Comment Letters Received

as part of the Workshop for the

2012 Triennial Review

San Francisco Bay Basin Water Quality Control Plan (Basin Plan)

April 2012

List of Comment Letters

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Alameda County Flood Control and Conservation – Zone 7

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Wine Growers of Napa County

ALAMEDA COUNTY WATER DISTRICT

43885 SOUTH GRIMMER BOULEVARD • P.O. BOX 5110, FREMONT, CALIFORNIA 94537-5110
(510) 668-4200 • FAX (510) 770-1793 • www.acwd.org

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April 16, 2012

Mr. Richard Looker
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street
Oakland, CA 94612

Dear Mr. Looker:

Subject: Alameda County Water District Comments on the San Francisco Bay Basin Water Control Plan (Basin Plan) 2012 Triennial Review

Thank you for the opportunity to provide input on the San Francisco Bay Regional Water Quality Control Board's (Regional Board's) 2012 Basin Plan Triennial Review. The Alameda County Water District (ACWD) is a water retailer that provides potable water to a population of over 328,000 in the Cities of Fremont, Newark, and Union City ("Tri-Cities"). ACWD has a water right permit from the State Water Resources Control Board to divert from Alameda Creek, downstream of Niles Canyon, for groundwater recharge into the Niles Cone Groundwater Basin (Niles Cone). The water percolated at ACWD's recharge facilities is subsequently recovered through ACWD's groundwater production wells as a potable water supply to ACWD's customers and through private wells for residents and businesses. This groundwater currently furnishes approximately 40% of the water supply for the Tri-Cities area and provides over 60% of the supply during dry years. From this description, it should be very clear that protecting the Alameda Creek watershed and the Niles Cone to preserve and enhance the water quality and water supply is of utmost importance to ACWD.

As such, ACWD has had a long-standing policy of seeking to preserve the beneficial uses of the Niles Cone. ACWD has a Groundwater Management Policy that serves as the basis for ACWD's groundwater management efforts, including groundwater and source water protection. These efforts have included a cooperative agreement between the Regional Board and ACWD for groundwater protection, as well as working with the Regional Board to eliminate wastewater discharges in tributaries of Alameda Creek.

ACWD has also been actively involved in the development of an Alameda Creek Watershed Management Plan, and has worked cooperatively with other upstream agencies, including the Livermore Amador Valley Water Management Authority, DSRSD-EBMUD Recycled Water Authority, Zone 7 Water Agency, as well as the San Francisco Public Utilities Commission

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(SFPUC) to ensure that their respective projects do not adversely impact ACWD's downstream water supplies.

In response to the Regional Board's March 2012, "Brief Issue Descriptions for the 2012 Triennial Review of the San Francisco Bay Basin Water Quality Control Plan" document published in anticipation of the upcoming review, ACWD has prepared specific comments on the items noted below.

2.1 Modify Groundwater Recharge Beneficial Use

ACWD utilizes sections of the Alameda Creek Flood Control Channel behind two inflatable rubber dams and recharge ponds (abandoned gravel quarry pits) to store and recharge water into the aquifers of the Niles Cone. ACWD's groundwater recharge program serves two major roles:

(1) Replenishment of groundwater extracted to meet local demands and to replace brackish water extracted as part of the Aquifer Reclamation Program and used as a source for the Newark Desalination Facility.

(2) Maintenance of groundwater flow toward San Francisco Bay, in order to prevent future saline water intrusion from the bay and to displace brackish water remaining from historic saline water intrusion.

The recharge facilities are operated to meet these two goals and the operating criteria for the recharge facilities and the groundwater basin are continuously evaluated to optimize the use of these resources.

Therefore, ACWD requests to be included in any project related to modifying and expanding the groundwater recharge beneficial use definition to support storage of drinking water in groundwater aquifers.

2.2 Evaluation of the Beneficial Use for Municipal Supply for Groundwater Aquifers along the Bay Fringe

ACWD is strongly opposed to Regional Board staff's considering a regional policy for groundwater along the Bay fringe whereby Regional Board staff would consider the exception criteria of Water Board Resolution 89-39 and may remove the domestic or municipal drinking water supply beneficial use (MUN) designation currently applied for all groundwater. Removing the municipal designation for other portions of the Bay Area where groundwater is not used as a source of drinking supply may be appropriate; however, it is not appropriate for the Niles Cone where groundwater, even in high TDS areas, is a major portion of ACWD's water supply.

ACWD understands that Water Board staff is considering removing the MUN designation for groundwater along the Bay fringe since these areas have "elevated total dissolved solids concentrations or the area suffers from low well yield." This is not the case in the Niles Cone.

The shallowest regional drinking water aquifer in the Niles Cone is the Newark Aquifer, in which ACWD operates high capacity production wells for potable supply and aquifer reclamation. The objective of ACWD's Aquifer Reclamation Program (ARP) is to improve Niles Cone ground water quality in areas that are presently brackish (i.e., elevated TDS) due to past sea water intrusion. Since 2003, ACWD has been utilizing pumped brackish groundwater for potable supply via treatment at the Newark Desalination Facility, supplied by ARP wells including wells screened in the Newark Aquifer. In 2010, the desalination facility was expanded to increase the production capability from 5 million gallons per day (mgd) to 10 mgd for a total blended production of 12.5 mgd.

Protecting the shallow water bearing zone, which in certain areas may exhibit a low yield as defined by Water Board Resolution 89-39, is also critical for protecting the Newark Aquifer. Both man-made (abandoned wells) and natural connections between the shallow zone and Newark Aquifer are present throughout the Niles Cone, including the Bay fringe area. Removing the MUN designation for the shallow zone would then result in lower water quality objectives (i.e., groundwater cleanup goals) which will increase the likelihood of adverse impacts to the Newark Aquifer. Therefore, it is extremely important that the shallow water bearing zone be afforded the same level of protection as the Newark Aquifer.

ACWD respectively requests that the MUN designation continue to apply to all groundwater in the Niles Cone Groundwater Basin.

3.3 Refine Alameda Creek Watershed Total Dissolved Solids (TDS) and Chloride Water Quality Objectives

We appreciate that the Regional Board is considering a refinement of Alameda Creek Watershed TDS and Chloride Water Quality Objectives as part of the 2012 Basin Plan Triennial Review. We strongly support the Regional Board's position stated in section 3.3 of the brief descriptions document that: "In reconsidering the objectives, potential impacts to the Niles Cone groundwater basin (recharged by the Alameda Creek watershed downstream of Niles) must be considered."

Salt loading to the Niles Cone continues to be a serious issue for ACWD and other groundwater users in the basin, in terms of both water quality and economics. Chloride and TDS discharged to Alameda Creek and its tributaries will ultimately impose an increased salt load on the Niles Cone, which serves as a potable supply for over 328,000 people in the cities of Fremont, Newark and Union City. ACWD has historically relied on Alameda Creek to provide a significant portion of the water supply for the Tri-Cities area, as noted above.

The water quality degradation associated with salt loading poses considerable treatment challenges and requires significant operational and capital cost investments on the part of ACWD's customers, essentially shifting the economic burden from upstream dischargers to ACWD's customers. ACWD already spends a significant amount of money each year to mitigate salt and hardness in groundwater prior to delivery to our customers: 1) Hetch Hetchy water is purchased from the SFPUC for blending groundwater pumped from the forebay of the basin; and

2) as previously noted, brackish groundwater pumped in the more westerly part of the basin is treated through reverse osmosis at ACWD's 12.5 mgd Newark Desalination Facility. The costs of desalination and blending increase as the quality of raw groundwater declines. More SFPUC water would need to be purchased per acre-foot of groundwater pumped from the forebay area. The cost of this SFPUC blending water is expected to more than double within the next 10 years. Higher TDS in water fed to the desalination facility would increase energy requirements and shorten the lives of the filters. Thus, future salt-loading to the Niles Cone would add to an existing water quality issue, which ultimately will translate into an increased economic burden to mitigate.

Given the potentially significant water quality and cost impacts of salt-loading from the Alameda Creek Watershed to the Niles Cone, ACWD would like to be actively involved in the discussions and studies that will be used to refine the TDS and Chloride Water Quality Objectives. We greatly appreciate the Regional Board's past efforts in addressing these issues, and we look forward to continuing to work with the Regional Board and stakeholders in the Alameda Creek watershed to promote a long-term plan for improved water quality in Alameda Creek for all beneficial uses. ACWD has spent significant time and effort over the last several decades to promote improved protection of water quality in the Alameda Creek watershed through coordination with other local agencies, reviewing Environmental Impact Reports and NPDES permits, emergency response to surface spills, participation in watershed planning and monitoring efforts, and participation in planning studies for expansion of wastewater export facilities from the Livermore-Amador Valley. Given these significant investments toward an objective that we are strongly committed to, we feel it is important to continue to advocate for water quality protection by all users of the watershed.

4.1 Environmental Screening Levels (ESLs) for Groundwater Cleanups

In 1988, ACWD began to informally provide assistance to the Regional Board in overseeing the investigation and remediation at Leaking Underground Fuel Tank (LUFT) and Spills, Leaks, Investigation, and Cleanup (SLIC) sites as an extension of ACWD's Groundwater Protection Program. This relationship was formalized in a Cooperative Agreement between ACWD and the Regional Board that was executed on June 27, 1996. As a result of this Cooperative Agreement, ACWD has followed the development of the ESLs and has used ESLs for soil, soil gas, and groundwater cleanup levels. ACWD has found the ESLs to be a very valuable tool that is protective of groundwater beneficial uses.

ACWD supports updating the Basin Plan to memorialize the approach for deriving and applying ESLs to cleanup sites.

4.3 Low-Threat Site Closure Requirements

As a result of the Cooperative Agreement between ACWD and the Regional Board, ACWD has been implementing the Regional Board's 1996 "Interim Guidance on Low-Risk Petroleum Hydrocarbon Cleanups." In addition, ACWD also participated with the Regional Board in the

development of the 2009 "Assessment tool for Closure of Low-Threat Chlorinated Solvent Sites." This demonstrates that ACWD supports the closing of low-threat cases in principle.

However, ACWD has great concerns with the State Water Board's January 31, 2012, draft "Low-Threat Underground Storage Tank Case Closure Policy" and the draft Substitute Environmental Document. ACWD's Board of Directors recently adopted the attached Resolution No. 12-016 on March 8, 2012, which urges the State Board to modify the draft Policy to:

1) Provide an exemption for groundwater basins that are actively used as a drinking water supply and are vulnerable to contaminants;

2) Address the cumulative impact on water quality and groundwater resources from closing numerous cases with elevated concentrations of petroleum hydrocarbons; and

3) Ensure that the burden and expense associated with tracking groundwater plumes containing petroleum hydrocarbons remains with the party responsible for contaminating the property and is not placed on local agencies, residents, and businesses.

Therefore, ACWD requests that the Regional Board be actively involved in the development of the State Board's policy and to ensure that the concerns above and the comments submitted in response to the policy are adequately addressed. If the Regional Board selects this item as part of its triennial plan, ACWD would support incorporating the principles of the Draft Final July 31, 2009, "Assessment tool for Closure of Low-Threat Chlorinated Solvent Sites" into either the first (solvent-impacted sites only) or second (both petroleum UST and solvent-impacted sites in case the State Board's policy is not adopted) policy options.

4.4 Salt and Nutrient Management Plans

The State Board adopted a Recycled Water Policy on February 3, 2009, that requires salt and nutrient management plans to be completed and proposed to the Regional Board within five years. However, an extension of two additional years may be granted if the Regional Board finds that the stakeholders are making substantial progress towards completion of a plan. Therefore, the two deadlines are either February 3, 2014, or February 3, 2016.

The Brief Issue Description document indicates that the Regional Board is providing regulatory and technical guidance to only three priority groundwater basins: Sonoma, Livermore-Amador Valley, and Santa Clara. Because the scope of the triennial review will conclude in 2015, a year after the first deadline, it would seem prudent to broaden the scope of this item. Regulatory and technical guidance is needed for all groundwater basins within the region so that substantial progress can be made on salt and nutrient management plans.

Since the first deadline is now less than two years away, ACWD supports this item being 1) included as one of the higher priority items for inclusion in the Regional Board's triennial review work plan, and 2) modified to providing regulatory and technical guidance for all groundwater

basins. In addition, it would be helpful to clarify to groundwater management agencies what the Regional Board's expectations are regarding deadlines and the amount of progress required by each deadline.

Again, ACWD appreciates the opportunity to provide input at this stage of the Basin Plan review process. Should you have any questions about our comments or need more information, please feel free to contact:

- Eric Cartwright, Special Assistant to the General Manager, at (510) 668-4206, or by e-mail at eric.cartwright@acwd.com, for information regarding water supply issues.

- Steven Inn, Groundwater Resources Manager, at (510) 668-4441, or by e-mail at steven.inn@acwd.com, for information regarding ACWD's groundwater resources.

- Kwame Agyare, Water Supply and Production Manager, (510) 668-6540, or by e-mail at kwame.agyare@acwd.com, for information regarding ACWD's activities in the Alameda Creek Watershed.

We look forward to working with Regional Board staff during the Triennial Review to explore these issues further and learn more about the proposed changes to the Basin Plan. Thank you for your consideration of our comments.

Sincerely,

Walter L. Wadlow
General Manager

si/tf
Attachment: Resolution No. 12-016
cc: Eric Cartwright, ACWD
Robert Shaver, ACWD
Steven Inn, ACWD
Kwame Agyare, ACWD
Laura Hidas, ACWD

ALAMEDA COUNTY WATER DISTRICT

43885 SOUTH GRIMMER BOULEVARD • P.O. BOX 5110, FREMONT, CALIFORNIA 94537-5110
(510) 668-4200 • FAX (510) 770-1793 • www.acwd.org

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March 15, 2012

Charles R. Hoppin, Chair
State Water Resources Control Board
P.O. Box 100
Sacramento, CA 95812-0100

Dear Mr. Hoppin:

Subject: Alameda County Water District Urges Modifications to the State Water Resources Control Board's Draft Low-Threat Underground Storage Tank Case Closure Policy

The Alameda County Water District (ACWD) supplies drinking water to a population of over 328,000 in the cities of Fremont, Newark, and Union City and groundwater accounts for a major portion of ACWD's supply. ACWD was formed in 1914 for the purpose of protecting the water in the Niles Cone Groundwater Basin and conserving the water of the Alameda Creek Watershed.

ACWD's Board of Directors is greatly concerned about certain provisions of the Draft Low-Threat Underground Storage Tank Case Closure Policy (Policy). Accordingly, on March 8, 2012, the ACWD Board adopted Resolution No. 12-016, which respectfully requests the State Water Resources Control Board to modify the Policy as follows:

- Provide an exemption for groundwater basins that are actively used as a drinking water supply and are vulnerable to contaminants;
- Address the cumulative impact on water quality and groundwater resources from closing numerous cases with elevated concentrations of petroleum hydrocarbons; and
- Ensure that the burden and expense associated with tracking groundwater plumes containing petroleum hydrocarbons remains with the party responsible for contaminating the property and is not placed on local agencies, residents, and businesses.

The ACWD Board considers this to be a very important matter to the residents and businesses that receive water from ACWD. We respectfully request the State Board to consider Resolution No. 12-016 and modify the draft Policy accordingly. Additionally, ACWD will be submitting comments concerning the State Board's Substitute Environmental Document and Policy under separate cover letter.

Lastly, ACWD staff welcomes the opportunity to meet with State Board staff to discuss ACWD's concerns.

Sincerely,

John H. Weed

John H. Weed
President, ACWD Board of Directors

si/tf
Enclosure
cc: Distribution List

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RESOLUTION NO. 12-016

OF BOARD OF DIRECTORS OF ALAMEDA COUNTY WATER DISTRICT URGING MODIFICATIONS TO THE STATE WATER RESOURCES CONTROL BOARD'S DRAFT LOW-THREAT UNDERGROUND STORAGE TANK CASE CLOSURE POLICY

WHEREAS, the Alameda County Water District (District) was formed in 1914 for the purpose of protecting the water in the Niles Cone Groundwater Basin and conserving the water of the Alameda Creek Watershed; and

WHEREAS, the Niles Cone Groundwater Basin is very sensitive and vulnerable to contaminants due to the highly permeable shallow aquifer that is used as a source of drinking water from the groundwater basin; and

WHEREAS, the District supplies water to a population of over 328,000 in the cities of Fremont, Newark, and Union City and local groundwater accounts for approximately 40 to 60 percent of the District's supply; and

WHEREAS, the District is a water agency that is responsible for groundwater management and is also the lead agency responsible for providing the technical oversight of leaking Underground Storage Tank (UST) cases within the District; and

WHEREAS, the State Water Resources Control Board (State Board) issued a draft "Low-Threat Underground Storage Tank Case Closure Policy" (Policy) for the purpose of establishing consistent statewide case closure criteria for UST cases; and

WHEREAS, the District generally supports the efficient and consistent closure of low-threat UST cases in California when the closure of those cases will not have a negative impact on the water quality of vulnerable groundwater basins that are actively used as a resource for potable water; and

WHEREAS, the case closure criteria in the Policy would allow thousands of UST cases to be closed state-wide, including the majority of the approximately 138 UST cases within the District, with elevated concentrations of petroleum hydrocarbons remaining in groundwater basins that are actively used as a source of drinking water, such as the Niles Cone Groundwater Basin; and

WHEREAS, closing UST cases that continue to have elevated concentrations of petroleum hydrocarbons in groundwater would require local agencies, utilities, and groundwater management agencies, such as the District, to manage and track contamination at these sites in the future in order to protect public health and the environment from residual contamination left in place at these sites for decades to centuries, and would unfairly transfer the burden and expense of these activities from the responsible parties to local agencies, such as the District;

NOW, THEREFORE, BE IT RESOLVED that the Board of Directors of the Alameda County Water District hereby urges the State Board to modify the draft Policy to provide an exemption for groundwater basins that are actively used as a drinking water supply by local residents and businesses, and are vulnerable to contaminants due to a highly permeable shallow aquifer that is used as a source of drinking water, or are more vulnerable to groundwater contamination due to minimal, or absence of, a natural clay barrier to prevent contamination from impacting drinking water aquifers; and

BE IT FURTHER RESOLVED that the Board of Directors of the Alameda County Water District hereby urges the State Board to modify the draft Policy to address the cumulative impact on water quality and groundwater resources from closing numerous cases with elevated concentrations of petroleum hydrocarbons in groundwater that exceed the water quality objectives set forth in the Water Quality Control Plans (Basin Plans) adopted by the State Board; and

BE IT FURTHER RESOLVED that the Board of Directors of the Alameda County Water District hereby urges the State Board to modify the draft Policy to ensure that the burden and expense associated with tracking groundwater plumes containing petroleum hydrocarbons remains with the party responsible for contaminating the property and is not placed on local agencies, residents, and businesses.

PASSED AND ADOPTED this 8th day of March 2012, by the following vote:

AYES: Directors Gunther, Huang, Koller, Sethy, and Weed

NOES: None

ABSENT: None

John H Weed

John H. Weed, President
Board of Directors
Alameda County Water District

ATTEST:

Gina Markou

Gina Markou, District Secretary
Alameda County Water District
(Seal)

APPROVED AS TO FORM:

Patrick T Miyaki

Patrick T. Miyaki, Attorney
Alameda County Water District

CERTIFICATE

I, the undersigned District Secretary of ALAMEDA COUNTY WATER DISTRICT, do hereby certify that the foregoing is a full, true and correct copy of a Resolution of the Board of Directors of ALAMEDA COUNTY WATER DISTRICT, a political subdivision, which said Resolution was duly adopted at a meeting of said Board regularly held on March 8, 2012, that a copy of said Resolution was forthwith duly entered in the minutes of said meeting of said Board, and that the same is in full force and effect.

Dated: March 15, 2012

Gina Markou

Gina Markou, District Secretary
Alameda County Water District

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

100 NORTH CANYONS PARKWAY LIVERMORE, CA 94551 PHONE (925) 454-5000 FAX (925) 454-5727

Via E-Mail

April 17, 2012

Richard Looker
California Regional Water Quality Control Board, SF Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Comment Letter - SF Bay Basin Plan Triennial Update

Dear Mr. Looker,

Thank you for the opportunity to comment on the triennial review of the San Francisco Bay Basin Plan. Zone 7 Water Agency (Zone 7) reviewed the Brief Issue Descriptions document, and our comments are made in the context of Zone 7's mission to provide drinking water, non-potable water for agriculture/ irrigated turf, flood protection, and groundwater and stream management within the Livermore-Amador Valley.

2.1 Modify Groundwater Recharge Beneficial Use

Zone 7 actively manages our local groundwater basin. We import water from the State Water Project (SWP) and, through artificial recharge, store it in our Main Basin for future use. While we agree that developing a new groundwater recharge (GWR) designation could be both appropriate and advantageous, we want to assure that GWR standards be developed to maximize beneficial uses of waters of the state.

Recognizing that GWR has many purposes, it is important that standards not be developed with a "one-size-fits-all" strategy. GWR for hydraulic control does not necessarily require the same standard as GWR for drinking water replenishment. It is also important that any standard created for GWR within the Livermore – Amador Valley Groundwater Basin support the continued use of natural and man-made waterways to convey and recharge State Water Project (SWP) imports and to move around groundwater generated from quarry operations.

2.4 Complete the Stream and Wetland Systems Protection Policy

Zone 7 concurs that functional wetlands and riparian areas are critical in providing valuable habitat for a variety of plants and animals as well as enhancing water quality functions including flood protection, pollutant filtration, water supply and replenishment. Establishing a regional definition/policy (e.g., covering areas served by the San Francisco and North Coast Regional Boards) is a step in the right direction, but it should be consistent, if not identical, to the State's definition/policy.

The proposed policy should not unduly expand regulatory requirements (and thereby the administrative burden) associated with ongoing maintenance activities for certain existing flood protection facilities. Also, the proposed policy should avoid any unnecessary duplication in regulatory oversight of stream and wetland areas by multiple state agencies, and should streamline the permitting process, wherever possible.

Finally, it seems to have been a number of years since any public meetings have been held; we encourage the board to re-initiate public involvement before moving forward on solidifying any new policy.

3.3 Refine Alameda Creek Watershed Total Dissolved Solids (TDS) and Chloride Water Quality Objectives

Zone 7 supports consideration of revising surface water objectives especially when given local reliance on SWP water conveyed through the Delta and imported to the Livermore Valley. First, it is our understanding that the numeric Surface Water Quality Objectives for Alameda Creek and its tributaries were originally written in 1975 to eliminate the POTW discharges and minimizing excessive discharges from quarry operations into the streambeds overlying the Livermore-Amador Valley groundwater basin and affecting downstream users while not precluding water agencies from recharging either basin with imported water.

Setting numeric objectives was successful in eliminating the POTW discharges into Alameda Creek but now it appears that these same objectives might limit recharge with imported South Bay Aqueduct (SBA) water through natural creek beds, as SBA water often exceeds the existing 90-day mean TDS and chlorides objectives. The future TDS and chloride levels of SBA water are likely to continue degrading due to climate change impacts, unless there is a major Delta "fix." In addition, due to court-imposed pumping constraints, Zone 7 may only be able to import excess water for recharging the groundwater basin in the fall, when Delta water is of lower quality.

While Zone 7's water imports for conjunctive use are an integral part of both Zone 7's groundwater and salt management programs, the current numeric limits could have unintended negative consequences on this program. Zone 7's water quality is highly dependent on the water quality from the Delta, and therefore improving Delta water quality is an important step towards meeting local basin objectives. Until there is a Delta fix, restricting recharges could add to water supply shortages.

As you know, RWQCB approved Zone 7's Salt Management Plan by letter dated September 24, 2004. The Plan was required under Provision D.1.c.ii of RWQCB's "Master Water Recycling Permit," Order No 93-159, as issued to Zone 7, the City of Livermore, and the Dublin San Ramon Services District. The Plan includes a proactive strategy for maintaining groundwater quality and ending the increasing trend in TDS by removing salts from basin groundwater and exporting the salt concentrate out of the watershed. Zone 7 completed a Groundwater Management Plan in September 2005, covering the Livermore-Amador Valley Groundwater Basin and submitted it to the California Department of Water Resources. The Plan documents all of Zone 7's current groundwater management policies and programs, and incorporates the Salt management Plan by reference (note: an update of these plans is underway currently). The Basin Plan should acknowledge this and other locally-approved groundwater management plans. Potential impacts to the Niles Cone groundwater basin must also be considered.

Zone 7 suggests that any revisions to water quality objectives for Alameda Creek address:

- The desirable local water quality objectives and beneficial uses above and below Niles Cone;
- That unreasonable restrictions could seriously jeopardize the ability to manage critical local groundwater supplies; and

- The current state of State Project water conveyed through the Delta (Zone 7 imports nearly 90% of its total water supply from the State Project).

Also, it should be noted that DWR's releases of SBA water to Alameda Creek tributaries are at the request of Zone 7 to maximize groundwater recharge to the Livermore-Amador Valley Main Basin. Therefore, we suggest that the Basin Plan acknowledge the benefits of storing, maintaining, and recovering local and imported surface water in/from the Livermore-Amador Valley Groundwater Basin.

Finally, there are also times when the Basin Manager (Zone7) and the quarry operators need to move uncontaminated, naturally-occurring higher-TDS groundwater between the respective quarry lakes. These discharges are important for the economic vitality of the Valley, and they generally do not add to the salt buildup in the basin. However, since groundwater TDS has increased over time, the current water quality objectives are often difficult to meet. Our plan is to address this issue through our Salt and Nutrient Management Plan Update effort.

Zone 7 requests the opportunity to actively participate in any efforts related to revising this water quality objective and, again, encourages a public stakeholder process to discuss possible changes to objectives that could better reflect current conditions.

3.6 Develop New Water Quality Objectives for Trash and Debris

Zone 7 is supportive of actions regarding trash and debris that are protective of the beneficial uses of the bay and ocean – especially measures that prevent debris or trash from entering a drainage system in the first place. Simple, but cost effective measures include applying "drains to the bay" stencils on storm drains, providing education and outreach to local children and businesses about their watershed and actions to keep it clean, and establishing local drop-off days for hazardous and electronic waste, etc.

The cities and flood control agencies in the Bay Area are currently subject to stringent (and costly) trash rules in the Municipal Regional Permit. Any new Water Quality Objective for trash should not unduly expand regulatory requirements or add unnecessary duplication in regulatory oversight.

3.7 Develop Nutrient Water Quality Objectives

Zone 7 is currently updating its Salt and Nutrient Management Plan. The results of this work will likely better inform this effort to establish Water Quality Objectives, and we are open to sharing our findings should they be applicable to your effort.

4.1 Environmental Screening Levels (ESLs) for Groundwater Cleanups

Zone 7 supports plans to update the ESL approach for groundwater cleanups and to develop a policy to address closure for low-risk contaminant sites, as long as such ESL's maintain a balance with local groundwater basin objectives implemented by local agencies as part of implemented Groundwater Management Plans.

4.3 Low-Threat Site Closure Requirements

Please see Zone 7's comment letter to the State Water Resources Control Board regarding the draft state policy (attached).

