14,011

BACWA EXECUTIVE BOARD MEETING

Thursday, November 18, 2010, 9:00 a.m. – 12:00 p.m.

HANDOUTS

Handout Packet is available on the BACWA website (www.BACWA.org).

Pages	Handout Title	Agenda Item #
2 – 3	Agenda	
4 – 5	AIR Committee Report	1
6 – 12	BAPPG Report	1
13	Collection Systems Committee Report	1
14	Permits Committee Report	1
15	Prop 50 Grant Disbursement Summary, November 2010	2
16 – 17	Executive Director Report	3
18 – 22	Meeting Minutes from BACWA Executive Board Meeting of October 28, 2010, File 14,010	6
23– 24	Board Action Request – Approve resolution recognizing Arleen Navarret for her service to the Bay Area Clean Water Agencies ; File 12,301	8
25 – 27	Board Action Request – Approve contract with CH2MHill to present an energy management workshop; $25,000; File 12,302	9
28 – 32	Board Action Request – Approve contract with O'Rorke for BAPPG Spring Cleaning outreach campaign; $40,000; File 12,300	10
33 – 37	Summary of Impacts Associated with Proposed SWRCB Whole Effluent Toxicity (WET) Policy – Version 3, 11/10/10	11
38 – 55	San Francisco Bay Region SWAMP Workplan (FY 2010–11 & 2011–12)	12
56 – 63	Stormwater Diversion Executive Summaries	13
64	DRAFT EOA Workplan for Development of ERS Transition Strategy	14
	The October 2010 Treasurer's Report will be distributed separately.	7

Bay Area Clean Water Agencies
A Joint Powers Public Agency
Leading the Way to Protect our Bay

AGENDA
Executive Board Meeting

Thursday, November 18, 2010
9:30 a.m. – 12:00 p.m.

EBMUD Plant Lab Library
2020 Wake Ave., Oakland, CA

ROLL CALL AND INTRODUCTIONS (9:30 a.m. – 9:35 a.m.)

PUBLIC COMMENT (9:35 a.m. – 9:45 a.m.)

REPORTS (9:45 a.m. – 10:30 a.m.)

1. Committee Reports Question and Answers.
2. Proposition 50 Grant Disbursements Status Report.
3. Executive Director Report.
4. Executive Board Reports.
5. Chair & Executive Director Authorized Actions
   a. Purchase Order for Jolly Whaler Printing and Cassie Prudhel to provide Regional FOG Outreach; $2,300; File 12,294.
   b. Authorization for RMC/Oakley Water Strategies to provide assistance to the Executive Director and Laboratory and Permits Committee in responding to the State Water Board's draft Whole Effluent Toxicity Policy; $3,200; File 12,162.

CONSENT CALENDAR (10:30 a.m. – 10:40 a.m.)

6. Minutes from October 28, 2010 BACWA Executive Board Meeting.
7. October 2010 Treasurer's Report.
8. Resolution recognizing Arleen Navarret for her service to the Bay Area Clean Water Agencies.
9. Contract with CH2MHill to present an energy management workshop; $25,000; File 12,302.
10. Contract with O'Rorke for BAPPG Spring Cleaning outreach campaign; $40,000; File 12,300.

OTHER BUSINESS (10:40 a.m. – 12:00 p.m.)

11. Draft Whole Effluent Toxicity Policy.
12. Nutrient Strategy & Monitoring Workplan.
13. Stormwater Diversions: Status and Next Steps Discussion.
14. eSMR Transition Plan and Support Proposal.
15. Finance Committee Meeting

NEXT REGULAR MEETING

The next regular meeting is scheduled for **December 16, 2010**, 9:00 to 12:00 at the EBMUD Plant **Ops Center** in Oakland. A holiday luncheon will follow.

ADJOURNMENT (12:00 p.m.)

Handout Packet will be available by noon on November 17, 2010 on the BACWA website (www.BACWA.org).

Report to BACWA Board from AIR Committee (November 2010)

Document Control	Prepared by Sarah Merrill (Project Engineer) Reviewed by Stephanie Cheng (Committee Chair)
Committee Request for Board Action	None at this time.
Committee Agenda Items	None at this time.

Recent Committee Actions:

Recent Committee Actions	• Committee Meeting was held October 20, 2010 at the CH2M Hill Oakland offices
AIR Website	http://bacwa.org/Committees/AirIssuesRegulations.aspx

News and Updates:

EPA: Proposed NSPS for Sewage Sludge Incinerators	• October 14, 2010 – EPA publishes final draft of new source performance standards (NSPS) and emission guidelines (EG) for new & existing sewage sludge incineration (SSI) units in Federal Register • Proposed rules establish opacity limits and emission limits for 9 pollutants • Written comments due to USEPA by November 29, 2010
For more information	http://www.epa.gov/ttn/oarpg/new.html

CARB: In-Use, Off-Road Diesel Fleet Regulation	• October 7, 2010- CARB met with the Associated General Contractors of America Trade Organization to agree upon proposed changes to the regulation. • Changes set for acceptance December 2010 CARB Meeting - Comments to be accepted beginning: October 20, 2010
	Primary changes would include: 1. Delay performance requirements by 4 yrs (2 yr - medium & small fleets) 2. Combine NOx and PM, lower annual requirements, and allow fleets to comply through turnover only 3. Provide easier compliance path for fleets under 500 hp 4. Increase low use threshold 5. Extend double credit for retrofits 6. Maintain turnover rate for a longer period, from 2017 to 2022
For more information	http://www.arb.ca.gov/msprog/ordiesel/ordiesel.htm

CARB: Guidance for Siting Biorefineries	• October 11, 2010 – CARB released draft Air Quality Guidance for Siting Biorefineries, - Comments Due: December 1, 2010 • A best practices guidance document for siting biofuel production facilities • Biorefinery definition: A facility that converts biomass to fuels, heat, electricity, and chemicals. - specifically addresses biogas and anaerobic digestion as a biofuel and conversion technology
For more information	http://www.arb.ca.gov/fuels/lcfs/101110_DRAFT_Air_Quality_Guidance_for_Siting_Biorefineries.pdf

BAAQMD: 2010 Clean Air Plan	• September 15, 2010, Board adopted the final Bay Area 2010 Clean Air Plan (CAP) & certified its Final EIR

Report to BACWA Board from AIR Committee (November 2010)

Adopted	• The CAP performance objectives are as follows: - Reduce PM2.5 exposure by 10% by 2015 - Reduce diesel PM exposure by 85% by 2020 - Reduce GHG emissions to 1990 levels by 2020 and 40% below 1990 by 2035 • Implementation to follow
For more information	http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx

CWCCG Update: CARB Mandatory Reporting Regulation	• CARB Mandatory 2010 Report Verification Grace Period: - Originally due October 1, 2010 - Two Month Grace Period – verification now due December 1, 2010 • Revisions to Mandatory Reporting Regulation - Proposed regulation amendments released October 28, 2010 - Reporting Threshold: proposed to be lowered to 10,000 MT CO_2-e - Cogen reporting category removed. - Comments Due: December 15, 2010 CARB Hearing: December 16, 2010
For more information	http://www.arb.ca.gov/cc/reporting/ghgver/advisory_Oct01_verification.pdf http://www.arb.ca.gov/regact/2010/ghg2010/ghg2010.htm

CWCCG Update: CARB Cap& Trade Program	• October 29, 2010: Final draft version of regulation released - Comments due by December 15, 2010 • December 16, 2010 – Board hearing of regulation Impact to POTWs • Capped Sectors: –No exemption for POTWs, but fugitive and most biomass combustion emissions from stationary sources excluded. CWCCG working with CARB staff to clarify language on excluded emissions. • Offsets: – Credits to be generated through ARB and "linked" programs – ARB to develop more protocols in 2011
For more information	http://www.arb.ca.gov/cc/capandtrade/capandtrade.htm

Next BACWA AIR Meeting: **Wednesday, January 26th, 2011**
CH2M HILL Oakland Offices, 10:00am

BAPPG Committee Report to BACWA Board

Meeting Date: November 18, 2010
Prepared By: Sharon Newton, City of San Jose
BAPPG Committee Chair

Project Updates

Project	Update	Completion Date
EPA Best Management Practices for Unused Pharmaceuticals	BAPPG and BACWA and BACWA jointly submitted a comment letter on the EPA Best Management Practices for Unused Pharmaceuticals at Health Care Facilities. See attached comment letter.	October 2010
DTSC Green Chemistry Safer Alternatives Regulations	BAPPG and BACWA and BACWA jointly submitted a comment letter on the DTSC Green Chemistry Safer Consumer Products Alternatives Regulations. See attached comment letter.	October 2010
Green Chemistry Initiative	DTSC held a public comment hearing regarding proposed regulations for the Green Chemistry Initiative on November 1st. Kelly Moran, TDC Environmental assisted BAPPG with developing comments on the regulations, which were provided to DTSC both electronically and orally. [Project Leads: Jen Jackson, East Bay Municipal Utility District, Melody LaBella at Central Contra Costa Sanitary District (CCCSD), Karin North, City of Palo Alto]	November 2010
Regional Holiday FOG Outreach	The Regional Holiday FOG outreach campaign will launch in November. Turkey fryer stickers and posters with information on proper FOG disposal will be delivered to Bay Area Home Depot and OSH stores. O'Rorke, Inc. will provide media support for this project.	November 2010
Holiday FOG Spanish Radio Advertisement	BAPPG will conduct outreach on Bay Area Univision Spanish radio stations during between Thanksgiving and Christmas. The advertisements promote proper disposal of kitchen fats, oils and grease.	December 2010
EcoMetro Guide Ads	BAPPG placed two ads in the South Bay and East Bay Chinook Book (The New EcoMetro Guide). The ads, created using existing artwork from the No Drugs Down the Drain campaign, direct residents to BayWise.org for disposal information. EcoMetro Guides are coupon books for "green" services and products that remain in circulation for one year. The 2011 Chinook Books have been published and are currently being distributed. The No Drugs Down the Drain ad is located in the resource section of the books. See attached example. [Project Lead: Karin North]	Fall 2010

BAPPG Committee Report to BACWA Board

Project	Update	Completion Date
Pharmaceuticals	BAPPG will begin working with the Teleosis Institute to develop two sets of brochures for hospice care workers to distribute to patients and their families - one set upon entering hospice and another for end of life. [Project Lead: Karin North]	Fall 2010
Spring Cleaning Campaign	BAPPG issued an RFP to at least six public relations firms to assist the BAPPG with a spring cleaning campaign to drive traffic to the Baywise.org website and encourage behavior change around disposal of common household toxics. Two public relations firms responded to the RFP and were interviewed. The selected proposal was from O'Rorke, Inc. and a BAR and PO are attached. [Project Leads: Jen Jackson, East Bay Municipal Utility District; Melody LaBella at Central Contra Costa Sanitary District (CCCSD); Karin North, City of Palo Alto; Amanda Roa, Delta Diablo Sanitation District]	March 2011

Next BAPPG Meeting

December 1, 2010, 10am – 12pm, 1515 Clay Street, Oakland, CA, Second Floor, Room 10

Attachments

- EPA Best Management Practices for Unused Pharmaceuticals at Health Care Facilities Comment Letter
- DTSC Green Chemistry Safer Consumer Products Alternatives Regulations Comment Letter
- O'Rorke BAR and Purchase Order

November 5, 2010
Sent via e-mail

Meghan Hessenauer
Engineering and Analysis Division (4303T)
US EPA, 1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460 (4101M)
unusedpharms@epa.gov

RE: Best Management Practices for Unused Pharmaceuticals at Health Care Facilities

Dear Ms. Hessenauer:

On behalf of the Bay Area Pollution Prevention Group (BAPPG) and Bay Area Clean Water Agencies (BACWA), we are pleased to provide comments on the draft Best Management Practices for Unused Pharmaceuticals at Health Care Facilities.

BACWA and BAPPG bring together representatives from fifty-five publicly owned treatment works (POTWs) around the San Francisco Bay and beyond. Our membership includes large metropolitan facilities such as the City and County of San Francisco, East Bay Municipal Utility District, the City of San Jose, East Bay Dischargers Authority and Central Contra Costa Sanitary District. Many of our members also provide drinking water and solid municipal waste collection, in addition to wastewater services. Because of cross-media contamination concerns, we take the issue of pharmaceutical pollution very seriously.

For years, our member agencies have worked tirelessly to promote the proper disposal of pharmaceuticals in both the residential and medical sectors. After several regional disposal events, many agencies have established ongoing public pharmaceutical collection programs at pharmacies and hospitals. Other member agencies have issued permits to healthcare facilities requiring specific best management practices to reduce pharmaceuticals going down the drain. The BAPPG has worked with hospice and long-term care facilities to pilot programs to properly dispose of unused medication from patients. Still another member agency has specifically banned the sewering of waste pharmaceuticals from any source within its jurisdiction.

We appreciate the EPA's attention to first reducing the volume of the pharmaceutical wastestream through operational and institutional changes such as better dispensing practices, improved inventory rotation to reduce the quantity of medicine on-hand that expires, and providing free samples through voucher programs.

We are concerned however, by the recommendation in "4.4 Recommended Management of Nonhazardous Unused Pharmaceuticals" (p. 20), to dispose of non-hazardous pharmaceuticals via solid waste landfill. In 2008, the BAPPG developed the attached document, "Managing Pharmaceutical Waste: A 10-Step Blueprint for Healthcare Facilities

for California Healthcare Facilities," as a resource for the healthcare industry in California to better manage pharmaceuticals without using solid waste landfills or the sewer as an option.

We are quite concerned therefore, that the EPA guidance provides for trash disposal in certain cases. In our estimation, there are no cases where this should be encouraged, particularly in a non-statutory guidance document.

In addition, we are concerned that the vast majority of pharmaceuticals are considered non-hazardous under RCRA guidelines. Since the guidance as currently drafted points to solid waste disposal for non-hazardous pharmaceuticals, the guidance may do little to change disposal habits that affect water quality. Given that the presence of pharmaceuticals in leachate is already a known environmental concern, we request that you change the guidance document to discourage both the sewering ***and*** landfilling of pharmaceuticals.

Last, we suggest that your guidance point to a single uniform disposal option of high heat incineration at a permitted facility. Rather than a menu of options, a single option will simplify and be much more easily implemented at institutions of any size.

We appreciate your consideration of our comments.

Sincerely,

Amy Chastain
Executive Director

Sharon Newton
Chair, Bay Area Pollution Prevention Group

Attachment

October 26, 2010
Sent via e-mail

California Department of Toxic Substances Control
Office of Legislation & Regulatory Policy
Jeff Woled, MS 22A
P.O. Box 806
Sacramento, CA 95812
gcregs@dtsc.ca.gov

Re: Safer Consumer Products Alternatives Regulations (Green Chemistry)

Dear Mr. Woled,

On behalf of the Bay Area Clean Water Agencies (BACWA) and the Bay Area Pollution Prevention Group (BAPPG), we are pleased to provide comments on the Safer Consumer Products Alternatives Regulations.

BACWA and BAPPG bring together representatives from fifty-five publicly owned treatment works (POTWs) around the Bay and beyond. Our membership includes large metropolitan facilities such as the City and County of San Francisco, East Bay Municipal Utility District, the City of San Jose, East Bay Dischargers Authority and Central Contra Costa Sanitary District.

