BACWA BAY AREA CLEAN WATER AGENCIES

Executive Board Meeting
AGENDA
Friday, July 15, 2016, 9:00 a.m. – 12:30 p.m.
EBMUD Treatment Plant, Lab Library
2020 Wake Ave, Oakland, CA

Agenda Item		Time	Pages
ROLL CALL AND INTRODUCTIONS		**9:00 AM**	
PUBLIC COMMENT		**9:03 AM**	
CONSIDERATION TO TAKE AGENDA ITEMS OUT OF ORDER		**9:04 AM**	
CONSENT CALENDAR		**9:05 AM**	
1 June 17, BACWA Executive Board Meeting Minutes			3-10
2 May, 2016 Treasurer's Reports			11-20
APPROVALS & AUTHORIZATIONS		**9:06 AM**	
3 Approval: Biennial Review of Conflict of Interest Code			21-35
4 Approval: Annual Nutrient Watershed Permit Payment			36-38
OTHER BUSINESS - POLICY/STRATEGIC		**9:10 AM**	
5 Discussion: Nutrients			
a. Regulatory			
i. Optimization/Upgrade Workshop Debrief	Presentations Link		39-48
ii. Watershed Permit Survey			
iii. No Net Loading Increase			
b. Technical Work			
i. Technical Document Review Update			
c. Governance Structure			
i. Planning Subcommittee Meeting # 20			49-75
6 Discussion: Proposed Selenium Water Quality Criteria		**10:20 AM**	76-78
7 Discussion: Water Board Joint Meeting Agenda		**10:50 AM**	79
8 Discussion: Pardee Technical Seminar Key Topics		**11:00 AM**	80-81
OTHER BUSINESS - OPERATIONAL			
9 Discussion: Microplastics Workshop Debrief	News Link Facts Link	**11:10 AM**	82-100
10 Discussion: Drought/Recycling		**11:30 AM**	
a. Proposition 1 Proposal			101-108
b. State General Order on Recycled Water	General Order Link		109
c. Hertzberg Bill Update			110-111
d. Expert Panel Research Recommendations on DPR			112-114
11 Discussion: Bay Area Regional Reliability Study		**11:45 AM**	
12 Discussion: Multipe Membership Requests for Information		**12:05 PM**	115

REPORTS		**12:15 PM**	
13	Committee Reports		116-124
14	Member Highlights		
15	Executive Director Report		125-134
16	Regulatory Program Manager Report		135
17	Other BACWA Representative Reports		
	a. RMP TRC	Rod Miller	
	b. RMP Steering Committee	Karin North; Jim Ervin	
	c. Summit Partners	Dave Williams	
	d. ASC/SFEI	Laura Pagano; Dave Williams	
	e. Nutrient Governance Steering Committee	Ben Horenstein; Jim Ervin	
	f. SWRCB Nutrient SAG	Dave Williams	
	g. SWRCB Focus Group – Bacterial Objectives	Lorien Fono; Amy Chastain	
	h. SWRCB Focus Group – Mercury Amendments to the State Plan	Tim Potter	
	i. Nutrient Technical Workgroup	Eric Dunlavey	
	j. NACWA Taskforce on Dental Amalgam	Tim Potter	
	k. BAIRWMP	Cheryl Munoz; Linda Hu; Dave Williams	
	l. NACWA Emerging Contaminants	Karin North; Melody LaBella	
	m. CASA Statewide Pesticide Steering Committee	Melody LaBella	
	n. CASA State Legislative Committee	Lori Schectel	
	o. CASA Regulatory Workgroup	Lorien Fono	
	p. ReNUWIt	Mike Connor; Ben Horenstein	
	q. RMP Microplastics Liaison	Nirmela Arsem	
	r. AWT Certification Committee	Maura Bonnarens	
	s. Bay Area Regional Reliability Project	Roger Bailey; Mike Connor	

SUGGESTIONS FOR FUTURE AGENDA ITEMS	**12:27 p.m.**	

NEXT MEETING **The next regular meeting of the Board is scheduled for August 19, 2016 from 9:00 am – 12:30 pm at the EBMUD Treatment Plant, Lab Library, 2020 Wake Ave., Oakland, CA.**	**12:28 p.m.**	

ADJOURNMENT	**12:30 p.m.**	

Executive Board Meeting Minutes

June 17, 2016

ROLL CALL AND INTRODUCTIONS

Executive Board Representatives: Laura Pagano (San Francisco Public Utilities Commission); Jim Ervin (San Jose); Michael Connor (East Bay Dischargers Authority); Maura Bonnarens (East Bay Municipal Utility District); Roger Bailey (Central Contra Costa Sanitary District).

Other Attendees:

Name	Agency/Company
Amanda Roa	Delta Diablo
Dan Jackson	City of Benicia
Dave Richardson	RMC
Denise Connors	LWA
Jennifer Keeny	PME
Karin North	City of Palo Alto
Karri Ving	SFPUC
Lori Schectel	CCCSD
Mallika Ramanathan	Brown & Caldwell
Melody LaBella	CCCSD
Nirmela Arsem	EBMUD
Rosey Jencks	SFPUC
Tom Hall	EOA
David Williams	BACWA
Lorien Fono	BACWA
Sherry Hull	BACWA

PUBLIC COMMENT

None.