4.4 Salt and Nutrient Management Plans

As noted in the Issues Description report, RWQCB plans to adopt individual Salt and Nutrient Management Plans into the Basin Plan. As a point of clarification, Zone 7 already has a Salt Management Plan that was required and has been approved by the RWQCB as a condition of issuing a Master Water Recycling Permit. Zone 7's current effort is to update and add nutrient management provisions as is required by the State's new Recycled Water Policy.

4.5 On-Site Wastewater Treatment System Implementation Plan

Given the protections provided to water quality, the Basin Plan should recognize the conditions and requirements for on-site wastewater treatment systems in the Upper Alameda Creek Watershed as imposed in Zone 7's Wastewater Management Plan and Alameda County's On-site Wastewater Treatment System Ordinance.

Thank you for taking the time to review and consider our comments. If you have any questions or comments, please feel free to contact me at (925) 454-5005.

Sincerely,

Elke Rank

Elke Rank

cc: Jill Duerig, Carol Mahoney, Matt Katen

Attachments:
Zone 7 letter to SWRCB regarding low-threat site closure

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT, ZONE 7
100 NORTH CANYONS PARKWAY, LIVERMORE, CA 94551-9486 • PHONE (925) 454-5000

March 19, 2012

Jeanine Townsend, Clerk to the Board
State Water Resources Control Board
1001 I Street, 24th Floor
Sacramento, CA 95814

Sent via email to commentletters@waterboards.ca.gov

Subject: ***Comment re: Low-Threat UST Closure Policy***

Dear Ms. Townsend:

Zone 7 Water Agency (Zone 7) is the local groundwater management agency for the Livermore-Amador Valley Groundwater Basin and has been for over 40 years. Groundwater typically makes up 15-25% of the water supplied by Zone 7 to its retail water supply agencies. In addition, some of these retail water supply agencies operate their own community supply wells within the Basin, as do some independent domestic and agricultural well owners. These additional wells increase the total groundwater usage in the region to approximately 20-40% of total regional water use.

Furthermore, the Basin is used by Zone 7 in an integrated water supply program wherein surface water is imported from the State Project during wet years, artificially recharged into the Basin and then the water stored in the Basin is available as drinking water during dry years. In 2005, Zone 7 adopted a Well Master Plan in which the need for additional municipal supply wells (to be installed within the next 15 years) is a critical component of the long-term local water supply and underground storage management.

Zone 7's active basin management is outlined in its Groundwater Management Plan. This includes a Toxic Site Surveillance program which includes monitoring and tracking all Leaking Underground Fuel Tank (LUFT) sites within the Basin. Premature closure of LUFT sites could limit the number and location of sites available for future wells, hamper artificial recharge operations and, by extension, negatively impact the beneficial uses of the Basin.

Therefore, we strongly urge the State Board to amend its first General Criteria to read:

a. The unauthorized release is located within the service area of a public water system *that does not use the local groundwater basin as a supply*;

Within the text explaining the first criteria, the policy needs to be amended appropriately to explain this concept. While the existing draft policy might be protective of existing wells, it severely limits future groundwater development in areas where basins are actively managed and

serving the general public as drinking water. It also ignores artificial recharge operations. It is imperative that this issue is better addressed so as not to degrade existing beneficial uses of a groundwater basin being used for a community's drinking water supply.

With respect to Zone 7's mission to provide drinking water, non-potable water for agriculture/irrigated turf, flood protection, and groundwater and stream management within the Livermore-Amador Valley, we have the following additional, more specific comments to offer on the Draft Low-Threat UST Case Closure Policy and SED for your consideration.

1. **Groundwater Future Use:** The draft policy takes into consideration existing groundwater supply wells and surface water bodies when determining if a case qualifies for low-threat closure. However, the policy does not appear to take into account that the case or site being considered for closure may be within 1,000 feet of a future supply well or artificial recharge facility in an active basin serving as a community water supply. In the Livermore Valley Groundwater Basin, for example, much of the groundwater is designated for municipal and domestic beneficial use. As a result, many supply wells are located within 1,000 of current and former UST sites. In addition to protecting groundwater in these current wells, Zone 7 would like to ensure that future well locations are also protected. There is a potential that Zone 7 or its retailers could develop plans to install a future production well within 1,000 feet of an existing plume. If that happens, a case or site that had qualified for low-threat closure may no longer be "low-threat." Again, Zone 7 strongly urges the Board to amend its first General Criteria so that active groundwater basins serving as community water supplies are not considered for closure under these low-threat criteria.

2. **On Page 5 of the Case Closure Policy, under Media-Specific Criteria, 1. Groundwater, Paragraph 5,** it is stated that "If groundwater with a designated beneficial use is affected by an unauthorized release, to satisfy the media-specific criteria for groundwater, the contaminant plume that exceeds water quality objectives must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites listed below. A plume that is 'stable or decreasing' is a contaminant mass that has expanded to its maximum extent: the distance from the release where attenuation exceeds migration." Zone 7 agrees that a plume must be stable or decreasing but does not feel that the method or criteria for determining if a plume is "stable and decreasing" has been adequately defined. If this policy document is not intended to provide that level of guidance for determining if characterization has been completed or if the contamination plume is stable, then Zone 7 recommends referencing a guidance document, such as the LUFT Manual. Zone 7 further recommends that whatever supporting guidance document is used is finalized prior to the Low-Threat UST Case Closure Policy being implemented.

3. **On Page 5 of the Case Closure Policy, under Media-Specific Criteria, Section 1, Groundwater, Paragraph 4 reads:** "It is a fundamental tenet of this low-threat closure policy that if the closure criteria described in this policy are satisfied at a petroleum unauthorized release site, attaining background water quality is not feasible, establishing an alternate level of water quality not to exceed that prescribed in the applicable Basin Plan is appropriate, and that the water quality objectives will be attained through natural attenuation

within a reasonable time, prior to the expected need for use of any affected groundwater." Zone 7 recommends rewording the paragraph. The sentence appears to be incomplete and the meaning of the paragraph is unclear.

4. **Page 4 of the SED, Section 2, Project Description, Media-Specific Criteria, a. Groundwater:** The third sentence reads: "These include five different scenarios with differing characteristics such as plume length, contaminant concentrations, and distance to wells." In the Low-Threat UST Case Closure Policy, distance from a water supply well or surface water body is referenced. Zone 7 recommends this remain consistent between the two documents and the SED should be changed to "distance to water supply wells or surface water bodies."

5. **Neither the draft policy nor the SED adequately assess either the cumulative impacts of such case closures or the cost to local water suppliers of this state mandate.** The burden and expense associated with tracking, containing and/or groundwater pollution plumes should remain with the polluter; it is inappropriate to close these cases prematurely, thus shifting costs and impacts to local water suppliers that use groundwater basins as community water supplies. This issue could be addressed by amending the language of the first General Criteria as suggested above.

Zone 7 appreciates the opportunity to comment on this document. Again, while Zone 7 strongly supports the closure of low-threat LUFT cases, we urge the State Board to amend the document before adopting it to better address the higher level of threat posed in groundwater basins that serve as community drinking water supplies. If you have any questions or comments, please feel free to contact either me at the number above (e-mail jduerig@zone7water.com) or Colleen Winey at 925 454-5063 (e-mail cwiney@zone7water.com).

Sincerely,

G.F. Duerig
General Manager

cc (via email): Jerry Wickham, ACEH
Cleet Carlton, RWQCB
Kevin Graves, SWRCB - WQ
Jarnail Chahal
Matt Katen
Colleen Winey

April 16, 2012

Richard Looker, Senior Environmental Scientist
Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Via E-mail**:** *rlooker@waterboards.ca.gov*

SUBJECT: 2012 Triennial Review of San Francisco Bay Basin Water Quality Control Plan

Dear Mr. Looker:

The Bay Area Clean Water Agencies (BACWA) appreciates the opportunity to comment on the Triennial Review of the San Francisco Bay Basin Water Quality Control Plan (Basin Plan). BACWA is a joint powers agency whose members own and operate publicly-owned treatment works (POTWs) and sanitary sewer systems that collectively provide sanitary services to over 6.5 million people in the nine county San Francisco Bay Area. BACWA members are public agencies, governed by elected officials and managed by professionals charged with protecting the environment and public health.

BACWA strongly supports the triennial review process and applauds the improvements made to the Basin Plan through this process in recent years. The current list of issues proposed for review and revision reflects a comprehensive and continuous improvement approach to address roughly two dozen topics that affect broad sections of the residents, businesses, and public agencies of the San Francisco Bay Area. All of the topics identified for review are worthwhile for evaluation and revision as needed accordingly, BACWA has limited our recommendations to four items for consideration.

1. **Raise the priority of issue: "Update the Basin Plan's Toxicity Testing Requirements."**

Issue 3.2 in the March 2012 document "Brief Issue Descriptions for the 2012 Triennial Review …" should be elevated to the highest priority. The description in the "Brief Issue" document captures the current problem well:

> *"Currently, there are inconsistencies between different State and Regional Water Boards' toxicity testing requirements that result in uneven protections for aquatic life and an unequal playing field for waste dischargers."*

To address the inconsistencies, the State Water Board drafted a "Proposed Policy for Toxicity Assessment and Control" that could be adopted later this year. Among other things, the proposed policy will establish numeric toxicity objectives and a new statistical approach, the Test of Significant Toxicity (TST) for evaluation of toxicity tests. This new statistical approach is calibrated with a built-in "false positive" rate and the null hypothesis is inverted: instead of testing to see if effluent is "toxic," under the new method, dischargers will be demonstrating that effluent is "not toxic." Both of these features are intended to make toxicity testing err on the side of protection of receiving waters. State Water Board presumes that the statistical analysis will be evaluated using the

Instream Waste Concentration (IWC) as approved by Regional Water Boards. Currently, to be protective, the Basin Plan offers no language to implement an IWC factor into the toxicity testing formula. The current draft policy also allows Regional Board discretion for determining reasonable potential for acute toxicity testing, assuming the chronic toxicity tests continue to be performed on a regular basis. This could be another area to explore via a Basin Plan modification.

Given the timeline for adoption of this policy, it is imperative that Regional Water Board staff begin scoping out implementation options now. For this reason, BACWA recommends that Regional Water Board staff establish a stakeholder committee to strategize and propose implementation options that are likely to be offered in the upcoming version of the proposed policy

2. **Continue to work within the San Francisco Bay Numeric Nutrient Endpoint (NNE) Framework when updating water quality objectives for nutrients and dissolved oxygen.**

The list of issues for triennial review consideration includes development of dissolved oxygen (DO) site-specific objectives (issue 3.1) and nutrient water quality objectives (issue 3.7).We believe that the two issues are inter-linked and should be rated as high priority projects for the 2012 triennial review. We recognize that nutrients and DO, and the linkages between them throughout different portions of the Bay, are very complex issues that will take a great deal of study and stakeholder involvement to resolve. These are also state-wide not just Bay area issues. BACWA supports the approach, as noted in issue 3.1, that RWB staff should track and participate in the review of DO WQOs, and in particular how compliance with them is to be assessed. This approach is also outlined in the 09/13/11 report by SCCWRP ("Science Supporting Dissolved Oxygen Objectives in California Estuaries") for the SWB Coastal NNE effort.

BACWA notes that Basin Plan does not currently provide implementation guidance on how to assess compliance with the current 5.0 mg/L WQO. Absent such guidance, the DO WQO has been interpreted to be a single value applicable at all times, at all depths, and in all locations. BACWA recommends that the RWB allocate Basin Planning staff resources to track and support State-wide efforts by the SWB, SCCWRP, and other to develop refined DO assessment criteria, as outlined on pages 67-68 of the above referenced SCCWRP report 6.4 Application of Dissolved Oxygen Criteria, which recommends in part:

> *"1) Assessment. A protocol should be developed that specifies where, when and how samples should be collected. In particular, it is important with dissolved oxygen to specify whether sampling a single depth is sufficient, or whether samples should be collected at the surface, mid-depth and bottom, or integrated over depth. The assessment protocol should provide clear guidance regarding the temporal and spatial extent of sampling, the density of data (grab or continuous samples), and the targeted assessment window (seasonal or year round) that are required in order to make an assessment".*

3. **Pursue Alternative Regulatory Approaches to Address 1996 303(d) Listing for Suisun Marsh for DO, Mercury, and Nutrients.**

In a related issue, potential high priority future TMDL's are listed in triennial review issue 5.2. One of those potential TMDL's is "Suisun Marsh Dissolved Oxygen, Mercury, and Nutrients." BACWA recommends Water Board address Suisun Bay dissolved oxygen, mercury, and nutrient issues within

the broader NNE Framework rather than undertake this as a separate initiative. This would be consistent with State Water Board Resolution 2005-0050 "Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options." This policy provides alternatives to TMDLs for addressing 303(d) listings. As stated on page 6:

> *"If a solution to an impairment is being implemented by a regulatory action of another state, regional, local, or federal agency, and the Regional Board finds that the solution will actually correct the impairment, the Regional Board may certify that the regulatory action will correct the impairment and if applicable, implement the assumptions of the TMDL, in lieu of adopting a redundant program."*

This policy also provides a rationale for considering complex and variable parameters in environments such as marshes where there is low DO due to "natural conditions" (e.g.: sediment/benthic oxygen demand, limited flushing, diurnal fluctuation, seasonal variation, etc.). The policy (p. 3, item B) states that:

> *"If the failure to attain standards is due to the fact that the applicable standards are not appropriate to natural conditions, an appropriate regulatory response is to correct the standards*"

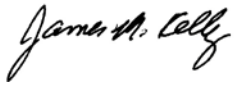
4. Include a New Triennial Review Project to Update Regional Board Wastewater Wetlands Policy Resolution 94-086.

BACWA sees merit in encouraging the use of wetlands to provide additional water quality enhancement of treated effluent while concurrently increasing the amount of wetlands habitat around the Bay. In order to encourage wetlands creation in this manner, BACWA recommends that Water Board staff include a new high priority triennial review project to update Regional Board Resolution 94-086. Resolution 94-086 is the “Policy on the Use of Wastewater to Create, Restore, and/or Enhance Wetlands.” This policy stands separate from Triennial Review issue 2.4, “Stream and Wetlands System Protection Policy.” The current Resolution 94-086 policy is now over 17 years old. Many lessons have been learned about salt marsh restoration over the intervening years. In fact, the hydrology and topography of the San Francisco Bay has been changing as vast areas of former salt evaporating ponds are being restored to marsh under the San Francisco Bay Salt Pond Restoration Project.

BACWA recommends that related Basin Plan revisions be developed and incorporated to recognize that the San Francisco Bay estuary represents a unique California environment that is being enhanced as salt marshes are being restored around the fringes of the Bay. The receiving waters downstream of many Bay Area POTWs are increasingly comprised of recently restored marsh that improves Bay water quality. For this reason, this triennial review cycle is an appropriate time to begin this updated Policy development and the evaluation of the beneficial aspects of potential future wastewater wetland discharges. The goal would be to develop near-shore permitting strategies for discharges to wetlands and sloughs that could recognize and possibly harness natural marsh processes as a means to achieve enhanced water quality attainment.

BACWA appreciates the Regional Water Board's close attention to the comments made herein, and representatives of BACWA would be more than happy to meet with you to discuss our comments and concerns in more detail if necessary.

Respectfully Submitted,



James M. Kelly
Executive Director
Bay Area Clean Water Agencies

cc: BACWA Executive Board
James Ervin, BACWA Permits Committee Chair
Naomi Feger, Regional Water Quality Control Board, San Francisco Bay Region

Bay Planning Coalition

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Alameda County Public Works Agency

John A. Coleman
Executive Director

April 17, 2012

Richard Looker
California Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

RE: Bay Planning Coalition's Comments on the Basin Plan

Dear Mr. Looker,

Please find below the Bay Planning Coalition's (BPC) comments on the Basin Plan for your review.

- Section 2.2 – The state should require meters in all groundwater basins to adequately monitor inflow & outflow of water. The state should encourage new technology to clean up such impacted basins to drinking water standards.
- Section 2.3 – With the prevalence of oil leaks/spills and emerging health impacts information from Gulf Coast, using petroleum indicators for SF Bay shell-fishing is advisable.
- Section 2.4 – BPC urges the Water Board to evaluate stream & wetland areas as a complete system and avoid evaluating any portion of system in isolation.
- Section 3.1 – BPC urges the Water Board to model water flow patterns to ensure ecosystem health will be sustained with any changes to DO or any other limits. Also, BPC urges utilizing data, best practices and lessons learned from other wetland project areas such as FL Everglades and the LA coastline for determining appropriate levels.
- Section 3.2 – BPC urges that a phased approach to implementation of standards so that smaller/medium dischargers will have adequate time & means to meet new standards with minimal disruption to service.
- Section 3.5 – BPC suggests a review of statistics and historical data on PCP levels in salmonid production to determine if PCP variable is affecting salmonid population.
- Section 3.7 – Many precedents are available nationwide to determine appropriate nutrient levels in the SF Bay, make use of the National Estuary Partnership Network and funding to develop this item. Also, dredging and disposal could help to bring back a more natural state to the Bay.
- Section 3.9 – BPC urges for system modeling to determine effects of adjusting values in specific areas to the entire system.
- Section 4.1 – In 2nd paragraph of this section, BPC urges for close coordination with 'other regulatory agencies' to ensure consistency among the agencies prior to adoption.
- Section 4.3 – BPC suggests using a narrow scope and amend as needed.
- Section 5.1 – BPC suggests considering a Water Board Water Bank for infrastructure improvement needs.
- Section 5.2 – Prioritize causes, such as past mining practices over 100 years ago, still impacting Bay.

10 Lombard Street, Suite 408 San Francisco, CA 94111-6205 Tel. (415) 397-2293 Fax (415) 986-0694
www.bayplanningcoalition.org

April 17, 2012

RE: Bay Planning Coalition's Comments on the Basin Plan (continued)

- Section 5.3 – Paragraph 1: ensure consistency of California standards with National Standards using LA wetlands & FL wetlands as a guide. Paragraph 2: ensure consistency with current DMMO BUDMAT approach.

Please feel free to contact Bay Planning Coalition if any questions or clarifications are needed.

Regards,

John A. Coleman
Executive Director

10 Lombard Street, Suite 408 San Francisco, CA 94111-6205 Tel. (415) 397-2293 Fax (415) 986-0694
www.bayplanningcoalition.org

San Francisco Bay, Regional Water Quality
Control Board
c/o Richard Looker
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2451 (ph)
rlooker@waterboards.ca.gov
sent via electronic mail

Re: San Francisco Bay Basin Plan, 2012 Triennial Review Comments

Dear Chair Muller, Members of the Regional Board, and Mr. Looker:

On behalf of the undersigned organizations, we implore the Regional Board to seize the opportunity of this Triennial Review to make significant advances in water quality policy to protect and enhance the San Francisco Bay ecosystem. We believe that this Basin Plan review should be a predominately proactive, rather than reactive, process to promote strong water quality policies. To this end, the highest priority revisions undertaken in this Triennial Review should be those that provide for water quality protection, especially where not currently provided for through express language in the Basin Plan. While we acknowledge that forging such new policies may require more time and effort than providing simple review and revisions to existing Basin Plan language, this opportunity occurs only once every three years, and is the perfect time to set in motion new, proactive policies, with lasting benefits.

To this end we strongly support the staff effort to create a new beneficial use for streams and wetlands of water quality enhancement. This policy will clarify and strengthen the need and ability for the Regional Board to focus on physical characteristics of water bodies that enhance water quality. In addition, we support the development of water quality objectives for nutrients, and for pentachlorophenol.

At the same time, however, we are troubled that a recurring theme of this Triennial Review, at the outset, seems to be a backward-looking approach to revise existing policies to allow for the introduction of greater pollution loads to the Bay and its tributaries. This theme arises in several areas. First, at least five of the policy changes recommended in the "Brief Issue Descriptions" document provided by staff for the Triennial Review workshop would result in some downgrading of environmental protections (these are discussed individually, below). Second, a majority of goals presented at the Triennial Review public workshop were either regressive, or reactive to new state and federal policy developments ("Priority projects from last Triennial Review, Review of beneficial uses, Review of water quality objectives, Updates to the

Implementation Plan, Updates to plans and policies). In addition, the "[a]ttainability of existing standards and associated implementation programs" was placed on equal, if not prioritized, footing with assessing "[i]ndicators of environmental degradation and need for additional protection."

According to the Project Ranking Criteria provided by Board staff subsequent to the public workshop, there should be no parity between projects that improve water quality and projects that ease discharge restrictions.[1] While we acknowledge that the first criteria listed as a priority is to Protect Beneficial Uses, we nonetheless have serious concerns with the relative value score given to the "Protect Beneficial Use" criterion – up to 5 points – while other criteria provide for up to 15 points in scoring, a score given to projects with input from the regulated community. While we certainly appreciate the value staff places on public participation, but we do not believe that the value given to public comment should be greater than the value given to whether or not a policy Protects Beneficial Uses.

With our comments on overall prioritization in mind, the following are our proposals for Basin Plan amendments, followed by comments on the "Brief Issue Descriptions" document circulated by Regional Board staff.

PROPOSED POLICY REVISIONS

I. Urban Runoff Management

For many pollutants of concern to San Francisco Bay and its tributaries, urban runoff represents the most significant contamination pathway, in terms of delivering the highest total pollutant load to sensitive water bodies. This is the case for a number of heavy metals, such as copper and iron, as well as hydrocarbon-based contaminants, including as oil and grease and PAHs. A number of studies conducted by the San Francisco Estuary Institute (SFEI) and others in the last decade have quantified pollutant loads from urban runoff and identified possible remediation strategies. However, this information goes unrecognized in Section 4.14 of the Basin Plan (Urban Runoff Management). Rather than identifying strategies and time schedules for achieving improvements in urban runoff quality, the Basin Plan suggests the Regional Board will work towards maintaining the status quo by seeking to avoid *increases* in pollution loads. Consistent with stated goals for the Basin Plan, the document should be revised to state the water quality objectives for urban runoff designed to protect designated Beneficial Uses.

Currently, the Basin Plan claims, "[a] large part of the Water Board's work in managing urban runoff involves supporting local planning and investigation." The Basin Plan fails to accurately describe the Regional Board's role as regulator and administrator of several significant NPDES permits, including the Phase I and II Municipal Regional Permits and the Statewide Industrial General Permit. It also suggests that stormwater management activities carried out by

[1] The ten listed factors are: 1.1 Water Board Mission (Protect Beneficial Uses), 1.2 Staff Resources Already Invested, 1.3 External Resources Already Invested, 1.4 External Resources Likely Available, 1.5 Public Interest, 1.6, Input from Internal Divisions, 1.7 Implement State Water Board Policy, 1.8 U.S. EPA Priority, 1.9 Geographic Scope, and 1.10 Low Controversy and Low Technical Complexity.

municipalities should proceed, more or less, on a voluntary basis. Section 4.14 of the Basin Plan deserves a full revision, identifying how and when the Regional Board intends to adequately regulate urban runoff.

Section 4.8 of the Basin Plan, addressing stormwater discharges, should also be revised in recognition of data that has become available in recent years, providing ample support for numeric water quality-based effluent limitations and prescriptive BMPs. Currently, the Basin Plan states "water quality based numerical effluent limitations are not feasible at this time", on the basis that "both the sources of pollutants in stormwater discharges and the point of discharge are diffuse, and the methods of reducing pollutants in stormwater discharges are in the development stage." In recent years, however, US EPA has encouraged the incorporation of numeric effluent limits into NPDES permits. In a 2010 memorandum, the agency encouraged permitting authorities to include numeric effluent limitations in permits to meet water quality standards.[2] In the same memo, US EPA stated where water quality based effluent limits are expressed in the form of BMPs, "the permit should contain objective and measureable elements (e.g. schedule for BMP installation or level of BMP performance)."

Currently, the Basin Plan fails to recognize the need for numeric standards and omits discussion of suitable BMPs to address municipal, industrial or construction stormwater pollution. Future iterations of the Basin Plan should discuss the legal obligations of stormwater permittees and provide brief discussion of preferred BMPs, such as low impact development (LID) techniques, on-site treatment, or stormwater retention. Consistent with EPA mandates, BMP performance criteria should be stipulated, as is the case with programs established by the Sacramento Stormwater Quality Partnership and the State of Washington.[3,4]

II. Monitoring Discharges for Permit Compliance

An unfortunate but growing trend in NPDES permitting is a disconnect between monitoring locations and point source discharges, rendering compliance determinations nearly impossible. For example, in a recent case in Los Angeles, environmental groups cited data showing numerous exceedances of water quality objectives from MS4 "mass emission stations," but their claims were rejected by the United States District Court, which reasoned:

> that Plaintiffs were attempting to establish liability without presenting evidence of who was responsible for the stormwater discharge. The district court observed that although "the District is responsible for the pollutants in the MS4" at the time they pass the mass-emissions stations, "that does not necessarily determine the question of whether the water passing by these points is a 'discharge' within the meaning of the Permit and the Clean Water Act." 2010 U.S. Dist. LEXIS 25083,

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[2] US EPA Memorandum Re: Revisions to the November 22, 2002 Memorandum "Establishing Total Maximum Daily Load (TMDL) Waste load Allocations (WLAs) for Storm Water Sources and NPDES Permit Requirements Based on Those WLAs". November 12, 2010.

[3] Refer to the Sacramento Stormwater Quality Partnership's list of approved Proprietary Stormwater Quality Treatment Devices. Available at: http://www.beriverfriendly.net/newdevelopment/propstormwatertreatdevice/

[4] Refer to the State of Washington's "Technology Assessment Protocol - Ecology (TAPE)". Available at http://www.ecy.wa.gov/programs/wq/stormwater/newtech/index.html

> [WL] at *7. Unable to decipher from the record where the MS4 ended and the Watershed Rivers begin, or whether any upstream outflows were contributing stormwater to the MS4, the district court stated that "Plaintiffs would need to present some evidence (monitoring data or an admission) that some amount of a standards-exceeding pollutant is being discharged through at least one District outlet." 2010 U.S. Dist. LEXIS 25083, [WL] at *8.

NRDC v. County of L.A., 636 F.3d 1235, 1244 (9th Cir. 2011). Fortunately, the Ninth Circuit Court of Appeal reversed the lower court, holding that the MS4 permit did designate the mass emission stations as the chief monitoring mechanisms of the permit, reasoning that "all NPDES permits must include monitoring provisions ensuring that permit conditions are satisfied," including complying with prohibitions against causing or contributing to exceedances of receiving water standards. *Id.* at 1250. Despite Plaintiffs' ultimate success in that case, the defendants' arguments remain: the use of mass emission stations makes determining the true cause(s) of water quality exceedances unnecessarily difficult, if not impossible, creating a nearly insurmountable burden for environmental groups or an enforcement agency to hold the worst polluters accountable on the basis of mass emissions data.