Preventing pollution from consumer products has long been an important strategy for POTWs to comply with NPDES permits, protect the biological processes used in our operations, and to maximize the quality of our biosolids. We have initiated and supported both state legislation and regulatory controls for a variety of consumer products, including mercury thermometers, head lice and scabies treatments containing lindane, copper-based root control products, pharmaceuticals, and tributyltin-containing cooling water additives.

We support the proposed Safer Consumer Product Alternatives Regulations because they will create a straightforward framework for preventing harmful discharges to municipal wastewater treatment plants. DTSC's regulatory program will be more efficient and cost-effective for us than the time-consuming and expensive process of sponsoring legislation addressing individual products or chemicals of concern. We also stand ready to assist DTSC with development of the wastewater portion of alternatives assessment methodologies and assessor training programs.

Outlined below are concerns we have about the proposed regulations and specific recommendations to improve them.

Funding
The state's need to protect consumers and the environment from pollutants in products can only be met if DTSC has sufficient funding to establish a robust regulatory program. We encourage

DTSC to work with the legislature to develop mechanisms to provide funding for full implementation of these regulations.

Include Water Pollution Priorities in First List of Priority Chemicals

We understand that DTSC seeks to focus its first list of Priority Chemicals on the state's highest priorities. In setting priorities, DTSC has selected only lists of chemicals that are problematic for human health. Some chemicals that are harmful to aquatic life are not particularly harmful for humans, such as copper. In selecting only human health based lists, DTSC would inadvertently close the door on prioritizing chemicals that are California's highest water pollution priorities.

In Section 69302.3(d)(3)(E) and (F), the regulations cite two Clean Water Act-related lists of chemicals that are the highest priority for water quality protection: the Federal Clean Water Act list of Priority Pollutants (which is the basis of the "California Toxics Rule" in 40 CFR 131.38) and the list of pollutants impairing California surface waters (the California "303(d) list"). Solving water pollution problems associated with chemicals on these lists should be among the state's highest priorities. We recommend that the following water quality priorities be added to the list of priority chemical lists in Section 69302.4 (d) and Section 69301.2 (a)(39)(B):

> "(4) Pollutants listed by California or the United States Environmental Protection Agency for one or more water bodies in California pursuant to section 303 (d) of the federal Clean Water Act.
> (5) Chemicals identified as priority toxic pollutants for California pursuant to section 303(c) of the federal Clean Water Act and listed in section 131.38 of Title 40 of the Code of Federal Regulations published in the Federal Register May 18, 2000."

Include Interference with Biological Waste Treatment Processes on List of Adverse Environmental Impacts in Section 69302.3(d)

Municipal wastewater treatment operations and waste management activities involve biological processes that can be adversely impacted by chemicals in products. These environmental impacts appear to have been inadvertently omitted from the list of adverse environmental impacts in section 69302.3(d), which will be the basis for selection of Chemicals under Consideration and which will define the scope of the environmental impacts evaluated in Tier I and Tier II-A Alternatives Assessments.

This omission can easily be corrected by adding the following to Section 69302.3(d):

> "(6) Interference with the performance of biological processes used in municipal wastewater treatment, biological processes that treat septic system discharges, and biological processes used to manage municipal solid waste, including but not limited to composting, digestion, and other types of biological energy production."

Close Loophole That Could Lead to Regrettable Substitutions

Once DTSC issues its lists of Chemicals under Consideration and Priority Chemicals, manufacturers are likely to reformulate products to avoid the need to complete detailed Alternatives Assessments. We appreciate that DTSC has designed the regulations to require that alternative formulations receive a basic screening (Tier I Alternatives Assessment) to avoid selection of regrettable substitutes. However, as drafted, the regulations contain a loophole that could be used to avoid the Tier I AA. To close the loophole, DTSC should require a Tier I AA

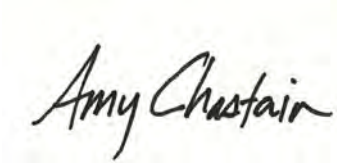
for any product that is substantially similar to products exempted through filing of Product Removal Confirmation Notifications.

To close this loophole, we recommend adding the following underlined language to Section 69305.1 (c).

> "(c) The requirements of subsection (a) do not apply if the manufacturer of the product has submitted a Chemical Removal Confirmation Notification or a Product Removal Confirmation Notification to the Department and has not placed into the stream of commerce a substantially similar new product."

Thank you for your consideration of our concerns and related recommendations. Please contact Jen Jackson at 510-287-0818 or jacksonj@ebmud.com if you have any questions.

Sincerely yours,



Amy Chastain
Executive Director

Sharon Newton
Chair, Bay Area Pollution Prevention Group

Collection Systems Committee Report to BACWA Board

November 10, 2010
From: Andy Morrison, Committee Chair
Prepared By: Monica Oakley

Committee Request for Board Action:

None.

Highlights of New Items Discussed and Action Items

New Annual SSO Reporting Procedures and Requirements

Johnson Lam, Regional Water Board staff, presented his new annual sanitary sewer overflow (SSO) reporting database at the November 4th Collection Systems Committee meeting. Water Board staff have requested that agencies upload Excel data to a website for easier compilation of regional data. During the presentation, several comments were made by BACWA members for improvement of the website. In addition, it became apparent (even if the suggested changes were incorporated) that the new electronic reporting would be more involved and take more time than originally advertised by Water Board staff. Additionally, the proposed method would likely result in data entry errors. BACWA collection system leaders will continue discussing alternative ways Water Board staff can collect information they are looking for without creating significant new (and tedious) work for BACWA member agencies.

Recent Regional Water Board Enforcement Actions

The Regional Water Board has recently issued Administrative Civil Liability (ACL) enforcement actions to agencies as follows:

Agency	Type of Enforcement Action	Date Issued	Penalty Amount that Regional Water Board "Is Seeking"
Sonoma Valley County Sanitation District	ACL for SSOs	7/15/10	$348,400
East Bay Municipal Utility District	ACL for Wet Weather Facility and Diversion Structure discharges	7/19/10	$209,851
Novato Sanitary District	ACL for SSOs	9/15/10	$287,486

It's possible that settlement agreement discussions will reduce the penalty amounts.

Upcoming TCP Training

The Santa Clara Valley section of the California Water Environment Association (CWEA) is holding a Technical Certification Program (TCP) training on December 15. Persons interested in attending should contact Dan Stevenson of the City of Sunnyvale at dstevenson@ci.sunnyvale.ca.us .

Transition of Committee Chair

Rich Cunningham, who has served as chair for the past 4 years, passed the gavel to Andy Morrison. Committee members expressed unanimous appreciation for Rich's years of service.

Next BACWA Collection Systems Committee Meeting

This meeting is scheduled for Thursday, December 2 at 1:30 PM, at the Boy Scouts Facility in San Leandro.

Permits Committee – Report to BACWA Board

Reporting Date: 11/09/10
Executive Board Meeting Date: 11/18/2010
Prepared By: Jim Ervin

Committee Request for Board Action: None.

Upcoming Permits –

Jan – City of Petaluma
Feb – Napa Sanitation District

eSMR: Permits Committee received a demonstration of the "Water Bits" software program from Darlene Reddaway of Azyura company. Darlene is one of the contractors who have responded to a State Water Board RFP for programming work on eSMR and the related CIWQS PET tool. Regional Water Board plans to implement use of the State eSMR database system by January 2012. Darlene's Water Bits software is a standalone web-based application that downloads SMR and DMR data into one zip file for reporting. Water Bits can also upload LIMS data and old data from the existing ERS system.

Upon full implementation of the State eSMR system, there will likely still be a need for an additional software tool that can import Regional Board calculations to determine permit compliance. This is a function currently performed by Johnson Lam and the ERS system that will be unavailable in eSMR. Water Bits will have functions that can cover this gap. We may need future discussion concerning Permittee, BACWA, or Regional Board purchase of a software tool to evaluate compliance with permit limits.

Whole Effluent Toxicity (WET) Assessment and Control Policy: CASA / TriTAC is organizing participants for the public workshop at State Board offices in Sacramento on 16 November. CASA / TriTAC hosted phone conference calls on November 2nd and 9th to coordinate with BACWA. The goal is to have people show up to demonstrate to State Board that there is more than the normal amount of concern and that delaying adoption of this policy is warranted. There are many legal, regulatory, statistical, and toxicological implications of this policy which makes commentary difficult and complex. Written comments are due to State Board at noon on 22 November. Amy Chastain will send a sample comment letter and oral testimony to BACWA members to help them frame their comments.

Pretreatment Reporting Requirements – NPDES Permit Attachment H:

Tim Potter's Attachment H working group is providing final comments on his draft by 12 November. This final version will be forwarded to Regional Water Board staff for review and approval. Final adoption may occur as early as the March 2011 Water Board meeting.

PCBs TMDL: Regional Board held a workshop to consider potential BMPs to address building demolition and caulking as a source of PCBs. Tim Potter discussed his comments and recommendations concerning PCB laden caulking BMPs and their implications for source control programs.

Next BACWA Permits Committee Meeting

Tuesday, December 14th, 2010, from 11:00 PM to 2:00 PM at EBMUD Wastewater Treatment Plant Library. Water Board staff will attend.

Grant Disbursement Summary to Date (Nov 10, 2010) Bay Area Integrated Regional Water Management (IRWM) Prop 50 Grant											
Agr. No.	**Implementing Agency**	**Project Title**	**DWR Proj. No.**	**Max. State Grant Funds by Project**	**Grant Funds Invoiced to date**	**Paid by DWR to date**	**DWR Retention**	**Admin[2] Funds Rec'd by BACWA**	**Funds paid out to date**	**Payable as of this date**	**Total Paid and Payable**
1	Contra Costa Water District	Regional Intertie (VFDs)	1	500,000.00	500,000.00	181,397.33	(50,000.00)		176,731.44	0.00	176,731.44
		BACWA Admin	16	15,625.00	6,621.24	5,959.11	(662.12)	15,625.00			
2	East Bay Municipal Utility District	Reg. Conservation Outreach	2	250,000.00	250,000.00	225,000.00	(25,000.00)		1,889,049.85	2,340.41	1,891,390.26
		California WaterStar Initiative -	3	525,000.00	0.00	0.00	0.00				
		New Business Guidebook Pilot	4	75,000.00	0.00	0.00	0.00				
		Richmond Adv Recycling	8	2,127,600.00	1,831,681.03	1,648,512.93	(183,168.10)				
		BACWA Admin	16	46,875.00	19,863.71	17,877.33	(1,986.37)	46,875.00			
3	City of Redwood City	Redwood City Recycled WP	5	972,800.00	972,800.00	**972,800.00**	**0.00**		978,759.11	0.00	978,759.11
		BACWA Admin	16	15,625.00	6,621.24	5,959.11	(662.12)	15,625.00			
4	City of Palo Alto	Mt.View-Moffett Recycl WP	6	972,800.00	972,800.00	**972,800.00**	**0.00**		965,858.13	2,275.98	968,134.11
		BACWA Admin	16	15,625.00	6,621.24	5,959.11	(662.12)	15,625.00			
5	Santa Clara Valley Water District	Reg. Conservation Outreach	2	125,000.00	125,000.00	112,500.00	(12,500.00)		80,625.00	4,377.33	85,002.33
		South Bay Adv Recycl WTP	7	2,934,600.00	0.00	0.00	0.00				
	(& San Jose)	BACWA Admin[3]	16	31,875.00	4,863.71	4,377.33	(486.37)	31,875.00			
SJ	City of San Jose	BACWA Admin for SCVWD[3]	16	15,000.00	15,000.00	13,500.00	(1,500.00)	15,000.00	0.00	13,500.00	13,500.00
6	North Coast County WD	Pacifica Recycled Water Proj	9	744,400.00	0.00	0.00	0.00		0.00	1,459.11	1,459.11
	(& SFPUC)	BACWA Admin[3]	16	10,625.00	1,621.24	1,459.11	(162.12)	10,625.00			
SF	S.F. Public Utilities Comm	Reg. Conservation Outreach	2	297,550.00	297,550.00	267,795.00	(29,755.00)		231,545.00	31,418.22	262,963.22
		BACWA Adm for Reg.Consrv	16	31,250.00	13,242.47	11,918.22	(1,324.25)	31,250.00			
		BACWA Admin for NCCWD[3]	16	5,000.00	5,000.00	4,500.00	(500.00)	5,000.00			
SOL	Solano Co. Water Agency	Reg. Conservation Outreach	2	50,000.00	50,000.00	45,000.00	(5,000.00)		45,000.00	0.00	45,000.00
7	North Marin Water District	North Marin Recycled Water	10	244,550.00	244,550.00	**244,550.00**	**(0.00)**		241,750.47	0.00	241,750.47
		BACWA Admin	16	9,375.00	3,972.74	3,575.47	(397.27)	9,375.00			
8	Zone 7 Water Agency	Reg. Conservation Outreach	2	60,000.00	60,000.00	54,000.00	(6,000.00)		720,000.00	5,959.11	725,959.11
		Mocho GW Demin Project	11	740,000.00	740,000.00	666,000.00	(74,000.00)				
		BACWA Admin	16	15,625.00	6,621.24	5,959.11	(662.12)	15,625.00			
9	Marin Municipal Water District	Reg. Conservation Outreach	2	200,000.00	200,000.00	180,000.00	(20,000.00)		374,451.90	468.08	374,919.98
		Direct Installation HET Prog	12	366,800.00	219,688.35	197,719.52	(21,968.84)				
		BACWA Admin	16	9,375.00	3,972.74	3,575.47	(397.27)	9,375.00			
10	Montara Water & Sanitary District	Groundwater Exploration Project	13	37,100.00	37,100.00	33,390.00	(3,710.00)		33,390.00	1,191.82	34,581.82
		BACWA Admin	16	3,125.00	1,324.25	1,191.82	(132.42)	3,125.00			
11	Alameda County Water District	Reg. Conservation Outreach	2	60,000.00	60,000.00	54,000.00	(6,000.00)		589,334.11	0.00	589,334.11
		Alameda Creek Phase 2 Fish	14	600,000.00	600,000.00	540,000.00	(60,000.00)				
		BACWA Admin	16	15,625.00	6,621.24	5,959.11	(662.12)	15,625.00			
12	Sonoma Valley County Sanit. Dist.	Sonoma-Napa Marsh RWP	15	366,800.00	0.00	0.00	0.00		0.00	3,575.47	3,575.47
		BACWA Admin	16	9,375.00	3,972.74	3,575.47	(397.27)	9,375.00			
Grand Total				**12,500,000.00**	**7,267,109.14**	**6,490,810.56**	**(507,695.91)**	**250,000.00**	**6,326,495.01**	**66,565.55**	**6,393,060.56**

Notes: 1. BACWA Administration Costs invoiced and paid to date: 105,939.76 92,070.65

3. Reimburse SFPUC and San Jose for Admin Costs until reimbursement = $80k then pay SCVWD & NCCWD

2.Admin funding = $152,250 in upfront funding plus grant check deductions.

11/10/2010

DIRECTOR'S REPORT TO THE BOARD

Prepared for the November 18, 2010 Executive Board Meeting
October 23, 2010 – November 12, 2010

A. Executive Board & Administrative Matters

Financial & Administrative Matters

During this period the Executive Director (ED), Assistant Executive Director (AED) continued to work with EBMUD accounting and Brian Campbell to integrate Proposition 50 into BACWA's new accounting system. We predict that this will be completed before the end of the year and will serve as the model for Proposition 84. A finance committee meeting will be scheduled for late January or early February to consider new financial procedures, review mid-year budget to actual, and being development of the Fiscal Year 2011-2012 budget and workplan.

