

Blue Ribbon Committee for the Rehabilitation of Clear Lake

Technical Subcommittee

1:00 pm-4:00pm¹

April 19, 2019

Meeting Summary

Attendees:

Attendees are listed In Attachment A.

Action Items:

1. Subcommittee members will review the memo on public water system intakes and provide comments to Amy Little (amy.little@waterboards.ca.gov) in advance of the next meeting.
2. CSUS staff will provide a summary of the meeting to all Subcommittee members by Friday, April 26. Subcommittee members provide review/comments by Friday, May 3.
3. CSUS staff will provide a list of all identified information gaps to Subcommittee members by Friday, April 26. Subcommittee members provide review/additions by Friday, May 3.
4. CSUS will follow up with Central Valley Water Board staff on applicability of 13267 to all growers in Lake County, or growers within Clear Lake Basin only.
5. Ms. LaBay will follow up with BLM on best management practice implementation since the recent wildfires.
6. CSUS will circulate 13267 orders to all Subcommittee members for reference.
7. CSUS will provide the policy for listing impaired water bodies as part of the 303(d) Clean Water Act process. The current policy is available online at https://www.waterboards.ca.gov/water_issues/programs/tmdl/docs/ffed_093004.pdf.
8. CSUS will circulate the TMDL TSO to all Subcommittee members for reference. NOTE: County TSO under development; will be released when complete.
9. Ms. LaBay will provide information on the use of autonomous technologies to map ecological drivers in Clear Lake to the Subcommittee.
10. Angela DePalma-Dow, Lake County Water Resources Department, will send the Lake County post-fire water quality monitoring handout to CSUS for posting.

Welcome and Introductions

Sam Magill (Facilitator) from Sacramento State's Consensus and Collaboration Program (CCP) opened the meeting and led introductions for the first meeting of the Blue Ribbon Committee for the

¹ Meeting scheduled 1:00-4:00, but ran until 4:30

Rehabilitation of Clear Lake (Committee), Technical Subcommittee (Subcommittee). A full list of participants is included in Attachment A. An audio recording of the meeting is available online [here](#).

Review Purpose of Blue Ribbon Committee, Technical Subcommittee, and Associated 2019 Timelines

Mr. Magil reviewed the [agenda](#) and the broader purpose of the Blue Ribbon Committee (BRC) and its responsibility to provide recommendations to the Executive Office by January 1, 2020. He then explained the Subcommittee's purpose:

- Develop a shared understanding of existing regulatory efforts
- Identify information gaps in existing Clear Lake water quality scientific studies
- Develop a list of options/recommendations for consideration by the full Committee
- Refine the menu of recommendations based on Committee input
- NOTE: The Subcommittee is not intended to be a consensus-based body. Instead, it is intended to develop a menu of recommendations based on the range of expertise represented, including tribal, local government, federal land management, and agriculture.

Mr. Magil acknowledged the contributions made by BRC members Karola Kennedy, Jim Steele and Sarah Ryan in spearheading the development of the technical goals for the Subcommittee. He recognized that all points of expertise may not be currently represented and highlighted the Subcommittee's flexibility to incorporate a variety of expert opinions. This could lead to the fluctuation of membership over time to meet the specific needs of the overall Committee effort. Subcommittee meetings are expected on a monthly basis with interim conversations as needed and can be conducted over webinar or in conference calls.

Mr. Magil opened the floor for Blue Ribbon Committee members to briefly provide background on the creation of the BRC Technical Subcommittee.

Sarah Ryan, Big Valley Band of Pomo Indians, expressed her excitement for the increased collaboration between multiple jurisdictions in their sharing of information and evaluations to address impairments facing Clear Lake. Ms. Ryan touched on the evaluations Big Valley Band of Pomo Indians conducts on cyanobacteria toxins in Clear Lake and underscored the importance of focusing on the nutrient [Total Maximum Daily Loads](#) (TMDL). She expressed the present need for more data from responsible parties and noted organized monitoring activities could help with obtaining additional data for load allocations.