An analogous in-water monitoring scheme exists in the San Francisco Bay Regional Municipal Stormwater General Permit ("MRP"), and will similarly stifle water quality improvements needed for the worst performing municipalities in our region. Moreover, the MRP contains "coalition monitoring" provisions that allow permittees to pool resources and collect data as a coalition, rather than individually. While potentially cost-saving, this provision has the dual effect of delaying data collection (permittees were allowed a multi-year grace period to establish the coalition) and a further abstraction of the storm water data being collected and reported by a coalition, rather than by *each* responsible permittee. These policies must be revised to make it absolutely clear that every permittee must provide sufficient data to determine that permittee's compliance or noncompliance under the permit. Such data must be collected at the terminus of each permittee's point source discharge, and should be collected, at an absolute minimum, several times each wet season.

In sum, the Basin Plan should adopt a policy to avoid these types of faulty NPDES compliance monitoring and to optimize compliance and resulting water quality benefits. In addition, to this end, the Board may expound on existing language in Basin Plan section 6.5, which states:

> Monitoring data collected by point source dischargers and nonpoint pollution control programs are used to:
>
> - Determine compliance with and provide documentation to support enforcement of permit conditions;
> - Support derivation of effluent limitations and wasteload allocations; and
> - Provide information needed to relate receiving water quality to mass emissions of pollutants by dischargers.

This language could be changed from the passive voice ("data . . . are used to") to be more prescriptive, and instead state that "data collected . . . must be sufficient to . . . ." This revision

would help to ensure consistency with 33 U.S.C. § 1318(a)(A), 40 C.F. R. § 130.4, and *NRDC v. County of L.A.*, 636 F.3d 1235.

III. Water Quality Objectives

The Regional Board should strengthen its Basin Plan policies that strive toward the establishment of numeric water quality objectives. Currently, the Basin Plan acknowledges that existing numeric limits provide only a "minimum level of protection," and that "[t]he Water Board will establish water quality objectives for selected pollutants as necessary technical information becomes available and a framework for assessing economic factors is developed." 4.1.2.1. The Basin Plan also contains a stated goal of establishing site-specific objectives, and describes the need for establishing additional numeric water quality standards, but again, only passively states: "The Water Board will establish water quality objectives for selected pollutants as the necessary technical information becomes available . . . ." (4.1.2.1.)

This passive approach, waiting until the necessary technical information "becomes available," does not satisfy the statutory requirements for the Basin Plan:

> The program of implementation for achieving water quality objectives shall include, but not be limited to:
>
> (a) A description of the nature of actions which are necessary to achieve the objectives, including recommendations for appropriate action by any entity, public or private.
> (b) A time schedule for the actions to be taken.
> (c) A description of surveillance to be undertaken to determine compliance with objectives.

Cal Water Code § 13242. These provisions require the Basin Plan to contain an *affirmative plan*, not a passive statement to wait for technical information become available.

Even Chapter 6 of the Basin Plan, which does create a proactive plan for data collection, fails to include the overarching goal that data collection should promote the development of new water quality objectives, and that data should be collected to this end. See Basin Plan section 6.1.

Historically, moreover, the Basin Plan's goal to establish numeric site specific objectives has only occurred for constituents for which a Bay-wide numeric water quality objective, or CTR standard, *already existed*, leaving the resulting site-specific objectives to be *lower* than the pre-existing Bay-wide or statewide standards.[5] While establishment of site-specific numeric objectives is a laudable goal, this goal should be broadened to include the goal of establishing numeric objectives for *new* pollutants that as yet have no established numeric objective, such as but not limited to antibacterial agents, endocrine disruptors, and PAHs. As the Basin Plan already states, existing numeric limits provide only a "minimum level of protection." The Basin

[5] Indeed, such is the case at present: The Brief Issue Description provided for the 2012 Triennial Review proposes new site specific objectives for dissolved oxygen, less stringent than existing standards.

Plan, therefore, should include an express policy and implementation plan to evaluate the need for, and collect data needed to support, new numeric water quality objectives that are more accurate than current objectives or are for contaminants for which no such objective yet exists.

A pertinent example centers on emerging toxic pollutants of concern, Basin Plan section 4.26.3. The Basin Plan does well to highlight the nature of the threat posed by emerging contaminants, but does not include a description of the nature of the actions necessary to achieve objectives that may be threatened by emerging contaminants, nor a time schedule for the actions to be taken, as required by statute. See Cal. Water Code § 13242. The Basin Plan does reference the Regional Monitoring Program (Basin Plan, Chapter 6) as the vehicle for data collection and study for emerging contaminants, but neither does Basin Plan Chapter 6 contain these required statutory programs of implementation (which should, nonetheless, appear in Basin Plan Chapter 4.) Again, section 4.26.3 relies on the passive goal of waiting until "the necessary technical information becomes available," but this passive tact is insufficient to constitute a plan of implementation.

Lastly, one minor editorial request. Basin Plan section 4.5.1 states:

> There may be cases where the promulgated water quality standard or adopted objectives are practically not attainable in the receiving water due to existing high concentrations. In such circumstances, discharges shall not cause impairment of beneficial uses.

The final sentence of this provision should be revised to state: "In such circumstances, discharges shall not cause <u>or contribute to</u> impairment of beneficial uses" (additions in underline).

IV. <u>Mixing Zones and Dilution Credits</u>

The Basin Plan contains vague and potentially misleading language regarding dilution zones that should be revised. Section 3.1 states that water quality objectives "cannot be applied at or immediately adjacent to submerged effluent discharge structures," and goes on to describe how zones of initial dilution can be established to monitor compliance with water quality objectives.[6] This language goes too far. It is well established law that a permitted discharger may only receive a mixing zone of dilution to determine compliance with receiving water objectives, if and only if that discharger has conducted a mixing zone study, submitted to the Regional Board for

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[6] The Plan states: "For a submerged buoyant discharge, characteristic of most municipal and industrial wastes that are released from submerged outfalls, the momentum of the discharge and its initial buoyancy act together to produce turbulent mixing. Initial dilution in this case is completed when the diluting wastewater ceases to rise in the water column and first begins to spread horizontally.

For shallow water submerged discharges, surface discharges, and nonbuoyant discharges, characteristic of cooling water wastes and some individual discharges, turbulent mixing results primarily from the momentum of discharge. Initial dilution, in these cases, is considered to be completed when the momentum-induced velocity of the discharge ceases to produce significant mixing of the waste, or the diluting plume reaches a fixed distance from the discharge to be specified by the Regional Board, whichever results in the lower estimate for initial dilution."

approval, and written into the individual discharger's permit. See, e.g., *Waterkeepers N. Cal. v. AG Indus. Mfg.*, 2005 U.S. Dist. LEXIS 43006,[7] Water Quality Standards; Establishment of Numeric Criteria for Priority Toxic Pollutants for the State of California, 65 Fed. Reg. 31682 (May 18, 2000), 31701 ("All waters (including lakes, estuaries, and marine waters) . . . are subject to the criteria promulgated today. Such criteria will need to be attained at the end of the discharge pipe, unless the State authorizes a mixing zone.")

Unfortunately, in practice, Baykeeper often sees this Basin Plan language being pointed to by dischargers who have not secured any mixing zone or dilution credit by permit, as an argument that water quality objectives cannot be applied to discharges from their facilities. Such misuse of the Basin Plan contravenes the State Implementation Plan, California Toxics Rule, and established case law, and should be halted through appropriate revision to the Basin Plan language. While there are a number of ways this language could be revised to more clearly state each discharger's obligations under the law, perhaps the simplest revision would be to specifically add language stating that no discharger may avail itself of a zone of dilution unless expressly approved by and through a permit held by the discharger; and where a discharger does not possess a permit with an express mixing zone provision, that discharger's compliance with receiving water objectives must be determined at the point of discharge from the facility. See, e.g., *Waterkeepers N. Cal. v. AG Indus. Mfg.*, 2005 U.S. Dist. LEXIS 43006; *Baykeeper v. Kramer Metals, Inc.*, 619 F. Supp. 2d 914, 926-927.

V. Sea Level Rise

Despite robust evidence that several Beneficial Uses of San Francisco Bay will likely be severely impacted as a consequence of climate-induced sea level rise, the Basin Plan fails to even mention the topic - let alone include planning provisions and policies for sea level rise adaptation. As the Regional Board is aware, anticipated rates of sea-level rise in coming decades will likely result in a number of adverse impacts to San Francisco Bay and surrounding environs. Some findings regarding the consequences of a rising sea under conservative forecasts of sea level rise include:

- Inherent shoreline inundation from a rising Bay and flooding from heightened storm surges, resulting in loss of tidal marsh areas, inundation of critical infrastructure and widespread property loss;[8]

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[7] "[The discharger's] argument that its water quality must be measured at the time storm water actually flows into a navigable water (as opposed to the time it exits the AIM facility) is equally misplaced. As WaterKeepers points out, accepting AIM's argument in this regard would essentially make it impossible to determine just what pollutants were discharged from the AIM facility.

Moreover, AIM's argument amounts to a contention that it is entitled to a dilution credit for other storm water discharge. A dilution credit is a limited regulatory exception that must be preceded by a site specific mixing zone study. *See* Lazerow Decl., Ex. F, Implementation Plan, §§ 1.4.1, 1.4.2.2, pp. 13-15, and Appendix 5. It is undisputed that AIM's current permit does not provide for a mixing zone, and it is further uncontroverted that AIM has never applied for any dilution credit. Fact Nos. 249, 250. Hence the concept of a dilution credit/mixing zone is inapplicable to this case."

[8] Knowles, N. 2010. Potential Inundation Due to Rising Sea Levels in the San Francisco Bay Region. California Climate Change Center. San Francisco Estuary and Watershed Science, 8:1.

- Impediments to drainage and reduced sediment flux from low-gradient streams and rivers;[9,10]
- Altered species composition due to inland migration of the tidal inundation zone;[11,12]
- Alterations to the balance between sediment accretion and erosion, thereby affecting the success of tens of thousands of acres of tidal marsh restoration currently underway throughout the region;[13,14]
- Modeling results suggest an 11.8-inch increase in sea level rise would shift the 100-year storm surge-induced flood event to once every 10 years.[15]

Legislative efforts such as AB 32 have demonstrated California's commitment to slowing the release of greenhouse gas emissions and mitigating the effects of climate change. However, policy makers and regulators have been reluctant to provide municipalities and developers with clear adaptation guidelines to address inevitable rates of sea-level rise. During the 2006 Climate Protection Summit, hosted by the Bay Area Air Quality Management District, local jurisdictions identified the need for a regionally coordinated effort and clear guidance. In the years since, activities have been limited to discrete actions by the Bay Conservation and Development Commission (BCDC), including the incorporation of sea level rise planning provisions into the Bay Plan. Given BCDC's limited regulatory authority, however, their efforts are hardly enough.

In recent years, research has become available indicating probably effects of sea level rise on hydrology, sediment transport, and habitats. In the South Bay, businesses, legislators, and non-profits are currently developing plans for levee expansion and other adaptation measures to defend urban areas, in ways that may or may not be protective of Beneficial Uses.[16] The Basin Plan should reflect these realities and help inform these processes. In the absence of guidance, development and planning review lacks transparency and Regional Board staff is provided limited tools to direct their decision-making processes.

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[9] Phillips, J.D. and M.C. Slattery. 2006. Sediment storage, sea level, and sediment delivery to the ocean by coastal plain rivers. Progress in Physical Geography 30, 4. pp. 513–530

[10] Duncan M. FitzGerald, D.M., M.S. Fenster, B.A. Argow and I.V. Buynevich. 2008. Coastal Impacts Due to Sea-Level Rise. Annual Review of Earth and Planetary Sciences. v. 36, pp. 601-647

[11] Galbraith, H., R. Jones, R. Park, J. Clough, S. Herrod-Julius, B. Harrington, and G. Page. 2002. Global Climate Change and Sea Level Rise: Potential Losses of Intertidal Habitat for Shorelibirds. Waterbirds. 25(2):173-183.

[12] Stralberg, D., V. Toniolo, G.W. Page, and L.E. Stenzel. 2004. Potential Impacts of Non-Native Spartina Spread on Shoreland Populations in South San Francisco Bay. PRBO Report to California Coastal Conservancy (contract #02-212). PRBO Conservation Science, Stinson Beach, CA.

[13] Orr, M., S. Crooks, and P.B. Williams. 2003. Will Restored Tidal Marshes be Sustainable?. San Francisco Estuary and Watershed Science 1(1):Article 5.

[14] Although some very high accretion rates occur in the San Francisco Bay region the average rate is approximately 1-2 mm per year. This rate has kept pace with recent sea level rise, but will likely fall short of the projected future sea-level rise of 2-3 mm (or more) per year. The high degree of development and infrastructure placed in nearshore areas restricts the inland migration of wetlands in many locations, thus more coastal wetlands are likely to be lost.

[15] California Climate Change Center. 2006. Projecting Future Sea Level. publication #CEC-500-2005-202-SF. Availableat www.energy.ca.gov

[16] Refer to the April 11, 2012 Contra Costa Times article by Mike Taugher and Paul Rogers "$1 billion needed for South Bay flood protection and marsh restoration"

At a minimum, the Regional Board must include within the Basin Plan discussion of the likely effects of climate change, with particular focus on sea level rise. Of greater utility would be prescriptive actions expected of developers within areas subject to sea level rise during the life of a proposed project, as well as recommendations to help ensure the sustainability of wetland restoration projects.

VI. Technology Based Effluent Limits

Basin Plan section 4.12 should be revised. It currently states that the 15 major industrial dischargers "are in compliance with available BAT standards promulgated by the U.S. EPA for each industrial classification." This is factually incorrect. The U.S. EPA has established Effluent Guidelines and Standards for Petroleum Refining Point Sources (40 CFR § 419 Subpart B) based on Best Available Technology Economically Achievable (BAT), but a review of existing data shows that the 15 major industrial facilities are *not* always "in compliance with" these Effluent Guidelines. (E.g., Shell Oil Products US and Equilon Enterprises LLC, TENTATIVE ORDER NO. R2-2012-XXXX, NPDES NO. CA0005789, Fact Sheet, F-9 "The Discharger violated its daily maximum effluent limit for selenium in March 2007, February 2008, and January 2010 (22 violations), daily maximum effluent limit for total coliform in January 2010 (1 violation), and daily maximum and average monthly effluent limit for nickel in February 2010 (3 violations)." Basin Plan section 4.12 should therefore be revised or clarified.

VII. Oil Spills

The Basin Plan's discussion of oil spills is no longer accurate and should be deleted or updated to reflect the known risks of oil spills to the Bay and its tributaries. To construct a more useful and protective policy, the Board staff should engage in a thorough review of extent threats and responsible agencies, to more clearly spell out the most protective role the Regional Board should play in this critical regional issue.

As noted in the Basin Plan, oil spills can cause severe and extensive damage to the environment. Section 4.24 cites petroleum and fuel transfers (presumably at marine oil terminals) as the primary source of oil spills. While precautions are much more extensive at oil terminals these days, several significant spills have happened recently in the Port of Los Angeles/ Long Beach, and a lack of regulatory requirements for on-the-water fuel transfers caused a significant amount of oil to spill during operations at the Dubai Star in the last several years.

In addition to risks from bunkering operations, San Francisco Bay's busy shipping ports (as well as shipping through shallow, fast-moving Pinole Shoals en route to Stockton and Sacramento) pose a substantial risk of oil spills to San Francisco Bay. In 2007, the container ship Cosco Busan struck the Bay Bridget and emptied 53,000 gallons of Intermediate-grade Fuel Oil into the Bay, causing extensive contamination, fatal injury to thousands of migratory birds and decimation of a herring season due to toxic exposure and deformation of herring embryos. While some safeguards have gone into place since the Cosco Busan spill, container ships (which often carry more oil than tankers) now arriving in the Port of Oakland are greater than 1200' long, and must turn 180 degrees in the Inner Harbor Turning Basin, with less than 100 feet to spare on each end of the ship. A light gash in an outer fuel tank could result in a serious spill.

Inland spills also pose a serious risk to the Bay. Recently (for the second time), a sump pump in a University of California at Berkeley building released hundreds if not thousands of gallons of diesel into Strawberry Creek. The response was less than impressive, as over-wintering shorebirds and ducks fed on clams and crustaceans through the diesel soaked tidal flats where Strawberry Creek meets the Bay. But the major source of inland spills is from leaking pipelines and trucks carrying fuel and chemicals. California's Office of Spill Prevention and response has a mandate but no funding source to respond to inland spills, leaving EPA in charge; unfortunately, EPA staff lack the extensive training and resources needed for an effective response, resulting in a significant gap in preparedness and likely damage to water quality. These unpermitted discharges to waters are squarely within the Regional Board's purview.

COMMENTS ON POLICIES PROPOSED IN STAFF REPORT

The undersigned organizations reaffirm that both beneficial uses and related water quality objectives should be first and foremost a function of the actual societal benefits the Region's waters have provided in the past (before impairment), as well as today. Consequently, these amendments or revisions should be based on protecting those beneficial uses or remediating the water to bring them back. We oppose revisions that are based on what is considered at this time to be achievable or is in the interests of the discharger community.

I. Amend Wet Weather Overflows Implementation

The 2012 Triennial review proposes to amend Section 4.9.2 and Table 4-4 of the Basin Plan to provide for consistency with newly issued NPDES permits (Alameda, NPDES Permit No. CA0038474; Albany, NPDES Permit No. CA0038471; Berkeley, NPDES Permit No. CA0038466; Emeryville, NPDES Permit No. CA0038792; Oakland, NPDES Permit No. CA0038512; Piedmont, NPDES Permit No. CA0038504; and Stege, NPDES Permit No. CA0038482)(collectively, "the 2009 Permits"), and State Water Board Order No. WQ 2007-0004 remanding Order No. R2-2005-0047. While we fully support this proposed revision, we believe it should go further than Section 4.9.2 and Table 4-4, and include comprehensive revisions to section 4.11.5 for consistency and up-to-date information.

II. Evaluate the Beneficial Use for Municipal Supply for Groundwater Aquifers along the Bay Fringe

This proposed policy is not protective of Bay water quality, and is opposed by the undersigned organizations. Water Board Resolution 89-039 provides a forward thinking, long-term protection to all surface and groundwaters in the state. Instead of seeking "exceptions to this policy" particularly in areas that are severely impaired (such as when there are "elevated total dissolved solids concentrations…"), that will have the result of reducing cleanup requirements, the Regional Board is responsible for supporting and implementing Resolution 89-039 to the greatest degree possible.

III. Evaluate the Shellfish Harvesting Beneficial Use for the San Francisco Bay Region

This proposed policy is not protective of Bay water quality and is opposed by the undersigned organizations. Instead, we see the refinement of the shellfish harvesting beneficial use definition between commercial and recreational shellfish harvesting as an unnecessary opportunity to reduce water quality standards. Although commercial shellfish harvesting is not currently occurring in San Francisco Bay, it is a fishery that once thrived. In recent years, groups and individuals have explored opportunities for oyster restoration – efforts that may result in innovating restoration opportunities driven by the potential for commercial shellfish harvesting. So long as such operations are compatible with existing Beneficial Uses, commercial opportunities should not be discouraged by the Water Board, nor codified in the Basin Plan.

IV. Develop Site-Specific Objectives for Dissolved Oxygen in San Francisco Bay

This proposed policy is not protective of Bay water quality and is opposed by the undersigned organizations. While discrete portions of the Bay may experience reduced dissolved oxygen (DO) concentrations resulting from restoration activities, this is not a widespread phenomenon warranting expenditure of precious staff time to develop site-specific objectives. Further, if human alterations of sloughs and tidal channels have resulted in conditions inadequate to support aquatic life, this is an issue that should be rectified by means other than those involving relaxations in water quality standards.

Creation of site-specific DO objectives also runs counter to the Nutrient Numeric Endpoint (NNE) project, which takes what could be characterized as an ecosystem-based approach to nutrient management. Creation of site-specific objectives would represent a duplication of effort that would likely be overturned by outcomes of the NNE project.

V. Refine Alameda Creek Watershed Total Dissolved Solids (TDS) and Chloride Water Quality Objectives

This proposed policy is not protective of Bay water quality, and is opposed by Baykeeper. The Regional Board should not expend any precious staff resources to degrade this existing objective. The only result from this backsliding would be to facilitate the introduction of new dischargers who were previously unable to meet the existing objective. This would result in degradation and must be fully justified through an antidegradation analysis.

VI. Revise Pentachlorophenol (PCP) Water Quality Objectives

We support amending the basin plan to accommodate more restrictive objectives for PCP and developing a related implementation plan. The Brief Issue Descriptions mentions that currently, information regarding where aquatic conditions occur in the Region that might pose a risk to salmonids is not available. In the absence of site-specific data, the Board must assume numeric objectives for PCP apply throughout the Estuary and its receiving waters.

VII. Trash Water Quality Objectives

Clean Water Action and the California Coastkeeper Alliance have been active stakeholders in the State Water Board's process to develop a trash policy. While we support the development of a policy to ensure a minimum level of protection throughout the state, we are concerned this effort may undermine the efforts of Region 2 to greatly decrease trash discharges, through implementation of the Phase I Municipal Regional Permit and other efforts. The state process has at times been delayed, while stormwater requirements within the region have created urgency for local municipalities to address marine debris/trash pollution.

Any statewide TMDL or water quality control policy should be viewed as a minimum standard. The Basin Plan should adequately reflect on-going efforts and goals towards achieving a 100% trash load reduction within Phase I communities, as well as any other region-specific measures intended to achieve trash-related water quality objectives. Subsequent to finalization of a statewide trash policy, the Regional Board must determine if additional regulations and requirements are required to meet the demands of Region 2, which should be reflected in future iterations of the Basin Plan. Finally, implementation of any trash load reduction policies should go beyond establishment of arbitrary controls or policies, such as education programs or product bans. Regulated authorities must be required to measure program effectiveness in terms of actual trash load reductions.

VIII. Develop Nutrient Water Quality Objectives

Over the last decade, scientists have informed the Water Board of impacts associated with nutrient enrichment, which have been exacerbated by physical changes observed throughout the San Francisco Estuary. Reductions in dissolved oxygen concentrations in the South Bay have been documented, accompanied by increases in phytoplankton, while ammonia/um is known to be impacting waters in the northern reaches of the Estuary. The Nutrient Numeric Endpoint (NNE) process hopes to address these issues, though there are indications that the stakeholder processes shall be dominated by the interests of dischargers, and that the final product may not be fully protective of Beneficial Uses.

We are supportive of the NNE process, though this process may take many years, during which time impairments to water quality may become more severe. Should scientific consensus indicate the need for more stringent water quality based effluent limits (WQBELs) for ammonia/um or dissolved oxygen we hope the Board shall not delay action until a time when stakeholders can agree on a suitable solution. We encourage the Board to recognize this in the Basin Plan, making it clear that more stringent WQBELs may be imposed on wastewater dischargers, if necessary.

IX. Development and Implementation of Biological Objectives

We are generally supportive of the creation of biological objectives for the protection of aquatic life, so long as their establishment does not preclude the enforcement of existing water quality objectives. However, this process is reminiscent of the triad-approach developed in support of the Sediment Quality Objective (SQO) process, which is about 20 years overdue, has required large resource allocations, and has resulted in a convoluted and unnecessarily expensive

approach to evaluating sediment quality that is scientifically unreliable, less protective of the environment and human health, and is unlikely to ever be implemented.

Prior to allocating precious resources to this effort, we hope the Board and public are provided with a detailed memorandum regarding the requirements of developing biological objectives for waters of Region 2, as well as the expected outputs and outcomes. Given current constraints of Region 2 staff, this effort is unlikely to warrant the large allocation of staff time and resources needed to properly establish site-specific biological objectives for the region.

X. Incorporate Revised U.S. EPA Recreational Water Quality Criteria for Bacteria

We are strongly opposed to EPA's proposed criteria, and urges the Regional Board to take an active position against this policy backsliding. The EPA proposal, released in December, would allow 1 in 28 beachgoers to experience some gastrointestinal illness after swimming, rather than the 8 in 1,000 that were previously acknowledged. Even if adopted by EPA, the Regional Board should maintain its own more stringent standards, and not spend precious staff resources writing a policy to degrade water quality.

XI. Priority Ranking for TMDL Development

Although we appreciate Regional Board efforts to develop TMDLs for water bodies located throughout the Region, we have questions regarding how these TMDLs have been prioritized. The TMDLs listed certainly address serious water quality impairments, yet how do these TMDLs rank, in terms of threats to Beneficial Uses, compared to dioxins and furans, for example? It is difficult for the public to comment on the adequacy of the list without discussion of how these priorities were developed. In the absence of such information, it appears these TMDLs were selected based on ease of development and implementation rather than severity of the threat to Beneficial Uses.

***

CONCLUSION

We thank you for your careful review and consideration of these many policy proposals, and we offer our full support and collaboration as needed to help Regional Board staff develop and implement each of the above policy recommendations, as appropriate.

Sincerely,

Jason Flanders
Program Director, San Francisco Baykeeper

Ian Wren
Staff Scientist
San Francisco Baykeeper

Andria Ventura
Program Manager
Clean Water Action/Clean Water Fund

Carin High
Vice Chair
Citizens Committee to Complete the Refuge

From: <bruhns@lmi.net>
To: <rlooker@waterboards.ca.gov>
CC: <nfeger@waterboards.ca.gov>, <klichten@waterboards.ca.gov>, <jponton@wat...
Date: 3/21/2012 11:23 AM
Subject: Basin Plan 3 year review

Greetings,

This is in response to the public notice for updating the Basin Plan. I offer the following thoughts for your consideration (note that these are my own opinions, I am not representing any other person, group, legal entity, etc.)

Regarding the issue of prioritizing the various activities listed in the March 2012 staff report, I would give the highest priority to completing the Stream Protection Policy. This is the most broad program proposed, has had years of work put into it, and probably would have the most significant beneficial effects of the various policy updates proposed. A few further useful aspects of the Policy are noted below. I think it is about time that this effort be brought forth to the public and the Board for consideration. Regarding the other suggested updates, to me they appear to be incremental advancements and revisions (i.e. tweaking) of existing policies and Board practices, and therefore I have no opinion of their relative priority.

I would like to introduce a couple of subjects (known stressors coming our way) into the discussion of modifying the Basin Plan. These can be considered as specific items to put into the Plan, or as something to address when considering other Plan changes.

First is the expected population growth in the Bay Area and its potential impacts on water quality. The SF Chronicle last week quoted a recently released ABAG report projecting that the Bay Area population by 2040 will have over 2 million more folks living here. I am aware that ABAG's area does not exactly match the Water Board boundaries, but the general concern should not change, i.e. not all the growth and its impacts will occur just beyond the Regional Board boundaries. Presuming ABAG is correct, there will be increased pressure on the region's wastewater infrastructure (a lot more sewage to move and treat), an infrastructure that is already stressed (e.g. Board orders requiring sewer system upgrades to prevent overflows). Increasing population will also need more housing, more business structures, more roads, etc. All these will further stress the landscape and have potential impacts on water quality (e.g. stormwater or stream system encroachment). This is one specific example of why the Stream Policy is needed.