A reminder to Executive Board (EB) members about completing required ethics training was sent.

B. Regulatory Affairs & Developments

Mercury Risk Reduction

The first Stakeholder Advisory Group (SAG) for the risk reduction program will be held December 7, 2010 from 12:30 until 5:00 at the State building in Oakland.

PCB TMDL Implementation

Water Board staff is still considering inclusion of a MDEL numeric effluent limit in wastewater permits. BACWA and the Water Board staff are continuing discussions about the technical aspects and will keep the EB informed of any developments.

Stormwater Diversion

This issue is on the November Board meeting agenda as a discussion item.

CIQWS

This issue is on the November Board meeting agenda as a discussion item.

Nutrients

The Sacramento permit will be considered for adoption at the December 8-9 Central Valley Water Board meeting. The San Francisco Bay Regional Water Board is developing a monitoring workplan to investigate the impacts of ammonia discharges on aquatic life beneficial uses in San Pablo Bay. This issue is on the November Board meeting agenda as a discussion item.

Selenium

The ED and board member Mike Connor are working with the laboratory and permits committees to respond to the San Francisco Bay Regional Water Board's request for information about selenium discharges.

Other

The ED worked with CASA and the permits committee to develop a strategy for responding to the State Board's draft policy on whole effluent toxicity. This issue is on the November Board meeting agenda as a discussion item.

C. Committee Affairs & Regional Collaboration

Committees	See Committee Reports for actions undertaken by the Committees during this period.
Workshops & Trainings	The scope of work for an energy workshop was finalized; preparations are still underway for the January 27, 2011 annual members meeting.
IRWMP	The list of projects for which Proposition 84 funding will be requested was finalized. BACWA is working with the group to prepare the application.
Other	The ED met with the managers of the North Bay POTWs to learn more about their needs and how BACWA can better serve them. The ED attended the San Francisco Estuary Partnership (SFEP) Implementation Committee meeting and spoke to the attendees about BACWA and BACWA's goals and projects. SFEP is preparing a "State of the Bay" report that will evaluate the health of the Bay using selected indicators.

D. Membership

Member Communications	The first html electronic newsletter was sent in early November. BACWA also sent a notice to the membership of the annual members' meeting and an e-alert requesting members to comment on the draft whole effluent toxicity policy.

E. Upcoming Meetings

- December 1, BAPPG Meeting
- December 1, Recycled Water Committee Meeting
- December 2, Collection Systems Committee Meeting
- December 7, Risk Reduction SAG meeting
- December 8, San Francisco Bay Regional Water Board Meeting.
- December 8, Laboratory Committee Meeting
- December 8, Tri-Tac Meeting (San Leandro)
- December 14, Permits Committee Meeting
- December 15, Operations Infoshare
- December 16, Executive Board Meeting

Bay Area Clean Water Agencies
A Joint Powers Public Agency
Leading the Way to Protect our Bay

MINUTES
Executive Board Meeting

Thursday, October 28, 2010
9:00 a.m. – 12:00 p.m.

EBMUD Plant Lab Library
2020 Wake Ave., Oakland, CA

ROLL CALL AND INTRODUCTIONS

Executive Board Representatives: Ben Horenstein, Acting Chair (East Bay Municipal Utility District); Jim Kelly (Central Contra Costa Sanitary District); Mike Connor (East Bay Dischargers Association); Tommy Moala (San Francisco Public Utilities Commission); Kirsten Struve (City of San Jose).

Other Attendees: Gail Chesler (Central Contra Costa Sanitary District); Scott Klein (East Bay Municipal Utility District); Gary Tominaga (East Bay Municipal Utility District); Sharon Newton (City of San Jose); Jim Ervin (City of San Jose); Laura Pagano (San Francisco Public Utilities Commission); Rich Cunningham (City of Albany); Greg Baatrup (Fairfield Suisun Sewer District); Phil Bobel (City of Palo Alto); Guy Moy (Union Sanitary District); Andy Morrison (Union Sanitary District); Patricia McGovern (PME); Doug Craig (MWH); Tom Hall (Eisenberg Olivieri Associates, Inc.); Monica Oakley (RMC/Oakley Water Strategies); Jackie Kepke (CH2M Hill); Amy Chastain (BACWA); Alexandra Gunnell (BACWA).

PUBLIC COMMENT

There were no public comments.

REPORTS

Committee Reports, agenda item 1, were included in the meeting handout packet and Committee Chairs were given the opportunity to provide further clarification, as requested by meeting attendees.

- The BAPPG committee report was included in the handout packet. The Executive Director (ED) and Committee Chair, Sharon Newton, reviewed the report and discussed the following items:
  - Committee member, Melody LaBella (Central Contra Costa Sanitation District), attended the ABAG Sewer Smart Summit and it will be discussed at the next BAPPG meeting.
  - A letter from the ED to the San Francisco Board of Supervisors regarding the Safe Drug Disposal Ordinance was included in the handout packet and reviewed.
  - The Mercury Watershed Permit Dental Metrics – Executive Summary prepared by Stephanie Hughes was included with the committee report in the packet and discussed. It was mentioned that BACWA may want to investigate whether NACWA will be preparing comments on the USEPA proposed rules defining sewage sludge as solid waste, specifically as it pertains to mercury emissions resulting from incineration.
- Committee Chair, Rich Cunningham, reviewed the Collection Systems committee report that was included in the handout packet, and discussed the following items:

- A list, from the San Francisco Bay Regional Water Quality Control Board (RWQCB), of those agencies who failed to file sanitary sewer overflow (SSO) annual reports was distributed.
- The committee will continue to follow development of the State Water Resources Control Board (SWRCB) revised Sanitary Sewer System Waste Discharge Requirements (WDR).
- Potential new SSO reporting procedures and requirements will be added to the November 18, 2010 BACWA Executive Board meeting agenda for further discussion.
- Starting in November, Andy Morrison will become the Collection Systems Committee Chair and the Board expressed their appreciation to Rich Cunningham for his many years of service as the committee chair.

- The Lab committee report was included in the handout packet and reviewed by Committee Chair, Guy Moy. The report provides information about the recent EPA audit at Union Sanitary District. Information about the SWRCB initiative to revise the Whole Effluent Toxicity (WET) Assessment and Control Policy was sent to committee members. Discussion on this topic will continue at upcoming Lab and Permits committee meetings. Additional information can be found in the Permits committee report, included in the handout packet.
- The Permits committee report was included in the packet and reviewed by Committee Chair, Jim Ervin. Jim Ervin sent an e-mail to committee members synopsizing the proposed changes to the WET policy and additional information about committee efforts surrounding this issue is included in the report. Representatives from CCCSD, LWA and EOA will be attending the November 16th SWRCB workshop to discuss this matter further and the committee will also continue to discuss this topic at their upcoming committee meeting.
- The Recycled Water committee report to the Board was included in handout packet and reviewed by the ED. BACWA has been selected as the applicant for Prop 84 grant funding. Project selection criteria are currently being determined, and application preparation will commence soon. The application is due to on January 7, 2011.
- Committee Chair, Greg Baatrup updated the Board on Biosolids committee activities. The UC Davis study on Biosolids emissions has completed the testing phase of their research and analysis of the results is occurring now. The process for releasing the report from the study is unclear at this time.

For **agenda item 2**, the **Proposition 50 Grant Disbursements Status Report** prepared by Brian Campbell (EBMUD) was included in the packet.

Under **agenda item 3,** The ED referred to the **Executive Director's Report** which was included in the meeting handout packet and fielded questions from meeting attendees. It was noted that there is a typographic error on the report and "All permittees subject to risk reduction requirements are ~~not~~ participating."

A synopsis of the RWQCB preferred selenium (Se) data requirements was included in the report. Mike Connor distributed 2009-2010 RMP Fees for Municipal Participants table which lists metals loading data for participating agencies. Mike Connor will discuss further analysis of Se data with Bhupinder Dhaliwal (CCCSD) and the ED will forward spreadsheet information prepared by Bhupinder to Mike Connor.

Executive Board members were invited to share any items of interest under **agenda item 4**, **Executive Board Reports.**

The following **Chair and Executive Director Authorized Actions**, were listed under agenda **item 5**.

a) Contract with TDC Environmental for BAPPG Green Chemistry Support from Kelly Moran, $4,000; File 12,225.

b) Contract with TDC Environmental for BAPPG Pesticide Regulatory Support; $6,000; File 12,280.

CONSENT CALENDAR

*Consent calendar **agenda and items 6 through 11** were approved in a motion made by Jim Kelly and seconded by Ben Horenstein. The motion carried unanimously.*

6. Approval of Minutes from September 23, 2010 BACWA Executive Board Meeting.
7. Treasurer's Report for First Quarter Fiscal Year 2011 (July 2010 – September 2010).
8. Auditor's Report for Fiscal Year 2010, and Basic Financial Statements for 2009 & 2010.
9. Resolution adopting a vision statement for the use of wastewater as a resource for the San Francisco Bay Area; File 12,263.
10. Contract with Univision for BAPPG FOG Spanish Outreach; $10,000; File 12,255.
11. Contract with Oakley Water Strategies/RMC for 2010 Mercury Group Reporting Support; $20,000; File 12,281

Questions about the auditor's report should be e-mailed to the ED and AED, and an explanation of "Restricted" versus "Unrestricted" as referenced on the report, will be sent to the BACWA board.

The ED will discuss possible revisions to the mercury annual report with the RWQCB to determine the appropriate level of specificity for future reports.

***Agenda item number 12** was removed from the Consent Calendar.*

12. Amendment to contract with Oakley Water Strategies for Committee and As Needed Technical Support to change contractor name to include RMC; File 12,162.

BOARD DISCUSSION ITEMS

Under **agenda item 13, Executive Board Chair & Vice-Chair Nominations & Election**, the following actions were taken.

Jim Kelly nominated Ben Horenstein for Chair and Tommy Moala seconded. Mike Connor moved to close nominations and Jim Kelly seconded. The motion carried unanimously.

Tommy Moala was nominated as Vice Chair by Jim Kelly and Mike Connor seconded. The motion carried unanimously.

Patricia McGovern of PME distributed slides and reviewed them for **agenda item 14, Shellfish Beneficial Use Issue Paper Presentation & Discussion**. Monica Oakley of RMC has a database of current bacteriological permit limits for BACWA member agencies and will provide it to the ED. The paper will be finalized and distributed to the RWQCB and member agencies, as necessary. BACWA will continue to track activities surrounding this issue.

For **agenda item 15,** Jackie Kepke, of CH2M Hill, and the ED reviewed the **Energy Workshop** proposal, included in the packet. Ben Horenstein and a representative from City of San Jose will participate in the planning group for this effort. Suggested topics to be addressed in at the workshop included:

- renewable energy and greenhouse gas emissions requirements in Europe, and how they affect utility management;
- framework differences, including regulatory-related, between model facilities and those in the Bay Area that may impact a POTW's ability to undertake high energy-efficiency and sustainability performance initiatives;
- public responses to rate increases for model agencies, and public relations/marketing efforts undertaken to address rate payer concerns.

This workshop is likely to be scheduled for March or April 2011. A contract for consultant support will be brought back to the board for approval next month. Any feedback should be directed to ED prior to the November Board meeting and the ED will keep board informed as this effort moves forward.

Mike Connor distributed a handout on "Joint BACWA/PGE Meeting on Demand Management/Power Generation". Mike Connor, Greg Baatrup, and Jackie Kepke will work with Pacific Gas and Electric (PG&E) in November to schedule an upcoming workshop on 1) Client interaction and demand management; 2) Power generation and use of methane. The Board will contact Mike Connor to provide contact information of agency representatives who could attend this meeting.

For **agenda item 16, Nutrients: NACWA Summit Presentation, SCRSD Permit & General Discussion**, Gail Chesler distributed and reviewed a handout showing the building blocks for nutrient policy discussions that were created during the summit. As NACWA materials are released the ED and Gail will make them available to the Board. The ED will contact Ann Farrell to obtain additional information pertaining to the SCRSD Permit. The Board recommended that ED and Chair use their contracting authority to seek consultant support to determine necessary research efforts, specifically focused on POTW issues.

The ED will schedule the next joint BACWA/RWQCB meeting.

The ED continues to work with LWA on PCB TMDL implementation and will update the Board on their progress.

The proposed **Annual Meeting Schedule & Topics** handout was included in the packet for **agenda item 17**. The Board should direct feedback to the ED.

For **agenda item 18**, the **2011 Executive Board Meeting Calendar** was included in the handout packet. Any anticipated scheduling conflicts should be directed to the ED.

The next regular meeting is scheduled for **November 18, 2010**, 9:00 to 12:00 at the EBMUD Plant Lab Library in Oakland.

The meeting adjourned at 12:00 p.m.

BACWA EXECUTIVE BOARD ACTION REQUEST

AGENDA NO.: 8

FILE NO.: 12,301

MEETING DATE: November 18, 2010

TITLE: Resolution honoring Arleen Navarret

☐ **MOTION** _____ ☒ **RESOLUTION** _____

RECOMMENDED ACTION

Approval of a resolution honoring former BACWA Chair and San Francisco Public Utilities representative Arleen Navarret for her service to BACWA.

SUMMARY

This resolution formerly recognizes Arleen Navarret for her outstanding contributions to BACWA and the municipal wastewater community.

FISCAL IMPACT

This action has no immediate fiscal impact that needs to be considered.

ALTERNATIVES

This action does not require consideration of alternatives.

Attachments:

1. Resolution

Submitted: _____ **Executive Director Approval:** /s/ Amy Chastain

Bay Area Clean Water Agencies

A Joint Powers Public Agency

A RESOLUTION HONORING
Arleen Navarret

WHEREAS, the Bay Area Clean Water Agencies (BACWA) was formed in 1984 as a public Joint Powers Authority with the mission of developing a regional understanding of the San Francisco Bay Estuary's watershed protection and enhancement needs through reliance on sound science, environmental, and economic information; *and*

WHEREAS, the San Francisco Public Utilities Commission (SFPUC) is a BACWA founding member and Principal; *and*

WHEREAS, Arleen Navarret served SFPUC for almost thirty years, first as a staff biologist, then as the head of biology laboratories and, finally, as the SFPUC's regulatory compliance manager. Arleen has provided exemplary and visionary leadership to the broader wastewater community during her tenure as the SFPUC BACWA Executive Board representative, BACWA Chair, BACWA Permits Committee Chair, and Tri-TAC Water Committee Chair; *and*

WHEREAS, Arleen is possessed of a unique combination of technical and regulatory expertise, interpersonal skills, compassion, humor, and commitment to public service that enabled her to bring together diverse interests and identify mutually beneficial solutions to difficult regulatory challenges; *and*

WHEREAS, Arleen's warmth, intelligence, and dedication to the environment, have been essential to BACWA's success in developing effective relationships with the regulators and environmental and community-based non-profits; *and*

WHEREAS, those relationships and Arleen's tireless efforts have resulted in more informed, thoughtful and effective water quality regulations as well as improvements to water quality; *and*

WHEREAS, the BACWA Executive Board and the agency's members wish to convey their deep appreciation of and affection for a most vibrant, generous, kind and intelligent colleague;

NOW, THEREFORE, BE IT RESOLVED, on this 18th day of November, 2010, that the BACWA Board of Directors hereby honors and thanks Arleen Navarret for her service to BACWA, its member agencies, and the San Francisco Bay Estuary.

