

“Safe to Swim” Workgroup 2013 Triennial Audit Report

Background

The California Water Quality Monitoring Council has requested the first Triennial Audit of implementing the Monitoring Council’s comprehensive monitoring program strategy, as required by SB 1070 [Water Code §13181(h)]. Since the workgroups are the main instruments to implement the strategy, the Monitoring Council asked that each workgroup provide their portion of the Triennial Audit, reviewing their workgroup’s progress implementing the Monitoring Council’s strategy. The audit period began with the delivery of the Monitoring Council’s strategy to the Agency secretaries at the end of December 2010.

To guide this audit, the Monitoring Council’s strategy contains a set of six “performance measures.”

1. Strategy, objectives, design
2. Indicators and methods
3. Data management
4. Consistency of assessment endpoints
5. Reporting
6. Program sustainability

This report is response to the Monitoring Council’s request to review the Safe to Swim web portal’s activities and progress since 2010.

Key Points

- The Workgroup is re-evaluating objectives and goals for safe to swim portal. For example, reporting on inland fresh waters is a relatively new priority
- The State Water Board process to develop statewide recreational objectives based on EPA criteria will improve consistency, and will impact the Workgroup and Portal approaches.
- There are no dedicated staff and resources to move the portal forward. There is a need for funding to ensure long-term viability and success for both staff who plan, create and update the portal and to support inland fresh water monitoring programs which are being subject to 20% cuts in the next Fiscal Year.

Background

There have been 15-30 members attending in person/online meetings of the workgroup. Members come from the county health agencies, the State and Regional Water Boards, NGOs, California data center experts and US EPA. There are 380 people receiving updates to Safe to Swim workgroup meetings through signing up at a State Water Board Lyris list.

Three Year Safe to Swim Web Portal Audit Review

Evaluation criteria

1. Strategy, objectives, design
 - a. The purpose of the group is to coordinate the monitoring and assessment of water quality issues affecting swimming safety and also to report that information

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to decision makers and the public through the Safe to Swim Water Quality web portal.

- b. To ensure that the [Safe to Swim "My Water Quality"](#) web portal will best serve California, the workgroup addresses two primary questions:
 - i. What do agency decision makers and the public really want to know about swimming safety on a local, regional and statewide basis?
 - ii. How can we best inform decision making?
- c. To assist the “Safe to Swim” Workgroup the “Data Management” Workgroup identified several specific questions which will help address how the primary two questions are answered
 - i. What are the problems in data management?
 - ii. What data sets should be a priority for access?
 - iii. Where are the data gaps?
 - iv. What data restrictions currently exist?
- d. In addition, the workgroup has produced a priority list of information and tasks which will help address public desires. This priority list identified 13 items of interest amongst 3 separate “Safe to Swim” Categories: “What are the current threats to my beach water quality?”, “Is it safe to swim at fresh water beaches?”, “What water quality data is available?” To date, only two of the priorities have been completed and those were by outside groups which created phone Aps to access beach data and created the ability for locals to upload beach conditions to the Aps websites. These Aps have not yet been incorporated into the Safe to Swim Portal architecture.

2. Evaluation

- a. Medium. The portal has created web pages to answer many of the questions, but there are some gaps and discrepancies. Examples:
 - i. Question of can I stream in lakes and streams? The portal is not currently addressing freshwater lakes and streams.
 - ii. Regional Board inland recreational data doesn't show up on the portal, plans are underway to address this.
 - iii. Some water quality monitoring programs may not be question driven.
 - iv. Workgroup is still evaluating whether the portal questions are addressing underlying issues of interest?
- b. Current Data available only based on Ocean water quality monitoring
- c. Highest current priority is to add fresh water bacteria data to portal.

3. Indicators and methods

- a. Medium. We have indicators (Bacterial standards measure performance), but there is an issue of statewide consistency. Regional Boards have varying indicators and some standards are water body based. This is some movement towards consistent EPA standards which will help with the freshwater standards in particular.