The second subject is climate change. There is already a measured rise of over 20 cm. in the Bay level since 1900. BCDC has published maps of expected further rise. There is really no need for any further discussion of whether there will be an impact, perhaps some discussion of the magnitude and timing. Much of the overburdened infrastructure noted above will be impacted (trunk sewers and wastewater treatment plants tend to located at the low points of a city, areas most likely to affected by rising sea level). Will all these facilities be moved, surrounded by dikes, or what? If planning for this has not begun, perhaps it should. Sea

level rise also needs to be considered in such efforts as tidal marsh restoration.

Another expected impact of climate change is a more variable climate, i.e. more droughts and very wet years. This will have a potential impact on stream systems and will be a compounding factor along with population growth. Another reason for a Stream Policy.

Finally, a thought on big picture, long range planning. Many agency plans have a planning horizon. ABAG's population projections are for 2040. The California Water Plan (last time I looked) has about a 40 year horizon, or about to 2050. I suggest the Water Board adopt a horizon of 2050 (either in the Basin Plan or some other public document). This would be the 100th anniversary of the Board. The question I pose is; after 100 years, after about 200 Board members, after about 10 Executive Officers, after about a 1000 staff members, after the Board itself has spent about a billion dollars of public funds (taxes, fees, federal grants, etc.), and after others (local government, industries, builders, farmers, etc.) have spent about one to two billion dollars a year, every year to maintain or improve water quality: What will we be able to show for that effort? (All estimates are my own, somewhat educated guesses). Or from a planning perspective now, what do we want to be able to show in 2050 for all that personal effort and expenditure of resources. I think the planning can be done, and it can be shown that it was a worthwhile investment. I also think planning should be done, and if it is done, it would lead to even more being accomplished.

Thank you for your consideration of these thoughts.

Wil Bruhns
Ex bureaucrat

SFRWQCB PUBLIC WORKSHOP
2012 Triennial Basin Plan Review
March 27, 2012
Elihu M. Harris State Building, 2nd Floor, Room 10
1515 Clay Street
Oakland, CA 94612

Comments Prepared by: Central Contra Costa Sanitary District
5019 Imhoff Place
Martinez, CA 94553-4392
925-228-9500
Margaret P. Orr, P.E, Director of Plant Operations
Tim Potter, Environmental Compliance Superintendent
Melody LaBella, Assistant Engineer

Good afternoon, my name is Margaret Orr and I am Director of Plant Operations at Central Contra Costa Sanitary District, Martinez, CA. With me today is Tim Potter, the District's Environmental Compliance Superintendent and Melody LaBella the District's Assistant Engineer. Central Contra Costa Sanitary District also participates as a member of the Executive Board of Directors for the Bay Area Clean Water Agencies (BACWA) and is an active member of the California Association of Sanitation Agencies (CASA) and the National Association of Clean Water Agencies (NACWA).

Our comments today will focus on the update for the toxicity testing requirements. The State Water Resources Control Board is proposing a new policy which provides numeric toxicity objectives versus the current narrative toxicity objectives. The State Water Board proposed policy would also require a new statistical approach called the Test of Significant Toxicity. In the Briefing document provided for the Basin Plan review, staff has described the new TST as "endorsed by USEPA." Actually, USEPA states that "EPA Regions and their NPDES states can still use EPA's Technical Support Document (TSD) approaches. This is what this Region is currently using. In fact the vast majority of the States use the TSD approach. US EPA states "the TST approach is **another statistical option** to analyze valid WET test data" (NPDES TST Implementation document EPA 833-R-10-003 June 2010). James Hanlon in a USEPA memo dated June 18, 2010 stated "the TST approach does not preclude the use of existing recommendations for assessing WET data provided in EPA's 1991 Water Quality based Technical Support Document which remains valid for use by EPA Regions and States". The San Francisco Bay Regional Water Quality Control Board has been gathering toxicity data for the past 20 years using the Technical Support Document approaches. As leaders in this arena, the dischargers have met with the State Water Board numerous times to provide feedback on the affect of the TST statistics which calculates control water as toxic up to 15% of the time because of the new calculation, TST statistical method. Key items the Regional Board will need to integrate into the Basin Plan to protect beneficial uses are as follows:

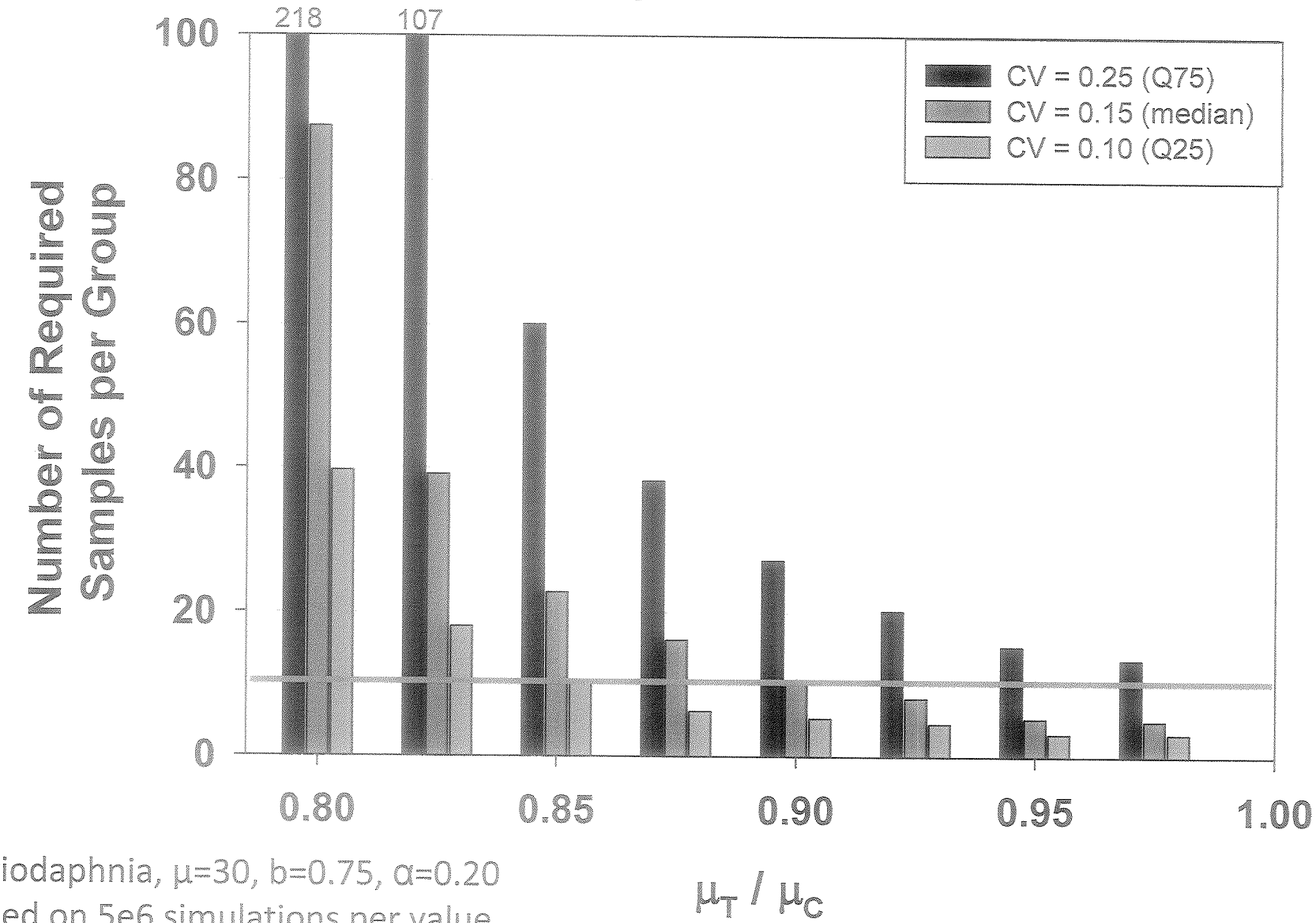
- The Test of Significant Toxicity (TST) relies on the toxicity test results using In-stream Waste Concentrations being compared to a control. Implementing the

Draft Toxicity Policy without using In-stream Waste Concentrations will result in erroneous TST results implying toxicity in discharges that do not actually cause adverse effects in the receiving waters. The Draft Toxicity Policy does not ensure statewide consistency when it addresses the use of In-stream Waste Concentrations by the state's Regional Boards as "may" use IWC. Using In-Stream Waste Concentrations is critical given the statistical issues with false positives. . We have consistently made this comment to the State, and it would be helpful if the Regional Board independently adopted this approach.

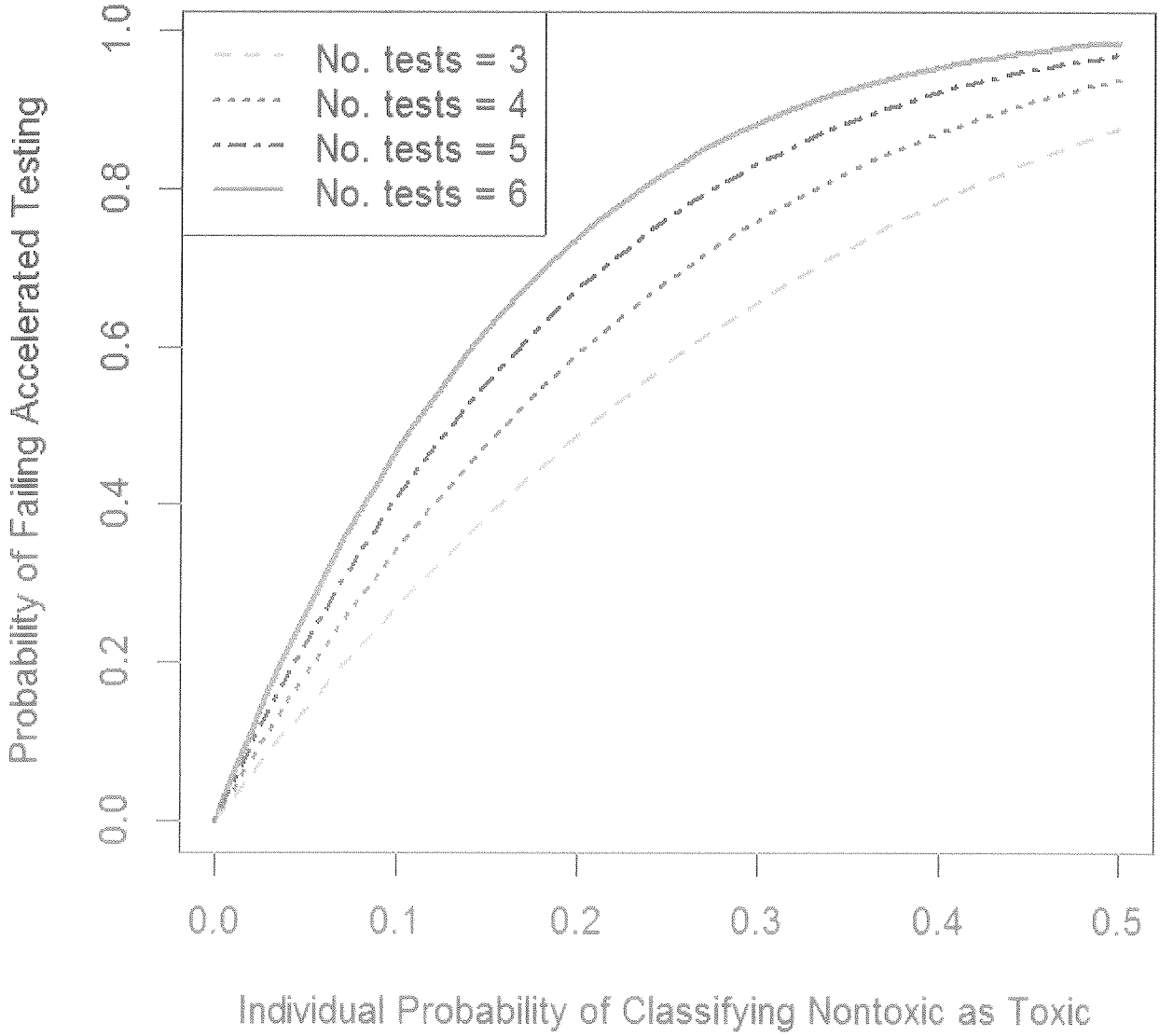
Thank you for the time you have allotted us today to bring this matter to your attention and we sincerely hope that you will work closely with the State Water Board to integrate in stream waste concentrations and mean effect levels in the Basin Planning document.

CCCSD will also be submitting a letter that will address several additional issues of concern including nutrients and selenium.

Number of samples needed to maintain false positive rate ≤ 5%



Ceriodaphnia, μ=30, b=0.75, α=0.20
Based on 5e6 simulations per value


No. tests = 3
No. tests = 4
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Probability of Failing Accelerated Testing
0.0
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0.4
0.6
0.8
1.0
0.0
0.1
0.2
0.3
0.4
0.5
Individual Probability of Classifying Nontoxic as Toxic

Central Contra Costa Sanitary District
Protecting public health and the environment
5019 Imhoff Place, Martinez, CA 94553-4392

FAX: (925) 372-763

ANN E. FARRELL
General Manager

KENTON L. ALM
Counsel for the District
(510) 808-2000

ELAINE R. BOEHME
Secretary of the District

April 16, 2012

Richard Looker, Senior Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612

Via E-mail: *rlooker@waterboards.ca.gov*

Dear Mr. Looker:

2012 TRIENNIAL REVIEW OF SAN FRANCISCO BAY BASIN WATER QUALITY CONTROL PLAN

Central Contra Costa Sanitary District (District) concurs with the Bay Area Clean Water Agencies' (BACWA) comments on the Triennial Review of the San Francisco Bay Basin Water Quality Control Plan (Basin Plan) submitted under separate letter. The District's comments presented below are intended to compliment, and in some cases expand on, BACWA's comments. References are to the document titled "Brief Issue Descriptions for the 2012 Triennial Review San Francisco Bay Basin Water Quality Control Plan (Basin Plan) March 2012" prepared by the SF Bay Regional Water Quality Control Board (RWQCB).

Update the Basin Plan's Toxicity Testing Requirements

The District requests that issue 3.2 Update the Basin Plan's Toxicity Testing Requirements be addressed as a high priority. The District has significant concerns about major elements of the State Board's Draft Toxicity Policy and will continue to provide comments through the State Board's process to positively affect the development of this document. As identified in BACWA's comments, the RWQCB can take steps as the toxicity policy document is being developed to ensure the Basin Plan implementation strategies appropriately support critical elements of the State Board's Toxicity Policy. As RWQCB staff indicated during the 3/27/12 Triennial Review workshop, the RWQCB will be required to implement the State Board's Toxicity Policy when it is finalized which is planned to occur within a year. Given this timing, it is very important to consider modifications to the Basin Plan to enable appropriate application of the In-stream Waste Concentration (IWC) and other elements that will be at the RWQCB's discretion.

Nutrients and Dissolved Oxygen

The District concurs with BACWA's comments on the strategies to address Develop Nutrient Water Quality Objective (issue 3.7) and Develop Site-Specific Objective for Dissolved Oxygen in San Francisco Bay (issue 3.1). The San Francisco Bay system is complex with many variables contributing to both the health and impairment of water quality and biota in this ecosystem.

Recycled Paper

Significant programs are underway or planned over the next several years to generate important data to properly inform expert scientists and policy decision-makers on the appropriate actions to address nutrients as a potential pollutant that warrants control. The District recommends the RWQCB's consideration of Basin Plan modifications related to nutrients are paced to enable the current studies and programs be completed to provide the necessary data or identify applicable data gaps, before initiating regulatory actions.

The Basin Plan amendments related to nutrients should support integrated region-wide strategies to implement nutrient controls that have the potential to yield measurable improvements to water quality. Such strategies will benefit from comprehensive data generated from appropriately designed studies.

Priority Ranking for TMDL Development

The District supports the comments provided by BACWA on the "Suisun Marsh Dissolved Oxygen, Mercury, and Nutrients" TMDL and would like the RWQCB to proceed with TMDL development in a manner that continuously evaluates the original impairment listing and alternative control strategies to address the impairment condition. For example, the District has provided significant input into the North San Francisco Bay Selenium TMDL development that should be considered when deciding whether to continue with this TMDL or to redirect RWQCB finite resources.

The District appreciates the RWQCB's consideration of the above comments and we look forward to contributing to the process to modify the Basin Plan. Please contact Tim Potter (925-229-7380), Margaret Orr (925-229-7284) or me (925-229-7302) if you have any questions about the comments presented in this letter.

Sincerely,

Ann E. Farrell
General Manager

AEF/mvp

cc: James Kelly, BACWA Executive Director

April 17th, 2012

Geotechnical
Environmental
Water Resources
Ecological

Richard Looker
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Re: 2012 Triennial Review of the Water Quality Control Plan for the San Francisco Bay Basin

---

Dear Mr. Looker:

We contacted the San Francisco Bay Regional Water Quality Control Board (Regional Board) in fall 2010 on behalf of our client, the International Copper Association and Copper Development Association (ICA/CDA), to request information concerning the region's copper criteria and the schedule of the upcoming triennial review of the Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan). ICA/CDA played a significant role in sponsoring scientific research used in development of the freshwater Biotic Ligand Model (BLM) for copper, which was adopted by the United States Environmental Protection Agency (EPA) in its latest national ambient water quality criteria (EPA 2007). ICA/CDA is now interested in encouraging efforts by states and tribes to incorporate these latest recommended EPA national criteria for copper into their water quality standards programs.

It is our understanding that the triennial review of the Basin Plan is currently underway and that public comments on the proposed amendments are due by April 17, 2012. Thus, the purpose of this letter is to urge the Regional Board to consider updating its aquatic life criteria for copper to use the BLM as currently recommended by EPA.

The current aquatic life criteria in the California Toxics Rule (CTR) used to derive freshwater copper standards, like most states' criteria, only take into account hardness as a factor that modifies toxicity. Using only hardness as a modifying factor for metals criteria is an outdated approach that excludes a substantial body of peer-reviewed scientific literature demonstrating that additional modifying factors can and should be incorporated into regulatory benchmarks or standards, while providing the same levels of aquatic life protection required under the Clean Water Act (EPA 1985, 1994, 2001, 2007). Copper toxicity is a function of its bioavailability, which in addition to being controlled by hardness, is also strongly related to other important factors such as dissolved organic carbon (DOC),

GEI Consultants, Inc./Ecological Division
4601 DTC Boulevard, Suite 900, Denver, CO 80237
303.662.0100 fax: 303.662.8757

alkalinity, pH, and temperature. The key strength of the BLM is that it accounts for multiple factors—in addition to hardness—that mitigate or exacerbate copper's toxic effect on aquatic life. There also are practical advantages for using the BLM; it is a cost effective regulatory tool compared to other site-specific toxicity test procedures (e.g., water-effect ratios), and the BLM software is publicly available, sanctioned by EPA, and requires only brief training to generate rapid and useable output. Therefore, BLM-based criteria provide a practical means of deriving demonstrably more accurate levels of aquatic life protection across a broad range of water quality conditions.

Please let us know how we can assist the Regional Board in its consideration of the BLM during the triennial review. GEI or ICA/CDA could help in a variety of ways, including preparation of written or oral testimony supporting the technical basis of the BLM, or providing guidance on application of the BLM to water quality criteria and what type of implementation approach would best fit your available datasets. ICA/CDA has also sponsored BLM training sessions over the past several years, and they have been well-attended by both regulators and the regulated community. If desired, it may be possible to provide this course or related education materials if you would find that helpful as a means of helping inform the public and stakeholders as to the basis and application of the BLM.

We appreciate the opportunity to provide you with this prospective proposal. Please let us know if you have any questions. We look forward to discussing this with you further.

Sincerely,

GEI CONSULTANTS, INC.

Robert W. Gensemer, Ph.D.
Senior Ecotoxicologist

RWG
cc: Joe Gorsuch, CDA
Steven Canton, GEI
Stephanie Baker, GEI

References

Tobiason, S., P. Heck, S. Park, and K. Tobiason. 2009. Using the biotic ligand model, water effect ratio, and translator for site-specific copper criteria to update effluent limits at a wastewater treatment plant. Proceedings of the Annual Water Environment Federation Technical Exhibition and Conference, p. 6325-6344. Water Environment Federation, Alexandria, VA.

U.S. Environmental Protection Agency (EPA). 1985. Guidelines for deriving numerical national water quality criteria for the protection of the aquatic organisms and their uses. PB85-227049, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA). 1994. Interim guidance on determination and use of water-effect ratios for metals. EPA-823-B-94-001, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA). 2001. Streamlined water-effect ratio procedure for discharges of copper. EPA-822-R001-005, U.S. Environmental Protection Agency, Washington, D.C.

U.S. Environmental Protection Agency (EPA). 2007. Aquatic life ambient freshwater quality criteria – copper. EPA-822-R-07-001, U.S. Environmental Protection Agency, Washington, D.C.

FAIRFIELD-SUISUN SEWER DISTRICT

1010 CHADBOURNE ROAD • FAIRFIELD, CALIFORNIA 94534 • (707) 429-8930 • WWW.FSSD.COM

GREGORY G. BAATRUP, GENERAL MANAGER

April 17, 2012

RW-100.10.10/12

Richard Looker
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

RE: 2012 Basin Plan Triennial Review

Dear Mr. Looker,

The Fairfield-Suisun Sewer District (District) appreciates this opportunity to provide comments on the initial list of candidate issues for inclusion in the Water Board's 2012 Triennial Review workplan. The District delivers high quality advanced secondary effluent directly to Suisun Marsh, and we are committed to the protection and preservation of these marshlands.

Regarding Section 5.2 of the March 2012 "Basin Plan Triennial Review Brief Issue Descriptions", the Water Board should take into account the various regulatory efforts already underway in determining an effective approach to address impairment in Suisun Marsh. In the fifteen years since Suisun Marsh was included on the 303(d) list for nutrients, mercury, and dissolved oxygen (DO), there has been significant progress in 303(d) listing policies as well as considerable growth in scientific understanding of how discharges affect a waterbody's ability to meet beneficial use criteria.

Accordingly, the District requests that the Water Board address Suisun Marsh nutrient, mercury, and DO issues within the broader Nutrient Numeric Endpoint (NNE) framework rather than proceed with this project as a separate initiative. This approach is consistent with State Water Board Resolution 2005-0050 "Water Quality Control Policy for Addressing Impaired Waters: Regulatory Structure and Options."

However, if the Water Board desires to develop a Suisun Marsh TMDL within the next three years, it is important that District requirements be equivalent to the conditions in its currently applicable NPDES permit.

The District strongly supports the Water Board's thoughtful prioritization of Basin Plan Amendment projects, and we appreciate your consideration of our comments. We look forward to working with you throughout the Suisun Marsh TMDL development process. Please do not hesitate to contact Meg Herston, Environmental Compliance Engineer, at (707) 428-9109 or mherston@fssd.com if you have any questions.

Sincerely,

Greg Baatrup
General Manager

Comments from Fred Krieger concerning the SF Bay Basin Plan Triennial Review
Received via email April 9, 2012

Issue #x

Modify the objectives applicable to waterways that are current or potential sources of drinking water so that these objectives apply only to pollutants with the potential to pass-through drinking water treatment facilities or pollutants that otherwise hinder the operation of these facilities.

Goal

Refine Table 3-5 in the Basin Plan to include only those parameters that present a risk of passing through drinking water treatment facilities or otherwise hindering treatment. Surface water constituents without the potential to impact drinking water or plant operations—especially aluminum and iron—would not be regulated for this purpose although they are part of the Title 22 CCR standards applicable to drinking water.

Background

Basin Plan Table 3-5 generally applies all the Title 22 drinking water standards (primary and secondary maximum contaminant levels - MCL) to surface waters designated as potential or existing sources of drinking water (MUN beneficial use). This may cause inadvertent compliance problems for natural constituents in surface waters that do not present a risk to either public health or plant operations. This situation occurs because a fairly low level of suspended solids carries enough aluminum from natural background to exceed the drinking water standards. Iron from background sources may also be an issue because iron is regulated as a secondary MCL. Not all Regional Boards apply the Title 22 standards in their entirety to surface waters and about one half the Boards use only the primary standards.

A permit violation could occur when these drinking water-derived standards have been translated into water quality-based effluent limits or in situations when the permit requires general compliance with water quality standards (as in most stormwater permits). Since most non-saline surface waters are designated with the MUN beneficial use (existing potential source of drinking water), the potential for violations is widespread. See Table 2.

Table 2 – Potential Exceedances of WQS due to Natural Soil Constituents

Constituent	**Background Concentration in California Soils (1)**	**Concentration in Discharge** (assuming total suspended solids = 100 mg/l)	Basin Plan **Water Quality Objectives for Municipal Supply** (Table 3-5)
Aluminum	7.3%	7.3 mg/l	1.0 *and* 0.2 mg/l (2)
Iron	3.7%	3.7 mg/l	0.3 mg/l

(1) Average; UC Riverside, 1996, posted here
(2) 0.2 is the secondary standard for aluminum; the 0.3 standard for iron is a secondary standard.

Typically, sediment in raw waters supplied to drinking water treatment plants is addressed by coagulation and flocculation. Chemicals (coagulants) are added to the water, followed by stirring to transform the suspended particles into larger flock which then settles out. Chemicals typically used include aluminum sulfate, alum-polymer blend, iron-polymer blends, ferrous sulfate, ferric chloride, and lime.

However, if these raw source waters are discharged to waterways or reservoirs, the natural concentrations could become a compliance concern although no risk is present.

Basin Plan

Most, but not all Basin Plans in California include the Title 22 Primary maximum contaminant levels (MCL). About half include the secondary MCLs (SMCL). The Basin Plan for the San Francisco Bay Area includes the following

> 3.3.22 CONSTITUENTS OF CONCERN FOR MUNICIPAL AND AGRICULTURAL WATER SUPPLIES
>
> At a minimum, surface waters designated for use as domestic or municipal supply (MUN) shall not contain concentrations of constituents in excess of the maximum (MCLs) or secondary maximum contaminant levels (SMCLs) specified in the following provisions of Title 22, which are incorporated by reference into this plan: Table 64431-A (Inorganic Chemicals) of Section 64431, and Table 64433.2-A (Fluoride) of Section 64433.2, Table 64444-A (Organic Chemicals) of Section 64444, and Table 64449-A (SMCLs-Consumer Acceptance Limits) and 64449-B (SMCLs-Ranges) of Section 64449. This incorporation-by-reference is prospective, including future changes to the incorporated provisions as the changes take effect. Table 3-5 contains water quality objectives for municipal supply, including the MCLs contained in various sections of Title 22 as of the adoption of this plan.

Suggestion for Triennial Review Project

Consider applying only the Title 22 Standards to MUN waterways that present a risk to humans or treatment plant operations taking into consideration that treatment plants effectively address particulates from background sources (e.g., soils with iron and aluminum). Another option to address constituents from natural soils would be to consider filtering the samples before analyses.