Ben Horenstein, BACWA Chair
East Bay Municipal Utilities District

Tommy Moala, BACWA Vice Chair
San Francisco Public Utilities Commission

Mike Connor, Executive Board Member
East Bay Dischargers' Association

Jim Kelly, Executive Board Member
Central Contra Costa Sanitary District

Bhavani Yerrapotu, Executive Board Member
City of San Jose

BACWA EXECUTIVE BOARD ACTION REQUEST

AGENDA NO.: 9

FILE NO.: 12,302

MEETING DATE: November 18, 2010

TITLE: Approval a contract with CH2M Hill to present an energy management workshop.

☒ **MOTION** ☐ **RESOLUTION**

RECOMMENDED ACTION

Authorize a contract with CH2M HILL to organize and present a workshop on energy management and resource recovery, not to exceed $25,000, with work to be completed by June 30, 2010.

SUMMARY

Based on the outcome of the BACWA Energy Project Assessment, BACWA asked CH2M HILL to present a workshop on issues related to energy management and resource recovery, and that also highlights Austria's Strass im Zillertal Wastewater Treatment Plant as an example of implementation of best practices. The objectives of the workshop will be to learn, and share, the strategies and factors successfully utilized by the Strass Plant and other high performing facilities; to stimulate a discussion among BACWA members about how BACWA can support more effective energy management efforts; and to build relationships with energy and other regulators.

FISCAL IMPACT

This project was not included in the BACWA Fiscal Year 2010-2011 budget and workplan. Funding for this project is available, however, from either the BACWA Training Reserve or the WQAS/Clean Bay Collaborative.

ALTERNATIVES

No other alternatives were considered as the BACWA contracting policies authorize a sole source selection process for contracts under $50,000.

Attachments:

1. Scope and Budget

Submitted: **Executive Director Approval:** /s/ Amy Chastain

BACWA Energy and Resource Workshop
Scope of Work

Background

Based on the outcome of the BACWA Energy Project Assessment and discussion at the Pardee Technical Seminar, CH2M HILL has been asked to collaborate with BACWA to develop and present a workshop focusing on energy management as well as resource recovery and organizational efficiency. The workshop will feature discussion of Austria's Strass im Zillertal Wastewater Treatment Plant (WWTP) case study, developed by CH2M HILL on behalf of the Water Environment Research Foundation (WERF), as well as other examples of WWTPs with high energy-efficiency and sustainability performance.

Objectives of the workshop are as follows:

- Learn key strategies and critical success factors from Strass and other high performing facilities
- Initiate a broader dialogue with BACWA members on how BACWA can support energy management efforts
- Build relationships with energy regulators and other potential partners

Task 1 – Workshop Planning and Preparation (est. $12,242)

Under this task, CH2M HILL staff will conduct the following activities:

- Work with BACWA Subcommittee to finalize the workshop agenda (assume 2 conference calls)
- Work with BACWA Executive Director to identify workshop partners and/or presenters. Potential partners include USEPA Region IX, the Regional Water Quality Control Board, the California Energy Commission, the California Public Utilities Commission, Pacific Gas & Electric, and WERF.
- Work with BACWA Executive Director to identify a workshop venue and date. Venues belonging to the potential partners identified above will be explored, as well as BACWA member agency venues.
- Develop presentation materials for the workshop
- Work with BACWA Executive Director to develop workshop invite.

It is assumed that workshop invite distribution and workshop logistics including food will be handled by BACWA.

Task 2 – Workshop Presentation (est. $12,697)

Under this task, CH2M HILL will deliver the workshop. It is assumed that the workshop will be a one-day event held in the Bay Area and will engage one local and two out of state CH2M HILL staff.

A preliminary workshop agenda is presented below. As described above, CH2M HILL will work with BACWA to refine this agenda in Task 1.

Preliminary Agenda

- Overview of WERF Optimization Challenge
- Strass case study + selected North American examples
- What can the Bay Area learn from Strass and other high performing facilities
    - Focusing on the right metrics
    - Organizational issues – hiring practices, organizational structure
    - Technical issues – examples: annamox sidestream nutrient treatment technologies, N_2O emissions
- Facilitated discussion on Bay Area challenges and opportunities
- Funding mechanisms – presented by CPUC/CEC/PG&E
- Path forward for the Bay Area – discussion on potential areas for collaboration (with regulators and among BACWA members)

Total ($24,939)

Note that task budgets are estimates only. The project will be managed and invoiced to meet the overall project budget.

The period of performance for this project is through June 2011.

BACWA EXECUTIVE BOARD ACTION REQUEST

AGENDA NO.: 10

FILE NO.: 12,300

MEETING DATE: November 18, 2010

TITLE: Contract with O'Rorke for BAPPG Spring Cleaning Outreach Campaign

☒ **MOTION** ☐ **RESOLUTION**

RECOMMENDED ACTION

Authorize an agreement with O'Rorke, Inc. in an amount not to exceed $40,000 to assist BAPPG with improving the Baywise.org website and then driving new website users to it through a strategic media campaign, to be completed by June 30, 2011.

SUMMARY

The BAPPG's goal for the BayWise.org website is that it becomes a credible and dynamic resource for the public to find information on protecting San Francisco Bay from pollution and to assist residents in the proper disposal of potential Bay pollutants. The "Spring Cleaning" outreach campaign will drive new users to the website, provide information on proper disposal to protect the Bay, encourage individuals to take action, and keep them engaged over a longer period of time. While previous campaigns have increased daily website hits for a brief period of time, we have not retained consistent traffic beyond the campaign period. This campaign and tools developed for it are aimed to increase overall website traffic after the campaign period, with a goal that the public will use www.BayWise.org as an ongoing resource.

FISCAL IMPACT

This project is included in, and consistent with, the approved Fiscal Year 2010-2011 BAPPG budget and workplan. It will be funded by the BAPPG line item, "General P2 Outreach," and the project will be managed by a team from BAPPG including Jen Jackson (EBMUD), Melody LaBella (CCCSD), Karin North (Palo Alto), and Amanda Roa (DDSD).

ALTERNATIVES

BACWA contracting policies authorize a sole source selection process for contracts under $50,000. However, BAPPG sent an RFP to seven public/media relations firms and two responded. Two firms indicated that the project budget was too low; two did not respond; one did not have sufficient resources to develop a proposal; and two provided proposals. While both proposals received were exceptional, BAPPG chose O'Rorke, Inc. because of its knowledge of water pollution issues as well as experience in multi-media campaigns for public agencies. However, we look forward to working with the other firm in the future to implement elements of their proposal to enhance the entire campaign.

Submitted: Sharon Newton, BAPPG Chair **Executive Director Approval:** /s/ Amy Chastain

Attachments:

1. Scope of Work
2. Proposed Schedule, Plan and Budget from O'Rorke Proposal

Scope of Work

FY 2010-2011 BAPPG General P2 Outreach, Spring Cleaning Campaign

Goals

- Improve Baywise.org website into a user-friendly, dynamic website that does not require significant time resources to sustain.
- During the campaign, increase average daily web hits from 400 to 3000 per month.
- After the campaign, increase average web hits from 400 to 1000 per month.
- Encourage bookmarking or other tools so that visitors will return to this page in the future.

Tasks

- Work with web developer and assist in adding features and creative interest to our website
- Develop messages for campaign in conjunction with BAPPG subcommittee
- Align campaign messages, materials and website tools/ content
- Develop and implement ongoing web engagement strategy and timeline, including newsletter development and online tools and resources
- Develop and implement a media strategy and advertising plan for campaign

SUGGESTED SCHEDULE, MEDIA PLAN & BUDGET

Upon award of the contract in mid-November, the O'Rorke team will immediately meet with BAPPG committee members to review the state of the website and plans for improvement. We will identify future goals and objectives, discuss potential directions, and agree on specific tasks in the work plan. Internally, we will expound key elements such as issues to highlight, strategies to reach varied targeted audiences with the appropriate messages. We'll also discuss analytics use to measure traffic to the site. During this process, we will coordinate with BAPPG's web contractor, Adammer. We'll simultaneously coordinate the media relations efforts to identify outreach opportunities and story ideas.

By January 2011, O'Rorke will develop campaign messages and compose a media buy recommendation. This will include both search-driven cost-per-click ads and traditional banner ads—all geo-targeted to the Bay Area only.

During January and February, we will focus on placing the media buy and working with BAPPG to get the creative elements to the final stage. In February, we will develop and coordinate press activities related to the new launch of the website and spring-cleaning related stories.

In March, we'll launch the campaign. From that point, we will closely monitor the campaign, report results and make any needed adjustments. Once the advertising is complete, we will provide a final report to BAPPG.

Media Recommendations

Although O'Rorke fully plans to work closely with the BAPPG committee, looking at the budget and scope of this project, we do have initial proposed media recommendations as follows:

Google AdWords

O'Rorke recommends running a Google AdWords campaign with keyword search terms geo-targeted to reach only users located in the Bay Area. Google is the number one most visited search engine on the web and we feel it is critical to reach our audience when they are conducting searches for information that they could be gathering from the Baywise.org website. Search terms can include words having to do with household chemicals, pesticides, paint or with other items, such as mercury thermometers. Although Google search driven ads are text only, O'Rorke finds that Google is a powerful tool in conjunction with other advertising elements; further, keyword choices will allow use to target individuals seeking out particular types of information. Google AdWords is fully trackable and, because it is a pay-per-click option, it is virtually risk-free.

Placecast

O'Rorke recommends working with 1020 Placecast to customize an online ad buy that can be targeted to Bay Area residents. Placecast has a network of sites (publishers) that it places ads with in catergories as diverse as news, weather, real estate, entertainment, social networking and food. Placecast's proprietary technology allows for precise geo-targeting based on non-identifying information, resulting in impressions that are not wasted on users that are not located in the Bay Area.

Advertising with Placecast assures a campaign of wider reach than can be achieved with simply focusing on one or two websites.

Regional Media Sites

O'Rorke would also consider the possibility of targeted ads on regional news sites such as sfgate.com, or the Bay Area Newspaper Group's sites (insidebayarea.com, contracostatimes.com etc). If we opt to use these sites, the focus would be specific: home & garden pages for ads related to housecleaning items (old paint, pesticides, etc), sports pages for male-targeted items. In this way, our ads on these sites would be as focused and hard-working as possible to ensure the best possible click through rates (CTRs).

O'Rorke's team already monitors daily website activity for several clients. By doing this, we are able to monitor our advertising's effectiveness in bringing new visitors to a site and can get a sense of overall traffic when ads are running versus when they are not. This also enables us to employ realtime adjustments and shifts to the ad or the buy itself.

BUDGET

O'Rorke is planning to allocate $30,000 toward paid media for this project. Another $10,000 will go toward staff hours for project management and implementation and for ad design work. The remaining $15,000 outlined in the RFP will be for coordination with Adammer and on media relations activities, as stated in the RFP. Please see budget grid below.

PROPOSED BUDGET	
ACTIVITY	**AMOUNT**
Online media buy	$30,000
Project management and ad design	$10,000
Coordinate with web developer	$5,000
Coordinate with media relations campaign	$10,000
TOTAL	**$55,000**

STAFF BY HOURLY RATE	
Tracy Keough, Managing Director	$180
Julia Fishman, Account Supervisor/Media Buyer	$162
Angela Anderson, Graphic Designer	$150
Meagan Miller, Account Executive	$135
Emiko Hashisaki, Account Executive	$135

SUMMARY (VERSION 3—11-10-10)

IMPACTS ASSOCIATED WITH THE PROPOSED SWRCB WHOLE EFFLUENT TOXICITY (WET) POLICY

• We support the goal of the Policy, which is to increase confidence in the end of result of toxicity testing— to protect water quality while minimizing false negatives and false positives. However, as proposed, the policy is fundamentally flawed and includes a number of unworkable provisions.

• Our biggest concern with the policy is that permittees will incur violations and (1) be exposed to enforcement and (2) be required to expend significant resources where there is no actual toxicity due to variability inherent in the testing of biological organisms.

• We understand the need to bring some consistency to addressing toxicity issues and are willing to work with SWRCB staff to identify a technically sound and implementable policy. Unfortunately, given the complexity of the issues, this cannot be done in the 30 days provided.

- Our request:
  - Extend the comment deadline by 60 days
  - Direct staff to work with stakeholders to devise an alternative policy
  - Schedule a second workshop in 2011

Chronic toxicity testing will be required of essentially all dischargers

- This will include:
  - Publicly Owned Treatment Works (POTWs)
  - Industrial and construction stormwater dischargers
  - MS4 Phase 1 and 2 NPDES stormwater Permits
  - Agricultural discharges under conditional waivers
- Costs associated with this monitoring requirement will range from $120,000 to $240,000 per discharge location over the life of a five-year permit cycle.

Excessive false positive error rate

- 15% of all non-toxic samples are expected to be identified as “toxic” based on an evaluation of EPA blank data.
- Probability of failing at least one chronic toxicity test is 86% over the course of one year and more than 99.9% over the course of a five-year permit cycle even if the discharge was actually non-toxic.
- Non-toxic discharges will be perceived to be toxic, resulting in false public perception of discharge and receiving water quality, and resources wasted to attempt to find the cause of the “toxicity.”

Numeric chronic toxicity limits will be required for nearly all dischargers:

- Every major POTW discharger (>1 MGD) – notwithstanding a lack of reasonable potential
- All minor POTW dischargers
- Water Boards will have the discretion to impose numeric chronic toxicity limits for all MS4, individual storm water, and agricultural dischargers under conditional waivers.

- Water Boards will also have the discretion to impose acute toxicity limits on all dischargers listed above as well.

Exceedances of numeric chronic (and acute) toxicity limits are Clean Water Act violations subject to:

- State penalties of up to $10,000 per day or $10.00 per gallon, and federal penalties of up to $37,500 per day per violation.
- Third party lawsuit and attorney fee liability, particularly if regulators decide to take no enforcement actions.
- Additional costs associated with required accelerated testing of $108,000 to $216,000 over a permit cycle.
- Additional costs associated with required Toxicity Identification Evaluation (TIE) testing ranges from $10,000 to over $100,000.
- Costs associated with conducting Toxicity Reduction Evaluations (TREs) can be high and long lasting.
- Costs associated with unnecessary treatment upgrades in response to false positive toxicity exceedances can be astronomical.
- None of the costs associated with coming into compliance in instances of actual toxicity were considered since these costs were determined to be "too speculative."

Essentially all waters of the State will be identified as impaired for toxicity:

- Clean Water Act section 303(d) impairment designation will occur if two or more receiving water samples are identified as toxic.
- An 89% chance of 303(d) impairment designation exists even for a completely non-toxic receiving water.
- Once a waterbody is listed, the false positive error rate will make it practically impossible to statistically demonstrate that a waterbody will meet 303(d) delisting requirements, even for a completely non-toxic receiving water.
- TMDLs will therefore be required for all waterbodies without any way to demonstrate that the waterbody will be attaining beneficial uses.
- Dischargers who have the TMDL allocations incorporated into NPDES permits will be at risk for permit violations for non-toxic conditions.
- Erroneous 303(d) listings will divert State resources from development of TMDLs with legitimate impairments.

LEGAL AND POLICY ISSUES ASSOCIATED WITH THE PROPOSED SWRCB WHOLE EFFLUENT TOXICITY (WET) POLICY

The Proposed Policy and associated analytical tools were not promulgated or established through formal rule making

- The Staff Report states that the "numeric objectives included in the Policy are simply a concise statement of several elements in U.S. EPA's TST document." (*See* Staff Report at 65.)
- The TST procedures were adopted from recent EPA *guidance* document that was never released for public comment.
- The proposed Policy's statistical procedures are not contained in the formally adopted 40 CFR part 136 methods.
- This Policy likely represents "underground rulemaking."