CONSIDERATION TO TAKE AGENDA ITEMS OUT OF ORDER

CONSENT CALENDAR

1. May 20, 2016, BACWA Executive Board Meeting Minutes – The approved minutes will be placed on the BACWA website.

2. April, 2016 Treasurer's Reports and Financial Summary – A Financial Summary Report was included in the Packet on **Pages 12-22**. A copy of the FY16 Budget as of April 30, 2016 (83% of the fiscal year) was included. It, along with the Summary, provides the Board with a concise overview of the Fund Balances and the current status of the Annual Budget and points out any variances in the budget to date.

2.a. A BACWA Alternative Investments Report was included in the Packet on **Pages 23-24**. The Executive Director gave an overview of BACWA's FY16 experience following the investment of a portion of BACWA funds in alternative investments.

Consent Calendar items 1, 2 and 2.a *were approved in a motion made by Roger Bailey and seconded by Michael Connor. The motion carried unanimously.*

AUTHORIZATIONS & APPROVALS

3. Approval: Merge AIR Fund into BACWA Fund – A Board Action Request was included in the Packet on **Pages 25-26**. The Executive Director gave an overview of the request. The Executive Director noted that given the reduction in the phase-in period for the AIR Committee from 3 years to 2 years which results in saving of $25k for those agencies that have supported the AIR Committee over previous years, it seems appropriate to merge the remaining balance in the AIR Fund into the BACWA general operating fund. The merger will help offset the first year's costs for the AIR Committee.

Item 3 *was approved in a motion made by Michael Connor and seconded by Jim Ervin. The motion carried unanimously.*

4. Approval: FY17 BACWA Agreements – A copy of the FY17 BAPPG Budget approved on April 15, 2016 was included in the Packet on **Page 27**. Board Action Requests for BAPPG Committee support were included in the Packet on **Pages 28-40**. A Board Action Request for AIR Committee support were included in the Packet on **Pages 41-47.** Board members suggested that staff and Committee Chairs continue to develop contacts with specialized expertise for future consulting work.

4.a O'Rorke Inc. - To Provide support for BAPPG's FY17 Priority Pollutant Campaigns.

Item 4a, *was approved in a motion made by Michael Connor and seconded by Roger Bailey. The motion carried unanimously.*

4.b TDC Environmental, LLC – To provide support for BAPPG's Pesticide Regulatory and Technical Support.

Item 4b, *was approved in a motion made by Michael Connor and seconded by Roger Bailey. The motion carried unanimously.*

4.c Stephanie Hughes, ChE P.E. - To provide Professional Training, Prepare Comment Letters and provide Policy Support to BAPPG.

Item 4c, *was approved in a motion made by Roger Bailey and seconded by Jim Ervin. The motion carried unanimously.*

4.d Carollo Engineers, Inc. – To provide AIR Committee Support.

Item 4d, *was approved in a motion made by Roger Bailey and seconded by Jim Ervin. The motion carried unanimously.*

5. Approval: FY16 Write-Off – A Board Action Request was included in the Handout on **Pages 48-49**. The Executive Director gave an overview of the request. The Board suggested other contacts at the agency who might be contacted in the future to resolve the issue.

Item 5 *was approved in a motion made by Michael Connor and seconded by Jim Ervin. The motion carried unanimously.*

OTHER BUSINESS-POLICY/STRATEGIC

Agenda **Item 6 –** Discussion: Nutrients

a. Regulatory
   i. Opt/Upgrade Workshop Agenda – The Agenda, along with a Survey on Watershed Permit Options, was included in the Packet on **Page 50-54**. The workshop has been scheduled for June 27, 2016 from 10:30 am to 1:30 pm at the EBMUD Training Resource Center in Oakland. To date approximately 50 attendees have signed up for the workshop. The Executive Director gave an overview of the Agenda. Board members suggested that the end time be extended; that the Survey be included in the next reminder email with the caveat that each agency only submit one survey response; that the table showing estimated costs for increasing the funding of the science program be included with the Survey; and that the Survey be reworked to include the level of confidence for each response. Agencies wishing for an individual presentation to their Boards may contact the consultant to arrange it.
   ii. Nutrient Removal Options – Dan Jackson from the City of Benicia Wastewater Treatment Plant gave a presentation on Nutrient Reduction and Water Reuse. His presentation is available on the BACWA website at Link. He indicated that he would like to see their water reuse project included in the Optimization/Upgrade Report.
   iii. Recycled Water/Capital Improvement Plan Survey – A copy of the BACWA Recycled Water Survey 2015, along with the letter sent with the CIP data request, was included in the Packet on **Pages 55-56**. The Regulatory Program Manager gave an overview noting that the second page of the letter is missing in the Packet. The entire letter can be accessed here. The survey requires essentially the same data as DWR's needs so should not add an undue burden on agencies. The purpose of the CIP data request is to better understand the nutrient removal projects that agencies are already planning.
b. Technical Work
   i. Update on Document Review –The Executive Director gave an overview of the status of the review noting that the consultant will be providing a two-part response for

review: 1) a review based on the strengths and weaknesses of the Assessment Framework manuscript from a scientific perspective; and 2) a transmittal letter to go with the review that addresses next steps and how BACWA can be involved in the "test drive" of the Assessment Framework. The Board noted the fragility of the BACWA alliance and requested that the Executive Director develop a high level list of points that all members of BACWA can agree on.

ii. Nutrient Technical Workgroup Debrief – The Agenda for the June 3, 2016 NMS Technical Workgroup Meeting, along with the Science Advisor's overview, were including in the Packet on **Pages 57-63**. Additionally, a link to other NMS Meeting materials was provided.

c. Governance Structure -

i. Program Coordinator Update –The NMS Fundraising and Outreach Strategy document was included in the Packet on **Pages 64-74**. The Executive Director noted the highlights and provided a priority list for funding in FY17. There were more projects approved that there is budget to pay for the studies. Several agencies indicated that they are interested in providing additional funds in FY16 and in future fiscal years to provide funding for P7 and P9. One agency indicated that it could contribute in-kind to P11. BACWA will work with the Science Manager to reach out to them on this and put together a letter to the Regional Water Board highlighting the additional funding.

ii. Steering Committee Meeting No. 9 Debrief – Notes from the NMS Steering Committee Meeting on June 10, 2016 was included in the Handout on **Pages 75-83**. The Executive Director gave an overview of the notes emphasizing that the Science Plan is underfunded. One Board member suggested RMP reserves might be tapped.

