water quality monitoring will be carried out to assess the water quality impacts of improvements (namely pre- and post-assessment of summer infrastructure improvements including the proposed sealing of the source of dry season freshwater flows to Capistrano and the cleaning of the St. Augustine Line). Other water quality monitoring under this agreement will stem from requirements of the TMDL.

The RCD has established itself as an important and well-regarded environmental resource in the community and in the state. Along with the ability to provide technical assistance the RCD is poised to access and integrate local, state and federal funds to leverage the HD's investment to protect water quality in Pillar Point Harbor.

Each proposed task is described below:

Task 1. Program Management

This work includes general program management and administration through tasks such as invoicing, billing, reports and presentations.

Task 2. Investigating Sources of Pollution

This work is split into two main categories, analyzing previously collected data through *Data Integration, Analysis and Research* and collecting new data through *Water Quality Monitoring*.

Data Integration, Analysis and Research

This task involves utilizing existing information and gathering additional information to generate hypotheses about sources of bacteria and other pollutants and to target future monitoring and remediation efforts. A variety of qualitative and quantitative data exists from a myriad of sources that needs to be integrated, synthesized and analyzed in order to gain a better understanding of contamination in the harbor. Work under this task is likely to fall within the following categories:

- Add to large dataset of water quality data for the harbor from RCD, Surfrider, San Mateo County and others, to identify available data and trends

- Analyze large data set collected over the last three years, the analysis of which will be summarized in a report and inform future research questions and monitoring plans.
Specific questions to be answered in analysis:
 - What is the relative contribution of FIB from each freshwater source compared to the others?
 - Are FIB counts in receiving water (e.g. harbor water at Capistrano Beach) higher or lower based on a dilution factor associated with the tide?
 - What is the difference in FIB between the receiving water and the freshwater sources at the outfalls, and what does this tell us about resuspension of sediments?
- Scope the development of a water quality data sharing platform to increase transparency and further encourage participation in citizen science
- Regular observational visits and surveys to harbor watersheds to gauge potential sources
- Continued review of existing studies about the issue and area as well as researching new and diverse strategies for bacterial identification and monitoring (e.g. Pillar Point Harbor Source Identification Project Literature Review and UCD report, sanitary surveys, watershed assessments, case studies from other areas etc.)
- Further characterize watersheds and beaches (notably Capistrano)
- Address data gaps in South Harbor

Water Quality Monitoring

Work under this task involves coordinating sampling events, collecting water samples, driving samples to labs, and managing and analyzing data. This task will be performed to support infrastructure assessments, management change assessments, or to support partners such as Surfrider. Additionally, new research questions may be developed following analysis of the large dataset compiled during the previous interagency agreement. Water Quality Monitoring goals for the next agreement may include but are not limited to:

- Design and potential implementation of TMDL monitoring program – exact implementation timeline unknown.
- Data driven monitoring program going forward
- Carry out pre- and post-FOG (fats, oils, and grease) cleaning assessment downstream of stormwater line (St. Augustine)
- Carry out pre- and post-sealing assessment of Capistrano outfall following sealing of pipe contributing dry season flows.
- Use new Microbial Source Tracking techniques to provide increased accuracy to new water quality data (particularly at Capistrano Outfall)
- Dye test toilets etc. at restaurants within the Harbor
- Carry out annual First Flush and Snapshot Data citizen science projects
- Analyze First Flush data from outfalls on HD property and develop monitoring program to ascertain if these pollutants are coming from HD property. Test for specific pollutants from HD outfalls only.

Samples will be collected using standardized protocols and will be tested for FIB (E. Coli and Enterococcus) and physical parameters such as flow, temperature, salinity, dissolved oxygen etc.

Task 3 Operations: Harbor District Property

This task proposes to use funds allocated via this agreement to make improvements within Harbor District Property only. The primary goal of this task is to further reduce sources of pollution within Harbor District Property. This task may involve works such as:

- Hire contractor to clean and inspect St. Augustine Outfall. The pipe is clogged with FOG and debris, and St. Augustine creek runs through it (new manhole installed)
- Scoping solutions such as retention ponds, rainwater harvesting, fungus remediation, absorbents, filter media, sediment/biofilm management etc.
- Urban Wildlife management (trash cans and storm drain covers)
- Storm drain art near Johnston Pier
- Ensuring trash leachate does not reach stormwater system
- Improve fish cleaning station effluent management
- Low impact development/GI/Fungal remediation opportunities on Harbor District property
- Consider repairs to South Harbor stormwater system as indicated by inspections
- Pet waste station at end of Johnston Pier for liveaboard boats
- Inspecting remaining stormwater lines (CCTV and/or dye) to understand drainage system and assess condition. This may also include sewer lines if needed.
- Cleaning and flushing stormwater lines and securing a dump site for all leftover materials

Task 4: Outreach and Education

Outreach and education initiatives are an important and cost-effective method of targeting pollution before it enters waterways that flow to the Harbor. Through outreach events, targeted mailings, signage, and social media, outreach aims to increase watershed literacy and encourage everyone to do their part to keep our waters clean. The RCD will continue to use the HD's initial investment to leverage involvement and funding from other organizations to increase outreach potential and reduce pollutants such as pet waste from entering waterways. This task may involve works such as:

- Communicating with the public about harbor stormwater and water quality
- Assisting with messaging and transparency (Websites, Social Media, Newsletters etc.)
- Finding and assisting with grants and funding as needed
- Training tenants, mobile businesses and HD staff about stormwater best practices
 - Power washing (sidewalks, jet skis, boats etc.), only rain down drain, grease traps, sewer laterals, garbage cans, wildlife management, dog waste and litter

- Education/outreach – brochures, flyers, signage, storm drain art, clean-ups, school programs, tabling events (Snapshot Day Hub) etc.
- Education/outreach related to the land to sea connection, watersheds, stormwater best management practices, and pet waste to the community and property owners (residents and businesses)
- Hosting events, trainings, workshops, community clean-ups
- Researching funding sources and assisting in applying to grants

Technical Assistance

The RCD will continue to provide technical assistance to HD staff by being readily available to discuss a variety of emergent issues in which the RCD has expertise. Technical assistance is likely to fall within the following categories and include TMDL guidance:

- Helping respond to emergencies like oil spills or sanitary sewer overflows and monitoring water quality as needed
- Work with the regional board and other partners in the development of a ground sourced and site appropriate TMDL. Work with all parties.
- Providing technical assistance as needed for natural resource topics and projects

PPH WQ Assistance FY20-FY23 Budget Draft			
	Qty	Rate	Amount
Executive Director	39	\$174	6,786
Administrative Specialist	26	\$96	2,496
Water Quality Program Manager	1725	\$79	136,275
Water Quality Program Coordinator	980	\$63	61,740
Conservation Project Coordinator	38	\$63	2,394
Lab Fees, Contractors, Supplies	1	\$15,309	15,309
FY20 Project Contractor(s)	1	75,000	75,000
TOTAL COST			300,000

*Proposed timeline includes final quarter of FY20 and complete FYs FY21, FY22, and FY23

About the RCD

The San Mateo RCD is a special district that helps people protect, conserve, and restore natural resources through non-regulatory technical assistance. The RCD uses diverse means to further resource conservation, acting as a focal point for local conservation efforts on public and private lands through partnerships and collaboration with landowners and managers, technical advisors, area jurisdictions, government agencies, and others. Formed in 1939 in partnership with the USDA Natural Resources Conservation Service, San Mateo County formed the first conservation district in the State of California.