The Policy is Unnecessarily Stringent.

- There is **no evidence** that these objectives and effluent limits are necessary. Every instance setting forth findings regarding toxicity and effects of the same is qualified with "may be," "might be," or "could be." There are no concrete examples provided, only conclusory statements that "the potential for ecological harm would likely increase" without the Policy (*see* Staff Report at 45).

- The **compliance schedule provisions in the proposed Policy are inappropriately restrictive**. Essentially, if a discharger currently monitors for toxicity, that discharger may not be allowed time to come into compliance with new more stringent limitations. Further, even where a compliance schedule is authorized, the duration of the compliance schedule may not exceed two years. Current State Water Board policy allows up to 10 years to comply with non-CTR constituents.

- The statewide numeric objectives would not supersede existing narrative objectives in the individual basin plans, thereby allowing regional water boards to "translate" the narratives into additional or different limits.

The Proposed Policy conflicts with and is more stringent than federal law.

- The Policy is more stringent than required by federal law since it **automatically assumes reasonable potential** for toxicity for large (more than 1 mgd) POTWs. This is contrary to the federal rule (40 C.F.R. §122.44(d)(1)(iv)), which only prescribes an effluent limit for toxicity where there is "the reasonable potential to cause, or contribute to an in-stream excursion above the numeric criterion for whole effluent toxicity."

- The Policy is more stringent than required by federal law since it **requires numeric effluent limits** when not required by federal or state law. (*See Communities for a Better*

*Environment (CBE) v. State Board/Tesoro,*109 Cal.App.4th 1089, 1103–07 (2003); State Board Order No. WQ 91-03, 1991 WL 135460, at 12; 40 C.F.R. §122.44(k).

- The Policy is more stringent than required by federal law since it **requires maximum daily effluent limitations** not required under 40 C.F.R. §122.45(d)(2). The Policy attempts to argue that longer term limits would be "impractical," which is not the regulatory standard, and the arguments are not supported with adequate findings and evidence. Moreover, the Policy's Staff Report actually contradicts this by including an alternative for longer term average limits (*see* Staff Report at 54 (showing monthly and weekly average limits for POTWs).

- The Policy is more stringent than required by federal law because it will result in more frequent determinations of effluent as toxic than use of the procedures currently required under federal law for toxicity testing.

- All of the more stringent than federal law requirements become **unfunded state mandates**.

The Proposed Policy Places Greater Importance on Ease of Enforcement than Water Quality Protection.

- The main difference between the policy and the current regulatory approach is that now, identified instances of toxicity must proceed to TIE/TRE or the discharger is subject to enforcement. Under the proposed Policy, **identified instances of toxicity--including false positives-- will constitute violations subject to administrative and civil enforcement.**

- The current approach, where effluent limits are prescribed for specific toxicants identified as causing the failures, will result in greater water quality improvement than will the proposed Policy. The proposed Policy merely makes test failures enforceable without changing anything in the effluent or in the environment. This not only diverts resources from the identification and reduction of the toxicity, but penalizes dischargers "genuinely attempting to reduce toxicity through an aggressive TRE process" (*see* Staff Report at 44).

- The proposed Policy imposes two different ways to "fail" a test (test result or percent effect), thereby increasing the likelihood of failure. Failures constitute both "an exceedance of an effluent limitation" and "an excursion above the objectives," thereby causing **two permit violations for each test failure**, by definition.

The Policy's CEQA Checklist is Inaccurate.

- The checklist finds "no impact" from the construction of new wastewater or stormwater treatment facilities, which is inaccurate. (*See* Staff Report at 78.) The SAIC economic analysis states that reverse osmosis or other control technologies may be required for some pollutants causing toxicity (*see* SAIC Economic Analysis at 5-7.) Thus, the "no

impact" selection was misplaced. Further, an analysis of the costs of these treatment technologies was never undertaken because the treatment needed is "highly site-specific."

The Water Code section 13241 and Economic Analyses are Inadequate.

- The Water Code section 13241 analysis is inadequate, without any citations to facts or evidence to support the conclusions. (*see* Staff Report at 63-64).

- The Economic Analysis done by SAIC is inaccurate, as it was done prior to the most recent modifications to the proposed Policy and is based on data from before 2008. Moreover, the costs considered are only for monitoring, not for compliance/treatment, enforcement, or citizen suit exposure. All of these costs need to be considered as they are all above the current baseline condition (except for TRE activities that are currently required).

SAN FRANCISCO BAY REGION SWAMP WORKPLAN (FY 2010-11 & 2011-12):

I. MONITORING SPRING PHYTOPLANKTON BLOOM PROGRESSION IN SUISUN BAY

II. BACKGROUND

Suisun Bay is an area identified as critical habitat for the threatened Delta Smelt (Hobbs et al., 2006). Several important changes in the pelagic food web of this area have been documented over the last two decades indicating that food for Delta Smelt and other threatened fishes is in short supply (Müeller-Solger et al. 2002; Sommer et al. 2007). One of the most striking changes in Suisun Bay is the decline in phytoplankton between 1975 - 1995 (Jassby et al. 2002) and the shift from large accumulations of phytoplankton biomass (>40 μg L^{-1} chlorophyll) during the summer (Cloern 1979) to much smaller phytoplankton blooms (<10 μg L^{-1} chlorophyll) that occur infrequently during spring (Wilkerson, et al. 2006; Kimmerer et al., in prep). Wilkerson et al (2006) studied phytoplankton and nutrient dynamics in the northern estuary from 1999-2003 and observed only a single phytoplankton bloom in Suisun Bay (30μg L^{-1}) during the entire study period. During an intensive study of the Suisun Bay foodweb, made during 2006 and 2007, phytoplankton blooms were largely absent (Kimmerer et al. in prep). During spring 2010, the SFRWQCB and the Romberg Tiburon Center monitored Suisun Bay phytoplankton weekly during the spring and observed two localized phytoplankton bloom events (>30 μg L^{-1}) providing evidence that while large spring phytoplankton blooms are (or have recently been) rare in Suisun Bay, the ecosystem does have the potential to support large populations of phytoplankton and increase its carrying capacity for higher trophic levels. The study results also suggest that monthly monitoring programs at limited locations within Suisun Bay may be insufficient to fully capture the dynamics of phytoplankton blooms.

Prior studies of phytoplankton in Suisun Bay have attributed low rates of primary productivity (Cole and Cloern, 1984; Cloern, 1996) to turbidity (Cloern, 1987, 1991) resulting in light limitation (Alpine and Cloern, 1988). In fact, the relationship between light availability and primary production is robust enough that most estimates of primary production in the San Francisco Estuary (SFE) made since the mid 1980s rely on measurements of chlorophyll-a and solar irradiance rather than direct (e.g. ^{14}C-tracer based) measurements of autotrophic carbon fixation (Cole and Cloern 1987, Jassby et al. 2002, Parker et al in prep). Low standing stocks of phytoplankton have been attributed to benthic grazing (Nichols and Thompson, 1985, Kimmerer and Orsi, 1996, Lehman 2000) especially by the invasive *Corbula amurensis*. Seasonal phytoplankton blooms in the SFE have been observed following periods of high freshwater flow, when stratification reduces both the effects of benthic grazing and light limitation (Cloern 1982, 1984, 1991; Cloern et al. 1983; Lucas et al. 1998).

Nutrient limitation had been largely dismissed as a driver of phytoplankton dynamics in the northern SFE, as nutrients are generally found in sufficient supply to meet phytoplankton needs (Hager and Schemel, 1996). While there are a large number of point source inputs of nutrients to the northern SFE, the dominant source of ammonium, NH_4 (ca. 90% of loading) upstream appears to come from the Sacramento Regional

Wastewater Treatment Plant which discharges into the Sacramento River, approximately 65 km upstream of Suisun Bay. An additional potentially important source of NH_4 to Suisun Bay is the Central Contra Costa Wastewater Treatment Plant that discharges into western Suisun Bay near the Carquinez Strait. As a result, nutrient concentrations, including NH_4, are generally higher in Suisun Bay compared to other subembayments (i.e. San Pablo and Central Bay) of the northern SFE, where phytoplankton blooms are more frequent.

Comment [m1]: RMP data review 1998 – 2001 indicates that ammonia is lower in Suisun Bay than San Pablo Bay

Wilkerson et al. (2006) and Dugdale et al. (2007) hypothesized that nutrients, particularly the availability of inorganic nitrogen in the form of nitrate (NO_3) and NH_4 may play a role in controlling phytoplankton dynamics in the northern SFE. Their research suggested that while the northern estuary is primarily light limited due to high turbidity and turbulence, differences in rates of primary productivity and chlorophyll-a accumulation that occur during spring phytoplankton blooms may be dependent on the form of available dissolved inorganic nitrogen (DIN), either as NO_3 or NH_4 and the relative concentrations of NH_4 and NO_3 act together as a secondary control (limitation) on primary production after irradiance.

Wilkerson et al (2006) described how phytoplankton growth during most of the year is supported by NH_4 at relatively low growth rates (e.g. 0.013 h^{-1} for Central Bay during summer). However over much of the year phytoplankton cannot use NO_3 as NH_4 concentrations (in excess of ca. 4 µmol L^{-1} or 0.056 µg L^{-1}) in the SFE inhibit NO_3 uptake (e.g. Dortch, 1990). The authors concluded that increased rates of primary production and chlorophyll biomass accumulation only occurs in the northern SFE with: 1) an improved light field, 2) phytoplankton uptake of NH_4 to reduce NH_4 concentrations to below inhibitory levels, 3) utilization of NO_3 by phytoplankton. Because Suisun Bay generally has the highest concentrations of NH_4, the inhibition of NO_3 uptake (and primary production) may be most pronounced in Suisun Bay compared to other locations in the northern SFE. In enclosure experiments that controlled for light and eliminated the effects of stratification and benthic grazing, Dugdale et al (2007) observed that compared to phytoplankton in San Pablo and Central Bay locations, phytoplankton NH_4 uptake rates in Suisun Bay were relatively low. In San Pablo and Central Bays increasing NH_4 concentrations were related to increasing phytoplankton NH_4 uptake rates.

In Suisun Bay, phytoplankton NH_4 uptake rates were relatively low and unchanging in response to NH_4 concentration. The reason for this difference in Suisun Bay compared to San Pablo and Central Bays ~~finding~~ has not been resolved, but will be investigated in this proposed study. Along with the data gathering suggested for the spring seasons of 2011 and 2012 in Suisun Bay, all point source receiving water data from Suisun Bay discharges should be analyzed along with water export rates. A comprehensive look at these data in an integrative model of the system as suggested in a recent framework document examining ammonia/ammonium issued in the Bay-delta system (Meyer et al. 2009). The general chemistry data, water export data, nutrient data, nutrient uptake rate measurements, primary productivity measurements, chlorophyll measurements, and phytoplankton species as delineated by algal cell biovolumes and counts will be utilized

to develop an integrative model. The integrative model will be used to meet the management objective for restoration and protection of aquatic life in Suisun Bay. The model output may direct more data gathering, and/or predict level of water export before beneficial use is impacted, and predict if nitrification by point source dischargers along Suisun Bay will protect beneficial use. Data should be collected in a similar timeframe from San Pablo Bay and/or Central Bay and utilized to calibrate the model for normal numbers of phytoplankton, general chemistry numbers, climate change, and the baseline performance of the ecosystem without the dynamic effect of water export.

Phytoplankton community composition may also be an important determinant of the relative importance of the NH_4 inhibition hypothesis on chlorophyll-a accumulation. Diatoms thrive in high NO_3 environments and have inherently high growth rates. In SFE the dominant diatoms include *Skeletonema costatum*, *Chaetoceros* species, *Thalassiosira* species and *Coscinodiscus* (Cloern and Dufford, 2005) and *Entomoneis* (Lidstrom, 2008, Kimmerer et al in prep). Historically, diatoms were the dominant group making up the chlorophyll-a in Suisun Bay. Since the 1980's there has been a shift in phytoplankton community composition in Suisun Bay from diatoms to flagellates and cyanobacteria (Lehman, 1996; Glibert 2010) which has been attributed to climate change (Lehman, 1996), size-selected grazing by clams (Werner & Hollibaugh, 19) and most recently by changes in nutrient loading (primarily NH_4) and shifts in N:P ratio (Glibert 2010).

While there is strong evidence for the role that *Corbula amurensis* played on the decline in summer chlorophyll accumulation in Suisun Bay after 1987, the long term decline in chlorophyll- a in Suisun Bay began prior to the 1986 invasion of *C. amurensis* suggesting that other factors were likely also important. Clam grazing rates vary seasonally and are at their lowest during spring in Suisun Bay, minimizing their impact on phytoplankton biomass. Interannual clam abundance in Suisun Bay was similar in 2010 to previous years, however, a large difference in chlorophyll-a accumulation occurred during 2010, weakening the bivalve grazing hypothesis during the spring period and suggesting that additional factors likely dictate the accumulation of chlorophyll-a. The *Corbula* population may hold ambient chlorophyll concentrations at relatively low values, but the phytoplankton present are held to low growth rates by other factors. The combination ensures low primary production rates and low biomass during much of the time.