Agenda **Item 7** – Discussion: Water Board Joint Meeting Agenda – A copy of the Draft Agenda for the July 18, 2016 Joint Meeting with the Water Board was included in the Packet on **Page 84**. The Executive Director gave an overview of the Agenda and asked the Board to provide feedback.

Agenda **Item 8** – Discussion: ELAP Certification – The Laboratory Manager from EBMUD gave a presentation (link) on the Environmental Laboratory Accreditation Program Certification (ELAP), which is considering adopting new standards, but has not decided what they will be. The changes have the potential to impact smaller labs which may not have the resources to meet potential stringent new requirements. An advantage of the potential changes are that everything is defined and audits are standardized; drawbacks are additional costs and may cause lab closures. BACWA will review the issue when the standards are released.

Agenda **Item 9** – Discussion: Microplastics Workgroup – The Laboratory Manager from EBMUD gave an update on the status of the workgroup's progress. SFEI is hosting a Microplastics Workshop on June 29, 2016 (link) and the EBMUD Laboratory Manager will be speaking. The key issue is that currently there is no one method to quantify microplastics in wastewater.

There is a lot of interference from cellulose material, and washing samples causes loss of microplastics. It is very difficult to reproducibly quantify microplastics and the method will require a lot more work before reliable data can be acquired.

Agenda **Item 10** – Discussion: CEC Survey – SFEI is offering to coordinate sampling for CECs this summer so that BACWA member agencies can pool their resources and get data about concentrations of pharmaceuticals in their influent, effluent or processes. An email from SFEI regarding the value of this pharmaceutical study was included in the Handout on **Page 85-86**, along with a link to the 2016 Pharmaceuticals in Wastewater Survey for agencies that are interested in participating. The survey is voluntary and any results will go to a review committee before being made public.

Agenda **Item 11** – Discussion: BARR Taskforce Message Consensus – A Memo from the BACWA Representative to the Bay Area Regional Reliability Project was include in the Packet on **Pages 87-88.** The Representative requested feedback from the Board on BACWA's position. He sees an opportunity to better understand the issues from the water side. There is a need to quantify water as a resource; determine the definition of shortage; and how to develop instruments to move water from potential supplies such as recycled water, to demands when a shortage occurs. The Board asked the Representative to return to a future Board meeting when there would be more time allocated to the issue.

Agenda **Item 12** – Discussion: Collection System Metrics/Penalties – The BACWA Collection Systems Committee Survey on metrics to define well-performing collection systems was included in the Packet on **Pages 89-92**. The Regulatory Program Manager gave an overview of the survey. There were only five responses and the Permit Committee does not intend to take on the issue. They are not opposed to it, but it would be a lot of work and the value is questionable. The Board indicated that the issue is not a high priority at this time.

Agenda **Item 13** – Discussion: BAAQMD Joint Meeting Debrief – The Agenda for the BACWA Joint Meeting the BAAQMD on June 15, 2016 was included in the Packet on **Page 93**. Since beginning the annual meetings, communication with the Air Quality Management District has greatly improved and the frequency may be increased to semi-annual in the future. The top issues are climate change and how to quantify greenhouse gas emissions by the wastewater industry; and solutions to the digester gas venting of Hydrogen Sulfide (H_2S). It was suggested by the Board that BACWA develop a strategy to present to the Air District for regulating digester gas venting.

OTHER BUSINESS-OPERATIONAL

Agenda **Item 14** – Discussion: Arleen Navarret Award Use – The Arleen Navarret Award winners from FY14 and FY16 gave a presentation on their use of the funds. The recipients traveled to

Washington state to tour the Bullitt Building which is the first large-scale building in the US to install composting toilets; to tour the Tacoma Tagro Biosolids facility; to meet with King County Wastewater Resource Recovery and Engineering staff who have experience with biosolids to soil and biogas utilization; and to meet with a biosolids expert at the University of Washington. The presentations can be found on the BACWA website at Link and Link.

Agenda **Item 15** – Discussion: Drought/Recycling –

a. State Water Board hearing on WRR – Finding 34 Options and BACWA Talking Points for State Water Board Hearing for the State General Order on Recycled Water were included in the Packet on **Pages 94-97**. The State General Order was adopted on June 7, 2016, and incorporates Option 2 which requires all permittees to enroll in the next three years. The enrollment of 96-011 permittees is on the agenda for the BACWA Joint Meeting with the Water Board on July 18, 2016.

b. Hertzberg Bill Update – A CASA Member Alert and Amendments to Senate Bill No. 163 were included in the Packet on **Pages 98-100**, along with a link to CASA's website page on the issue. A Board member gave an overview of the current status of the bill. It is still problematic. There will be a committee hearing on June 21st at which time we will know more.

c. Prop 1 Proposal – Minutes of a June 9, 2016 meeting to discuss a Prop 1 research proposal – use of wetlands to treat RO concentrate, were included in the Packet on **Pages 101-103**. The Regulatory Program Manager noted that the outcome of the meeting is that the concept is tentatively fundable. More detail needs to be developed with a timeline and scope. The RPM asked the Board if they want BACWA to continue with the development of a proposal and the Board indicated strong support.