San Francisco Bay Regional Water Quality Control Board

Public Workshop on the Basin Plan Triennial Review

March 27, 2012

Public Water Agencies Talking Points

- Good afternoon. My name is Elizabeth Leeper and I am an attorney at the firm Kronick, Moskovitz, Tiedemann & Girard.
- I am here today on behalf of the State Water Contractors organization and the San Luis & Delta-Mendota Water Authority, and their members, who receive water supplies from the State Water Project and federal Central Valley Project. These Public Water Agencies have a significant interest in water quality and aquatic resources in the Bay-Delta Estuary.
- We appreciate the opportunity to provide input to the Regional Water Board's Basin Plan Triennial Review process. We have reviewed the materials distributed for the workshop and are developing written comments that will be submitted by the deadline.
- Today I would like to highlight one issue in particular that should be a priority in the triennial review process.
- We are pleased to see the development of water quality objectives for nutrients identified in the staff report. We urge the Regional Board to designate the nutrient issue as a high priority.
- In particular, we urge the Regional Water Board to consider the impacts of ammonium on aquatic life in developing the nutrient objectives.
- In addition, we encourage the Regional Water Board to develop implementation program language provisions addressing the implementation of nutrient objectives through water quality regulation, including the NPDES permitting process.
- We look forward to working with the Regional Water Board in this process.
- Thank you

Westlands Water District
3130 North Fresno Street
P.O. Box 6056
Fresno, CA 93703
Phone: (559) 224-1523
Fax: (559) 241-6277

State Water Contractors
1121 L St., Suite 1050
Sacramento, CA 95814
Phone: (916) 447-7357
Fax: (916) 447-2734

April 17, 2012

Delivered Via E-mail to rlooker@waterboards.ca.gov

Mr. Richard Looker
California Regional Water Quality Control Board
San Francisco Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Comments of Public Water Agencies Regarding Triennial Review for the Water Quality Control Plan, San Francisco Bay ("Basin Plan")

Dear Mr. Looker:

The State Water Contractors, Inc. ("SWC") and Westlands Water District (Westlands),[1] on behalf of and with each of their member agencies (collectively, "Public Water Agencies"), respectfully submit the attached comments on the Triennial Review of the Water Quality Control Plan, San Francisco Bay Basin ("Basin Plan"). The Public Water Agencies thank the San Francisco Bay Regional Water Quality Control Board ("Regional Board") for the opportunity to provide our input and views regarding issues for priority consideration in the Triennial Review and the Basin Plan amendment projects that will best address the water quality planning needs of the region.

The attached comments and referenced studies document the significant impacts of nutrients, and in particular ammonium, on aquatic life in the Bay-Delta Estuary, including Suisun Bay. Published research demonstrates that: (1) excess ammonium inhibits nitrogen uptake by diatoms and reduces diatom primary production (which reduces a key food source for copepods eaten by Delta fish species, including Delta smelt and longfin smelt); (2) excess ammonium alters algal communities by changing the ratios of different nutrients to favor harmful, invasive, and less desirable species; and (3) excess total ammonia nitrogen is toxic to copepods such as *Eurytemora affinis* and *Pseudodiaptomus forbesi*, which are a food source for larval Delta smelt and other fish. We urge the Regional Board to designate the development of numeric water quality objectives for nutrients as a high priority for the Triennial Review, and to consider the well documented impacts of ammonium on aquatic life in developing numeric nutrient objectives.

[1] For a description of the SWC and Westlands, see Attachment 1.

We respectfully request that the Regional Board consider the attached comments in identifying the priority issues for the Triennial Review and in developing Basin Plan amendment projects. Thank you for this opportunity to participate in the Triennial Review process.

Sincerely Yours,

Craig Manson
General Counsel
Westlands Water District

Terry L. Erlewine
General Manager
State Water Contractors

Attachments

Attachment 1

State Water Contractors, Inc. (SWC): The SWC organization is a nonprofit mutual benefit corporation that represents and protects the common interests of its 27 member public agencies in the vital water supplies provided by California's State Water Project ("SWP"). Each of the member agencies of the State Water Contractors holds a contract with the California Department of Water Resources ("DWR") to receive water supplies from the SWP. Collectively, the SWC members deliver water to more than 25 million residents throughout the state and more than 750,000 acres of agricultural lands. SWP water is served from the San Francisco Bay Area, to the San Joaquin Valley and the Central Coast, to Southern California. The SWC's members are: Alameda County Flood Control and Water Conservation District Zone 7; Alameda County Water District; Antelope Valley-East Kern Water Agency; Casitas Municipal Water District; Castaic Lake Water Agency; Central Coastal Water Authority; City of Yuba City; Coachella Valley Water District; County of Kings; Crestline-Lake Arrowhead Water Agency; Desert Water Agency; Dudley Ridge Water District; Empire-West Side Irrigation District; Kern County Water Agency; Littlerock Creek Irrigation District; Metropolitan Water District of Southern California; Mojave Water Agency; Napa County Flood Control and Water Conservation District; Oak Flat Water District; Palmdale Water District; San Bernardino Valley Municipal Water District; San Gabriel Valley Municipal Water District; San Gorgonio Pass Water Agency; San Luis Obispo County Flood Control & Water Conservation District; Santa Clara Valley Water District; Solano County Water Agency; and Tulare Lake Basin Water Storage District.

Westlands Water District: Westlands is a member of the San Luis & Delta-Mendota Water Authority and encompasses more than 600,000 acres of farmland in western Fresno and Kings counties. Westlands supplies water to farmers who produce high quality commercial food and fiber crops sold for the fresh, dry, canned and frozen food markets, both domestic and export, that generate more than $3 billion annually in agricultural-related economic activity. Westlands also supplies water to families, businesses, municipalities, and industrial users across the Central Valley. Westlands receives water through the CVP, the federal water project that stores water in large reservoirs in Northern California for use throughout the State. After water is released from CVP reservoirs, the water flows to the Delta. From there, water is pumped through the Delta-Mendota Canal for direct use or to the San Luis Reservoir for later use by our farmers. Many communities depend on the agricultural economy that relies on the water provided by Westlands, including Mendota, Huron, Tranquility, Firebaugh, Three Rocks, Cantua Creek, Helm, San Joaquin, Kerman, Lemoore and Coalinga. More than 50,000 people live and work in these communities and depend on the water provided by Westlands for their livelihoods.

Attachment 2

Public Water Agencies' Comments on the Triennial Review of the Water Quality Control Plan, San Francisco Bay Basin ("Basin Plan") April 17, 2012

The State Water Contractors ("SWC") and the Westlands Water District, and their member agencies (collectively, "Public Water Agencies") appreciate the opportunity to comment on the San Francisco Bay Regional Water Quality Control Board's ("Regional Board") Triennial Review ("Review") of the Water Quality Control Plan, San Francisco Bay Basin ("Basin Plan").

The Public Water Agencies have a significant interest in the Regional Board's Triennial Review process because they receive water through the California State Water Project ("SWP") and the federal Central Valley Project ("CVP"). The CVP and SWP collect and store water in large reservoirs in northern California for use throughout the State. After water is released from reservoirs, the water flows to the San Francisco Bay/Sacramento-San Joaquin River Delta ("Delta" or "Bay-Delta"). From there, water is conveyed for use on more than 2 million acres of prime farmland and by approximately 25 million California residents in the San Francisco Bay Area, the San Joaquin Valley, the Central Coast and Southern California.

The Bay-Delta estuary provides critical habitat for at least five species listed under the federal Endangered Species Act ("ESA"),[1] including the delta smelt[2] and spring-run Chinook salmon (threatened), the winter-run Chinook salmon (endangered), and the fall- and late fall-run Chinook salmon (species of concern).[3] For example, the Carquinez Strait and Suisun Bay are within the critical habitat that the USFWS has designated for the Delta smelt. (59 Fed. Reg. 65256-65279 [1994].) Another Bay-Delta species, the longfin smelt is listed as a threatened species protected under California Endangered Species Act ("CESA"), (14 Cal. Code Regs. § 670.5(b)(2)), and the U.S. Fish & Wildlife Service recently found that listing of the Bay-Delta population of longfin smelt under the ESA is warranted but currently precluded by higher priority actions. (77 Fed. Reg. 19756 [April 2, 2012]).

It is well documented that water quality and many aquatic resources within the Bay-Delta estuary are in decline. The estuary and many of its tributaries are listed as impaired, and the populations of both pelagic and anadromous fish have suffered significant decline in recent years. To date, regulators have largely responded to the fisheries' decline by regulating the CVP and SWP and restricting the fresh water supply available to the Public Water Agencies or their members. These restrictions have had a direct adverse impact on the ability of the

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[1] Under the federal Endangered Species Act, a threatened species is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." 16 U.S.C. § 1532(20). Endangered species are those which are "in danger of extinction throughout all or a significant portion of its range." 16 U.S.C. § 1532(6).

[2] The U.S. Fish and Wildlife Service listed the delta smelt as a threatened species in 1993 and designated critical habitat for the smelt in 1994. (58 Fed. Reg. 12854 [March 5, 1993]; 59 Fed. Reg. 65256 [Dec. 19, 1994].) The USFWS has found that reclassification of the delta smelt as endangered is warranted but precluded by other higher priority listing actins. (See 75 Fed. Reg. 17667 [April 7, 2010].)

[3] *See* U.S. Fish & Wildlife Service Sacramento Fish & Wildlife Office Species Account, available at www.fws.gov/sacramento/es/animal_spp_acct/delta_smelt.pdf; Updated Status of Federally Listed ESUs of West Coast Salmon and Steelhead, available at www.nwr.noaa.gov/Publications/Biological-Status-Reviews/loader.cfm?csModule=security/getfile&pageid=21346

members of the Public Water Agencies to serve the families, work places and farms who depend on CVP and SWP water.

Unfortunately, while the regulatory focus on water users has resulted in impacts to water supply reliability, it has not led to real improvements for the Delta smelt, longfin smelt, salmon or other aquatic life of the Bay-Delta. To the Public Water Agencies, this has not been a surprise. Federal and state agencies have long recognized that nutrient loadings significantly impact water quality and aquatic life.[4] Moreover, as highlighted in these comments, the current science clearly confirms that nutrients are contributing to the decline of aquatic life in the Bay-Delta. Accordingly, during this Review, the Public Water Agencies urge the Regional Board to:

- Make nutrients a high priority and devote the necessary staff and scientific resources to address this serious stressor on aquatic life in the Bay-Delta.
- Set clear numeric water quality criteria for ammonium.
- Amend the Implementation Plan in order to implement the new numeric water quality criteria by requiring wastewater treatment plants to install nitrification and denitrification technology to remove nutrients now discharged untreated into the waters of this State.

The Triennial Review process is an opportunity for the Regional Board to regulate and put in place measures that will reduce the water quality stressors on the Bay-Delta ecosystem. In view of the substantial contribution of nutrients to the decline of aquatic life, nutrients should be – indeed must be – a high priority issue for the Triennial Review process. The Regional Board should act now, before there is further decline in aquatic life, and develop and implement Basin Plan amendments that will address the impacts of nutrients on beneficial uses within the Region. The Public Water Agencies appreciate the opportunity to provide input to the Regional Board's Basin Plan Triennial Review process. For the reasons stated below, the Public Water Agencies urge the Regional Water Board to update the Basin Plan to address directly the water quality impacts of nutrients, particularly the impact of ammonium.

I. <u>Update Water Quality Objectives</u>

A. Develop Numeric Nutrient Water Quality Objectives

The Public Water Agencies are pleased to see that the March 2012 "Brief Issue Descriptions" for the 2012 Basin Plan Triennial Review ("Staff Report") identifies the development of Nutrient Water Quality Objectives as an issue for consideration in the Triennial Review process. (Staff Report, at 6.) We urge the Regional Board to designate the development of numeric nutrient objectives as an issue of high priority. In particular, the Regional Board should consider the well documented impacts of ammonium on aquatic life in developing numeric nutrient objectives.

[4] According to U.S. EPA: "Nutrient pollution, especially from nitrogen and phosphorus, has consistently ranked as one of the top causes of degradation in some U.S. waters for more than a decade. Excess nitrogen and phosphorus lead to significant water quality problems including harmful algal blooms, hypoxia and declines in wildlife and wildlife habitat. Excesses have also been linked to higher amounts of chemicals that make people sick." http://water.epa.gov/scitech/swguidance/standards/criteria/nutrients/

As described in the Basin Plan, "[t]he technical bases of the region's water quality objectives include extensive biological, chemical, and physical partitioning information reported in the scientific literature, national water quality criteria, studies conducted by other agencies, and information gained from local environmental and discharge monitoring . . . ." (Basin Plan at 3-1). The Public Water Agencies submit that there is already overwhelming scientific literature and research, grounded in sound science, to demonstrate that the ongoing discharge of nutrients, from sources such as wastewater treatment plants, is a major stressor contributing to the decline of the food web that supports aquatic life throughout the Bay-Delta.

Regional Board staff has acknowledged the scientific evidence that establishes the nexus between nutrient discharges and impacts on aquatic life. On June 4, 2010, the Regional Board submitted a letter to the Central Valley Regional Water Quality Control Board citing published studies that document the impacts of ammonium in Suisun Bay and urging the Central Valley Regional Board to take all necessary actions to ensure beneficial uses in Suisun Bay are fully protected.[5] In that letter, Regional Water Board Executive Officer Bruce Wolfe concluded:

> One of the primary hypotheses for the pelagic organism decline (POD) is a decline in food availability for POD species. Declines in diatom blooms in Suisun Bay have been well documented by the Interagency Ecological Program (IEP) and others. Studies on the relationship between nutrients and primary productivity in the estuary indicate that ammonia levels in Suisun Bay reduce both nitrate uptake and primary production rates (Wilkerson et al 2006, Dugdale et al 2007).

(June 4, 2010, letter from Wolfe to Central Valley Regional Water Quality Control Board.) Further, a work plan co-authored by a Regional Board Senior Scientist, Karen Taberski, states that "there is evidence that primary productivity is inhibited in Suisun Bay, and that NH_{4+} [ammonium] may be causing that inhibition." (*See* Taberski, Dugdale, et al., Surface Water Ambient Monitoring Program ["SWAMP"] Monitoring Plan 2011-2012, *San Francisco Bay Region Work Plan, Monitoring Spring Phytoplankton Bloom Progression in Suisun Bay* at 1 [Dec. 2010] ["Work Plan"].[6] Specifically, among other objectives, the Work Plan study is designed to further assess whether "high NH_{4+} concentrations in Suisun Bay correlate with low primary production." (Work Plan, Attachment at 2.)

Nitrogen loading, in the form of total ammonia nitrogen, has several adverse impacts on the Region's water quality and the Bay-Delta ecosystem. Published research demonstrates that: (1) excess ammonium inhibits nitrogen uptake by diatoms and reduces diatom primary production (which reduces a key food source for copepods eaten by Delta fish species, including Delta smelt and longfin smelt); (2) excess ammonium alters algal communities by changing the ratios of different nutrients to favor harmful, invasive, and undesirable species; and (3) excess total ammonia nitrogen is toxic to copepods such as *Eurytemora affinis* and *Pseudodiaptomus forbesi*, upon which larval Delta smelt and other fish graze.

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[5] San Francisco Bay Regional Water Quality Control Board letter from Bruce H. Wolfe, Executive Officer, to Kathy Harder, Central Valley Regional Water Quality Control Board re Comments on "Issue Paper – Aquatic Life and Wildlife Preservation Related Issues – Proposed NPDES Permit Renewal for Sacramento Regional County Sanitation District Sacramento Regional Wastewater Treatment Plant". June 4, 2010.

[6] http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/workplans/1112rb2wp.pdf

The overwhelming scientific evidence demonstrates that untreated total ammonia nitrogen is a key contributor to the decline of the food web that is essential to aquatic species in the Delta. The impacts of ammonia and ammonium on the Bay-Delta ecosystem, as evidenced by scientific research, are described in more detail below.

1. Excess ammonium is inhibiting nitrogen uptake by diatoms and reducing diatom primary production in the Bay-Delta.

Foremost, the scientific literature unquestionably demonstrates that ammonium loadings are disrupting the food supply by inhibiting nitrogen uptake by phytoplankton in the Bay-Delta estuary. As the U.S. Fish and Wildlife Service has stated in its Notice of 12-month petition finding to add Bay-Delta longfin smelt to their candidate species list: "Phytoplankton preferentially take up ammonium over nitrate when it is present in the water. Ammonium is insufficient to provide for growth in phytoplankton, and uptake of ammonium to the exclusion of nitrate results in decreases in phytoplankton biomass [citation]." (Proposed Rule to List Longfin Smelt, 77 Fed. Reg. 19776. April 2, 2012.) Phytoplankton, including diatoms, form the base of the Bay-Delta food web and are essential to a healthy aquatic ecosystem. Diatoms are important sources of food for many secondary consumers, such as copepods, and copepods, in turn, serve as a food source for other aquatic life, such as Delta smelt and longfin smelt. (*See* Parker, et al., 2012, at 2 [reduction of phytoplankton blooms and primary production is particularly important for the Northern [Bay-Delta Estuary], where food limitation has been demonstrated for zooplankton (Mueller-Solger et al., 2002) and fish species (Bennett and Moyle, 1996) and may be in part responsible for an overall ''pelagic organism decline' (Sommer et al.,2007)."].)

In recent research, Dr. Richard Dugdale and others have found that excessive ammonium from wastewater treatment plant discharges is inhibiting nitrogen uptake by diatoms and contributing to reduced diatom production in the Bay-Delta.[7] (*See* Attachment 3, Public Water Agencies' Technical Memorandum, Summary of Nutrient Impacts, at 1 [April 17, 2012] ["Technical Memorandum"] [summarizing research]; *see also* Taberski, Dugdale, et al., SWAMP Monitoring Plan 2011-2012, *San Francisco Bay Region Work Plan; Monitoring Spring Phytoplankton Bloom Progression in Suisun Bay* at 1 [Dec. 2010] ["Work Plan"][8]) Indeed, as the Work Plan acknowledges, Dr. Dugdale has found that at an ammonium concentration of 4 µmol L^{-1} (equivalent to 0.056 mg L^{-1}), nitrate uptake is fully inhibited. (Work Plan at 2.)

Studies published by Wilkerson, et al. (2006) and Dugdale, et al. (2007) show that "bloom levels of chlorophyll are evident only when nitrate uptake occurs and that nitrate uptake only takes place at lower ambient ammonium concentrations." They conclude that ammonium

[7] *See e.g.*, Parker, A.E., R.C. Dugdale and F.P. Wilkerson. 2012. Elevated ammonium concentrations from wastewater discharge depress primary productivity in the Sacramento River and the Northern San Francisco Estuary. Mar. Pollut. Bull., doi:10.1016/j.marpolbul.2011.12.016; Parker, A.E., A.M. Marchi, J. Drexel-Davidson, R.C. Dugdale, and F.P. Wilkerson. "Effect of ammonium and wastewater effluent on riverine phytoplankton in the Sacramento River, CA." Final Report to the State Water Resources Control Board; Wilkerson, F.P., R.C. Dugdale, V.E. Hogue and A. Marchi, 2006. Phytoplankton blooms and nitrogen productivity in San Francisco Bay, Estuaries and Coasts 29(3): 401-416.; Dugdale, R.C., F.P. Wilkerson, V.E. Hogue and A. Marchi. 2007. The Role of ammonium and nitrate in spring bloom development in San Francisco Bay. *Estuarine, Coast and Shelf Science* 73: 17-29 ; Sommer, T., C. Armor, R. Baxter, R. Bruer, L. Brown, M. Chotkowski, S. Culberson, F. Feyrer, M. Gingras, B. Herbold, W. Kimmerer, A. Mueller-Solger, M. Nobriga and K. Souza. 2007. The Collapse of Pelagic Fishes in the Upper San Francisco Estuary, *Fisheries* 32(6):270-277; Glibert, P. 2010. "Long-term changes in nutrient loading and stoichiometry and their relationships with changes in the food web and dominant pelagic fish species in the San Francisco Estuary, California," *Reviews in Fisheries Science.* 18(2):211 – 232.

[8] http://www.swrcb.ca.gov/water_issues/programs/swamp/docs/workplans/1112rb2wp.pdf

concentrations greater than 4 µmol L-1 completely inhibit nitrate uptake by diatoms and thus suppress bloom formation. More recently Parker, et al. (2012) concluded that "[t]he quantitative reduction in primary productivity and nitrogen uptake at various points in the [Sacramento] river was predictable and strongly related with NH_4 concentrations" and as such, "control of river nutrients, especially NH_4 loading, is essential to management efforts to restore the river/estuary to a productive condition."

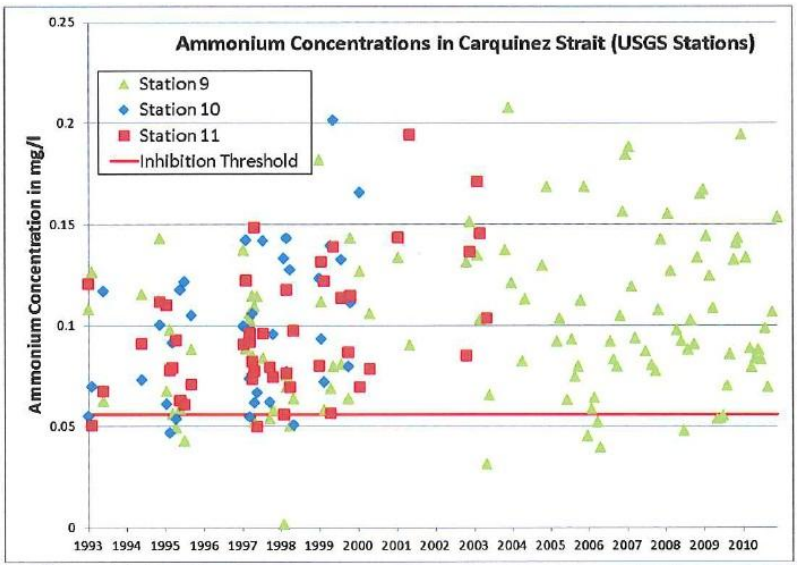
In a 2011 report submitted to the State Water Resources Control Board ("State Water Board"), Dr. Dugdale summarized the study as follows:

> Our data indicate that ammonium above 4 µmol L-1 (0.056 mg-N L-1) suppresses nitrate assimilation and primary production rates at concentrations as low as 0.014 mg- N L-1, with complete shutdown when concentrations reach 0.056 mg-N L-1.
>
> This ammonium-induced inhibition of nitrate uptake prevents algal blooms important to the health of aquatic life from developing when conditions are otherwise favorable.

(Dugdale, Wilkerson, and Parker, Brief Report in Response to Selected Issues Raised by Sacramento Regional County Sanitation District in Petition for Review of Discharge Permit Issued by the Central Valley Regional Water Quality Control Board at ¶1 [May 4, 2011] ["Dugdale Report"].)

Indeed, the Regional Board's own scientists have already recognized that excess ammonium from wastewater discharges is contributing to the decline of aquatic life in the Bay-Delta. In a 2010 presentation, the Regional Board's senior scientist, Ms. Karen Taberski, specifically recognized the relationship between ammonium and phytoplankton abundance. Looking at time series data, Ms. Taberski graphically demonstrated the relationship that Drs. Dugdale, Wilkinson and Parker have demonstrated and documented in their published literature. (*See* California's Surface Water Ambient Monitoring Program (SWAMP) Suisun Bay Studies, Karen Taberski, SF Bay RWQCB (2010) ["Taberski, 2010"].) According to Ms. Taberski, the results of her 2010 Suisun Bay survey showed that the "largest diatom bloom in 10 years" occurred in the spring of 2010 and the "[b]looms occurred when ammonium < 4 uM." (Taberski, 2010 at slide 13, slide 11 [Spring bloom low ammonium < 4uM"]). In contrast, the data show phytoplankton decreasing as ammonium concentrations increase. (*Id.* at slides 7 ["High ammonium Low chlorophyll – a"].)

Water quality monitoring data for the estuary show that the ammonium concentrations in Carquinez Strait consistently exceeds the inhibition threshold, as established by data from the federal government's United States Geological Survey ("USGS") monitoring stations 9, 10 and 11 located in Carquinez Strait.



As shown by the data presented in the above figure, the complete ammonium inhibition concentration of 0.056 mg L^{-1} (indicated on the graph by the red line) is repeatedly exceeded and the point at which suppression begins (0.014 mg L-1) has always been exceeded over the course of almost two decades of monitoring. These data demonstrate that many of the Region's waters are impaired, as the ammonium concentrations are 4-5 times greater than the concentrations found to inhibit nitrogen uptake by diatoms and to reduce diatom production.

The recent proposed rule to list the Bay-Delta longfin smelt under the ESA confirms the validity of the conclusions drawn by Dugdale, et al. and Ms. Taberski. There, the U.S. Fish and Wildlife Service discussed the body of scientific literature showing the impacts of ammonium on the Bay-Delta's primary productivity and overall food web. (77 Fed. Reg. 19776.) Based on that review of the literature, the proposed rule states that "ammonium impairs primary productivity by reducing nitrate uptake in phytoplankton" and "[d]ecreased primary productivity results in less food available to longfin smelt and other fish . . ." (*Id.*) In addition, a recent National Academy of Sciences report[9] identifies nutrient enrichment as a significant stressor on the Bay-Delta ecosystem and acknowledges that nitrogen inhibition "affects the food web . . . since diatoms are considered a good food source for most zooplankton, planktivorous fish, and shellfish species." (National Academy of Sciences, Sustainable Water and Environmental Management in the California Bay-Delta, at 65. [2012] ["NAS Report"].)

Moreover, while the recent peer reviewed literature published by Dugdale et al and the analyses done by Ms. Taberski surely advance the science by highlighting the relationship in the Bay-Delta, studies showing ammonium suppressing phytoplankton are not new or unique to the Bay-Delta. (*See* Technical Memorandum at 1-2.) There is a large body of scientific research describing ammonium suppression of primary productivity, which was first observed as far back as the 1930s. (Technical Memorandum [citing Ludwig, 1938; Harvey, 1953].) Some of the early field demonstrations of this phenomenon were by MacIsaac and Dugdale (1969, 1972), followed by research in the Chesapeake Bay by McCarthy, et al. (1975). (*Id.*) Indeed, like Dr. Dugdale, Lomas and Glibert (1999a) in fact described a threshold for initial inhibition of nitrate

[9] The prepublication version of the report is available at http://www.nap.edu/catalog.php?record_id=13394.

uptake at ammonium levels of 1 μmol L-1. (*Id.*) Ammonium suppression of nitrate uptake overwhelms cells with an excess of ammonium; and in doing so, alters the cells' ability to assimilate nitrate thereby suppressing primary productivity. This is particularly problematic for the Bay-Delta, which is already a low-producing estuary. (*Id.* [citing Jassby et al., 2002].)

2. Nutrient discharges into the Bay-Delta estuary are contributing to a shift in algal communities by changing the nutrient ratios to favor harmful, invasive, and undesirable species.