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- b. Currently there are three different bacterial indicators (Enterococcus, Total and Fecal Coliform) referenced in the portal and these are currently in swim guide and beach watch guide, but there is an issue of statewide consistency.
 - c. Some of the regional boards have different bacterial indicators. There is some commonality, but there is a movement to move to the indicators that the state water board is using, which could be discussed (see e below).
 - d. Inland waters weren't initially a priority, but that we have reevaluated and are moving inland, and need to make sure we are consistent in our methods.
 - e. The State Water Resources Control Board (State Water Board) is proposing statewide water quality bacterial objectives and a control program to protect recreational users from the effects of pathogens in California water bodies. The program would be adopted as amendments to both the Inland Surface Water, Enclosed Bays and Estuaries Plan and the Ocean Plan. Significant proposed program elements include: new water quality objectives for both fresh and marine waters based on United States Environmental Protection Agency (U.S. EPA) Recreational Water Quality Criteria released in November 2012 (*E.coli* for fresh water and Enterococcus for marine). The project would also attempt to create a statewide reference beach/natural source exclusion process and address a consistent high flow exemption for certain stormwater channels.
4. Data management
- a. Low-medium. Issues past few years with Beach Watch (connectivity with Beach Watch and CEDEN has been poor). Contract in place to address Beach Watch data quality issues.
 - b. Difficulty of integrating data from outside organizations such as the Council for Watershed Health. Problems with this process and efforts are being made to coordinate monitoring among regional coastal agencies on a local level, this is not being done on a statewide basis.
 - c. Data Management Issues
 - i. Uneven data quality within BeachWatch.
 - ii. The current system was developed collaboratively between SWRCB, the Southern California Beach Water Quality Work Group, and SCCWRP. Structures used in the data system are the result of the cooperative agreements made in the past with a goal of retaining compatibility with the legacy database system originally developed by the SWRCB. The data structures and implementation designed to maintain compatibility with the legacy system present several challenges in light of developments that occurred in the intervening years. For example, the structure does not provide for efficient flow of data to the central database and subsequently to the EPA WQX and PRAWN systems. As originally implemented the data structures are awkward to use and can be easily misunderstood by data users unfamiliar with the database.
 - iii. The second problem is the result of normalizing the data structures to establish a relationship between an advisory and the indicator(s) that triggered the advisory. Structurally this is implemented as a one-to-many relationship between the advisory table and the advisory indicators table.

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Each county is required to report their data to the central database by the 15th of each month. An existing advisory or closure that bridges the 15th of any given month without an associated open date opened is reported with each data submission. This one-to-many relationship generates duplicate records for that advisory in proportion to the number of times it is submitted by the county without resolution (a reported opening date). An individual record is created for each advisory for each indicator. So, if all five indicators triggered the advisory five records would be generated in the central database. To resolve these issues, the approach taken for many years has been to manually clean-up data prior to delivery of the final database to the SWRCB and EPA.

- iv. The laboratory data is less problematic, but not fully clean. As part of the historical analysis requirements, E. Coli was labeled as Fecal Coliforms to expedite the AB411 analysis. This was the result of the cooperative agreement and is understood by all of the health officers in the state. In practice, this only affects the data from two of the 16 counties reporting to Beachwatch. These data are easily distinguishable by the analysis method associated with the bacteria name, but for clarity, the labeling is cleaned up in the central database before the data is released.
 - v. The State Board is looking at a solution that would be for data collected by the counties to be submitted immediately, along with any management actions regarding beach advisory, closure or opening. Direct data submission to the CEDEN Regional Data Center (RDC) would eliminate several data processing steps to facilitate immediate transfer and availability via CEDEN and data marts serving the Monitoring Council’s “Safe to Swim” Portal and the participating counties. Annual submissions of results to EPA would be handled through existing WQX transfer from CEDEN. Submission of notifications to the EPA PRAWN system could either be added to CEDEN or handled by the RDC following the conclusion of the annual cycle
 - vi. Bringing in indicator data from various orgs
 - 1. Are these inputted effectively? – Fresh water is not yet available on the portal. We are looking to the Regional Board data already collected and transmitted to SWAMP to be our next set of data added to the web portal.
 - vii. Are there problems in this process – Yes, part identification, part creating organizational training for using CEDEN.
5. Consistency of assessment endpoints
- a. Low-medium. Freshwater standards are being applied to marine waters in SF in Swim Guide. This is also being addressed by State Water Board Bacteria Objectives project noted above in Item 3.
 - b. Working on reviewing and presenting Regional Board Basin Plan and water body standards. This is a major project to determine location based fresh water standards. There is a major GIS project through Cal State Northridge University to map all these individual water body standards.