Karola Kennedy, Koi Nation of Northern California expressed her excitement to begin the Technical Subcommittee. She mentioned the past disconnect between the County, Elem Indian Colony, agriculture and water purveyors and stressed the opportunity to help each other to create solutions for Clear Lake. Ms. Kennedy noted the lack of knowledge in the region regarding the Sulphur Bank mercury mine site in the county and believes addressing the mine will contribute to improved water quality of Clear Lake.

Jim Steele, Robinson Rancheria, emphasized the value recommendations from the Blue Ribbon Committee have in influencing future action at the State level. Clear Lake is one of the most unique lakes in the world and is known by most fresh water researchers.

After introductory remarks, the following discussion was recorded:

- Sarah Ryan, Big Valley Band of Pomo Indians asked whether there is a limitation on how many BRC members can be at Subcommittee meetings. Mr. Magil responded BRC is subject to open meeting requirements. No more than 7 BRC members should be present to comply with the Bagley-Keene Act.
- Frank Aebly, United States Forest Service asked if there is a central place where members can access all relevant scientific information? Mr. Magil noted inventories are being compiled among BRC members. Mr. Magil noted additional resources to be discussed later in the meeting, and specifically noted how Dr. Geoff Schladow, University of California, Davis and his team are working to compile resources.
- Ms. Ryan will review Appendix A from the [Big Valley Environmental Protection Agency Water Quality Dashboard User Guide](#) that delineates available services and is an inventory of available data sources. CCP has also offered to store any information deemed appropriate by the Subcommittee.
- Greg Giutsi, University of California Agriculture and Natural Resources mentioned the Clear Lakes Aquatic Website (CLAW) has peer reviewed literature that gives a sufficient overview of the history, data and the type of work done on Clear Lake.
- Karola Kennedy added that the public water systems generated a recent document that compiles a summary on Clear Lake source water quality projects. Amy Little indicated that there is an overview [document](#) and [Excel matrix](#) available.
- Broc Zoller, The Pear Doctor, Inc added how the Council for Agricultural Science and Technology (CAST) recently put out an issue paper. CAST is a nonprofit organization composed of scientific societies and many individual, student, company and associate society members. CAST's Board is composed of representatives of the scientific societies, commercial companies and nonprofit or trade organizations. CAST's vision is decision making related to agriculture and natural resources based on credible information developed through science, and consensus building. The primary work of CAST is the publication of task force issue papers discussing various agricultural topics. Mr. Zoller distributed to members a copy of the April 19th CAST issue paper titled "Reducing the Impacts of Agricultural Nutrients on Water Quality across a Changing Landscape".
- Angela DePalma, County of Lake ensured that the Lake County knows a database is needed and is working on creating one. There are no links to CLAW, nor is there a water quality tab available yet. The County is working to ensure data is made available.
- Mr. Giutsi asked whether the County has the Revised Clean Lakes 2010 report online. David Cowan, Lake County Water Resources Department informed the County has hard copies.

Clear Lake Nutrient TMDL and Target Levels

Jennifer LaBay, Nonpoint Source Manager Central Valley Water Board (CVRWQCB), delivered a presentation on Clear Lake Nutrient TMDL and the Target Levels. Ms. LaBay outlined the main topics of the presentation including the background of the TMDL, the status of load allocations, regulatory and additional efforts underway, the current challenges and next steps. The full presentation can be found [here](#).

Ms. LaBay briefed the Subcommittee and the public on the July 2018 [Clear Lake Nutrient TMDL Program Technical Memorandum](#) (Technical Memorandum) and the follow-up work done by the Central Valley Regional Water Quality Control Board (CVRWQCB). Since the memo's release, the CVRWQCB held a workshop in Lakeport with presentations from the Farm Bureau, Elem Indian Colony, Lake County and the Middle Creek Restoration Coalition. At the workshop, conversations touched on funding for woodland restoration, stormwater and the importance of public outreach for the TMDL effort. Since the workshop, CVRWQCB coordinated with responsible parties to identify methods to verify whether load allocations are being met.