The inhibition of phytoplankton is not the only deleterious effect on water quality and aquatic life caused by excessive ammonium discharges in the Bay-Delta. The research of Dr. Patricia Glibert and others demonstrates that excessive ammonium discharges have also adversely impacted aquatic life in the Bay-Delta by increasing the ratio of nitrogen to phosphorus in the receiving water, which triggers impacts to the food web on which Bay-Delta aquatic life depends. (*See* Technical Memorandum at 4-8) Increasing ammonium discharges, particularly when phosphorus discharges have been declining, degrades water quality by changing the ratio between dissolved inorganic nitrogen and phosphorus, as well as the total nitrogen to total phosphorus ratio. These ratios are known to have profound influences on food webs.[10]

Altering nutrient ratios has long been shown to influence phytoplankton community composition and the presence—or absence—of native species and vegetation, as extensive studies have repeatedly demonstrated in systems around the world, including: Hong Kong, Tunisia, Germany, Florida, Spain, Korea, Japan, and Washington, D.C. (Chesapeake Bay), among others. (*See* Technical Memorandum at 4-8 [discussing body of literature]; *see also* Glibert, et al. (2011)[11] [evaluating 30 different systems].)

Dr. Glibert's research strongly suggests that changes in Delta smelt, longfin smelt and several other fish species' abundance are related to changes in ammonium load from wastewater discharges. In an analysis of 30 years of data from the Bay-Delta, Dr. Glibert and others (2010; Glibert et al., 2011) found that the variation in nutrient concentrations and ratios is highly correlated to variations in the base of the food web, primarily the composition of phytoplankton species (*i.e.,* diatoms), to variations in the composition of zooplankton species (*i.e.,* copepods, like *P. forbesi*), to variations in the abundance of invasive clams, and to variations in the abundance of fish species. Accordingly, Dr. Glibert concluded that "[r]emediation of pelagic fish populations should be centered on reduction of nitrogen loads and reestablishment of balanced nutrient ratios delivered from point source discharges."[12] (*See* Technical Memorandum at 3-4.)

Establishing balanced nutrient ratios will provide favorable conditions for the Bay-Delta food web because "reductions in N (especially NH_4^+ [ammonium]) will allow organisms, from diatoms to fish, that cannot withstand high NH_4^+ (and/or that are outcompeted by NH_4^+ -tolerant organisms, such as various harmful dinoflagellates and cyanobacteria), to compete."

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[10] Sterner, R.W. and J.J. Elser. 2002. Ecological stoichiometry: The biology of elements from molecules to the biosphere. Princeton University Press, Princeton, N.J. Sterner and Elser (2002), state that, "Stoichiometry can either constrain trophic cascades by diminishing the chances of success of key species, or be a critical aspect of spectacular trophic cascades with large shifts in primary producer species and major shifts in ecosystem nutrient cycling."

[11] *See* Glibert, P.M., D. Fullerton, J.M. Burkholder, J.C. Cornwell, and T.M. Kana. 2011. Ecological stoichiometry, biogeochemical cycling, invasive species, and aquatic food webs: San Francisco Estuary and comparative systems. *Reviews in Fisheries Science*, 19(4): 358-417 (research collecting and reviewing the data from, among others, Hong Kong, Tunisia, Germany, Spain, Korea, and Japan, Florida, New York, and Washington D.C.).

[12] Glibert, P. 2010.

(Glibert, et al., 2011). Accordingly, the release of ammonium from wastewater treatment plants into the San Francisco Bay Basin must be controlled to best ensure that the overall ecosystem can be fully restored.

3. Excessive total ammonia has been shown to be toxic to copepods.

Recent studies also indicate that total ammonia at concentrations present in the Bay-Delta estuary is acutely toxic to copepods central to the food web that supports aquatic life in the Bay-Delta estuary, including the Delta smelt and the longfin smelt. (*See* Technical Memorandum at 7.) Specifically, Dr. Swee Teh and colleagues at the University of California at Davis[13] have done a variety of studies of the effects of total ammonia on the native copepods *Eurytemora affinis* and *Pseudodiaptomus forbesi*. [14] Dr. Teh and his team concluded that total ammonia has "adverse effects … on the growth, reproduction, and survival of parents and progenies of *P. forbesi*" and that the effects have "implications on the abundance of this copepod as an important food source to larval fishes in the Delta." (Teh, et al., 2011 Final Report at 2.) Teh and his colleagues conducted life cycle tests to assess the impacts of different concentrations of total ammonia on the ability of *P. forbesi* to reproduce and thrive. The life cycle tests showed that total ammonia impacted adult *P. forbesi* reproduction at concentrations greater than or equal to 0.79 mg L^{-1}, while observed effects were present for nauplii and juveniles at total ammonia concentrations as low as 0.36 mg L^{-1}.[15] According to Dr. Teh, "these results demonstrate that **ammonia significantly impacts populations of *P. forbesi*** as analyzed." (Teh, 2011 Final Report at 2 [emphasis in original].)

The Teh et al. (2011) study was recently cited in the U.S. Fish and Wildlife Service proposed rule to list the Bay-Delta longfin smelt as threatened or endangered under the ESA. (77 Fed. Reg. 19776.) The proposed rule states that "[a]quatic insects in which the longfin smelt relies upon for food have been shown to be sensitive to ammonia." (77 Fed. Reg. 19776.) The proposed rule states that "[a]mmonia also can be toxic to several species of copepods important to larval and juvenile fishes." (*Id.*) The toxic effect of total ammonia is a major stressor on aquatic life that has a pervasive impact across the Bay-Delta estuary.

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[13] Dr. Teh is a Ph.D in Comparative Pathology and a Research Toxicologist and Pathologist in the Department of Anatomy, Physiology, and Cell Biology at the University of California - Davis. He serves as the Interim Director of the Aquatic Toxicology Laboratory at the UC-Davis School of Veterinary Medicine, and is a UC-Davis Faculty Member for the Graduate Group in Ecology, the Center for Aquatic Biology and Aquaculture, the Center for Health and the Environment, and the John Muir Institute of Environment. Dr. Teh conducted his work under the auspices of the Central Valley Regional Water Quality Control Board.

[14] The relevant research and related writings includes work summarized in Dr. Teh's Declaration (May 4, 2011) ("Teh Decl.") and the Exhibits to that Declaration. Werner, et al., Pelagic Organism Decline (POD): Acute and Chronic Invertebrate and Fish Toxicity Testing in the Sacramento-San Joaquin Delta 2008-2010, Final Report Submitted to the California Department of Water Resources (July 24, 2010), (http://www.science.calwater.ca.gov/pdf/workshops/POD/Werner%20et%20al_2010_POD2008-2010_Final%20Report.pdf); (also at Teh Decl. Exhibit 3); Full Life-Cycle Bioassay Approach to Assess Chronic Exposure of P. forbesi to Ammonia/Ammonium to the Delta Pelagic Organism Decline Contaminants Work Team (July 6, 2010), Teh Decl. Exhibit 4; Letter from S. Teh to C. Foe (November 10, 2010), Teh Decl. Exhibit 5; S. Teh, et al., Final Report, Full Life-Cycle Bioassay Approach to Assess Chronic Exposure of *Pseudodiaptomus forbesi* to Ammonia/Ammonium – Submitted to C. Foe and M. Gowdy (March 4, 2011), Teh Decl. Exhibit 6 ("Teh, et al., 2011 Final Report); *see also* Presentation by Dr. Teh to the Central Valley Regional Water Quality Control Board, Ammonia Summit, available at http://www.waterboards.ca.gov/centralvalley/water_issues/delta_water_quality/ambient_ammonia_concentrations/18aug09_ammonia_summit/teh_pres.pdf (August 18-19, 2009).

[15] Teh, S. Full Life-Cycle Bioassay Approach, *supra*.

4. Ongoing Studies Will Support the Regional Board's Development of Numeric Nutrient Water Quality Objectives

Several ongoing studies and developing programs will support the Regional Board's development of numeric nutrient objectives. The State Water Board has established a State Regional Technical Advisory Group to support application of the Nutrient Numeric Endpoint ("NNE") framework to California estuaries. In addition, the State Water Board has contracted with the Southern California Coastal Water Research Project to develop an estuarine classification system, to review candidate nutrient-related indicators for all estuaries, to explore revision of dissolved oxygen objectives, and to review studies supporting a numeric endpoint for macroalgae on estuarine tidal flats. In 2010, the Regional Board initiated the Nutrient Numeric Endpoint process to develop nutrient numeric endpoints (NNEs) for the San Francisco Bay estuary and established a Technical Team and a Stakeholder Advisory Group. Through this effort a literature review and data gap analysis was produced in 2011.[16]

Further, there is a substantial amount of scientific work underway that will provide information to support development of nutrient objectives. The ongoing SWAMP study, Monitoring Spring Phytoplankton Bloom Progression in Suisun Bay,[17] will provide additional scientific information to support the development of numeric water quality objectives for ammonium. These studies include monitoring, phytoplankton growth and nutrient uptake rate measurements, and diatom toxicity identification evaluations. The Regional Board's Water Code 13267 letter issued March 2, 2012, requiring submittal of information on nutrients in wastewater discharges, will provide additional information on nutrient sources and loads. Finally, the draft Nutrient Management Strategy for San Francisco Bay developed collaboratively by the Regional Board and stakeholders identifies additional monitoring, modeling and scientific studies to be conducted in the next 4-5 years.

While this additional research and analysis will surely advance the body of knowledge regarding nutrients, the existing literature provides ample support for the Regional Board to develop numeric nutrient water quality objectives and to restrict the discharge of nutrients.[18] New field data and resulting analyses continue to confirm the causal nexus between excess ammonium and the Delta's declining ecosystem. The Public Water Agencies urge the Regional Board to act expeditiously to develop numeric nutrient water quality objectives to regulate the harmful impacts of ammonium on the Region's water quality.

B. **Develop Dissolved Oxygen Objectives for Various Habitats**

The Public Water Agencies are pleased to see that the Staff Report identifies site-specific dissolved oxygen ("DO") objectives as a candidate project for updating in the Basin Plan. (Staff Report, at 3.) We encourage the Regional Board to develop site-specific dissolved oxygen objectives for the San Francisco Bay's various habitats, particularly for tidal wetlands such as

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[16] http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/planningtmdls/amendments/estuarineNNE/644_SFBayNNE_LitReview%20Final.pdf

[17] http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/workplans/1112rb2wp.pdf

[18] To the extent the Regional Board is not convinced the science is not absolutely "settled," we nonetheless urge the Regional Board to follow the conservative approach it has long taken to use the best available data to establish clear and binding numeric water quality criteria. As the Basin Plan states, "[t]he Regional Board recognizes that limited information exists in some cases, making it difficult to establish definitive numerical objectives, but the Regional Board believes its conservative approach to setting objectives has been proper." (Basin Plan at 3-1.)

those in the Suisun Marsh. Updating the DO objectives will facilitate the State Water Board's development of a nutrient assessment framework for San Francisco Bay, because dissolved oxygen is proposed as a primary indicator for nutrient assessment.

II. Update Implementation Plans

A. The Regional Board Should Develop Implementation Provisions for the Regulation of Nutrients

The Public Water Agencies urge the Regional Board to go beyond setting numeric water quality objectives for nutrients. The Regional Board should use this Review to develop specific implementation provisions that will implement numeric nutrient objectives through water quality regulation, including the National Pollutant Discharge Elimination System ("NPDES") permitting process.

The State Water Board has already directed the Regional Board to address ammonia and ammonium through its regulation of point sources, such as wastewater treatment facilities. The State Water Board staff report prepared in support of the State Water Board's periodic review of the 2006 Water Quality Control Plan for the San Francisco Bay-Sacramento-San Joaquin Delta Estuary states:

> Ammonia and toxicity are priority issues for the Water Boards and, at this time, staff recommends that they be addressed primarily by the San Francisco Bay and Central Valley Regional Water Quality Control Boards (Regional Boards) as part of their water quality control programs for control of point and non-point sources of waste. The State Water Board and Regional Boards will continue to coordinate their efforts on these issues through the Water Board's Bay-Delta Team, which consists of representatives from the Division of Water Rights, the Division of Water Quality, the Division of Financial Assistance, and the Regional Boards. Ammonia and toxicity effects on beneficial uses will also continue to be considered during the State Water Board's review of various flow objectives.

(Staff Report, at 5.) The State Water Board accepted its staff's recommendation. (*See* SWRCB Resolution 2009-0065; s*ee also* Strategic Workplan for Activities in the Bay-Delta [July, 2008].)

In view of the literature and data demonstrating the harmful effects of ammonium on aquatic life in the Bay-Delta, the Public Water Agencies urge the Regional Board to update the Implementation Program to include effluent limitations for the discharge of ammonium from point sources, such as publicly owned treatment works. Specifically, the Regional Board should impose ammonium effluent limits requiring nitrification to remove ammonium from discharges into the San Francisco Bay Basin. The Regional Board should also develop total nitrogen effluent limits requiring denitrification to remove nitrate from discharges to restore the nitrogen to phosphorus balance in the Bay-Delta. Control technologies to remove ammonium (nitrification) and nitrate (denitrification) are readily available, as evidenced by the fact that nitrification, and in many instances denitrification, have already been required at many wastewater treatment plants discharging directly or indirectly into the Bay-Delta, including Sacramento Regional Wastewater Treatment Plant, Stockton, Fairfield, Manteca, Tracy, and Vacaville Easterly.

Time is of the essence with respect to limiting nitrogen discharges affecting Delta smelt, longfin smelt and other aquatic life in the Bay-Delta. The Regional Board should not delay the development of effluent limitations for nutrients pending further studies on the relative contributions of the various ammonium sources to ammonium concentrations in the Napa River mouth, Mare Island and Carquinez straits and Suisun Bay. It is well documented that water quality and aquatic life resources within the Bay-Delta estuary are under stress. The estuary and many of its tributaries are listed as impaired, and the populations of both pelagic and anadromous fish have suffered serious declines in recent years. The development of effluent limitations for nutrients, including ammonium, will support recovery of the Delta ecosystem.

B. **Where Implemented in Other Impacted Ecosystems, Nutrient Removal Has Improved the Natural Ecosystem and Aquatic Life**.

Importantly, there is ample evidence that updating the Basin Implementation Plans to require nutrient removal would help to restore the health of the ecosystem and aquatic life in the Bay-Delta estuary. Indeed, even beyond the literature demonstrating the effect of ammonium on aquatic life, the benefit of reducing nutrient discharges is supported by an extensive body of literature documenting improvements in ecosystem functions in hydrologic systems where nutrient loading from wastewater treatment plants and other sources has been controlled and reduced. Reducing nutrient loading in the Chesapeake Bay, Tampa Bay and coastal areas of Denmark has proven to be effective at reversing the harmful effects of previously undertreated wastewater discharges and restoring the native systems. (*See* Technical Memorandum at 5-7 [discussing literature]; *see* Glibert, et al. (2011) [noting improvements that resulted "following the removal of nutrients from wastewater effluent" discharged to the Potomac River and Tampa Bay].)

Moreover, there is recent empirical evidence for the Delta ecosystem demonstrating that reducing ammonium loadings improves the chance of diatom blooms essential to primary productivity in the Bay-Delta. In Suisun Bay, a diatom bloom reached chlorophyll concentrations of 30 µg L-1 during spring 2000 when ammonium concentrations declined to 1.9 µmol L-1. (Wilkerson et al. 2006.) Similarly, as Ms. Taberski observed, *see* Taberski, 2010, *supra,* and Dr. Dugdale has reported, chlorophyll concentrations in Suisun Bay reached 35 µg L-1 during spring 2010 when ammonium concentrations declined to 0.5 µmol L-1. (Dugdale et al., 2011.) These blooms are comparable to spring chlorophyll levels from 1969-1977, (Ball and Arthur, 1979), when ammonium concentrations were much reduced—*before* substantial nutrient contributions were introduced into the Bay-Delta ecosystem. (Cloern and Cheng, 1981.)

III. <u>**Update Surveillance and Monitoring**</u>

The Public Water Agencies further encourage the Regional Board to develop monitoring program requirements that ensure the continued collection of nutrient data in the San Francisco Bay Basin and ensure sufficient data are collected to quantify sources of nutrients. The Public Water Agency acknowledge and support the Regional Board's commitment to work with the local discharger group Bay Area Clean Water Agencies ("BACWA") to develop more data documenting the impacts of nutrient discharges into the Bay-Delta ecosystem. Additional studies focused on discharges of ammonium and other nutrients from specific sources will be helpful in further defining the scope of problems caused by nutrient discharges.

Attachment 3

Technical Memorandum
Summary of Nutrient Impacts

There is a large body of literature documenting the significant impacts of increased loading and changing forms, concentrations, and ratios of nitrogen and phosphorus both within the San Francisco Bay/Sacramento-San Joaquin Delta Estuary (Bay-Delta) and globally to the food web form and function. The form of nutrients matters. Wilkerson, *et al.* (2006) and Dugdale, *et al.* (2007) show that "bloom levels of chlorophyll are evident only when nitrate uptake occurs and that nitrate uptake only takes place at lower ambient ammonium concentrations." They conclude that ammonium concentrations greater than 4 μmol L^{-1} inhibit nitrate uptake by diatoms and thus suppress bloom formation. This level of ammonium is exceeded a majority of the time in the Sacramento River and Suisun Bay.

In enclosure experiments with samples from Central Bay, Suisun Bay and the Sacramento River at Rio Vista, Wilkerson *et al.* (in preparation) observed "a gradient of decreasing phytoplankton physiological rates in the upstream direction as far as Rio Vista." Algal biomass accumulation was delayed in enclosures from Suisun Bay and was not observed within 96 hours in enclosures from Rio Vista. Parker, *et al.* (2012) observed a 60% decline in primary production in the Sacramento River below the Sacramento Regional Wastewater Treatment Plant compared to production above the Treatment Plant's outfall. Parker, *et al.* (2012) conclude that "… control of river nutrients, especially NH_4 loading, is essential to management efforts to restore the river/estuary to a productive condition." Also supporting this finding, Parker, *et al.,* (in press) found that "[b]y tracing both C and N uptake we provide clear evidence that high rates of C uptake are linked to phytoplankton NO_3, and not NH_4, use. They conclude that the increased proportion of ammonium "may help explain some of the reduced primary production and phytoplankton biomass observed [in the San Francisco Estuary] since the 1970s."

These observations of ammonium suppression are not new or unique to the Bay-Delta. There is a large body of scientific research describing ammonium suppression of algae productivity, which was first observed as far back as the 1930s (Ludwig, 1938; Harvey, 1953). Some of the early field demonstrations of this phenomenon were by MacIsaac and Dugdale (1969, 1972), followed by research in the Chesapeake Bay by McCarthy, *et al.* (1975). Lomas and Glibert (1999a) describe the threshold for inhibition of nitrate uptake at ammonium levels of approximately 1 μmol L^{-1}. Ammonium suppression of nitrate uptake when both nutrients are in ample supply should not be confused with the preferential use of ammonium by phytoplankton when nitrogen is limiting. Under the latter conditions, phytoplankton will use ammonium preferentially because it requires less energy than nitrate. Under the former conditions, the cells must cope with an excess; and in doing so, their metabolism is altered away from an ability to assimilate nitrate. Total primary productivity is suppressed as a result. This is particularly problematic for the Bay-Delta as it is already a comparatively low producing estuary (Jassby *et al.,* 2002). Laboratory experiments suggest that Delta-wide chl-a levels are now low enough to limit zooplankton abundance (Müller -Solger *et al.*, 2002).

Nutrient form also affects phytoplankton species composition. Cyanobacteria have been shown to preferentially use chemically reduced forms of nitrogen over nitrate in many studies.

Chemically reduced nitrogen not only includes ammonium, but also urea and dissolved organic nitrogen. This evidence comes from:

- Measurements of enzyme activities in the cells – enzymes that process these forms of nitrogen. Cyanobacteria have been shown to have some of the highest measured rates of urease, for example, relative to all phytoplankton species tested, and among cyanobacteria, *Microcystis* rates are the highest (Solomon et al., 2010).
- Directly determined rates of nitrogen uptake using isotope tracer techniques. These rates show that cyanobacteria use reduced nitrogen forms and, in many cases, avoid the chemically oxidized forms (Glibert *et al.,* 2004).
- Direct growth studies. These studies based on growth measurements in the laboratory demonstrate that growth rates of *Microcystis* can be significantly higher on urea than on nitrate (Berman and Chava, 1999). Meyer, *et al*. (2009) state: "Compared to NO_3- and N_2 (via fixation) as N sources, NH_4+ produces the highest growth and primary production rates for *Microcystis aeruginosa* and other cyanobacteria (*Aphanizomenon flos-aquae* and *Anabaena flos-aquae*) in laboratory studies [citations removed]" (Meyer *et al.,* 2009).

Moreover, retrospective analysis of the data in the Bay-Delta system further demonstrates that at very high ammonium concentrations (*i.e.*, > 200 $\mu g\ L^{-1}$), phytoplankton functional groups such as flagellates, cryptophytes and diatoms are outcompeted by cyanobacteria (Glibert, P., Univ. of Maryland. Personal communication). Thus, even though *Microcystis* may have a broad capability for using different forms of nitrogen to support their physiological demands for nitrogen, they have a greater capacity to take up and metabolize reduced forms of nitrogen compared to other functional groups and may have higher growth rates under reduced nitrogen compared to nitrate and thus may outcompete other phytoplankton groups at very high ammonium levels. Lehman et al. (2010) concedes: "Recent increases in ammonium concentration in the western delta may give a competitive advantage to *Microcystis* which rapidly assimilates ammonium over nitrate."

The physiological literature strongly supports the concept that different algal communities use different forms of nitrogen. Diatoms generally have a preference for nitrate; dinoflagellates and cyanobacteria generally prefer more chemically reduced forms of nitrogen (ammonium, urea, organic nitrogen) (Berg, *et al*., 2001; Glibert, et al., 2004, 2006; Brown, 2009). It has long been recognized that diatoms may have a nutritional requirement for, and under some circumstances even a preference for, nitrate (Lomas and Glibert, 1999a; 1999b). Moreover, diatoms often show no evidence of nitrate uptake saturation under very high nitrate conditions (Collos et al. 1992, 1997), in contrast to the generally accepted saturating uptake kinetic relationships that are used to describe the relationship between nutrients and uptake rate. Thus, cyanobacteria may grow particularly well on ammonium while their competitors, such as diatoms, do not.

The shift in algal community composition in the Bay-Delta has been far more extensive than just the recent increase in annual blooms of *Microcystis.* The Delta's algal species composition has shifted from diatoms to smaller and lower quality food species such as flagellates, cryptophytes and cyanobacteria (Lehman, 2000*;* Lehman *et al*., 2005*;* Lehman et al., 2010; Jassby *et al*., 2002; Sommer *et al*., 2007*;* Glibert, 2010; Glibert et al., 2011; Winder and Jassby, 2010) and to invasive

macrophytes such as *Egeria densa* (Sommer, *et al*., 2007; Nobriga et al., 2005; Glibert et al., 2011). Jassby (2008) states:

> *A decrease in percentage of diatom biovolume occurred during 1975–1989, caused by both a decrease in diatoms and an increase in green algae, cyanobacteria, and flagellate species biovolume (Kimmerer 2005; Lehman 1996), i.e., probably in the direction of declining nutritional value per unit biomass. In principle, the total nutritional value of a community could decrease even as its biomass increases. Moreover, changes in size, shape, and motility of species comprising the phytoplankton community could also affect their availability as food particles for crustacean zooplankton and other consumers.*

In addition, the ratios of nitrogen to phosphorus are known to have profound influences on food webs. Sterner and Elser (2002) state: "[s]toichiometry can either constrain trophic cascades by diminishing the chances of success of key species, or be a critical aspect of spectacular trophic cascades with large shifts in primary producer species and major shifts in ecosystem nutrient cycling."

The N:P ratio has long been shown to influence phytoplankton community composition and the presence - or absence - of native species and vegetation, as extensive studies have repeatedly demonstrated in systems around the world including: Hong Kong, Tunisia, Germany, Florida, Spain, Korea, Japan, and Washington D.C. (Chesapeake Bay), to name just a few. The Potomac River (Chesapeake Bay) was invaded by submerged aquatic vegetation, *Hydrilla,* and clams, *Corbicula*, when the N:P ratio of effluent from the large Blue Plains sewage treatment facility increased after phosphorus was reduced in the 1980s (Ruhl and Rybicki 2010). In Spain's Ebro River estuary, *Hydrilla* and *Corbicula* invaded shortly after phosphorus was removed from effluent (Ibanez *et al*. 2008). In Tolo Harbor, Hong Kong, nutrient loading, particularly phosphorus loading, increased due to population increases in the late 1980's. The result was that a distinct shift from diatoms to dinoflagellates was observed in the harbor, coincident with a decrease in the N:P ratio (Hodgkiss and Ho 1997; Hodgkiss 2001). Once the phosphorous was removed from the sewage effluent that was being discharged into the harbor and stoichiometric proportions were re-established, there was a resurgence of diatoms and a decrease in dinoflagellates (Lam and Ho 1989). In Tunisian aquaculture lagoons, dinoflagellates have been shown to develop seasonally when N:P ratios decrease (Romdhane, et al. 1998). Comparable results have been observed in systems in Germany (Radach *et al*., 1990) and along the coast of Florida (Glibert *et al*., 2004; Heil *et al*., 2007).

N:P ratios have also been shown to influence zooplankton community composition. Norwegian studies monitored lakes for many years and found that different zooplankton tend to dominate under different N:P ratios, due to the different phosphorus content of different species found in the lake (Hessen 1997). Hessen (1997), for example, showed that a shift from calanoid copepods to *Daphnia* tracked N:P; calanoid copepods retain proportionately more N, while *Daphnia* are proportionately more P rich. Studies from experimental whole lake ecosystems found that zooplankton size, composition and growth rates changed as the N:P ratio varied (*e.g.*, Schindler 1974, Sterner and Elser 2002).

There has been a measureable change in the N:P ratio in the Bay-Delta, an increase in total N loading, a decrease in total P loading, and a change in the dominant form of nitrogen from

nitrate to ammonium (Glibert, 2010). In a retrospective analysis of 30 years of data from the Bay Delta, Glibert (2010; Glibert et al., 2011) found that the variation in these nutrient concentrations and ratios is highly correlated to variations in the base of the food web, primarily the composition of phytoplankton, to variations in the composition of zooplankton, to variations in the abundance of invasive clams, and to variations in the abundance of several fish species.

Winder and Jassby (2010) provide additional documentation of the shift that has occurred in the phytoplankton and zooplankton community.

The shift in the phytoplankton community has ripple effects through the food web. Cloern and Dufford (2005) state, "[t]he efficiency of energy transfer from phytoplankton to consumers and ultimate production at upper trophic levels vary with algal species composition: diatom-dominated marine upwelling systems sustain 50 times more fish biomass per unit of phytoplankton biomass than cyanobacteria-dominated lakes [citations removed]." Slaughter and Kimmerer (2010) provide further support. They observed lower reproductive rates and lower growth rates of the copepod, *Acartia* sp. in the low salinity zone compared to taxa in other areas of the estuary and conclude that "[t]he combination of low primary production, and the long and inefficient food web have likely contributed to the declines of pelagic fish."