Agenda **Item 16** – Discussion: 2017 BACWA Executive Board Calendar – A proposed 2017 BACWA Executive Board Calendar was included in the Handout on **Page 104.** The Executive Director noted that a tentative date of January 27, 2017 has been set for the BACWA Annual Meeting. The Assistant Executive Director will reserve meeting venues for the 2017 dates. The Assistant Executive Director noted that the dates for the Pardee Technical Seminar should be October 18-20, 2017. The AED will send Outlook invitations to Board members for the 2017 meeting dates.

Agenda **Item 17** – Discussion: FWQC Issues Matrix – The FWQC Issues Matrix was included in the Packet on **Pages 105-116**. The Executive Director reminded the Board that BACWA is a sponsor and gave an overview.

Agenda **Item 18** – Discussion: Request for PPIC Sponsorship – An email, a letter, and supporting documents requesting BACWA sponsorship of the Public Policy Institute of California were included in the Packet on **Pages 117-123**, along with a link to PPIC. The Executive Director outlined the benefits of sponsorship. A motion was made by Roger Bailey to provide $1,000 in sponsorship funds. The motion was seconded by Laura Pagano. Following discussion a vote was

taken. There were two yes votes and one no vote. The motion did not pass. It was agreed that the Board would monitor the progress of the group and readdress it in the future.
Agenda **Item 19** – Discussion: BAPPG Comment Letter on Malathion – A copy of the BACWA Comment Letter to the EPA on Malathion was included in the Packet on **Pages 124-132**.

REPORTS

Agenda **Item 20** – Committee Report – BACWA Committee Reports were included in the Handout on **Pages 133-139**.

AIR Committee: No meeting.
BAPPG: A report from the June 1, 2016 meeting was included in the Packet on **Page 133**.
Biosolids Committee: No meeting.
Collections Committee: No meeting.
InfoShare - Asset Management: A report from the May 25, 2016 meeting was included in the Packet on **Page 134-135**.
InfoShare – Operations & Maintenance: No meeting.
Lab Committee: A report from the June 8, 2016 meeting was included in the Packet on **Page 136-137**.
Permits Committee: A report from the June 14, 2016 meeting was included in the Packet on **Pages 138-139**.
Pretreatment Committee: No meeting.
Recycled Water Committee: No meeting.

Agenda **Item 21** - Discussion: Member Highlights - Executive Board Representatives (Board) were given an opportunity to provide updates from each of the Principal agencies. Non-principal members were also given an opportunity to report out on behalf of their agencies. No actions were taken on the report-outs.

EBDA: No report.
EBMUD: No report.
Central Contra Costa: No report.
San Francisco: No report.
San Jose: No report.
City of Benicia: No report.
Delta Diablo: No report.
Palo Alto: No report.

Agenda **Item 22** - The **Executive Director's Report**, along with the Board Calendar, and BACWA Action Items, were included in the Packet on **Pages 140-149**. It was noted that 82 of the 88

action items from FY16 have been completed. The Executive Director noted that he will be giving a presentation to CWEA.

Agenda **Item 23** - The **Regulatory Program Manager (RPM) Report** was included in the Packet on **Page 150**.

Agenda **Item 24 - Other BACWA Representative Reports** – BACWA Representative were given an opportunity to provide updates. No actions were taken based on the reports.

a. RMP-TRC: Rod Miller; Laura Pagano – No report.
b. RMP Steering Committee: Karin North; Jim Ervin – No report.
c. Summit Partners: Dave Williams – No report.
d. ASC/SFEI: Laura Pagano; Dave Williams – No report.
e. Nutrient Governance Steering Committee: Ben Horenstein; Jim Ervin – No report.
f. SWRCB Nutrient SAG: Dave Williams – No report.
g. SWRCB Focus Group – Bacterial Objectives: Lorien Fono; Amy Chastain – No report.
h. SWRCB Focus Group – Mercury Amendments to the State Plan: Tim Potter – No report.
i. Nutrient Technical Workgroup: Eric Dunlavey – No report.
j. NACWA Taskforce on Dental Amalgam: Tim Potter – No report.
k. BAIRWMP: Cheryl Munoz, Linda Hu, Dave Williams – No report.
l. NACWA Emerging Contaminants: Karin North, Melody La Bella – No report.
m. CASA Statewide Pesticide Steering Committee: Melody La Bella – No report.
n. CASA State Legislative Committee: Lori Schectel – No report.
o. CASA Regulatory Workgroup – No report.
p. RMP Microplastics Liaison: Nirmela Arsem – No report.
q. ReNUWIt: Mike Connor; Ben Horenstein – No report.
r. AWT Certification Committee: Maura Bonnarens – No report.
s. Bay Area Regional Reliability Project: Roger Bailey; Mike Connor – No report.

SUGGESTIONS FOR FUTURE AGENDA ITEMS: None.

ANNOUNCEMENTS:
The next regular meeting of the Board is scheduled for **July 15, 2016 from 9:00 am – 12:30 pm** at the **EBMUD Treatment Plant, Lab Library 2020 Wake Ave., Oakland, CA.**

To receive a copy of any materials provided to the Board at a BACWA Executive Board meeting contact Sherry Hull at shull@bacwa.org.