Ms. LaBay discussed other regulatory efforts such as the Statewide Permit for Small Municipal Storm Water Systems (Phase II MS4), the Irrigated Lands Regulatory Program (ILRP) and the Development of Federal Land NPS Permits. Ms. LaBay reviewed the additional efforts in the Clear Lake Watershed such as the Cyanobacteria Task Force created by Big Valley Rancheria of Pomo Indians and the Elem Indian Colony of Pomo, the creation of the Multi-Agency Brochure, the California Cyanobacteria and Harmful Algal Bloom Network (CCHAB) and a project focusing on environmental drivers of cyanobacteria blooms and cyanotoxins in Clear Lake, which is to hopefully begin by the end of 2019.

Ms. LaBay reviewed persistent challenges CVRWQCB faces with the existing regulatory authority, as well as determining the current phosphorus loading, pinpointing if loading reductions were met and determining the level of significance of internal loading.

CVRWQCB's next steps include continuing to solicit data and information to evaluate TMDL allocations, identifying data gaps and next steps for the TMDL, continuing existing partnerships and watershed efforts and identifying research, monitoring, and funding opportunities to address clear lake water quality issues.

After the presentation, Subcommittee members made the following questions and comments:

- Mr. Giusti asked whether the 13267 order included all irrigated agriculture in Lake County or if it's limited to agriculture within the Clear Lake watershed. Ms. LaBay offered to follow up on the question. NOTE: since the meeting, CVRWQCB staff confirmed the order applies to growers within the Clear Lake watershed only.
- Mr. Giusti added CVRWQCB may be getting information from those who may not be discharging within Clear Lake Basin. Ms. LaBay responded CVRWQCB focuses on growers discharging to the Clear Lake watershed.
- Mr. Zoller asked how CVRWQCB measures load reduction given that creek flows change with storms? Ms. LaBay mentioned measuring load reduction with changing flows was a challenge with irrigated agriculture and the 13267 order. There are challenges with TMDL and determining whether the goals have been met. CVRWQCB focuses on the effectiveness of practices to review erosion of phosphorous loading into Clear Lake. CVRWQCB is working to see what practices were implemented since TMDL and recognizes certain practices have changed.
- Mr. Zoller stated the issue paper mentions the amount that agriculture is responsible for phosphorus discharges in other lakes such as Lake Erie, where local agricultural crops such as soybeans and corn are fertilized with phosphorus. However, in Lake County, the crops grown are

not fertilized with phosphorus. The issue is with erosion into the lake, which is influenced by storms. He asked how erosion caused by storms can be measured in a meaningful way? NOTE: additional discussion regarding erosion and phosphorus loading will be conducted at future Subcommittee meetings.

- Mr. Giusti commented that the other challenge is that agriculture is part of the larger landscape with dirt loads across two to three other properties. If water samples are collected at certain points, sediment discharge from roads, adjacent properties, and other sources can't be ignored.
- Ms. DePalma discussed how the County is working with the CVRWQCB to identify what land parcels are contributing and how to best monitor for downstream parcels. Ms. Ryan added that additional agricultural monitoring stations may be needed (there are currently only two in the Clear Lake Basin). Ms. DePalma stated continued monitoring at Scotts Creek and lower than Scotts Creek will make it easier to see what else is coming from the Lake County land versus Bureau of Land Management (BLM) land. It is important to keep the station at Upper Scotts Creek Station. Mr. Magill noted UC Davis will provide an overview of its monitoring efforts and new gauges following this presentation.
- Ms. LaBay noted CVRWQCB has discussed landscape changes since the recent fires with BLM. Ms. Ryan asked how public land managers (notably USFS and BLM) under the TMDL have provided data, including miles of road, slope information, and percentage of lands with installed management practices. USFS has made significant progress; BLM was not present. Ms. LaBay will follow up with BLM (**see Action Item #5**).
- Ms. LaBay will provide 13267 information to CSUS for positing/circulation as soon as possible (**See Action Item #6**).
- Mr. Alpers highlighted recent sampling work conducted by the US Geological Survey (USGS) on Cow Mountain. Access issues to one specific stream in the area have limited availability of data this year; Ms. DePalma offered to work with USGS to get access to the properties in question. NOTE: Ms. DePalma-Dow provided contact information for the property owners in question to Mr. Steele and Mr. Alpers following the meeting.
- Ms. Ryan asked for Ms. LaBay to explain the Time Schedule Order (TSO). Ms. LaBay explained the TSO is an enforcement order under National Pollutant Discharge Elimination System (NPDES) requirements laying out a timeline for compliance. It is connected to the MS4 permit and specifies the process and activities taken at Lake County and actions other permittees will take to meet TMDL load allocation requirements. Ms. LaBay will forward information on TSOs as available (**see Action Item #8**).
- Mr. Zoller noted large rainfall events can make some implemented best practices ineffective. Does CVRWQCB have partnerships with Lake County to restore wetlands? Ms. LaBay commented that CVRWQCB does not have partnerships with the land trust and cannot dictate methods of compliance under state law. Instead, CVRWQCB works with responsible entities to provide input and recommendations. CVRWQCB is reliant on regulatory authority and works to provide support through providing information on funding opportunities and in supporting the Middle Creek Restoration Project. Responsible parties could investigate partnerships. This could be pursued through the broader Committee effort.
- Mr. Giusti noted phosphorus *and* iron both play an important role in cyanobacteria propagation; focusing only on phosphorus could be limiting. Ms. LaBay offered to follow up with a write up of