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6. Reporting- how well we are getting the assessment out to people in a real time manner?

a. Medium.

- i. Delay in receiving lab results. Conventional procedures have an embedded 2-day delay period. Problems getting data from labs into data systems. Local county beach programs are required to submit their data into BeachWatch only by the 15th of the following month it is collected.
- ii. BeachWatch plans to improve timeliness and data quality via an online database replacement
- iii. How well data is freshwater getting into CEDEN and then to the portals? Is it available in a dynamic manner so that people can get information? No freshwater is available at all. Again, beach data when available is often at least a month old before being made available.
- iv. Most useful data come from the Heal the Bay Beach Report Card (BRC) and SwimGuide in providing access to useful interpretation of ocean beach data.
 1. The BRC is an online public health tool based on routine beach water monitoring conducted by local health agencies and dischargers. The BRC assigns a weekly letter grade (A-F) based on the risk of adverse health effects to the beachgoers. Grades are based on fecal indicator bacteria concentrations which indicate pollution from numerous sources, including fecal waste. The better the grade a beach receives, the lower the risk of illness to ocean users. The BRC should be used like the SPF ratings in sunblock—beachgoers should determine what they are comfortable with in terms of relative risk, and then make the necessary decisions to protect their health.
 2. Weekly grades are calculated on a point-based system which takes into consideration the magnitude and frequency of bacteria exceedances (based on state standards) from the most recent 30 days. Grades are updated and available online every Friday at www.beachreportcard.org
- v. Safe to Swim website provides links to coastal county websites and this provides the most timely reporting of beach conditions possible, on the day the lab results are complete.

7. Program sustainability

a. Medium.

- i. Workgroup has suffered from transitional membership over the past few years, but there is good interest currently.
- ii. Coastal beach monitoring is more sustainable because of long-term funding through State Water Board Waste Discharge Permit fee program and water quality monitoring grant agreements with local county programs. Funding is \$1.8 million per year for Beach Safety Program.
- iii. Inland monitoring (SWAMP and NGO successes)

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- b. Web portal survives on uncompensated support from the State Water Board's GIS and web units (in addition to OIMA and DWQ Ocean Unit, State Board Citizen monitoring coordinator). Continued support without funding cannot be guaranteed.
- c. Regional Board inland freshwater recreational monitoring.
 - i. All nine regions were informed 11/19 that they will suffer approximately 20% cuts to their SWAMP regional monitoring budgets for FY13-14. This will directly impact each Region's freshwater bacteria monitoring program (which is funded mostly by SWAMP) and therefore should not be considered "sustainable."
 - ii. Central Valley Regional Board – Freshwater bacterial monitoring Program
 - 1. Scope: They have a Safe to Swim monitoring style effort that targets swimming holes on river and streams during the summer swimming season (typically they monitor mid-May through September). This past summer they also added some recreational lake sites. The primary sites are sampled twice per month, and they have additional sites sampled by citizen monitoring groups on a monthly basis. Most of the sites are in the Sierra foothills, although they do have some sites in the valley, particularly along the lower American River. They use E. coli as the indicator and for the last two years they've had a contract with UC Davis for pathogen analysis at the problem sites with high results. Because they do the E. coli analyses in-house, they include it in all their studies and have accumulated a lot of results over the years, even if the primary purpose of the study wasn't safe to swim.
 - 2. Funding status: The management has agreed to continue the Safe to Swim efforts through next summer. The analysis costs are low, so it's mainly their ability to maintain the staffing for the field runs, lab work, data management, coordination with the partners. Being able to show how the data is being used on a statewide portal would really help make their case to continue committing so many resources to this effort.
 - 3. Issues: Their study design was developed using the old USEPA single sample maximum for E. coli. They are anxious to see how the Water Boards decide to implement the new USEPA guidelines as they may need to revise the sampling design (more frequent sampling at fewer sites). This work group could potentially be a great resource to discuss how ambient monitoring can be used on the portal.
 - iii. North Coast Regional Water Quality Control Board
 - 1. Region 1's Freshwater Beaches Bacteria Monitoring Program.
 - 2. The Regional SWAMP program funded the development and operation of an ELAP certified Bacteria Lab at the Regional Board office for the past 3 years.