The meeting adjourned at 12:46 pm.

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

June 30, 2016

MEMO TO: Bay Area Clean Water Agencies Executive Board
MEMO FROM: D. Scott Klein, Controller, East Bay Municipal Utility District
SUBJECT: Eleventh Month Treasurer's Report

As required by section eight of the Joint Powers Agreement establishing the Bay Area Clean Water Agencies (BACWA) and California Government Code Sections 6500 et seq., attached is the BACWA Treasurer's Report for the period covering **July 1, 2015 through May 31, 2016** (eleven months of Fiscal Year 2015-2016). This report covers expenditures, cash receipts, and cash transfers for the following BACWA funds:

- Bay Area Clean Water Agencies (BACWA),
- BACWA Legal Reserve Fund (Legal Rsrv),
- Water Quality Attainment Strategy (WQA CBC),
- Air Issues and Regulation Group (AIR),
- Water/Wastewater Operator Training (WOT),
- Prop84 Bay Area Integrated Regional Water Mgmt (PRP84),
- Prop50 Bay Area Integrated Regional Water Mgmt (PRP50)

Fund Balances as of month end 05/31/16

DESCRIPTION	BEGINNING FUND BALANCE 07/1/15	TOTAL RECEIPTS	TOTAL DISBURSEMENTS	ENDING FUND BALANCE 05/31/16	OUTSTANDING ENCUMBRANCES	UNOBLIGATED FUND BALANCE 05/31/16
BACWA	1,006,959	653,162	520,598	1,139,523	88,428	1,051,096
LEGAL RSRV	300,000	-	-	300,000	-	300,000
CBC	1,243,029	1,281,340	1,225,762	1,298,607	566,236	732,372
AIR	10,171	54,384	37,955	26,601	14,046	12,555
GRAND TOTAL	2,560,159	1,988,887	1,784,314	2,764,731	668,709	2,096,023
WOT	45,463	130,745	130,500	45,708	-	45,708
TOTAL	45,463	130,745	130,500	45,708	-	45,708
PRP84	275,232	2,782,873	2,936,978	121,127	5,296	115,831
PRP50	561,537	99,148	510,022	150,663	7,360	143,303
TOTAL	836,769	2,882,022	3,447,001	271,790	12,657	259,134

BACWA Revenue Report for May 2016

FUND #	DEPARTM	JOB	REVENUE TYPE	AMENDED	CURRENT PERIOD			YEAR TO DATE				UNOBLIGATED
					DIRECT	INVOICED	JVS	DIRECT	INVOICED	JVS	ACTUAL	
800	BACWA	1011099	Principal's Contributions	468,180	-	-	-	-	468,180	-	468,180	-
800	BACWA	1011133	Assoc.& Affiliate Contr	171,639	-	-	-	-	173,199	-	173,199	(1,560)
800	BACWA	0408511	Administrative & General	-	554	-	-	3,249	-	(2,695)	554	-
800	BACWA	1014251	Non-Member Contributions (BAPP(	3,600	-	-	-	-	3,600	-	3,600	-
800	BACWA	1011109	Fund Transfers	2,500	-	-	-	-	-	2,438	2,438	62
800	BACWA	1011117	BDO Interest Income	1,500	-	-	-	-	-	5,190	5,190	(3,690)
	BACWA TOTAL			**647,419**	**554**	**-**	**-**	**3,249**	**644,979**	**4,934**	**653,162**	**(5,189)**
804	LEGAL	1011117	Interest Income	-	-	-	-	-	-	-	-	-
	LEGAL TOTAL			**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
802	AIR	1014250	Member Contributions	50,000	-	-		-	48,080		48,080	1,920
802	AIR	1014252	Non-Member Contributions (AIR)	6,200	-	-	-	-	6,200	-	6,200	-
802	AIR	1011117	Interest Income	-	-	-	33	-	-	104	104	(104)
	AIR TOTAL			**56,200**	**-**	**-**	**33**	**-**	**54,280**	**104**	**54,384**	**1,816**
805	WQA-CBC	1011099	BDO Member Contributions	675,000	-	-	-	-	674,250	-	674,250	750
805	WQA-CBC	1011108	BDO Other Receipts	686,779	-	-	-	-	600,608	-	600,608	86,171
805	WQA-CBC	1011117	BDO Interest Income	-	-	-	-	-	-	6,482	6,482	(6,482)
	WQA CBC TOTAL			**1,361,779**	**-**	**-**	**-**	**-**	**1,274,858**	**6,482**	**1,281,340**	**80,439**
	GRAND TOTAL			**2,065,398**	**554**	**-**	**33**	**3,249**	**1,974,117**	**11,520**	**1,988,887**	**77,066**
810	WOT	1011099	BDO Member Contributions	146,000	-	6,000	-	-	130,500	-	130,500	15,500
810	WOT	1011117	BDO Interest Income	-	-	-	-	-	-	245	245	(245)
	WOT TOTAL			**146,000**	**-**	**6,000**	**-**	**-**	**130,500**	**245**	**130,745**	**15,255**