There is also a growing body of literature documenting improvements in ecosystem functions in systems where nutrient loading is reduced. Reducing nutrient loading in the Chesapeake Bay, Tampa Bay, and coastal areas of Denmark has proven to be effective at reversing the harmful effects of previously undertreated discharges and restoring the native systems. For example, within several years of increasing nutrient removal at the Blue Plains treatment plant in Washington DC, N:P ratios in the Potomac River declined, the abundance of the invasive *Hydrilla verticillata* and *Corbicula fluminea* began to decline (Figure 1), and the abundance of native grasses increased (Ruhl and Rybicki 2010).

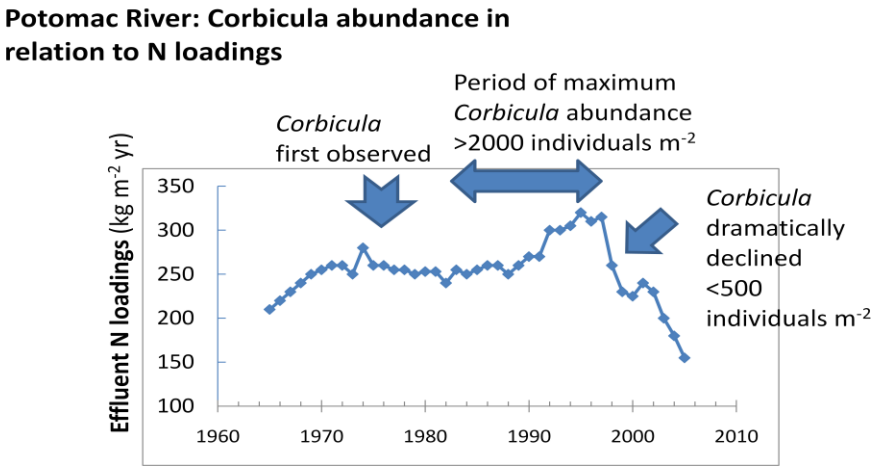

Figure 1. Comparative relationships for the Potomac River showing the change in effluent N loading and the relative abundance of the invasive clam, *Corbicula fluminea* clams. Data derived from Dresler and Cory (1980), Jaworski *et al.* (2007), and Cummins *et al.* (2010).

Tampa Bay provides another important example. Eutrophication problems in the Bay were severe in the 1970s, with N loads approximating 24 tons per day, about half of which was due to point source effluent (Greening and Janicki 2006). Several years after nitrogen and phosphorus reductions were achieved, native seagrass began to increase. Lower nutrient discharges also had positive effects on the coastal waters around the island of Funen, Denmark (Rask *et al*. 1999). Since the mid 1980s, there has been a roughly 50% reduction in the loading of N and P in the region due to point source reductions. Again, native grasses returned and low oxygen problems were reversed.

Moreover, there is recent evidence that diatom blooms can be restored in the Bay-Delta if ammonium loading were reduced. In Suisun Bay a diatom bloom reached chlorophyll concentrations of 30 $\mu g\ L^{-1}$ during spring 2000 when ammonium concentrations declined to 1.9 $\mu mol\ L^{-1}$ (Wilkerson *et al*. 2006). Similarly, chlorophyll concentrations in Suisun Bay reached 35 $\mu g\ L^{-1}$ during spring 2010 when ammonium concentrations declined to 0.5 $\mu mol\ L^{-1}$ (Dugdale *et al*., 2011; Dugdale *et al.,* submitted). These blooms are comparable to spring chlorophyll levels from 1969-1977 (Ball and Arthur, 1979) when ammonium concentrations were 1.8 $\mu mol\ L^{-1}$ during summer and 4.0 $\mu mol\ L^{-1}$ during winter (Cloern and Cheng, 1981). If clam abundance declines, as has occurred in San Pablo Bay and South San Francisco Bay (Cloern *et al*., 2007), chlorophyll levels may also be restored during summer in Suisun Bay if ammonium loading were reduced.

Additionally, as Glibert (2010) reported, "[s]upporting the idea that correct balance of nutrients is important for restoration of delta smelt and other pelagic fish, there is a small but apparently successful subpopulation of delta smelt in a restored habitat, Liberty Island. Liberty Island is outside the immediate influence of Sacramento River nutrients. It has abundant diatoms among a mixed phytoplankton assemblage, as well as lower NH_4 levels and higher ratios of NO_3:NH_4 than the main Sacramento River [citations removed]."

The recent increase in *Microcystis* bloom frequency and size can also be explained by changes in Delta nutrients. Based on stable isotope analyses of particulate organic matter and nitrate, Kendall *et al.* (2011) observed that ammonium, not nitrate, is the dominant source of nitrogen utilized by *Microcystis* at the Antioch and Mildred Island sites in the summer 2007 and 2008.

Nutrients affect more than *Microcystis* growth; nutrients may also affect its production of toxins. In Daechung Reservoir, Korea, researchers found that toxicity was related not only to an increase in N in the water, but to the cellular N content as well (Oh, *et al*. 2000). A very recent report by van de Waal (2010) demonstrated in chemostat experiments that under high CO_2 and high N conditions, microcystin production was enhanced in *Microcystis*. Similar relationships were reported for a field survey of the Hirosawa-no-ike fish pond in Kyoto, Japan, where the strongest correlations with microcystin were high concentrations of NO_3 and NH_4 and the seasonal peaks in *Microcystis* blooms were associated with extremely high N:P ratios (Ha *et al*. 2009). Thus, not only is *Microcystis* abundance enhanced under high N:P, but its toxicity is as well (Oh, *et al*. 2000).

Glibert *et al.* (2011) provides further support for the hypothesis that nutrient form and ratio is driving food web composition in the Delta. Using several different statistical approaches, Glibert *et al.* (2011) evaluated the relationships between approximately thirty different aquatic

species and various nutrient ratios and found significant correlations for a majority of them. After comparing trends in the Bay-Delta estuary to those in Lake Washington, Potomac River, Hudson River and several European lakes and estuaries, they state,

> *Moreover, the physiology of the resident organisms and biogeochemical pathways lends support to the premise that similar trophic structure, including the appearance of* Microcystis, *in many of these systems has resulted from similar nutrient dynamics, biogeochemistry and food web interactions that resulted, in turn, from changes in stoichiometry and the relative abilities of different types of organisms to either sequester nutrients and/or to tolerate nutrients that are in excess (e.g., NH_4^+).*

They suggest that, "[r]eductions in N (especially NH_4^+) will allow organisms, from diatoms to fish, that cannot withstand high NH_4^+ (and/or that are outcompeted by NH_4^+ -tolerant organisms, such as various harmful dinoflagellates and cyanobacteria), to compete."

Glibert *et al.* (2011) found, "[f]or all organisms, with the exception of *Acartia*, for which strong correlations were observed with X2 (Table 9), *i.e.*, *Eurytemora*, *Pseudodiaptomus*, *Daphnia*, *Bosmina*, *Corbula*, *Crangon*, longfin smelt, splittail, striped bass, starry founder, crappie, sunfish and largemouth bass, equal or more significant correlations were observed with nutrients or nutrient ratios." This analysis determined pairwise relationships between biological parameters and nutrients and/or nutrient ratios using both the original data and data that were adjusted for autocorrelation. Glibert *et al.* (2011) also found that total phosphorus "explained at least as much of the variability in delta smelt as did the [Feyrer *et al*., 2010] habitat index (Table 4), and dinoflagellate abundance explained even more (Table 6)." Unlike the X2 relationships whose mechanisms of effect are largely unknown, the nutrient relationships have a strong mechanistic explanation in ecological stoichiometry and stable state principles.

Ammonia Toxicity

Studies have been conducted by scientists at UC Davis investigating the effects of ammonia to the calanoid copepod *Pseudodiaptomus forbesi* using a full-life cycle bioassay approach. *P. forbesi* is an important food organism for the young of many fish species in the Bay-Delta including delta smelt and longfin smelt, two State listed species. Evidence of the toxic effects of ammonia on *P. forbesi* comes from life cycle tests conducted by Teh *et al*. (2011). Teh *et al*. (2011) found that total ammonia nitrogen at 0.36 ± 0.01 mg L^{-1} significantly affects the recruitment of new adult copepods and total ammonia nitrogen at 0.38 ± 0.01 mg L^{-1} significantly affects the number of newborn nauplii surviving to 3 days old.

Clam Invasion

There is no denying that the overbite clam has had a significant impact on the ecosystem since it took hold in the mid-1980s. Kimmerer (2002) and Kimmerer *et al.* (2009) found that many of the relationships between spring X2 and abundance changed in the mid-1980s, presumably due to the invasion by the overbite clam, *Corbula amurensis.* Phytoplankton biomass also declined significantly due to grazing pressure from the invasive clams. There is some scientific debate regarding the ability, or lack thereof, to manage clam populations by increasing freshwater outflows. However, this strategy fails to account for the potential consequences of an increased

distribution in the freshwater clam, *Corbicula fluminea*, if freshwater flow is used to try to push the distribution of the brackish water clams further west of the Delta.

In addition, Glibert *et al.* (2011) found that "the change after 1987 also corresponds with the change in nutrient loading. X2 is strongly correlated with PO_4^{3-}, TP and NH_4^+." Glibert (2010) suggested that changes in nutrients created the environment in which these clams could dominate. Glibert (2010) found a strong correlation between the CUSUM trends in clam abundance and ammonium concentration and in the ratio of inorganic nitrogen to inorganic phosphorus (DIN:DIP).

Glibert *et al.* (2011) provides further support for nutrient effects on clam abundance as well as on the abundance of other invasive organisms such as non-native centrarchids and non-native invasive weeds. Using several statistical approaches, Glibert *et al.* (2011) found "a strong long-term correlation between water-column DIN:TP ratios (and DIN:PO_4^{3-} ratios) and abundance of the clam, *Corbula*…there is also a strong long-term positive relationship between pH and C*orbula* abundance." They explain,

> *Changes in external nutrient loads can drive changes in internal ecosystem biogeochemistry and, in turn, trophodynamics. This analysis suggests that increasing dominance over time of macrophytes, clams, and* Microcystis *along with more omnivorous fish that are fueled by a benthic food web, are not a result of stochastic events (random invasions) but, rather, are related to a cascade of changes in biogeochemistry resulting from changes in nutrient loading over time as a major driver. This analysis supports the premise that reductions in P loading from external sources drive aquatic systems toward increased importance of sediment dynamics, and toward the sediments as a major source of P. The food webs that are supported are different from those supported when the water column is the major source of P; they are benthic-dominated. Macrophytes such as* Egeria *and phytoplankton such as* Microcystis *are physiologically well adapted to these altered nutrient and pH regimes. The communities of bivalves and fish change accordingly.* (Glibert *et al*., 2011, pp. 389-399)

As discussed previously, and in more detail in Glibert *et al.* (2011), numerous examples exist where nutrient reductions in other ecosystems has led to the restoration of native sea grasses and to declines in invasive bivalve populations.

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San Francisco
Water Power Sewer
Services of the San Francisco Public Utilities Commission

1155 Market Street, 11th Floor
San Francisco, CA 94103
T 415.554.3155
F 415.554.3161
TTY 415.554.3488

April 17, 2012

Submitted via email: rlooker@waterboards.ca.gov

Richard Looker
California Regional Water Quality Control Board
San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Solicitation of Comments for Basin Plan Triennial Review

Dear Mr. Looker:

The City and County of San Francisco Public Utilities Commission (PUC) appreciates the opportunity to respond to the Regional Water Board solicitation for potential projects to be addressed during the 2012 Basin Plan Triennial Review. The topic we have identified pertains to our responsibilities for managing the drinking water program for the City. Specifically, we propose the Board consider giving precedence to the drinking water standards in Title 22 CCR and in the federal Safe Drinking Water Act when determining the safe levels of trihalomethanes regulated to protect drinking water (MUN beneficial use classification).

Our goal at this stage of the process is to identify problems that potentially could be addressed during the Triennial Review. We have included a more detailed discussion of this issue in the attachment. Thank you for the opportunity to comment. Please contact me if you have any questions or Jim Salerno at 415-554-3207.

Sincerely,

Steven R. Ritchie
Assistant General Manager, Water

Attachment: SFPUC Response to Triennial Review Issue Solicitation

Edwin M. Lee
Mayor

Anson Moran
President

Art Torres
Vice President

Ann Moller Caen
Commissioner

Francesca Vietor
Commissioner

Vince Courtney
Commissioner

Ed Harrington
General Manager

SFPUC Response to 2012 Triennial Review Issue Solicitation by the San Francisco Regional Water Quality Control Board (Notice)

Issue
Modification of the trihalomethane standards for protecting the MUN beneficial use

Goal
Chapter 4 in the Basin Plan could be modified to specify that the cumulative standard for trihalomethanes in the California drinking water regulations (Title 22 CCR) would take precedence in permitting discharges from drinking water supply or distribution systems to waterways designated as drinking water (MUN beneficial use).

Background
Raw (source) water may be disinfected with chlorine or chlorinated compounds to reduce microorganisms such as bacteria, protozoa, and viruses that can cause illness in humans. Chlorine also prevents the growth of algae that may interfere with treatment of water and cause taste and odor problems. This disinfection procedure produces trihalomethanes, which are regulated contaminants under state and federal laws.

The California Toxics Rule (CTR) which implements the CWA includes criteria for individual trihalomethanes. The chorine or chlorine compounds used for disinfection can create very low levels of trihalomethanes which exceed the CTR criteria but not the drinking water standards, which have a cumulative trihalomethane standard. A problem arises because two of the CTR criteria are very restrictive and limit the ability of drinking water utilities to release disinfected water supplies into reservoirs or other waterways. As released into waterways such as reservoirs, these trihalomethanes do not present a risk to health, but they may exceed the CTR criteria for surface waters at the point of discharge, requiring treatment or the need to evaluate dilution and other factors during the permitting process.

A similar situation results when drinking water in distribution systems must be released to surface waters due to repairs or other emergencies. These releases need to be dechlorinated to prevent toxicity, but CTR/trihalomethane issues are also present when the receiving water is a MUN designated waterway. This results in the ironic situation of drinking water not being suitable for discharge into drinking sources because of a perceived threat to drinking water.

Regulatory status
The California Toxics Rule (CTR) includes criteria for individual trihalomethanes that are intended to protect human health. Separately, the state drinking water standards in the Title 22 regulations and the similar federal standards implementing the Safe Drinking Water Act establish a cumulative trihalomethane standard that applies at the point of consumption. The Basin

Plan also includes a cumulative trihalomethane standard although it is higher than the Title 22 standard and possibly out of date.

Table 1 shows the current standards applicable to trihalomethanes.

Table 1 – Trihalomethane Standards Based on the Clean Water Act and Federal and State Drinking Water Laws

	Clean Water Act	State regulations (Title 22 CCR) & Safe Drinking Water Act	San Francisco Bay Area Basin Plan
all µg/l	California Toxics Rule (CTR) - Human Health Criteria	Max. Contaminant Levels (MCL)	Water Quality Objectives for Municipal Supply (Table 3-5)
Chlorodibromomethane	0.41	*Summed together*	*Summed together*
Dichlorobromomethane	0.56		
Bromoform	4.3		
Chloroform	(none)		
Total trihalomethanes	(none)	80 (total)	100 (total)

The state standards in Title 22 Table 64533-A Maximum Contaminant Levels are based on the National Interim Primary Drinking Water Regulations at 40 CFR 141.64. Title 22 definitions: §64401.92. Total Trihalomethanes or TTHM. "Total Trihalomethanes" or "TTHM" means the sum of the concentrations in milligrams per liter (mg/L) of the trihalomethane compounds (bromodichloromethane, bromoform, chloroform, and dibromochloromethane)...

Discussion

The CTR criteria and drinking water requirements are at odds with one another because they set two different limitations for the same constituents. Given that the drinking water requirements more directly regulate the risk in the drinking water distribution system as it applies to human consumption, it appears that meeting these requirements should be sufficient without having to meet the limitations derived from the CTR. Problems occur during permitting for discharges of drinking water or chlorinated raw water destined for reservoirs or other surface waters. The reasonable potential analysis (RPA) conducted according to the State Implementation Policy often identifies chlorodibromomethane and dichlorobromomethane as failing the RPA, thus requiring effluent limits. These calculated limits may require treatment of the discharge to remove the trihalomethanes or some other determination such as a dilution study to demonstrate the levels will be reduced below the CTR criteria at some point in the receiving water. In any case, public health is protected because the drinking water in the distribution system is fully regulated for total trihalomethanes by both State and federal law.
For example, Hetch Hetchy aqueduct water is chlorinated at the Tesla Chlorination Facility and ammonia added to form chloramine in the Sunol

Valley. These flows may be directed to the Crystal Springs Reservoir through the Pulgas Treatment Facility depending on system demand or the need to augment regional reservoir supply. The Pulgas Treatment Facility removes the chloramines added previously to comply with standards to protect aquatic organisms in the reservoir from toxicity. However, one of the regulated trihalomethanes—dichlorobromomethane—has been measured in the treated water at 3 ug/L, which exceeds the CTR criterion of 0.56.[1] Although the total trihalomethane concentration is much less than the drinking water standard of 80 ug/L, the treated discharge from Pulgas would require a demonstration of dilution or other action. Similar situations may arise when treated waters must be returned to reservoirs or are otherwise released to surface waters.

Suggestion for Triennial Review
Consider adding a section to Chapter 4 specifying that trihalomethanes discharged or released from drinking water systems where they may eventually be used as source water for drinking water will be assessed with the Title 22 Standards for drinking water rather than the CTR criteria.

[1] Chlorodibromomethane has also been a compliance concern because the minimum detection level (MDL) is not low enough to determine compliance with the CTR criterion.

CITY OF
SAN JOSE
CAPITAL OF SILICON VALLEY

Environmental Services Department

April 17, 2012

Richard Looker, Senior Environmental Scientist
Regional Water Quality Control Board, San Francisco Bay Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Via E-mail: *rlooker@waterboards.ca.gov*

SUBJECT: 2012 Triennial Review of San Francisco Bay Basin Water Quality Control Plan

Dear Mr. Looker:

The City of San Jose (City) appreciates the opportunity to comment on the Triennial Review of the Water Quality Control Plan for the San Francisco Bay Basin on behalf of the San José/Santa Clara Water Pollution Control Plant (Plant). The Plant provides wastewater treatment services to the cities of San José and Santa Clara, and other cities and agencies within the tributary area. The tributary service area includes the City of Milpitas, West Valley Sanitation District (Cities of Campbell, Los Gatos, Monte Sereno and Saratoga), Burbank Sanitary District, Cupertino Sanitary District (City of Cupertino), and County Sanitation Districts #2 and #3. The service area includes approximately 1.4 million residents and over 16,000 businesses in Silicon Valley.

The City is a member of the Bay Area Clean Water Agencies (BACWA) and supports the comments of BACWA on the Triennial Review.

The City's comments address three issues of greatest interest to the City:

- Update the Basin Plan's Toxicity Testing Requirements
- Develop Nutrient Water Quality Objectives
- Develop Site-Specific Objectives for Dissolved Oxygen in San Francisco Bay

The City of San Jose urges that issue 3.2, "Update the Basin Plan's Toxicity Testing Requirements," be given the highest priority.

The California Water Resources Control Board (State Water Board) will soon release a "Proposed Policy for Toxicity Assessment and Control." It is anticipated that this proposed policy could be adopted by end of this year (2012). The State-wide policy will impose numeric limits for toxicity testing as determined using the Test of Significant Toxicity (TST) statistical method in place of the EC25 methods that are currently in use in San Francisco Bay.

There are advantages and disadvantages to the new toxicity policy proposed by State Water Board. Imposition of the TST method and numeric limits will make toxicity testing and enforcement easier to understand and enforce: the results are expressed as "pass or fail," the statistical method is a relatively simple comparison of Welch's T-Test results (measurement of variability) between test and control sample populations. A major disadvantage is that the policy dictates use of TST method in such a way that results will show at least a 5 to 15 percent false positive error (result will show "toxic" when in fact the sample is non-toxic). This "false positive" error rate is considered beneficial since it offers more water quality protection. However, the proposed policy also assumes that toxicity tests will be determined at Instream Waste Concentration (IWC). Implementation of an IWC is unclear for Bay Area discharges since provisions in the current San Francisco Bay Basin Plan do not provide guidance for determination or utilization of the IWC in connection with toxicity testing.

The proposed toxicity policy will also allow consideration of Reasonable Potential (RP) when determining the frequency for acute toxicity testing. This could be a very sensible and cost-saving option to incorporate into the Basin Plan. A number of agencies, like the San Jose/Santa Clara Water Pollution Control Plant, have not detected acute toxicity after decades of testing. Assuming that the more sensitive chronic toxicity test will continue to be conducted at a regular frequency, the Basin Plan should reflect this option for greatly reducing the frequency of the acute toxicity test.

The state-wide toxicity policy may offer other opportunities and challenges for basin planning, in addition to the two mentioned above. The triennial review process will have to be flexible enough to address implementation issues when the State-wide toxicity policy is adopted. This could mean that minor amendments to the Basin Plan may need to be incorporated during the current calendar year.

The City strongly supports long-term development of Nutrient Water Quality Objectives (Issue 3.7).

Development of Nutrient Water Quality Objectives is currently an issue of nation-wide concern. Concentrations of nitrogen and phosphate nutrients in San Francisco Bay are known to be high compared to similar estuaries, such as Chesapeake Bay. Despite comparatively high nutrient levels that cause eutrophication elsewhere, many of the unique characteristics of San Francisco Bay (light limitation due to higher suspended sediment concentrations among them) have resulted in no eutrophic conditions in the Bay over time. But, because the status quo is not well understood, there is concern as conditions change. If the San Francisco Bay were suddenly to experience eutrophication, scientists and agencies will need to identify the problem and respond appropriately. For these reasons, the nutrient issue should be given high priority.

However, development of nutrient objectives will be a large, time-consuming effort. Nutrients in natural waterways are an extremely complex set of issues. Lessons learned from other parts of the nation have shown that nutrient objectives are not easy issues to tackle. The process for exploring the science must be coordinated with steps to build effective and practicable policy. Water Board staff is already engaged with the San Francisco Estuary Institute and Bay Nutrient

Numeric Endpoint (NNE) Framework to guide the emerging science. Eventually, policy will be developed based on scientific assessments yet to be accomplished. As the scientific assessments continue, it will be necessary to pull in a large, diverse group of stakeholders to review and achieve some level of consensus on subsequent policy decisions that will affect a broad group of stakeholders.

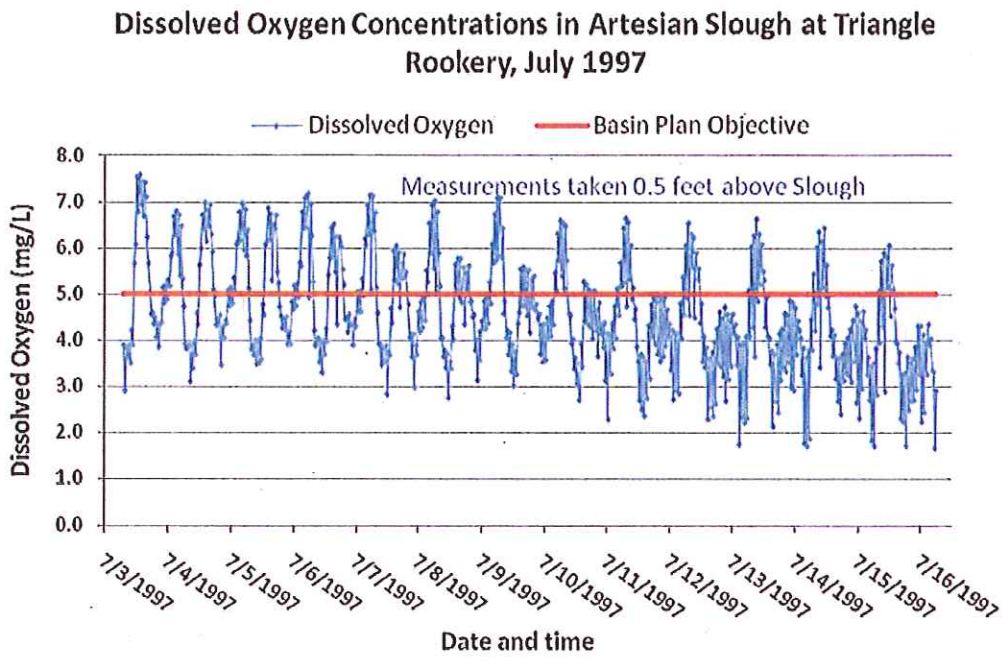
The City supports development of Site Specific Objectives for Dissolved Oxygen in San Francisco Bay (Issue 3.1).

The City has a fair amount of experience tracking Dissolved Oxygen (DO) concentrations in wetlands, slough channels, ponded areas, and other shoreline habitats of South San Francisco Bay. As the City has confirmed, and Water Board recognizes, large fluctuations in dissolved oxygen are part of the natural ecological function of these shallow-water areas. The variations regularly result in dissolved oxygen concentrations below the current 5 mg/L minimum water quality objective. This objective is unnecessarily stringent (high) for shallow water habitats such as sloughs and marshes. It is also overly simplistic since it currently applies to all ranges of habitats and all water depths. The current DO objective is not essential to the protection of many shallow water systems.

The DO site-specific objectives effort has become a critical issue as restoration of shallow water habitats continues in the South Bay. Many of these desirable habitats are not expected to consistently meet the current Basin Plan DO objective of 5 mg/L if they are functioning as restoration efforts envision.

As an example of the complexity of developing a DO site-specific objective, the City of San Jose was one of the early implementers of a DO compliance strategy after it purchased former Salt Pond A18 in 2005. The pond management plan was to cease making salt and begin circulating Bay water through the pond that would then be discharged back into the Bay via Artesian Slough and Coyote Creek. The challenge for Water Board staff at that time was to craft language in a Waste Discharge Requirement that would protect receiving waters, but also acknowledge that DO in the pond discharges frequently fell below 5 mg/l as a result of natural processes. To solve this problem, the City utilized DO data that had been collected in the lower reaches of Artesian Slough (the receiving water) in the summer of 1997. (See graph below)

The 1997 data showed that DO in Coyote Creek and Artesian Slough often falls below 5 mg/L on a daily basis during the warm summer months from natural and uncontrollable factors (light and tidal influence). Typically, the lowest DO occurs at night or in the early morning when light levels are absent or low due to photosynthesis. Ongoing monitoring also shows that the lowest concentrations of DO correspond to incoming tides during low light conditions. Therefore, the low DO fluctuations can be characterized as "normal" for the area near the mouth of Coyote Creek since the primary factors leading to low DO are natural (light and tides) rather than anthropogenic discharges to receiving waters. Because of this robust characterization of receiving water DO levels, a regulatory trigger of 3.3 mg/L DO is applied to Pond A18 discharges (rather than 5.0 mg/L). The trigger concentration of 3.3 mg/L represents the weekly 10th percentile of continuous DO data (every 15 minutes) measured in the slough in July 1997.