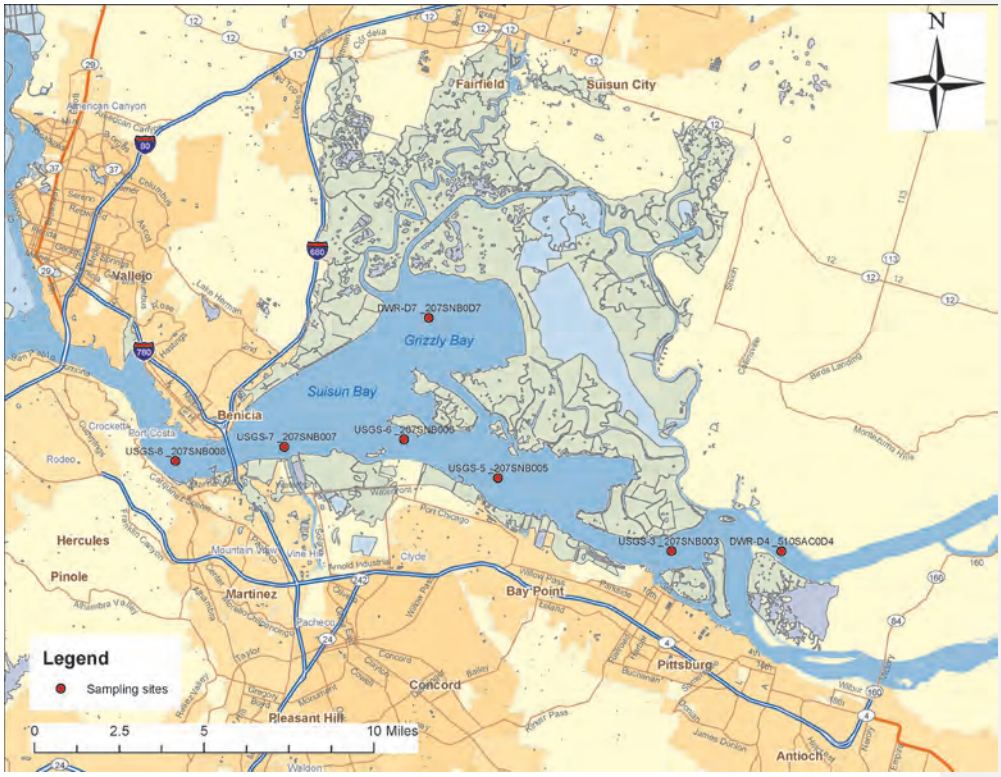


Figure 1: Station locations for 2010 SFRWQCB/RTC study of phytoplankton in Suisun Bay

During 2010 the SFRWQCB and the Romberg Tiburon Center monitored phytoplankton in Suisun Bay with 10 sampling events at 7 stations over the period of March to July (Fig 1). These stations are also monitored monthly by USGS or DWR which provide valuable additional data for analysis. Two blooms were observed with chlorophyll concentrations of 30 µg L^{-1} or greater. The first was measured on April 14th and the second on May 24th. Analysis of the conditions and possible causes of the 2010 blooms is in a preliminary stage, although NH_4 likely plays an important role. NH_4 concentrations at the landward end of Suisun Bay (Station D4) fell from 10.31 µmol L^{-1} in mid-March to 5.5 µmol L^{-1} (close to the inhibitory level of 4 µM; Wilkerson et al. 2006) on April 14 and remained below that value through June 21. Loading of NH_4 to the Bay from upstream, calculated from Delta Outflow and the NH_4 concentrations at D4 (Table 1), were as high as 3.04 mmol $m^{-2}d^{-1}$ (normalized to the area of Suisun Bay) pre-bloom, and reduced by about 50% or more for the remainder of the monitoring period. At the central location of the bloom, NH_4 concentrations fell to as low as 0.5 µmol L^{-1}. Upstream events, not analyzed in detail, apparently resulted in both reduced loadings and reduced

ambient NH_4 concentrations that along with other favorable environmental conditions, e.g. irradiance, water column stability and flow rate, allowed the phytoplankton to take control of the NH_4 inputs (reducing the concentrations below inhibitory levels), to access the NO_3 pool and result in blooms (Dugdale et al., ms in prep). Both blooms occurred as flow was increasing with a decrease in both loading and concentration at D4. An analysis of the conditions at the Sacramento Regional WWTP outfall area in 2009 (non-bloom year) and 2010 revealed a decrease in loading and NH_4 concentration from mid-March to mid-April. These changes were reflected in the reduced loading and NH_4 concentration in Suisun Bay and may be the major event enabling the 2010 blooms (Dugdale et al, 2010) However, in this study an additional NH_4 signal was detected in the western part of Suisun that may play a role in controlling phytoplankton blooms in Suisun Bay. Central Contra Costa Sanitation District discharges an average of approximately 7,000 lbs/day of ammonia to western Suisun Bay (Fig. 2). One of the most intriguing aspects of the spring 2010 situation is that a bloom was observed at Rio Vista by the May USGS RV Polaris cruise, a location where we have consistently observed very low phytoplankton activity.

	Delta Outflow, m^3s^{-1}	NH_4 conc mmol m^{-3}	NH_4 loading,mmol m^{-2} d^{-1}
17-Mar	496.9	10.31	2.61
24-Mar	283.3	6.97	1.01
7-Apr	616.9	9.66	3.04
14-Apr	633.5	5.5	1.77
26-Apr	765.3	5.18	2.02
12-May	617.3	4.43	1.39
24-May	639.7	3.56	1.16
16-Jun	595.5	4.29	1.30
21-Jun	280.9	2.69	0.38
mean			1.63
sd			0.82

Table 1: Calculated NH4 loading to Suisun Bay based on Delta Outflow and NH4 concentrations at Station D4 (from Dugdale et al, in prep)

An additional sampling run was conducted for the SWAMP study on September 1, 2010 using the types of sampling and analyses proposed in this study. Results will be made available in the fall 2010.

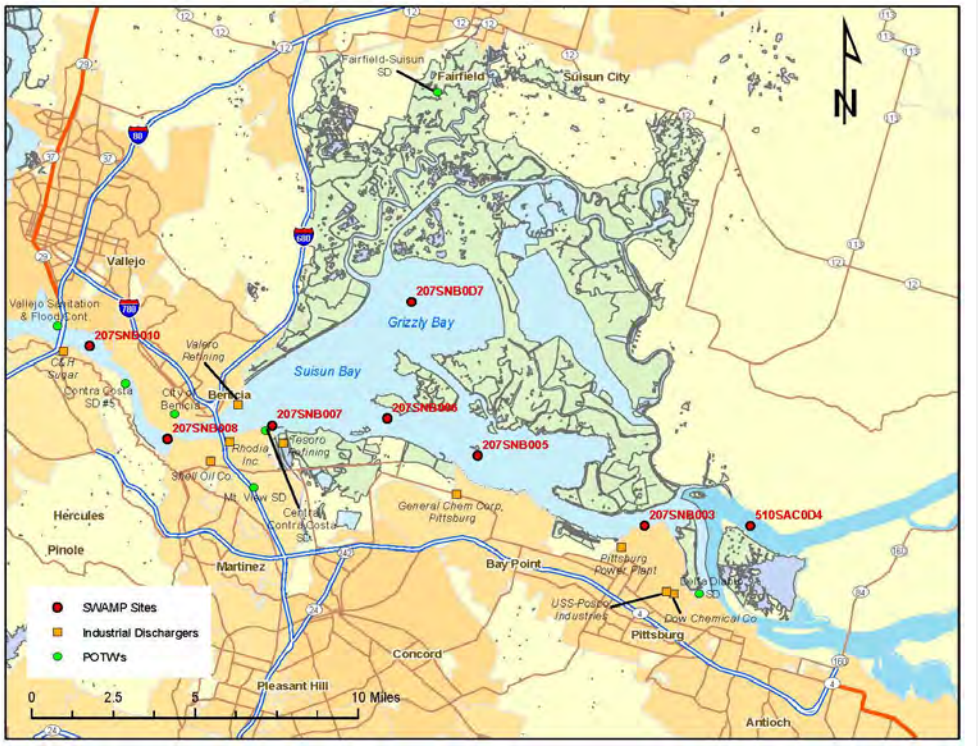


Figure 2. SWAMP 2011 sampling stations with point source discharges of ammonium in Suisun Bay providing all receiving water data for use in an integrative model as well as one new station at the mouth of the San Joaquin River.

DWR and USGS will be conducting ongoing monthly monitoring in Suisun Bay. However, since the specific conditions that favor spring phytoplankton blooms in Suisun Bay are not clear, and initiation of bloom events is temporally variable, more frequent, spatially intensive monitoring is needed to capture the initiation of blooms and the specific conditions associated with the event. In addition, a more intensive spatial scale is needed to identify the source(s) of contaminant(s) causing inhibition.

There is evidence that primary productivity is inhibited in Suisun Bay, and that NH_4 may be causing that inhibition. However, there may be other contaminants and water export effects in the water of Suisun Bay that are contributing to inhibition of primary production. By using Toxicity Identification Evaluation (TIE) methods that includes general chemistry data already being collected by point source discharges to Suisun Bay, the cause(s) of toxicity may be able to be identified. In a study conducted by AQUA-Science for CALFED and the Central Valley RWQCB, diuron was identified as the cause of phytoplankton toxicity (growth inhibition) in the Sacramento-San Joaquin watershed and Delta through the use of TIEs (Miller et al 2002). As part of this study we will use

TIEs to attempt to identify the cause of primary production inhibition in Suisun. Some R&D will be required to adapt TIEs to diatoms that would occur in Suisun and to target the most likely causes of growth inhibition (ammonium, pesticides/herbicides and their degradation products, ~~and~~ copper, salinity, temperature, pH, total alkalinity, total dissolved inorganic carbon, carbon dioxide fugacity, iron, nitrate, nitrate reductase enzyme activity, dissolved oxygen levels, turbidity, water export)~~)~~. In addition, several years of monitoring/studies ~~will probably~~may be necessary to ~~accomplish all of the objectives below~~calibrate a comprehensive model that can be utilized to support the management objective for protection of aquatic life in Suisun Bay. If TIEs are able to identify the cause of inhibition, and that cause includes contaminants or physical changes such as water export, ~~other than NH_4, that contaminant~~that scenario will be measured and monitored in future sampling runs. In addition, samples will be archived for retrospective analysis. Therefore, this is a multi-year study plan.

Monitoring Objectives and Questions

The ~~six~~ nine objectives and associated research questions of this project are:

1) ~~Confirm that~~Evaluate the effect NH_4 is having ~~an inhibitory effect~~ on primary production in spring in Suisun Bay and determine if other contaminants are also contributing to inhibition.

i) Is primary productivity in Suisun Bay inhibited compared to Central and San Pablo Bays?

ii) If so, is NH_4 and/or other contaminants causing the inhibition?

2) Define relationships between inorganic nutrient concentrations, primary productivity and chlorophyll-a in Suisun Bay in spring.

i) Are low productivity locations correlated with elevated inorganic nutrient concentrations (i.e. NH_4) or specific elemental ratios?

ii) Does chlorophyll-a vary as a result of inorganic nutrient concentrations or elemental nutrient ratios (e.g. N:P)?

iii) Discuss the role of total phosphorus in primary productivity.

3) Identify sources of inorganic nutrients, or other contaminants that TIEs indicate limit primary production, to Suisun Bay in the spring.

i) Do spatial and temporal patterns in inorganic nutrients indicate a single upstream source to Suisun Bay?

ii) Are there indications of additional sources of inorganic nutrients (e.g. NH_4) within Suisun Bay and if so, where are these sources?

iii) If TIEs indicate that another contaminant inhibits primary production, what are the sources of that contaminant?

4) Characterize spatial patterns in inorganic nutrient concentrations, chlorophyll-a, primary production and phytoplankton nitrogen uptake between shoals and channels during spring in Suisun Bay.

i.) Are there differences in inorganic nutrient concentrations, chlorophyll-a

concentrations, primary production or phytoplankton N uptake rates between deep (>5m) channel and shallow (<2m) shoal habitats?

ii) Are depth integrated primary production and phytoplankton N uptake rates different between shoal and channel habitats?

5) Characterize phytoplankton community composition during phytoplankton blooms and non-blooms in Suisun Bay.

i.) Is elevated NH_4 associated with a different phytoplankton community composition compared to NO_3?

6) Evaluate the role that water column stratification and an improved light field play in promoting phytoplankton bloom initiation in Suisun Bay.

i) Does NH_4 inhibition of NO_3 uptake and primary production hold in highly turbid (i.e. low light) conditions?

ii) Can phytoplankton blooms occur under high light AND elevated NH_4?

7) Delineate the factors/conditions for the reduction of ammonia below Dr. Dugdale's proposed toxicity thresholds (4 u moles).

a. During 2010 monitoring ammonia in Suisun Bay dropped below 4 u moles on several sampling events. What caused this reduction? Was it due to uptake by phytoplankton or due to some other reason?

8) Evaluate the role of clam grazing on phytoplankton abundance in Suisun Bay.

a. Is clam grazing a phytoplankton growth limiting factor?

9) Characterize the ambient waters for herbicides and/or other similar potential phytoplankton toxicants.

a. Are there known herbicides and/or other byproducts (yet unidentified) that are interfering with phytoplankton growth independently or synergistically with NH_4.

10) Determine effect of salinity on resident phytoplankton population

a. Is salinity a phytoplankton growth limiting factor?

b. Is there a difference in phytoplankton growth during a drought year versus normal and high rain years?

c. Are taxonomic richness and diversity (Shannon-Wiener index) significantly higher or lower at varying salinities?

d. Correlate data with water export.

Benefits and Outcomes

The proposed monitoring program for FY10-11 (and planned monitoring in future years) will provide the following benefits and outcomes:

- Conduct controlled studies to determine if contaminants, including ammonium (NH_4), are inhibiting primary production in Suisun in the spring.
- Evaluate whether point sources (industrial inputs and municipal WWTPs) influence nutrient concentrations, or the concentrations of other contaminants that limit primary production in Suisun Bay.
- Provide detailed characterization of phytoplankton blooms, including primary production and nutrient uptake rates in addition to biomass measurements in Suisun Bay, a critical habitat for food limited species.
- Provide a comparison of phytoplankton parameters in shoal and channel habitats.
- Further test the" NH_4 inhibition" hypothesis for phytoplankton,
- An integrative model will be developed to meet the management objective for restoration and protection of aquatic life in Suisun Bay. The model output may direct more data gathering, and/or predict level of water export before beneficial use is impacted, and predict if nitrification by point source dischargers along Suisun Bay will protect beneficial use.

III. Study Methods and Materials

a. Monitoring design, spatial and temporal scale, and frequency of sampling

The monitoring program will be based on the sampling plan completed from March – July 2010 by the SFRWQCB and RTC and will be comprised of 10 cruises completed from March to June 2011 and 2012. Sampling will be conducted at ~~8~~ 9 stations between the Sacramento River and Carquinez Straits including a new sampling location starting in 2011 at the mouth of the San Joaquin River. Most of these samples will be collected in the channel except for one station in the shoals of Suisun Bay (207SNB0D7). These stations will be the same 7 stations as in 2010 (Fig 1) plus the new station at the mouth of the San Joaquin River. However, an ~~an~~ additional station will be included to the west of station 207SNB008 at the western end of Carquinez Strait to bracket the input of NH_4 from sources in the western part of Suisun (Fig. 2, 207SNB010). In order to extend the results obtained during 2010 and address the objectives described above, sampling for some parameters, i.e. phytoplankton C and N uptake rates will be added, phytoplankton species as delineated by algal cell biovolumes and counts, ammonium, pesticides/herbicides and their degradation products, copper, salinity, temperature, pH, total alkalinity, total dissolved inorganic carbon, carbon dioxide fugacity, iron, nitrate, nitrate, reductase enzyme activity, dissolved oxygen levels, turbidity, water export and additional samples will be collected at 4 depths during all cruises, providing depth-integrated results for the spring bloom progression for biovolumes and counts. Because of the significant number of cancelled cruises in 2010 due to weather, during 2011 and 2012 sampling will be conducted using the 38-ft RV Questuary. The Questuary is outfitted with a vertically deployed conductivity, temperature and depth (CTD) profiler and a rosette system carrying six, 3-L Niskin bottles for sampling the water column at discrete depths. In addition, the Questuary is outfitted with an underway data acquisition system (UDAS) for geo-referenced, continuous measurements of temperature, salinity and in vivo fluorescence for greater spatially resolution of water characteristics and phytoplankton biomass within Suisun Bay. The RV Questuary has been used extensively

for studies in Suisun Bay and can operate under inclement weather and is able to access all the stations to be sampled.

ISCO samplers will be deployed at the DWR Hood sampling facility and programmed to obtain a daily composite sample (4 sub-samples/day). The ISCO units are expected to be provided and operated by CVRWQB. Analyses will be made by RTC. These data on source region NH_4 concentrations in the 5-7 day period preceding any observed bloom in Suisun Bay will aid in understanding the connection between source NH_4 and inputs to the Bay.

b. Indicators and measurement parameters

Water column light / stability by CTD profiling

The monitoring program in 2011 and 2012 will be enhanced over 2010 sampling with vertical profiles of temperature, salinity, optical backscatter (OBS), photosynthetically active radiation (PAR) and *in vivo* chlorophyll-a collected at the ~~6~~ 9 discrete stations. Temperature and salinity measurements will allow for the evaluation of water column stratification and the ability to estimate vertical water column turnover and the potential for benthic - pelagic coupling. Estimates of PAR will provide insight into the role of light availability on primary production, phytoplankton N uptake and resulting phytoplankton biomass in Suisun Bay. Additional measures of water column clarity, OBS and in vivo chlorophyll-a, will provide information about the role of both inorganic particles and phytoplankton in the attenuation of light. The RV Questuary is outfitted with a Seabird Electronics SBE-32 Carousel water sampler and a SBE-19plus CTD which makes continuous measurements of conductivity, temperature, and pressure with depth. Additionally, a LiCOR photosynthetically active radiation (PAR) sensor, Wetlabs fluorometer and D&A optical backscatter sensor are deployed as part of the CTD package. The underway data acquisition system (UDAS) is equipped with a Seabird Electronics SBE-19 CTD and a Wetlabs fluorometer.