robotics associated with environmental driver studies in relation to autonomous technology such as the use of wire walkers and eco-mappers (**see Action Item #9**).

Lake County Clean Water Program Quality Activities TMDL

Ms. DePalma presented on the Lake County Clean Water Program Water Quality Activities TMDL and acknowledged a list of sponsors listed at the beginning of her presentation. She outlined the presentation topics such as the introduction to the Clean Water Program, the Water Quality Activities in Lake County, and the TMDL activities from the Lake County Perspective. The presentation can be found online [here](#).

Clean Water Program

Ms. Depalma-Dow provided an overview of the Lake County Clear Water Program (LCCWP). The LCCWP provides an implementation mechanism to manage stormwater and meet MS4 requirements. The LCCWP is a collaborative effort between the City of Clearlake, the City of Lakeport and the County of Lake. More information on the LCCWP is available online [here](#).

She explained current water quality activities include post-fire stream storm monitoring, lake monitoring with DWR, aquatic plant treatments and data, shoreline development and construction activities and quagga zebra mussel monitoring with some water quality from the California Department of Fish and Wildlife. Planned water quality activities include MS4 storm water monitoring, TMDL monitoring, expanding surface stream monitoring for quality and quantity to address existing data gaps, and data management to ensure all new and old data is available on CEDEN and that a portal to be accessible from the Lake County Water Resources Department (WRD) webpage.

Ms. DePalma then touched on a brief overview of the TMDL and highlighted Lake County's Role in TMDL. The County has worked to reduce phosphorus sediment inputs from County MS4 areas and non-MS4 areas, where Clearlake MS4 is discharging into Clear Lake, urban locations, from new construction, roads, direct lake input and outflows, street sweeping and cleaning and other storm water infrastructure. The next steps forward for CWP TMDL include quantifying structural control through developing methods to track best management practices, quantify source control through effective outreach, and program expansion.

During the presentation, the following discussion was recorded:

- Ms. Ryan asked what coordination is happening with tribes. Ms. Depalma-Dow responded coordination will be like that of the work groups and will happen once the CWP is finalized with the Board of Supervisors. The task is ensuring the agreement and TSO are in order. Expected meeting dates for Management Council Documents are available on the County website under Programs and Projects. Agendas and meeting minutes from each meeting are also available.
- Ms. DePalma will provide Mr. Magil a link to the Lake County Water Resources Department post-fire water quality monitoring handout (**see Action Item #10**).

- Mr. Giusti asked if the County does sec-disk readings and whether light is one of the drivers for cyanobacteria production. Ms. DePalma explained the County does sec-disk readings every month with the California Department of Water Resources (DWR). Light is a driver.
- Mr. Giusti commented on the portion of Ms. DePalma's presentation concerning wake boats and the erosion of shorelines. He noted the County should consider that tourists coming to Clear Lake are more likely to be fishers than wake board/water skiers.
- Ms. Ryan noted that land use changes can impact nutrient loading (i.e., construction will result in more sediment than passive grassland).
- Mr. Cowan noted County funds for monitoring are limited. The County would have to choose between being a partner in the USGS gauge station or sediment sampling. This is an administrative challenge the County has for meeting its TMDL requirements. Ms. Ryan added that Mr. Cowan's statement is exactly why the Lake County Advisory Committee stressed that funding was crucial for work related to water resources. Mr. Magil suggested the possibility of the BRC as one avenue for funding.