BACWA Expense Detail Report for May 2016

EXPENSE TYPE	JOB	AMENDED BUDGET	CURRENT PERIOD ENC	CURRENT PERIOD PV	CURRENT PERIOD DA	CURRENT PERIOD JV	YEAR TO DATE ENC	YEAR TO DATE PV	YEAR TO DATE DA	YEAR TO DATE JV	OBLIGATED	UNOBLIGATED
LABOR												
AS-Executive Director	1011123	183,498	(15,292)	15,292	-	-	15,292	168,207	-	-	183,498	-
AS-Assistant Executive Directo	1011124	78,642	(6,816)	6,816	-	-	7,639	71,003	-	-	78,642	-
AS-Regulatory Program Manager	1011149	123,360	(19,662)	19,662	-	-	25,735	97,625	-	-	123,360	-
ADMINISTRATION												
AS-EBMUD Administrative Servic	1011125	40,000	(5,372)	5,372	-	-	11,239	28,761	3,576	(10,107)	33,469	6,531
AS-BACWA Admin Expense	1011118	7,500	-	-	897	-	-	-	3,706	-	3,706	3,794
AS-Insurance	1011126	4,500	-	-	-	(6)	-	-	4,152	(6)	4,147	353
MEETINGS												
GBS- Meeting Support	1011122	16,600	(116)	116	1,769	-	273	727	11,593	-	12,593	4,007
COMMUNICATION												
CAR-BACWA Website Development/	1011116	7,088	(293)	293	74	-	3,159	1,840	2,441	-	7,440	(352)
LEGAL												
LS-Regulatory Support	1011107	2,500	-	-	-	-	2,430	70	-	-	2,500	-
LS-Executive Board Support	1011110	2,000	-	-	-	-	608	1,392	-	-	2,000	-
COMMITTEES												
AIR-Air Issues&Regulation Grp	1014253	50,000	-	-	-	-	14,046	37,955	-	-	52,000	(2,000)
BC-BAPPG	1011147	86,000	(8,029)	8,029	-	-	22,053	47,372	30,500	-	99,925	(13,925)
BC-Biosolids Committee	1011101	3,100	-	-	-	-	-	-	1,183	-	1,183	1,917
BC-Collections System	1011097	10,000	-	-	-	-	-	-	750	-	750	9,250
BC-InfoShare Groups	1011102	1,000	-	-	219	-	-	-	956	-	956	44
BC-Laboratory Committee	1011103	6,000	-	-	-	-	-	-	2,291	-	2,291	3,709
BC-Permit Committee	1011098	1,000	-	-	-	-	-	-	-	-	-	1,000
BC-Pretreatment Committee	1011146	1,000	-	-	-	-	-	-	989	-	989	11
BC-Water Recycling Committee	1011100	1,000	-	-	-	-	-	-	-	-	-	1,000
BC-Miscellaneous Committee Sup	1011104	30,000	-	-	-	-	-	-	-	-	-	30,000
COLLABORATIVES												
CAS-Arleen Navaret Award	1012201	1,000	-	-	695	-	-	-	1,577	-	1,577	(577)
CAS-FWQC	1012202	5,000	-	-	-	-	-	-	5,000	-	5,000	-
CAS-Stanford ERC	1011969	10,000	-	-	-	-	-	-	10,000	-	10,000	-
CAS-CWCCG	1011148	35,000	-	-	-	-	-	-	35,000	-	35,000	-
BACWA TOTAL		**705,788**	**(55,579)**	**55,579**	**3,654**	**(6)**	**102,473**	**454,951**	**113,714**	**(10,113)**	**661,025**	**44,763**
TECH SUPPORT												
WQA-CE Addl Work Under Permit	1014254	100,000	(4,240)	4,240	-	-	95,760	4,240	16,100	(15,810)	100,290	(290)
WQA-CE-Technical Support	1011127	136,779	-	-	-	-	28,409	62,932	1,500	(31,762)	61,079	75,700
WQA-CE CASA Chem of Concern	1011128	15,000	-	-	-	-	-	-	-	-	-	15,000
WQA-CE Opt-Upgrade Studies	1014255	559,000	(27,808)	39,808	-	-	406,405	204,225	-	-	610,629	(51,629)
WQA-CE Risk Reduction	1014023	17,500	(2,346)	2,346	-	-	35,662	14,338	-	-	50,000	(32,500)
WQA-CE-Nutrient WS Permit Comm	1014021	880,000	-	-	-	-	-	-	870,000	-	870,000	10,000
WQA-CE-Program Mgmt	1011131	50,000	-	-	-	-	-	-	100,000	-	100,000	(50,000)
TECH SUPPORT (CBC) TOTAL		**1,758,279**	**(34,394)**	**46,394**	**-**	**-**	**566,236**	**285,734**	**987,600**	**(47,572)**	**1,791,998**	**(33,719)**
GRAND TOTAL		**2,464,067**	**(89,974)**	**101,974**	**3,654**	**(6)**	**668,709**	**740,685**	**1,101,314**	**(57,685)**	**2,453,023**	**11,044**
WOT												
Administrative Support	1011142	2,500	-	-	-	-	-	-	-	-	-	2,500
BDO Contract Expenses	1011143	-	-	-	-	-	-	-	130,500	-	130,500	(130,500)
		2,500	**-**	**-**	**-**	**-**	**-**	**-**	**130,500**	**-**	**130,500**	**(128,000)**