Nutrient and dissolved organic carbon and nitrogen concentrations

A principal objective of the 2011/12 monitoring program is an evaluation of the temporal and spatial trends in inorganic nutrients (NO_3, NO_2, NH_4, PO_4, $Si(OH)_4$) and organic nutrients (bulk DOC, bulk DON, urea) within habitats of Suisun and Grizzly Bays. Assessment of conservative behavior of nutrients (i.e. nutrient concentrations versus salinity, e.g. Wilkerson et al. 2006) will provide an indication of nutrient sources to Suisun Bay. Finally, the impact of nutrient concentration on primary production, phytoplankton N uptake and phytoplankton biomass is a primary objective of the project.

The following nutrient protocols developed in the laboratory of R. Dugdale are SWAMP comparable. Water samples for inorganic nutrients will be collected in polycarbonate vials. Water chemistry (nutrients and carbonate system) will be analyzed at the Romberg Tiburon Center. Concentrations of nitrate, nitrite, phosphate, and silicate will be analyzed with a Bran and Luebbe AutoAnalyzer II according to the procedures of

Whitledge et al. (1981) for all but silicate which will use Bran and Luebbe (1999). Ammonium will be measured using the Solorzano (1969) method using a 10-cm pathlength cell.

Bulk dissolved organic carbon and total dissolved nitrogen (TDN) will be measured using a Shimadzu TOC-V; Dissolved organic nitrogen will be determined by subtracting dissolved inorganic nitrogen (nitrate, nitrite, and NH4) from TDN measurements.

An inter-laboratory calibration will be conducted in 2011/2012 to verify the quality control/quality assurance of the data. Central Contra Costa Sanitary District will support the project by splitting some samples for ammonia, nitrate and phosphorus (Solorzano (1969) ammonia method).

Other labs should be contacted to provide validation of the following methods.

- Freiderich (2002) dissolved inorganic Carbon method
- Dugdale N Wilkerson (1986) C and N Uptake rate method
- Witledge (1981) nitrate, nitrite, phosphate and silica method

Dr. J. Patten, College of Marine Science, University of South Florida will be asked to join the effort by providing graduate student assistance for the simultaneous spectrophotometric flow-through measurements of pH, carbon dioxide fugacity, and total inorganic carbon.

Phytoplankton biomass and community composition

Phytoplankton biomass will be assessed in four ways, *in vivo* chlorophyll-a, size fractionated extracted chlorophyll-a, flow cytometry, and direct microscopic counts. *In vivo* chlorophyll-a measurements from surface water and with depth will provide a high resolution assessment of phytoplankton abundance in Suisun Bay. Size fractionated (all cells and cells with diameter > 5 µm) extracted chlorophyll-a measurements will be collected at the discrete stations and will be used for absolute measurements of chlorophyll-a and for comparison with previous phytoplankton monitoring completed in Suisun Bay. Flow cytometry will provide estimated counts of red-fluorescing particles (i.e. phytoplankton) for comparison with chl-a, and direct microscopic counts will provide phytoplankton community structure.

In vivo chlorophyll-a will be measured on the CTD and using the UDAS system by a Wetlabs Fluorometer. Calibration of underway data will be made for each cruise using the extracted chlorophyll-a obtained in parallel. Size fractionated extracted chlorophyll (for cells with diameters <5 µm or >5 µm) will be determined using the extraction protocol of Arar & Collins (1992) and a Turner Designs Model 10 fluorometer. Size distribution of fluorescent particles will be made using a CytoSense flow cytometer in 20 ml samples (Dubelaar and Gerritsen, 2000). Phytoplankton identification on preserved (with Lugols solution) samples will be completed under a subcontract with EcoAnalysts to be consistent with other phytoplankton taxonomy data collected by the California

Department of Water Resources.

Primary production and phytoplankton nitrogen uptake

Estimates of primary production (carbon uptake) and phytoplankton nitrogen uptake (NO_3 and NH_4) will provide insight into the specific mechanisms responsible for phytoplankton bloom initiation in Suisun Bay. Specifically, it is hypothesized that rates of primary production are lower when phytoplankton grow on NH_4. In contrast, when phytoplankton use NO_3 (i.e. phytoplankton NO_3 uptake is observed) it is hypothesized to lead to elevated primary production rates and may favor specific groups of fast-growing phytoplankton (i.e. diatoms). Measurements of depth integrated primary production, using simulated in situ methodology along with nitrate reductase (NRA) enzyme activity in conjunction with nutrient parameters, ammonia and nitrate uptake rates, primary production and phytoplankton species composition through biovolume measurements and counts will allow for an evaluation of the NH4 inhibition of nitrate uptake hypothesis under varying light limitation conductions and an improved estimate of the ~~capacity of Suisun Bay phytoplankton to absorb the loading of NH_4.~~ what species or phytoplankton group the inhibition may be impacting.

Uptake of C, NO_3, NH_4, will be made on water sampled from four depths (equivalent to 100%, 50%, 25% and 5% of surface PAR i.e. simulated *in situ* incubations) at all of the discrete stations. Uptake rates will be determined using dual labeled $^{13}C/^{15}N$stable isotope tracer techniques (Slawyk et al., 1977, Legendre and Gosselin, 1996) to yield simultaneous C and N uptake rates from a single sample. Water will be dispensed into 160 ml incubation bottles and inoculated with either $Na^{13}CO_3$ and $K^{15}NO_3$ or $Na^{13}CO_3$ and $^{15}NH_4Cl$ (99 at%). Additions will be made to approximately 10% of ambient concentration to avoid substrate enhancement effects; Dissolved inorganic carbon will be measured according to Friederich et al. (2002) using a Monterey Bay Research Institute-clone DIC analyzer. Immediately following inoculation, one sample will be filtered onto a precombusted GF/F filter (450ºC, 4-hr) by gentle vacuum to determine the initial PON and POC concentration and isotopic filter blank. Incubations will be performed at ambient temperature for 24 hours (Cole and Cloern, 1984) and terminated by gentle vacuum filtration onto precombusted GF/F. C and N concentration and isotopic composition will be determined using a Europa 20/20 mass spectrometer. C and N uptake rates will be calculated based on isotopic enrichment according to Dugdale and Wilkerson (1986) and Parker (2005). Depth integrated primary production and phytoplankton nitrogen uptake estimates will be computed using trapezoidal approach (Cole & Cloern, 1984).

Toxicity Identification Evaluations (TIEs)

TIEs have the potential of identifying the cause of diatom growth inhibition in Suisun Bay. In the past, correlations or spiking experiments have provided the relationships between ammonium and, nutrient uptake or chl-a. TIEs can identify a cause and effect relationship between diatom growth inhibition and the contaminant(s) that causes the inhibition. TIEs will be conducted using EPA methods (USEPA 1988) adapted to target

ammonium, pesticides/herbicides and copper, the mostly likely causes of diatom growth inhibition in Suisun Bay. Pesticides/herbicides will be selected based on use in the watershed and toxicity of the compound. The diatom species that will be used in the TIEs ~~will be selected in consultation with the TIE contractor~~shall be a diatom that is present in Suisun Bay and is a diatom that tends to dominate the Suisun Bay diatom group mass. ~~This species will most probably be a readily available laboratory species (ex. Thallasiosira sp.) that may be found in Suisun.~~ If conducive to the salinity tolerance of the chosen diatom, water collected from Central Bay and San Pablo Bay will be used as references during initial toxicity testing.

c. Data analysis and assessment

Data collected as part of the Suisun Bay surveys will be analyzed for spatial and temporal trends and correlation between nutrient concentration and phytoplankton biomass. Primary production and phytoplankton nitrogen uptake will be computed from simulated in situ incubations using a trapezoidal integration approach. 2011/12 results will be compared with results for Suisun Bay collected by the USGS and DWR monthly monitoring program, EPA dataset (Wilkerson et al 2006,) CALFED Foodweb Program (Kimmerer et al, in prep.) and results collected by this group in 2010 (Dugdale et al, in prep). Nutrient analysis and chlorophyll-a analysis are all SWAMP comparable with regular assessment of certified reference and spiked field samples. Quality assurance for dissolved organic carbon and nitrogen measurements are made using certified reference material from the laboratory of D. Hansell (-U. Miami). Certified reference material for dissolved inorganic carbon measurements are provided by the laboratory of A. Dickson (Scripps Inst.).

d. Data Management – RTC will submit data to the SWAMP DMT in SWAMP format and stored in the SWAMP database.

IV. COORDINATION AND REVIEW STRATEGY

This study will be funded by ~~both~~ the SF Bay regional SWAMP, ~~and the~~ State Water Contractors, and the Bay Area Clean Water Agencies (BACWA). Monitoring and SFSU laboratory analysis will be funded by SWAMP and be conducted by the SFSU Romberg Tiburon Laboratory. The CVRWQB will provide and operate the ISCO samplers. The State Water Contractors and BACWA will fund toxicity identification evaluations and phytoplankton taxonomy. For consistency, EcoAnalysts will conduct phytoplankton taxonomic analysis. The project will be reviewed through the SWAMP peer review process. However, since TIE protocols need extensive R & D and because the funding is not through SWAMP, the TIE portion of this study design is conceptual rather than descriptive further delineation will occur with the assistance of BACWA and the State Water Contractors.

The Sacramento-San Joaquin Delta and the San Francisco Bay Estuary ecosystem is a very large and complex freshwater-estuarine system with physical, chemical, and biological processes interacting together under highly unnatural conditions. An extensive list of potential stressors impacting this ecosystem includes but is not limited to: changes

in hydrology (major diversions), 95% loss of wetlands/marshes, channelization and dredging of rivers, introduction of numerous exotic species (plants and animals), climate change (increased temperature, drought), agricultural and residential use of pesticide and insecticide, entrainment of pelagic organism decline (POD) species and POD food supply from large-scale pumping of water from the Delta, stormwater runoff, municipal discharges, industrial discharges, and agricultural runoff (Meyer, et al., 2009). It is likely that multiple stressors have acted together to cause the POD; however, the contribution or impact of a given stressor relative to other stressors is unknown.

The study described in the work plan will help to fill in data gaps and will eventually be valuable in gaining a better understanding of nutrient sources and sinks, nutrient cycling processes, phytoplankton community composition and succession, and the factors that promote phytoplankton blooms in Suisun Bay in the spring time period. The study will not, however, result in definitive answers to all of the questions and objective set forth for this study. The data gathered can only provide snapshots in time.

A comprehensive and integrative model, as recommended by an expert panel that was convened to address the potential for adverse effect of ammonia/um on the Bay-Delta system (Meyer, et al., 2009), is needed to more completely account for all of the potential ecosystem drivers and to determine the major drivers that control the ecosystem. The model could be used to forecast outcomes of potential management actions and would serve as the basis for making scientifically sound management decisions to restore beneficial use to the Suisun Bay. BACWA and the Clean Water Agencies will pool resources to develop a comprehensive water quality model that provides for scientifically based decision making with a common pursuit to restore beneficial use to Suisun Bay.

Coordinating this research effort with existing research/monitoring shall be done by establishing a technical/scientific advisory group to review the workplan to ensure that proposed studies will answer the questions necessary to make sound management decisions. The advisory group can include representative of Water Boards, the funders (Water Contractors and BACWA), and representatives with scientific subject matter expertise and familiarity with ongoing Delta/POD monitoring and research.

V. QUALITY ASSURANCE

This monitoring study will be consistent with the SWAMP Quality Assurance Program Plan (QAPrP) (2008) for parameters that are part of that plan. MQOs for nutrients and chlorophyll-a will be consistent with the QAPrP. Quality assurance will be expanded as stated in Section III.

VI. REPORTING

Data from this project will be available to the advisory group and all stakeholders as it

becomes available and will also be in the SWAMP database and CEDEN. The results of this study should be peer reviewed but should be available to stakeholders prior to publication in any scientific journal. ~~will be a peer reviewed journal article written by RTC contractors.~~ There will also be a ~~separate report on TIEs~~report on all aspects of the study to be funded by the State Water Contractors and the Bay Area Clean Water Agencies.

VII. PROJECT SCHEDULE

March – June 2011 – Sampling
July – December 2011 – Data analysis and review
March – June 2012 - Sampling
July – December 2012 - Data analysis and review
March 2012 – Draft paper due to RWQCB
April 2012 – Respond to RWQCB comments
May 2012 - Draft paper due to peer reviewed journal

Final paper is publication of peer reviewed journal article.

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Environmental Enhancement Project and Supplemental Environmental Project

Characterization of Stormwater Flows, Diversion of Dry Weather and First Flush Flows to a Publicly-Owned Treatment Works

FINAL REPORT

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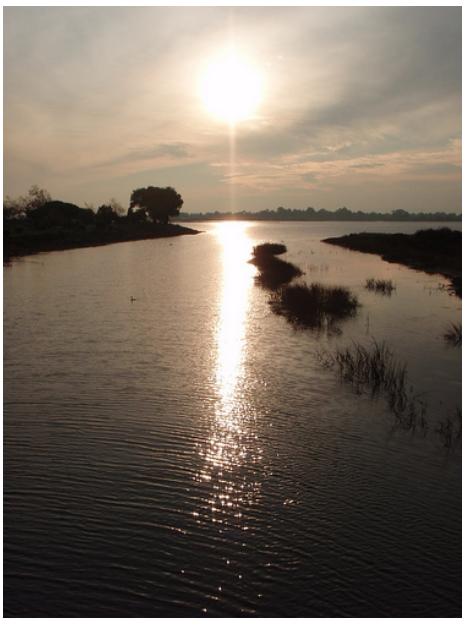
July 2010

Executive Summary

Project Background and Objectives



In 2005, the San Francisco Bay Regional Water Quality Control Board (Water Board) required East Bay Municipal Utility District (EBMUD) to conduct an interim environmental enhancement project as a National Pollution Discharge Elimination System (NPDES) Permit requirement for EBMUD's Wet Weather Facilities. In coordination with the Water Board and other stakeholders, and through a structured selection process, EBMUD identified a pilot project to divert some dry weather and first flush flows from a selected stormwater pump station to its Main Wastewater Treatment Plant (MWWTP), and to characterize dry weather, first flush, and wet weather flows from the pump station. Alameda County Flood Control District's (ACFCD) Ettie Street pump station was selected for diversion and characterization given its history as an industrial watershed with known contamination of PCBs and other pollutants of concern to the Bay.

Subsequent to the approval for the stormwater diversion and characterization project, EBMUD elected to perform a supplemental environmental project as partial fulfillment of an enforcement action settlement with the Water Board. This project was to further characterize the flows at the Ettie Street pump station and to add a second location, a nearby creek, for dry weather, first flush, and wet weather pollutant characterization. Cerrito Creek, a natural creek comprised primarily of residential and commercial runoff, provided a very different watershed from the industrial area at the Ettie Street pump station.