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3. The focus of the monitoring effort was two-fold, development of a Pathogen TMDL for the Russian River and monitoring for public health considerations at several heavily recreated freshwater beaches in the Russian River.
 4. They expanded the sampling effort to include several freshwater beaches in the South Fork Eel River watershed during the past 2 years.
 5. All of the lab activities occurred here at the Regional Board office utilizing the IDEXX system for Coliforms and Enterococcus.
 6. RB 1 management is currently considering persuading the County Health Department to conduct this effort into the future. If management is unsuccessful, They will most assuredly continue our collection and analysis efforts.
- iv. Lahontan Regional Water Quality Control Board
1. The SWAMP program at Region 6 coordinates the efforts of multiple programs (i.e., SWAMP, NPS, Planning, TMDLs, etc.) to conduct monitoring of fecal indicator bacteria (FIB) at fresh water streams and lakes throughout the Region. Where FIB screening indicates potential problems, the Region follows up with more frequent and multi-indicator diagnostic sampling to characterize bacteria loads and to identify sources. (A summary report for 2011 can be viewed at the Region's SWAMP webpage.)
 2. One of the Lahontan Regional Board's highest Triennial Review priorities is to update & modernize its bacteria objectives. The Region also has many water bodies that are 303(d)-listed for bacteria & pathogens, for which it needs to know the source(s) of bacteria before effective remedial strategies can be determined.
 3. The Region's monitoring questions are:
 - a. Do targeted water bodies meet water quality objectives for bacteria? and
 - b. Where water bodies are known or suspected to be impaired by bacteria and pathogens, what are the magnitude & extent of the impairments, and what are the sources?
 4. The Region relies on staff from multiple programs to collect samples which are then processed at its in-house laboratory, and it utilizes contract funding from SWAMP, TMDLs, and "discretionary" contract pools to conduct microbial source tracking (MST) studies at impaired water bodies.
 5. All of the Region's FIB data are entered into CEDEN, and could therefore be automatically captured and displayed at the Council's Safe-to-Swim web portal.
- v. Santa Ana Regional Water Quality Control Board freshwater bacteria monitoring programs:

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1. The Basin Plan Amendment R8-2012-0001 “Recreation Standards for Inland Fresh Surface Waters in the Santa Ana Region” requires a monitoring plan – monitoring has not started-
 - a. As part of the Stormwater Quality Standards Task Force efforts that led to the adoption of the E. coli objectives for inland fresh surface waters, the three principal funding members, i.e., the Orange, Riverside and San Bernardino county stormwater agencies, committed to participate in the development and implementation of a comprehensive, watershed-wide bacteria quality monitoring program.
 - b. To begin the development of a comprehensive bacteria quality monitoring program, the Stormwater Quality Standards Task Force considered the waterbodies that should be considered high priority for monitoring and identified a tentative list.
 - c. This program is in the nascent stages, so there is no information on who will fund what. The Regional Board will work with the dischargers to develop a monitoring plan so that monitoring required in the stormwater permits and MSAR TMDL could be incorporated into this monitoring plan (to the extent possible). The RB work with them in setting up the data so it can be uploaded into CEDEN. The RB will also inform them of the Safe to Swim Portal and try to get them to participate in the workgroup (if they are not already).
 2. Stormwater permits for Orange, San Bernardino and Riverside counties require monitoring (not sure where the data are submitted except in the annual report)
 3. Middle Santa Ana River TMDL requires bacteria monitoring at several locations. The data are sent to the Santa Ana Watershed Project Authority but we are trying to get them to upload to CEDEN
- vi. Citizen monitoring funding more readily available in Southern California than in Northern California. Funding and leadership (staff) is an issue.

Current Workgroup Goals

- Integrate Safe to Swim website with existing smartphone applications and websites (Beach Report Card and The Swim Guide) and reduce redundancies.
- Evaluate the informational survey conducted during 2013 of monitoring entities to determine “what agency decision makers want to know about swimming safety on a local, regional and statewide basis and how to best inform decision making.”
- Develop priority list for addressing problems in data management and restrictions; review Beach Watch/CEDEN database for gaps, barriers to use, etc.

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- Expand the coverage of Safe to Swim by adding inland waters to Safe to Swim Portal website.
- Develop recommendations for long-term agency involvement and financial support of Safe to Swim portal and workgroup.

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