The City's experience with alternate DO compliance strategies suggests three things:

1) The current Basin Plan Water Quality Objective for DO is not realistic or attainable for all habitats covered by the Basin Plan, nor is it necessarily desirable or reflective of natural conditions in many shallow water habitats.

2) A site-specific approach to dissolved oxygen assessment and compliance for shallow water areas must recognize the inherent variability of DO in these habitats and the requirements to protect the resident biota in these specific habitats.

3) Setting rigorous site-specific objectives for DO must be based on initial site-specific evaluations of the natural DO conditions, including collection of continuous data at a frequency that captures DO fluctuations over the 24-hour cycle.

The City of San Jose recognizes the dedicated effort that Water Board staff invests in the triennial review process and is pleased to participate in the process. If you have any questions regarding the City's comments, please contact James Ervin, Acting Environmental Compliance Officer, at 408-945-5124.

For

Kerrie Romanow, Acting Director
Environmental Services Department

April 17, 2012

Delivered Via E-mail to rlooker@waterboards.ca.gov

Mr. Richard Looker
California Regional Water Quality Control Board
San Francisco Region
1515 Clay Street, Suite 1400
Oakland, CA 94612

Subject: Comments of Public Water Agencies Regarding Triennial Review of the Water Quality Control Plan, San Francisco Bay

Dear Mr. Looker:

The San Luis & Delta-Mendota Water Authority ("Authority")[1] hereby provides its comments to the San Francisco Bay Regional Water Quality Control Board ("Regional Board") on the Triennial Review of the Water Quality Control Plan, San Francisco Bay ("Basin Plan").

Studies document the significant impacts of ammonium on aquatic life in the San Francisco Bay/Sacramento-San Joaquin River Delta Estuary, including Suisun Bay. Published research demonstrates that: (1) excess ammonium inhibits nitrogen uptake by diatoms and reduces diatom primary production (which reduces a key food source for copepods eaten by Delta fish species, including Delta smelt and longfin smelt); (2) excess ammonium alters algal communities by changing the ratios of different nutrients to favor harmful, invasive species; and (3) excess total ammonia nitrogen is toxic to copepods such as *Eurytemora affinis* and *Pseudodiaptomus forbesi*, which are a food source for larval fish.

The Authority thus urges the Regional Board to consider the effect of ammonium as a high priority for the Triennial Review, considering the well documented impacts of ammonium on aquatic life, and amend the implementation plan to require wastewater treatment plants to install nitrification and de-nitrification technology to remove nutrients now discharged untreated into the waters of this State.

Thank you for this opportunity to participate in and comment on the Triennial Review process.

Sincerely,

Daniel G. Nelson
Executive Director

842 SIXTH STREET
SUITE 7
P.O. BOX 2157
LOS BANOS, CA
93635
209 826-9696
209 826-9698 FAX

[1] See attachment 1 for description of the Authority.

Attachment

The Authority is a joint powers authority, established under California's Joint Exercise of Powers Act. (Gov. Code, § 6500 et seq.). The Authority is comprised of 29 member agencies, 27 of which hold contractual rights to water from the federal Central Valley Project ("CVP"). The Authority member agencies have historically received up to 3,100,000 acre-feet annually of CVP water for the irrigation of highly productive farm land primarily along the San Joaquin Valley's Westside, for municipal and industrial uses, including within California' Silicon Valley, and for publicly and privately managed wetlands situated in the Pacific Flyway. The areas served by the Authority's member agencies span portions of seven counties encompassing about 3,300 square miles, an area roughly the size of Rhode Island and Delaware combined.

The Authority's members are: Banta-Carbona Irrigation District; Broadview Water District; Byron Bethany Irrigation District (CVPSA); Central California Irrigation District; City of Tracy; Columbia Canal Company (a Friend); Del Puerto Water District; Eagle Field Water District; Firebaugh Canal Water District; Fresno Slough Water District; Grassland Water District; Henry Miller Reclamation District #2131; James Irrigation District; Laguna Water District; Mercy Springs Water District; Oro Loma Water District; Pacheco Water District; Pajaro Valley Water Management Agency; Panoche Water District; Patterson Irrigation District; Pleasant Valley Water District; Reclamation District 1606; San Benito County Water District; San Luis Water District; Santa Clara Valley Water District; Tranquillity Irrigation District; Turner Island Water District; West Side Irrigation District; West Stanislaus Irrigation District; and Westlands Water District.

Santa Clara Valley
Water District

5750 ALMADEN EXPWY
SAN JOSE, CA 95118-3614
TELEPHONE (408) 265-2600
FACSIMILE (408) 266-0271
www.scvwd.dst.ca.us
AN EQUAL OPPORTUNITY EMPLOYER

Sent by email to: rlooker@waterboards.ca.gov
and by regular mail

April 17, 2012

Richard Looker
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2451

Subject: Comment Letter – San Francisco Bay Basin Plan Triennial Review

Dear Mr. Looker:

On March 27, 2012, The San Francisco Regional Water Quality Control Board (Regional Board) held a public workshop on the Basin Plan's triennial review. Santa Clara Valley Water District (SCVWD) staff has reviewed the materials presented and appreciates the opportunity to provide the following comments.

The issues that have been identified in the triennial review affect many local agencies in the San Francisco Bay region. The SCVWD encourages San Francisco Bay Regional Water Quality Control Board (Water Board) to work with all local agencies that may be impacted by the proposed revisions to the Basin Plan. Strong stakeholder involvement throughout the Basin Plan updates and revisions will create broader support from all agencies and will assist the Water Board in meeting its objectives. SCVWD's comments to the initial candidate issues proposed by the Water Board are presented below.

The Santa Clara Valley Water District serves nearly 1.8 million residents of Santa Clara County. Maintaining the county's safe, reliable supply of high-quality water now and in the future is a top priority for SCVWD. As the local groundwater management agency, SCVWD is charged with protecting groundwater resources, which provide nearly half of the water used in the county. Consistent with our mission related to watershed stewardship, SCVWD also implements projects and programs to preserve and improve surface water quality for beneficial uses. The SCVWD Board of Director's commitment to water quality protection is evidenced by the following Board policies:

- Water Supply Objective 2.1.1: Aggressively protect groundwater from the threat of contamination and maintain and develop groundwater to optimize reliability and to minimize land subsidence and salt water intrusion.
- Water Resources Stewardship Objective 4.2.1: Preserve or improve surface and ground water quality for beneficial uses.

To summarize, SCVWD appreciates the opportunity to provide comments and looks forward to continued involvement in the Triennial Review process. We recommend that work be focused on:

1. Updating the beneficial uses, particularly the Groundwater recharge beneficial use, and
2. Updating Water Quality objectives, particularly developing nutrient objects for the Bay/Delta related to ammonia and other nutrients that impact the food chain, environmental screening levels for groundwater clean-ups and salt & nutrient management plans.

If you have any questions or need further information, please contact me at (408) 265-2607, extension 2665.

Sincerely,

Ann Draper
Deputy Operating Officer
Watershed Operations

cc/enc : B. Goldie, N. Camacho, J. Fiedler, J. Maher, S. Dharasker, P. Showalter, T. Trinh
Bruce Wolfe, San Francisco Bay Regional Water Quality Control Board

2012 Basin Plan Triennial Review
San Francisco Bay Region
Comments from the Santa Clara Valley Water District (SCVWD)

2.1: Modify Groundwater Recharge Beneficial Use

The issue description calls for modifying and expanding the definition of groundwater recharge beneficial use to encourage groundwater storage. SCVWD supports this proposed modification as SCVWD's managed recharge programs provide the majority of the pumped groundwater in the county.

The discussion of groundwater recharge beneficial use focuses primarily on the limitations and potential negative impacts on groundwater quality and does not present the positive aspects of recharge. SCVWD's managed recharge program has resulted in many positive outcomes including maintaining and improving water quality, reducing and pushing back saltwater intrusion, and halting inelastic land subsidence. The discussion of groundwater recharge should provide more balance by presenting both the potential positive and negative impacts.

2.2: Evaluate the Beneficial Use for Municipal Supply for Groundwater Aquifers along the Bay Fringe

The goal of this project is to create a consistent and transparent process to determine when a municipal supply beneficial use applies to a given groundwater aquifer. These determinations would then be documented in the Basin Plan. As proposed, SCVWD is concerned that this might lead to dismissing the development of potential groundwater sources that could be put to beneficial use, particularly at a time when the importance of groundwater supplies and storage is being increasingly recognized.

SCVWD recognizes that not all aquifers contain water that is of sufficient quality to be put to immediate use, but some of these waters may be developed with the appropriate treatment. In some areas, development of marginal quality groundwater may not be necessary or cost effective considering current needs. However, continued population growth and potential impacts of climate change may make the development of previously unused sources necessary in the future. SCVWD recommends that if this project moves forward, consideration be given to potential future groundwater development needs. Unless the aquifer can be clearly demonstrated as impaired beyond use, SCVWD recommends it be considered to be a potential source of drinking water.

2.4: Complete the Stream and Wetland Systems Protection Policy

SCVWD is in alignment with the purpose of the proposed amendment to promote benefits on water quality and flood attenuation. To achieve the purpose of the beneficial uses of water quality and flood attenuation, the amendment needs to address the issue of development setbacks. SCVWD requests that local agencies like ours have an opportunity to participate in the development of this section. The inclusion of the benefits that development setbacks can provide to water quality, flood attenuation and the connectivity of stream floodplains should be considered as well.

3.1: Develop Site-Specific Objectives for Dissolved Oxygen in San Francisco Bay

SCVWD encourages the Water Board to develop site-specific dissolved oxygen objectives for the San Francisco Bay's various habitats, particularly for tidal and managed wetlands including those in the Suisun Marsh. Low dissolved oxygen levels are not only detrimental to many

aquatic organisms and biogeochemical processes, but they are also a good indicator of nutrient impairment. Having up-to-date and relevant objectives for dissolved oxygen will be important.

Dissolved oxygen varies in different habitats and the objectives should reflect those variations. . For instance the South Bay Salt Ponds that are being restored to wetlands have varying dissolved oxygen depending on temperature, water depth, water circulation and other factors. In wetland locations, descriptive requirements may better serve the restoration effort.

3.2: Update the Basin Plan's Toxicity Testing Requirements

SCVWD recommends that Water Board provide local agencies an opportunity to participate in the revision process. SCVWD requests the opportunity to comment at a later time either individually or jointly with other agencies.

3.6: Develop Trash Water Quality Objectives

SCVWD recommends that Water Board provide local agencies an opportunity to participate in the development and implementation process. The SCVWD requests the opportunity to comment at a later time either individually or jointly with other agencies.

3.7: Develop Nutrient Water Quality Objectives

Objectives and measures should take into account different settings.

Related to the Bay/Delta System: SCVWD is pleased to see that the March 2012 "Brief Issue Descriptions" identifies the development of Nutrient Water Quality Objectives as a possible issue for consideration in the Triennial Review process. SCVWD urges the Water Board to designate the development of numerical nutrient objectives as a high priority issue for the Triennial Review. There is a large and growing body of published research that implicates excess ammonium and an imbalance in nitrogen to phosphorus levels in many of the undesirable changes to the Bay Delta ecosystem. Excess ammonium in the estuary has been linked to declines in primary productivity and diatom biomass (Wilkerson et al. 2006; Dugdale et al. 2007; Parker et al. 2012), increases in harmful algal blooms (Kendall et al. 2011), and direct toxicity to important prey organisms for endangered and threatened fish species (Teh et al. 2011). In addition, evidence is growing that the imbalance in nutrients in the estuary caused by increasing nitrogen loads to the system due mostly to population growth and decreasing phosphorus loads due mostly to source controls has altered the Bay Delta's aquatic community composition at all trophic levels (Glibert 2010; Glibert et al. 2011). This shift in nutrient balance may be a key factor that allows non-native and invasive species to thrive while native species continue to decline. The San Luis & Delta-Mendota Water Authority and State Water Contractors provide additional support for developing nutrient water quality objectives in their comment letter. SCVWD supports and incorporates those comments by reference. SCVWD looks forward to continuing to work with the Water Board and other stakeholders in the process of developing the SF Bay-specific NNE framework, a regional nutrient strategy, and ultimately numeric nutrient water quality objectives for the bay and its tributaries.

SCVWD requests that the Water Board update its implementation program to include effluent limitations on nitrogen discharges from point sources such as publicly owned treatment works. At a minimum, the Water Board should impose ammonium effluent limits that require nitrification to reduce ammonium loading to the estuary. The Water Board should also consider effluent total nitrogen limits that require denitrification in order to restore the nitrogen to phosphorus balance in the estuary. Nitrogen removal technology, both nitrification and denitrification, is readily available and already required in many parts of the country, including within the Central Valley of California. In areas where nitrogen reductions have occurred, ecosystem functions have

improved; invasive plants and bivalves have declined and native sea grasses have begun to return (Glibert et al. 2011 and other references).

Related to South Bay Salt Ponds: As a partner in the South Bay Salt Pond Restoration effort, SCVWD is working to restore salt ponds to wetland habitat. This restoration effort provides environmental benefits and will produce more benefits as restoration efforts continue. It would be important to have water quality objectives which will facilitate restoration efforts.

Related to the State Board's freshwater nutrient objective development: SCVWD owns 8 reservoirs that are fed with a combination of local and imported water. SCVWD operates these reservoirs to maintain high water quality which facilitates treatment or processing for drinking water. Additional surface water quality regulation may not improve the drinking water quality. Please include SCVWD in any stakeholder process or draft review associated with the nutrient freshwater objective.

3.8: Development and Implementation of Biological Objectives

SCVWD recommends that the Water Board provide local agencies an opportunity to participate in the development and implementation process. The SCVWD requests the opportunity to comment at a later time either individually or jointly with other agencies.

4.1: Environmental Screening Levels (ESLs) for Groundwater Cleanups

SCVWD agrees that a clear and consistent process in establishing site cleanup levels is critical in making the site cleanup process both practical to all parties involved, but also more efficient as all parties know what to expect from the beginning of a project. In the current environment of limited funding, it is critical that the focus be on those sites posing the highest risks. The SCVWD appreciates the Water Board's strategy of focusing on the process and avoiding a one-size fits all approach to ESLs based on strict numeric criteria.

4.3: Low-Threat Site Closure Requirements

Santa Clara County relies on our high quality groundwater for almost half of the water used annually. In the SCVWD's 20+ years of experience in working with Water Board staff on contaminant release sites, the site investigation and cleanup process has been working successfully. The SCVWD supports closing sites that no longer pose a significant risk to human health, the environment, and water resources as this will allow Water Board staff to focus on higher priorities and will remove unnecessary burdens from the responsible parties. The SCVWD encourages the Water Board to continue its focus on developing process and broad criteria, as is proposed for the work on ESLs, rather than fixed numeric targets. All sites need to follow the same procedures and be required to satisfy the broader criteria, but the final decision on closure should be made on a case-by-case basis.

4.4: Salt and Nutrient Management Plans

SCVWD initiated development of a Salt and Nutrient Management Plan for the Santa Clara Subbasin in 2011. The SCVWD has formed a subbasin stakeholder group, which includes the Water Board. In January 2012, the SCVWD held a workshop for Water Board staff to apprise them of its effort in developing this plan. The SCVWD appreciates the Water Board's involvement and interest in the development of this plan.

4.5: On-Site Wastewater Treatment System Implementation Plan

The Water Board is in the process of updating the Basin Plan to reflect changes in the State Board's on-site wastewater treatment system (OWTS) policy, the draft of which is currently out for public comment. The Santa Clara County Department of Environmental Health is currently in the process of revising its OWTS ordinance, including expanding the use of alternative systems. SCVWD recommends that Water Board work with groundwater management agencies in addition to the local OWTS oversight agencies to ensure all concerns are considered for inclusion in the Basin Plan.

5.1: The California Water Plan

SCVWD recommends that Water Board provide local agencies an opportunity to provide input into the sections that may impact them. SCVWD requests the opportunity to comment at a later time either individually or jointly with other agencies.

5.2: Priority Ranking for TMDL Development

SCVWD recommends that Water Board provide local agencies an opportunity to participate in the priority ranking process that may impact them. SCVWD requests the opportunity to comment at a later time either individually or jointly with other agencies.

6: Editorial Revisions, Minor Clarifications or Corrections

SCVWD recommends that the Water Board identify the process and timeline for local agencies and interested parties to submit suggestions for these types of issues. One clarification that SCVWD has identified involves Table 3-6 (Agricultural Water Objectives). SCVWD recommends the following clarifications to this table:

- Provide additional discussion of these objectives to better explain the significance of the objectives presented.
- Provide the definition of "threshold" and "limit" to aid users of the Basin Plan.

South Bay Salt Pond Restoration Project

Restoring the Wild Heart of the South Bay

April 17, 2012

Richard Looker
Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2451
email: rlooker@waterboards.ca.gov

Re: 2012 Basin Plan Triennial Review

Dear Mr. Looker,

I am writing to you in regard to the Water Board's triennial review of the Basin Plan. The South Bay Salt Pond Restoration Project is interested in participating in the process, and would like to offer the following thoughts on the proposed list of projects.

2.4 Complete the Stream and Wetland Systems Protection Policy
Please consider the impact of upstream sources (e.g., contaminants, sediment, nutrients) on downstream beneficial uses. For example, upstream Guadalupe River sources continue to move mercury into our project area, potentially impacting on our ability to restore tidal wetlands.

3.1 Develop Site-Specific Objectives for Dissolved Oxygen in San Francisco Bay
We would consider this a top priority.

3.7 Develop Nutrient Water Quality Objectives
Could Harmful Aquatic Bacteria (HAB's) be added to this item?

3.8 Development and Implementation of Biological Objectives
Given the description provided, we were not clear whether or not this should be a high priority and whether or not it applies to tidal wetlands. We would like to be involved in further discussions on this item to understand how it may or may not apply to our project.

5.3 Develop Policy for Managing Mercury in Restored Wetlands
This is obviously an item of great interest to us, and generally of high priority. However, given the extensive nature of the monitoring that is currently underway by our project (and others), perhaps it would be prudent to postpone any policy development until we have data from our

Applied Studies to help inform policy development. For that reason, we suggest that this not be a top priority for this review cycle, but rather be made a top priority in the next triennial review.

The South Bay Salt Pond Restoration Project and the State Coastal Conservancy would like to remain involved in future discussions on these topics. Please add me to any notification lists as appropriate and do not hesitate to contact me at jbourgeois@scc.ca.gov or 408.314.8859.

Thank you,

John Bourgeois
Executive Project Manager
South Bay Salt Pond Restoration Project

South Bay Salt Pond Restoration Project

Restoring the Wild Heart of the South Bay

April 17, 2012

Richard Looker
Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, CA 94612
(510) 622-2451
email: rlooker@waterboards.ca.gov

Re: 2012 Basin Plan Triennial Review

Dear Mr. Looker,

I am writing to you in regard to the Water Board's triennial review of the Basin Plan. The South Bay Salt Pond Restoration Project is interested in participating in the process, and would like to offer the following thoughts on the proposed list of projects.

2.4 Complete the Stream and Wetland Systems Protection Policy
Please consider the impact of upstream sources (e.g., contaminants, sediment, nutrients) on downstream beneficial uses. For example, upstream Guadalupe River sources continue to move mercury into our project area, potentially impacting on our ability to restore tidal wetlands.

3.1 Develop Site-Specific Objectives for Dissolved Oxygen in San Francisco Bay
We would consider this a top priority.

3.7 Develop Nutrient Water Quality Objectives
Could Harmful Aquatic Bacteria (HAB's) be added to this item?

3.8 Development and Implementation of Biological Objectives
Given the description provided, we were not clear whether or not this should be a high priority and whether or not it applies to tidal wetlands. We would like to be involved in further discussions on this item to understand how it may or may not apply to our project.

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Thank you,

John Bourgeois
Executive Project Manager
South Bay Salt Pond Restoration Project

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

April 17, 2012

Richard Looker
San Francisco Bay Region
California Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

Dear Richard:

This letter provides U.S. Environmental Protection Agency (EPA) comments on the San Francisco Bay Regional Water Quality Control Board (SF Bay Waterboard) triennial review list of issues and projects ("*Brief Issue Descriptions for the 2012 Triennial Review of the San Francisco Bay Basin Water Quality Control Plan (Basin Plan) March 2012*").

We appreciate the work completed by the SF Bay Waterboard staff on several top priorities from the 2009 Triennial Review priority list (e.g., Significant Waterbodies and Beneficial Uses update; Beneficial Uses for Hayward Marsh; and Recreational Criteria for Beaches); and recognize that SF Bay Waterboard staff are also involved in State Water Resources Control Board-lead efforts. Thank you for your continued hard work.

EPA supports the issues / projects listed, and we have identified four (4) items in the list as high priority and offer one new high priority item for consideration:

- Item 2.4 – *Complete the Stream and Wetland Systems Protection Policy*;
- Item 3.1 – *Develop Site-Specific Objectives for Dissolved Oxygen in SF Bay*;
- Item 3.7 – *Develop Nutrient Water Quality Objectives*;
- Item 3.8 – *Development and Implementation of Biological Objectives*;
- [New] - Review and revise the objective and implementation language for unionized ammonia in SF Bay. This is to ensure the objective and its implementation is consistent with EPA criteria and implementation for saltwater acute and chronic effects. Specifically, we encourage review and revision, as necessary, of the Basin Plan objective's magnitude and averaging period (in contrast with EPA's saltwater criteria) and its implementation, including in NPDES permits.

Additionally, we encourage the SF Bay Waterboard staff to include on the final list of priorities for this triennial review Item 3.5 – *Revise Pentachlorophenol (PCP) Water Quality Objectives and identify freshwaters that support early life stages of salmonids*. PCP criteria were included in the California Toxics Rule (CTR) of 2000. Subsequently, the US Fish and Wildlife Service and the National Marine Fisheries Service issued a Biological Opinion concluding that the U.S. EPA's CTR water quality criteria for PCP are not protective of the early life stages of salmonid

fish under conditions of low dissolved oxygen and high temperatures. The U.S. EPA has asked the State and this Waterboard to identify where aquatic conditions of low dissolved oxygen and high temperatures occur in the San Francisco Bay Region and to adopt the appropriate PCP water quality criteria.

We look forward to working with you on the priority issues identified through this Triennial Review process. If you have any questions, please contact me at (415) 972-3452, or Susan Keydel at (415) 972-3106.

Sincerely,

[signature on original]

Janet Hashimoto, Manager
Standards and TMDL Office

Cc: Tom Maurer, US Fish and Wildlife, Sacramento Field Office
Joe Dillon, National Marine Fisheries Service

members

Black Stallion Winery

Cakebread Cellars

Catlin Farm

Constellation Brands U.S.

Far Niente Winery

Harlan Estate Winery

Hall Napa Valley Wines

Joseph Phelps Vineyards

Kendall-Jackson Wine Estates

Michael Mondavi Family Estate

Pina Vineyard Management

Round Pond

Sawyer Cellars

Silver Oak Cellars

Silverado Premium Properties

Swanson Vineyards

Treasury Wine Estates

Trefethen Family Vineyards

Trinchero Family Estates

WINEGROWERS
of napa county

April 17, 2012

Via Email rlooker@waterboards.ca.gov

Mr. Richard Looker
San Francisco Bay Regional Water Quality Control Board
1515 Clay Street, Suite 1400
Oakland, California 94612

Re: Triennial Review Comments

Dear Mr. Looker:

Winegrowers of Napa County ("Winegrowers") is a non-profit trade group consisting of nineteen winery, vineyard manager, and grape grower members. Overall, our members produce a significant share of Napa County's total annual wine production and farm a sizeable portion of Napa County vineyards. The mission of Winegrowers is to promote and preserve sustainable agriculture as the highest and best use of the natural resources of Napa County. Winegrowers appreciates the opportunity to comment on the Triennial Review of the Water Quality Control Plan for the San Francisco Region ("Basin Plan").

Pursuant to the State Water Resources Control Board's *Policy for Implementation and Enforcement of the Nonpoint Source Pollution Control Program* (May 20, 2004)("Non-Point Source Policy"), Regional Boards may adopt categorical waivers of waste discharge requirements ("WDRs") through a Basin Plan amendment.[1] (Non-Point Source Policy at 4.) The Winegrowers respectfully request that the Regional Board consider this option as part of the Triennial Review process instead of the currently proposed vineyard waiver being worked on by Regional Board staff. Because the timelines set for both regulatory processes appear to be similar, the Winegrowers believe that this request will not create additional work for the Regional Board and may be more efficient in the long run.

[1] Alternatively, the Regional Board could include vineyards requirements as part of the implementation plan required for the water quality objectives contained in the Basin Plan. (Cal. Water Code section 13242.) As with waivers, implementation plans are to include the nature of the actions to be taken, time schedules, and proposed monitoring activities. (*Id.*; Cal. Wat. Code §13269.)

po box 5937 napa ca 94581 707.258.8668 v 707.258.9228 f

WINEGROWERS
of napa county

Given the recognized effectiveness of the Napa County resource conservation and erosion control regulations, the Winegrowers believe that the Regional Board could share its authority for general oversight and regulation of vineyards with local governmental entities that have already been regulating and overseeing vineyard management practices for decades with great success.[1] The Basin Plan Amendment could propose a formal link to these entities through either a Memorandum of Understanding ("MOU") or Management Agency Agreement ("MAA") that would effectuate a waiver of WDRs or be deemed functionally equivalent to a waiver. (Non-Point Source Policy at 9.) The Non-Point Source Policy and Basin Plan already recognize this approach, which can achieve non-point source control more efficiently by leveraging the Regional Board's limited staffing and financial resources. (*Id.* at 10; *see also* Basin Plan at 4-2 ("The watershed management process is flexible and recognizes the existing institutional structures that can implement watershed management to protect water quality… These institutions are therefore well suited to organize and/or participate in a watershed management approach at the countywide level….").)

To ensure the continued success of Napa Valley's locally based programs, the Regional Board could maintain enforcement of local laws under California Water Code section 13225(d), or could terminate application to certain vineyards that do not comply with local regulations and require an individual WDR, if needed. Given that the Non-Point Source Policy at page 9 encourages creative and efficient approaches to prevent or control non-point sources, the Winegrowers requests that the Regional Board consider this option in lieu of proceeding with the vineyard waiver program.

We are more than happy to meet with you to discuss our proposal in more detail at your earliest convenience.

Very truly yours,

Michelle Benvenuto
Winegrowers of Napa County

Cc: Mike Napolitano, San Francisco Bay Regional Water Quality Control Board
Sandi Potter, San Francisco Bay Regional Water Quality Control Board

[1] *See* Napa River Sediment TMDL at 78 ("locally administered water quality protection programs… may provide an innovative and less intrusive means for landowners to qualify for waivers"); and at 80 ("An effective means of reducing sediment delivery from sheetwash erosion would be for all vineyards to meet the performance standards specified under the Napa County Conservation Regulations.").

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