Proposition Expense Detail Report for May 2016

DEPTID	DEPARTMENT	EXPENSE TYPE	AMENDED BUDGET	CURRENT PERIOD				YEAR TO DATE				OBLIGATED	UNOBLIGATED
				ENC	PV	DA	JV	ENC	PV	DA	JV		
811	Prop84BayAreaIntegRegnlWtrMgmt	BDO Fund Transfers	-	-	-	-	-	-	-	-	2,057	2,057	(2,057)
811	Prop84BayAreaIntegRegnlWtrMgmt	Administrative Support	-	-	-	-	-	-	-	191,317	-	191,317	(191,317)
811	Prop84BayAreaIntegRegnlWtrMgmt	BDO Contract Expenses	-	-	-	-	-	5,296	10,669	-	-	15,965	(15,965)
811	Prop84BayAreaIntegRegnlWtrMgmt	Regional Green Infrastructure	-	-	-	-	-	-	-	218,765	-	218,765	(218,765)
811	Prop84BayAreaIntegRegnlWtrMgmt	Water Efficient LRP	-	-	-	-	-	-	-	277,651	-	277,651	(277,651)
811	Prop84BayAreaIntegRegnlWtrMgmt	Bay Friendly Landscape TP	-	-	-	-	-	-	-	33,344	-	33,344	(33,344)
811	Prop84BayAreaIntegRegnlWtrMgmt	Weather Based Irrigation Cntrl	-	-	-	-	-	-	-	38,651	-	38,651	(38,651)
811	Prop84BayAreaIntegRegnlWtrMgmt	High Efficiency Toilet & UR	-	-	-	-	-	-	-	605,681	-	605,681	(605,681)
811	Prop84BayAreaIntegRegnlWtrMgmt	High Efficiency Toilet & UI	-	-	-	-	-	-	-	413,764	-	413,764	(413,764)
811	Prop84BayAreaIntegRegnlWtrMgmt	High Efficiency Clothes Washrs	-	-	-	-	-	-	-	620,062	-	620,062	(620,062)
811	Prop84BayAreaIntegRegnlWtrMgmt	Napa Co. Rainwater HP	-	-	-	-	-	-	-	42,101	-	42,101	(42,101)
811	Prop84BayAreaIntegRegnlWtrMgmt	Conservation Program Admin	-	-	-	-	-	-	-	70,086	-	70,086	(70,086)
811	Prop84BayAreaIntegRegnlWtrMgmt	Flood Infrastructure Mapping T	-	-	-	-	-	-	-	231,019	-	231,019	(231,019)
811	Prop84BayAreaIntegRegnlWtrMgmt	Stormwater Improvements & PBP	-	-	-	-	-	-	-	26,815	-	26,815	(26,815)
811	Prop84BayAreaIntegRegnlWtrMgmt	Richmond Shoreline & San PFP	-	-	-	-	-	-	-	15,485	-	15,485	(15,485)
811	Prop84BayAreaIntegRegnlWtrMgmt	Pescadero Integrated FRAH	-	-	-	-	-	-	-	3,094	-	3,094	(3,094)
811	Prop84BayAreaIntegRegnlWtrMgmt	Restoration Guidance, San FC	-	-	-	-	-	-	-	70,389	-	70,389	(70,389)
811	Prop84BayAreaIntegRegnlWtrMgmt	SF Estuary Steelhead MP	-	-	-	-	-	-	-	52,756	-	52,756	(52,756)
811	Prop84BayAreaIntegRegnlWtrMgmt	Watershed Program Admnstrtn	-	-	-	-	-	-	-	13,273	-	13,273	(13,273)
	PRP84 TOTAL		**-**	**-**	**-**	**-**	**-**	**5,296**	**10,669**	**2,924,252**	**2,057**	**2,942,275**	**(2,942,275)**
815	Prop50BayAreaIntegRegnlWtrMgmt	BDO Fund Transfers	-	-	-	-	-	-	-	-	381	381	(381)
815	Prop50BayAreaIntegRegnlWtrMgmt	Administrative Support	-	-	-	-	-	-	-	-	-	-	-
816	Prop50BayAreaIntegRegnlWtrMgmt	BDO Contract Expenses	-	-	-	-	-	7,360	2,254	-	-	9,614	(9,614)
815	Prop50BayAreaIntegRegnlWtrMgmt	EBMUD New Biz Guidebook	-	-	-	-	-	-	-	67,500	-	67,500	(67,500)
815	Prop50BayAreaIntegRegnlWtrMgmt	South Bay Advanced Regional RW	-	-	-	-	-	-	-	292,087	-	292,087	(292,087)
815	Prop50BayAreaIntegRegnlWtrMgmt	Pacifica RWP	-	-	-	-	-	-	-	74,440	-	74,440	(74,440)
815	Prop50BayAreaIntegRegnlWtrMgmt	Direct Install HET	-	-	-	-	-	-	-	36,680	-	36,680	(36,680)
815	Prop50BayAreaIntegRegnlWtrMgmt	Sonoma - Napa Marsh RWP	-	-	-	-	-	-	-	36,680	-	36,680	(36,680)
	PRP50 TOTAL		**-**	**-**	**-**	**-**	**-**	**7,360**	**2,254**	**507,387**	**381**	**517,382**	**(517,382)**
GRAND TOTAL			**-**	**-**	**-**	**-**	**-**	**12,657**	**12,923**	**3,431,640**	**2,438**	**3,459,657**	**(3,459,657)**

Fund Balances

BACWA has seven funds of which three are operating funds (BACWA, Legal, and CBC) and four are pass-through funds for which BACWA provides only contract administration services. The four pass-through funds are not of particular concern as these funds simply track expenses and revenues to ensure that receipts are adequate to pay all expected expenses.