The environmental enhancement project and supplemental environmental project provided data to characterize pollutant loadings in the stormwater, and to assess potential impacts on EBMUD's MWWTP processes, its biosolids, and the receiving water resulting from these pilot project diversions. This report provides all of the analytical and flow data generated during the projects and provides an overview of the findings.

Project Sites

The two project sites are located in EBMUD's wastewater service area. EBMUD is a publicly owned water and wastewater utility in the San Francisco Bay area, providing wastewater treatment service in an 88-square-mile area along the eastern shore of the Bay. The two project areas represent two contrasting watersheds. One is a previously industrial area that

drains to ACFCD's pump station located at Ettie Street, in Oakland, California. The other is a residential/commercial area that drains to Cerrito Creek located in El Cerrito, California.

Diversion System

In order to divert stormwater flows from the Ettie Street pump station to EBMUD's wastewater treatment plant, a diversion system from the stormwater system to the sanitary sewer needed to be constructed. The diversion system was designed to discharge 75 gallons per minute (gpm), or approximately 108,000 gallons per day. The system was designed to operate during dry weather periods and some first flush events between April 2008 and March 2010. During the course of the projects, approximately 2 billion gallons of flows passed through the Ettie Street pump station to the Bay. During the same period, EBMUD diverted approximately 40 million gallons of stormwater system flows to its wastewater treatment plant.

Sampling and Analyses

Between April 2008 and February 2010, a total of 70 samples were collected during dry weather, wet weather, and first flush events. These samples were collected at three locations: (1) the Ettie Street pump station influent, to assess pollutant concentrations from the Ettie Street watershed and to allow calculation of pollutant removal through solids settling in the pump station's wet wells; (2) the diversion pump effluent, to obtain information about the nature of discharges from the pump station to the Bay and the actual diversions to EBMUD's wastewater treatment plant; and (3) at Cerrito Creek, to obtain information about stormwater flows in a primarily residential and commercial watershed in EBMUD's wastewater service area.

EBMUD's laboratory, certified by the Environmental Laboratory Accreditation Program, performed all analyses for the samples collected, including low-detection-level analyses for a range of organic compounds including PCBs, pesticides and caffeine. The laboratory provided results for nearly 200 individual analytes in some samples. The analytical data generated for these samples provided a broad stormwater pollutant characterization for both the Ettie Street pump station and for Cerrito Creek.

Results and Discussion

Key findings of these projects include:

- Stormwater flows were found to contain pollutants of concern including PCBs and other organic compounds, metals, solids and nutrients. Bacterial contamination and caffeine, a possible indicator of domestic sewage in the stormwater flows, were found in a majority of the samples.

- Concentrations of pollutants in individual samples were generally higher in the samples from the industrial area than in the samples collected from the creek located in the residential/commercial area. However, for some analytes, including caffeine, BOD and TSS, the concentrations in individual samples were greater at Cerrito Creek, especially during wet weather and first flush events.

- First flush flows contained the highest concentrations of pollutants for a majority of analytes at all sample locations. Some constituents, including PCB congeners, demonstrated the highest average concentrations in wet weather samples, while others including tetrachloroethene and coliform dominated in dry weather samples.

- After applying the wastewater treatment plant pollutant-specific removal rate, the calculated pollutant loading from the Ettie Street influent was still generally highest for first flush flows; however, PCB congeners and some other pollutants continued to be higher for wet weather flows.

- For pollutants reviewed, the total Ettie Street influent annualized biosolids loading was highest for wet weather flows followed by the first flush and dry weather flows.

- First flush and wet weather flows are highly variable in volume, duration, and pollutant concentrations. This leads to significant data variability in the pollutant and biosolids loading calculations for these weather periods. Establishing clear, site-specific criteria for wet weather and first flush events would increase dependability of the pollutant and biosolids loadings calculations and help to better assess potential diversions.

- Since the diversion flows were low relative to the average wastewater treatment plant flow, no impacts to the EBMUD MWWTP effluent, biosolids, or plant processes from these diversions were anticipated, and none were detected.

- Process impacts from larger scale diversion of stormwater flows could not be readily predicted from these projects. Additional studies would be necessary to further assess the logistics of diverting large scale dry weather and first flush flows to a wastewater treatment plant. Areas for further studies, such as assessment of hydraulic capacity, costs, and regulatory implications, would be necessary to clarify the acceptability of first flush flow diversions.

In addition, the projects revealed the following findings that can be considered for any similar projects in the future:

- First flush and wet weather events were unpredictable and required short notice mobilization and close coordination on the inter-department and inter-agency levels.

- Large sample volumes and extensive sampling equipment were required to fulfill the projects' sampling and analytical requirements.

- Providing a comprehensive pollutant profile is time-consuming and costly. Identifying site-specific pollutants of concern and a thorough site background evaluation prior to the project initiation may help to decrease analytical costs.

- Ongoing coordination and collaboration with multiple stakeholders was essential to the successful development and implementation of the projects.

Bay Area Clean Water Agencies

A Joint Powers Public Agency

Leading the Way to Protect our Bay

STORMWATER DIVERSION WHITE PAPER

FINAL

September 2010

Prepared by

carollo

Engineers...Working Wonders With Water®

EXECUTIVE SUMMARY

Stormwater is a significant source of pollution into urban waterways. Stormwater consists of both wet weather flows due to rainfall, as well as dry weather flows due to irrigation runoff, pool draining, washdown water, construction work, and other related activities. One practice to mitigate dry weather stormwater pollution that has been implemented in Southern California is to divert these dry weather flows to sanitary sewer systems in locations where there is excess conveyance and treatment capacity. These projects have demonstrated success in reducing bacterial indicators in surface waters.

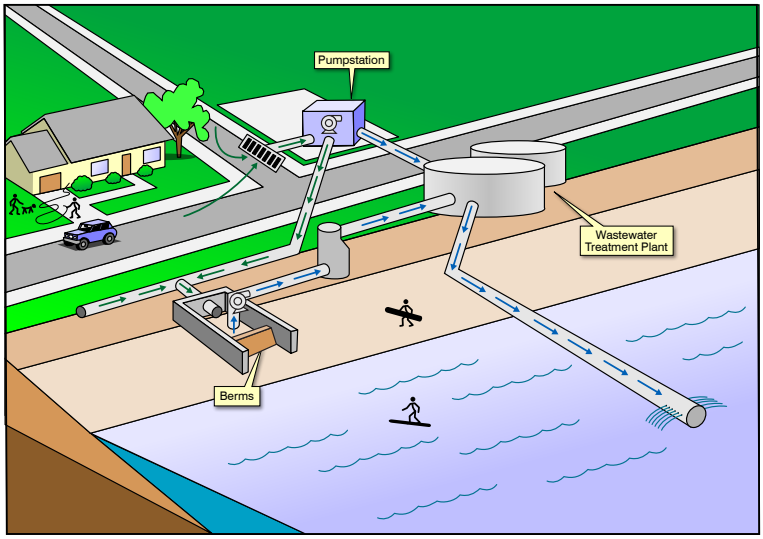
There is some interest amongst regulators in implementing diversion projects in Northern California. The San Francisco Regional Water Quality Control Board (RWQCB) issued a Municipal Regional Stormwater NPDES Permit (MRP) to stormwater agencies in five San Francisco Bay Area (Bay Area) counties. The MRP requires the permittees to conduct a feasibility study and construct five diversion pilot projects. The RWQCB's driver for requiring diversions is to reduce concentrations of mercury and PCBs in stormwater runoff to San Francisco Bay.

The objective of this White Paper is to identify the challenges and opportunities associated with diversions of flow from stormwater systems to a POTW. The issues and concerns addressed in this paper include:

- What are the institutional, technical and economic challenges that need to be overcome to implement diversions?
- What are the potential watershed and institutional opportunities associated with diversions?

The White Paper was developed using published and grey literature. In addition, significant information was obtained through the case studies of the following agencies:

- City of LA
- Orange County Sanitation District
- City of Ventura
- City of Santa Cruz
- East Bay Municipal Utility District



Conceptual diversion structure layout.

While the scope of the White Paper included the analysis of both dry weather and first flush flows, no example of a POTW accepting first flush flows was identified either as a case study or in the literature. However, a stormwater treatment facility in Santa Monica, CA (that does not accept municipal wastewater), does treat some wet weather flows if they are below the facility's hydraulic capacity. Additionally, a potential schematic for treating a first flush volume is proposed in this White Paper. The majority of this White Paper pertains to dry weather flows only.

Institutional Issues

Interest in diversions in the Bay Area is being driven by regulations such as the stormwater MRP as well as stormwater TMDLs. However, based on the analysis of existing statutes, the RWQCB can only encourage, not require, POTWs to accept the diversion.

Interagency agreements are key to a successful diversion project, since stormwater and wastewater are often handled by different agencies, or different divisions within the same agency. One approach that has been successful is for the POTW to issue dry weather runoff discharge permits to stormwater agencies, where the permit lists the terms under which the POTW will accept diversions. Additionally, there are several models to partition construction and O&M costs that have been implemented by the Case Study agencies.

Technical Considerations

Diversion structures that have been implemented by Southern California agencies are mostly constructed by pumping water that has been screened for trash from stormwater pump stations to a nearby sanitary collection system connection. Alternatively, diversions can be implemented by installing an inflatable dam in a stormwater channel, and water that accumulates behind the dam is pumped to the sanitary collection system.

A third, non-structural strategy is to implement operational diversions where a stormwater sump that is stagnant becomes septic during the dry season. The stagnant water in these sumps is suspected of causing fish kills (due to low dissolved oxygen conditions) when the first rain leads to enough flow to trigger the pumps but not enough flow to dilute the pollutants in the stormwater. In such a situation, an agency can send staff to these sumps on a rotating basis to manually pump out the water to the sanitary system.

The technical challenges in implementing diversions chiefly lie in protecting POTWs from high flows or high pollutant loads. This means monitoring and restricting stormwater flows and quality, and shutting them down if a safe threshold is exceeded.

Flows to the POTW can be restricted by using small pipe sizes and small pumps. For an additional level of control, valves can be closed or pumps can be shut down either manually or automatically in response to rainfall or high flows. There are a number of closed conduit and open channel approaches to measure flow, such as differential pressure meters, positive displacement meters, ultrasonic meters, magnetic meters, open channel meters etc. Controlling the flow from the stormwater system to the sewer system can be accomplished through passive, manual, automated and remote control mechanisms. In general, the risk of exceeding and overwhelming the flow capacity of the sanitary sewer collection and treatment system can be mitigated by providing redundancy in the stormwater diversion design and control systems.

Constituents in stormwater in addition to the targeted compounds (mercury and PCBs) could potentially leads to process problems or permit violations by the POTW. Water quality monitoring is more difficult than flow monitoring, since it generally needs to be performed in a lab. However, some pollutants can be measured in-situ with online meters, such as conductivity, dissolved oxygen, and the concentrations of some hydrocarbons. One strategy that may be employed to manage the potential impacts of diversions on the POTWs operation is to maintain a low ratio of the flow rate of the diversion to sanitary flows. This practice was employed by Case Study agencies.

In addition to conveying dry weather flows to a POTW, diversions could be operated to target other potential benefits for stormwater agencies. One such operational approach is using diversions to flush sections of a stormwater collection system and convey the flushing flow to a POTW during the dry season. Additionally, diversions could be used for intentional conveyance of flow resulting from street cleaning. In this case, the suspended solids and particulate associated pollutants would be conveyed to the POTW for treatment during the dry season. The Case Study agencies did not use diversions for collection system flushing or conveyance of flow from street cleaning.

The driver for considering diversions is to provide a water quality benefit in the watershed. The Southern California Case Study agencies each realized their water quality goals, which were either to improve aesthetics or odors near a pump station or receiving water, to reduce odor near a pump station, or to reduce coliform loading into receiving waterbodies. These results are encouraging, but are not immediately applicable to the Bay Area, where the drivers are reduced mercury and PCB runoff to San Francisco Bay.

There are potential negative watershed impacts of implementing diversions. Diversions from the stormwater system to a POTW could result in local flow loss in receiving waterbodies. In addition, implementation of diversions may discourage implementation of practices within a watershed aimed at reducing flows and pollutant loads, such as source control, water conservation, and low impact development practices/technologies.

Estimated Costs

Construction and O&M costs were investigated for diversion projects and compared to the costs associated with implementing onsite sand filtration in stormwater pump stations. This represents a benchmark, or avoided cost to which diversions can be compared.

Outstanding Issues and Future Work

This White Paper explored a range of institutional, technical and economic issues pertaining to diversions. However, more data is needed in several areas, such as POTW process and treatment cost impacts due to diversion flows. Additionally, big-picture issues such as the role of diversions in a holistically managed water environment have yet to be undertaken.

WORKPLAN TO ASSIST BACWA WITH DEVELOPING ALTERNATIVE ERS TO ESMR/CIWQS TRANSITION STRATEGIES

Purpose

The purpose of the work is to assist BACWA with instituting and then coordinating an ERS to eSMR/CIWQS Transition Workgroup that would be tasked with developing a prioritized list of alternative ERS transition strategies. There are many different opinions about how to best proceed with this ERS transition. Associate and Affiliate BACWA members without sophisticated LIMS systems may be facing significant increases in data entry time and effort, and loss of error detection and compliance reporting functionality, depending on how the transition to from ERS to eSMR/CIWQS is implemented.

Scope of Work

Task 1 – **Identify Workgroup Goals and Members** (10 hours) Confer with the BACWA Principals and Executive Director to obtain guidance on the recommended size, composition, and near-term (i.e. 2010) goals of the ERS Transition Workgroup. Contact SWB eSMR/CIWQS staff to confirm current status of and likely timeline for Region 2 ERS transition. Contact recommended candidate Workgroup members to confirm their interest and availability. Conduct a preliminary verbal survey of ERS transition concerns and alternative transition approaches. Prepare bullet point summary of information obtained from workgroup member preliminary survey.

Task 2 – **Convene First Workgroup Meeting** (14 hours) Develop the agenda for a kick-off meeting with the BACWA ERS Transition Workgroup. The Workgroup will meet to develop and prioritize a list of ERS transition concerns and alternative ERS transition strategies. The Workgroup will also assess the pros and cons of alternative levels of BACWA support for the ERS transition process. EOA will coordinate the logistics of scheduling and convening the meeting and prepare meeting highlights notes.

Task 3 – **Meet with RWB Staff** (10 hours) Develop meeting agenda for an ERS transition alternatives and on-going ERS maintenance/access discussion with the BACWA Workgroup and RWB staff. Prepare necessary meeting materials based on the Task 2 first workgroup meeting. Coordinate logistics of scheduling and convening meeting. Prepare meeting highlights notes.

Task 4 – **Identify Next Steps in ERS Transition Process** (12 hours) Synthesize information from Tasks 1-3. Coordinate with workgroup to develop recommended prioritized list of ERS transition strategies and potential next steps to be conducted during 2011. Present workgroup results to BACWA Executive Board including draft workplan for 2011.

Compensation and Schedule

Following notice to proceed, work will be conducted on the above tasks as directed by the BACWA ERS transition workgroup chair, subject to the allocated budget, on a time and materials basis (46 hours) in accordance with the attached EOA 2010 Fee Schedule, at a total cost not to exceed $9,800. Work will be conducted in accordance with the Professional Services Agreement between BACWA and EOA effective July 1, 2010 for As Needed Technical Services for FY 2010-2011. It is estimated that Tasks 1-4 would be completed over approximately a three to four month period.