Update on University of California Davis Tahoe Environmental Research Center

Mr. Magil introduced Dr. Geoff Schladow, director of UC Davis Tahoe Environmental Research Center (TERC) and noted that UCD's work is occurring in parallel to the Committee. TERC is currently undertaking the most extensive water quality investigation of Clear Lake to date. This includes both an extensive monitoring effort and the development of modeling tools to address water quality challenges and emerging/ongoing threats from wildfire and climate change

Dr. Schladow provided an overview of monitoring efforts, including stationary buoys, continuous gauge stations, and weather stations throughout the basin to collect critical ecological information. He emphasized the TERC research team's work is directed towards addressing the fundamental question of what drives eutrophication and harmful cyanobacteria blooms. Their goal is to quantify external and internal loading of nutrients such as what is coming from the sediments under both oxic and anoxic conditions. He closed by noting TERC is focused specifically on cyanobacteria issues, but also contributing factors to the overall ecological wellbeing of Clear Lake.

Subcommittee members made the following questions and comments:

- Mr. Steele suggested TERC should consider organic content of the sediment and the temperature of the water as separate standalone components. Dr. Schladow noted Mr. Steele's points were valid and mentioned TERC is looking at organic contents of sediments. Mr. Steele added TERC should collect samples at the mouth of Rodman Slough. Ms. Little echoed Mr. Steele's thoughts on organics and expressed that from a drinking water perspective she is interested in linking modeling with best management practices, and how that might impact public water supplies.
- Mr. Alpers commented noted USGS would like to coordinate with TERC. USGS obtained some funding from USEPA related to the Sulphur Bank mercury mine Superfund site. USGS plans to do one round of water quality surveying at UCD's buoys in the second week of July. This data will be used to map chlorophyll and methylmercury distribution. Dr. Schladow mentioned TERC and

USGS met and are working to establish regular monthly meetings to collaborate and leverage sources.

- Mr. Alpers reminded Subcommittee members the scope of the Committee is to address water quality issues generally, and while nutrients have been the focus there exists a TMDL for mercury as well.

Big Valley Rancheria Water Quality Dashboard User Guide

Ms. Ryan introduced an inventory of all publicly available Clear Lake water quality data from 1951 to 2015. DWR currently houses the largest collection of data in the CEDN database. CEDN's data eventually goes to the federal Water Quality Exchange (WQX).

Ms. Ryan added that additional information missing from the Appendix A document is surface water purveyor data. She expressed Big Valley Rancheria's interest in seeing water purveyor data being a part of the big picture with water quality data. She encouraged Subcommittee members to submit any data they would like to contribute. Big Valley Rancheria can make the data available to download. Ms. DePalma-Dow added the National Water Quality Portal is also a useful source.

2019 Technical Subcommittee Principles and Priorities

Mr. Magil reviewed the 2019 Technical Subcommittee Principles and Priorities developed by Committee member leads for the Subcommittee, and asked if there were any additions to the current list:

- Cyanobacteria Blooms
- Lake/Watershed Management and Monitoring
- TMDL Goals
- Establishing Basin/Lake Nutrient Loss and Lockup Rates vs. Inputs.

Mr. Steele remarked that all in attendance seemed to agree to begin with the regulation requirements. Science changed since the TMDL; the lake needs to be understood in the context of today's needs and goals. Mr. Steele stressed the importance of recognizing the effects cyanobacteria blooms had on the economy and the value of maintaining the watershed. He underscored the value of understanding drivers of Clear Lake's problems, internal loading, achieving a feedback loop and strengthening watershed management. Finally, he emphasized the importance of educating the community to obtain buy-in by ensuring the public can relate to the issues. He believes Clear Lake is seen as a burden but has value for the State.

Ms. Kennedy agreed that starting with nutrients as well as nutrient TMDL for watershed management is critical. She added that challenges associated with mercury are also important and hoped the Committee will participate in Sulphur Bank Mercury Mine Superfund remediation. She closed by noting regulations only exist where environmental improvements are needed.

Ms. Ryan echoed Ms. Kennedy's comment on regulation and added that the TMDL exists because the beneficial uses of Clear Lake have impairments, including impaired cultural/tribal values. The protection of beneficial uses is important for Big Valley. In Aug 2017, when the CVRWQB held its TMDL workshop, many stakeholders commented on significant impacts to water quality for consumption and recreational use. These situations led to the formation of the Committee. Starting with a focus on nutrients, she suggested the Subcommittee should explore the link between best management practice implementation and water quality improvement.

Mr. Magill asked the Subcommittee if starting with nutrients was appropriate, noting that mercury is also an important pollutant. The following conversation was recorded:

- Mr. Giusti replied and noted nutrients and sediments are a low hanging fruit for the Subcommittee.
- Mr. Giusti added research could be done on the role of the Cash Creek dam regarding natural flushing of Clear Lake. Mr. Steele noted work completed by Tom Suchanek from UC Davis investigated this connection and could be a presentation topic at future meetings. Dr. Schladow added a calibrated 3D model could help assess the physical and biogeochemical impacts of the dam.
- Mr. Zoller underscored the importance of constant monitoring to support recommendations on nutrients or any other pollutant.
- Mr. Cowan suggested creating a defined list of questions for consideration at each Technical Subcommittee meeting to help guide discussions.
- No Subcommittee members expressed concern at beginning data review/recommendation develop with a focus on nutrient management.

Public Comment

There was no public comment.

Closing Comments and Next Steps

Mr. Magill asked Ms. Little to introduce her work with the State Water Resources Control Board (Water Board) on public water systems in Clear Lake. Ms. Little introduced a memo on public water systems in Clear Lake. Subcommittee members will review the memo and provide comments in advance of the next meeting (**see Action Item #1**).

The memo will be part of a focused presentation at the next meeting, in addition to data collected on water quality conditions downstream of water treatment plants. Additional presentation topics include:

- The Big Valley/Elem Indian Colony cyanotoxin report
- A presentation on nutrient loading based on satellite data.
- Review of data gaps

Mr. Magill encourage Subcommittee members to provide other presentation topics as they arise. In advance of the next meeting, a list of perceived data gaps will be circulated to all Subcommittee

members for review (**see Action Item #3**). He then asked for any final comments by meeting participants:

- Ms. DePalma-Dow noted that DWR could be invited to join the group, given their data collection efforts and capacity.
- Ms. DePalma-Dow highlighted Lake County's desire to work with the Southern California Coastal Watershed Research Program (SCCWRP) on cyanobacteria drivers and potential impacts of boat wake/wave mixing on cyanobacteria production.
- Ms. Ryan commented on the need for CVRWQCB research on herbicide use and its impact on cyanobacteria production to continue.

Mr. Magill thanked participants for attending and adjourned the meeting.

ADJOURN

ATTACHMENT A: Roster of Participants

Committee Members Present			
First	Last	Organization	Title
Alex	Forest	University of California Davis	Assistant Professor
Amy	Little	State Water Resources Control Board	Associate Sanitary Engineer
Broc	Zoller	Lake County Farm Bureau	Board member
Charlie	Alpers	United States Geological Survey	Research Chemist
David	Cowan	County of Lake	Water Resources Interim Director
Frank	Aebly	United States Forest Service	District Ranger
Geoff	Schladow	University of California Davis, Tahoe Environmental Research Center	Director
Greg	Giutsi	University of California Agriculture and Natural Resources	Retired
Karola	Kennedy	Koi Nation of Northern California	Committee Designee
Jennifer	LaBay	Central Valley Regional Water Quality Control Board	Nonpoint Source Program Manager
Jim	Steele	Robinson Rancheria	Committee Designee
Sarah	Ryan	Big Valley Band of Pomo Indians	Environmental Director

Members Absent	
Name	Organization
Tom Suchanek	United States Geological Survey

Public Attendants and Staff	
Name	Organization
Alix Tyler	Elem Indian Colony
Angela DePalma-Dow	Lake County WRD
Micaiah Palmer	California State University, Sacramento
Sam Magil	California State University, Sacramento