BACWA Fund: This fund provides the resources for BACWA staff, its committees, and other administrative needs. The ending fund balance was $1,139,523 which is significantly higher than the target reserve of $160,000 which is intended to cover 3 months of normal operating expenses. However, $88,428 of the ending fund balance is already obligated to meet on-going operating line item expenses for BAPPG Committee Support, Legal services, IT services, Board meeting expenses, accounting services and BACWA staff support. This leaves an unobligated fund balance of $1,051,096.

CBC Fund: This fund provides the resources for completing special investigations as well as meeting regulatory requirements. The ending fund balance was $1,298,607 which is significantly higher than the target reserve of $400,000. However, $566,236 of the ending balance is obligated to meet line item expenses for completion of the Optimization/Upgrade Studies contract, the Risk Reduction contracts, and for technical support.

Legal Fund: This fund provides for needed legal services. The ending balance was $300,000 which is at the target reserve of $300,000.

Annual Budget

The BACWA Annual Budget includes all expected revenues as well as budgeted expenses. Transfers are made from the BACWA Fund and/or the CBC Fund to balance the Annual Budget if expenses exceed revenues and vice versa. It is therefore important to achieve the anticipated revenues and not exceed the budgeted expenses on an annual basis in order to maintain the BACWA and CBC Fund balances at the levels projected in the 5 Year Plan.

Revenues as of May, 2016 (92% of the FY) are at 100%. This is not unexpected as agencies generally pay shortly after receiving their annual invoices early in the fiscal year.

Overall Expenses as of May, 2016 are at 74% and are tracking in accordance with the Annual Budget. Individual expense categories with a plus or minus 10% variance at this point in the fiscal year are as follows:

Administration: This category is only 77.30% expended at 92% of the FY due to invoices not being current.

Meetings: This category is under-expended (i.e. 74.22%) due primarily to lower than expected expenditures for Annual and Executive Board Meetings.

Communications: This category is under-expended (i.e. 80.96%) due primarily to lower than expected expenditures for Website Development & Maintenance.

Legal Support: Budget of $4,500 and expenditures to date of $1,462 resulting in a favorable variance of $3,038 due to a low need for legal administrative advice.

Committees: Budget of $189,100 and expenditures to date of $121,996 resulting in a favorable variance of $67,104 due to no need to tap the Committee Contingency line item plus lower individual Committee expenditures.

Collaboratives: This category is 101.13% expended at 92% of the FY due to early payment of dues to FWQC, ReNUWIt, CWCCG, and payment of Arleen Navarret Award for two fiscal years (2014 & 2016) in FY16.

Tech Support: This category is 71.26% expended at 92% of the FY partly due to timing of invoices.

BACWA Revenues and Expenses (as of May 31, 2016, 92% of FY)

	A	B	C	D	E	F	G	H
1	***BACWA FY16 BUDGET***	***Line Item Description***	**FY2016 Budget Amended**	**FY2016 Actuals May 2016**	**Actual % of Budget May 2016**	**Variance**		**NOTES**
2	***REVENUES & FUNDING***							
3	Principals' Contributions		$468,180	$468,180	100.00%	$0		
4	Associate & Affiliate Contributions		$171,639	$173,199	100.91%	$1,560		**FY16:** 2 New Members & 1 Member Cancelled
5	Fees	Clean Bay Collaborative	$675,000	$674,250	99.89%	-$750		**FY16:** N. San Mateo CBC Fee of $750 written off
6		Nutrient Surcharge	$600,000	$600,608	100.10%	$608		Actual invoiced: $600,608
7		Other (SFEI Carryforward)	$86,779			$0		SFEI Carryforward from FY15
8	Other Receipts							
9		AIR Committee Phase-in	$50,000	$48,080	96.16%	-$1,920		**FY16:** $48,080 invoiced.
10		AIR Non-Member	$6,200	$6,200	100.00%	$0		
11		BAPPG Non-Members	$3,600	$3,600	100.00%	$0		
12		Other	$0	$15,810				Reimb. Received from EBMUD for Sidestream Study -not included
13	Fund Transfer	Special Program Admin Fees	$2,500	$2,438	97.52%	-$62		WOT only
14	Interest Income	Funds	$1,500	$11,777	785.13%	$10,277		**FY16:** Actuals includes BACWA, Legal, AIR & Nutrients Funds
15		Total Revenue	**$1,978,619**	**$1,988,332**	100.49%	**$9,713**		
16								
17	***EXPENSES***							
18		***Line Item Description***	**FY2016 Budget Amended**	**FY2016 Actuals May 2016**	**Actual % of Budget May 2016**	**Variance**		**NOTES**
19	**Labor**							
20		Executive Director	$183,498	$168,207	91.67%	$15,291		
21		Assistant Executive Director	$78,642	$71,003	90.29%	$7,639		
22		Regulatory Program Manager	$123,360	$97,625	79.14%	$25,735		
23		**Total**	**$385,500**	**$336,835**	87.38%	**$48,665**		
24								
25	**Administration**							
26		EBMUD Financial Services	$40,000	$32,337	80.84%	$7,663		Accounting & Audit Services
27		Administrative Expenses	$7,500	$3,706	49.41%	$3,794		Travel, Supplies, Parking, Mileage, Tolls, Misc.
28		Insurance	$4,500	$4,152	92.27%	$348		
29		**Total**	**$52,000**	**$40,195**	77.30%	**$11,805**		
30								
31	**Meetings**							
32		EB Meetings	$2,500	$1,491	59.65%			9 of 10 meetings paid
33		Annual Meeting	$8,000	$4,131	51.64%			Catering & Venue
34		Pardee	$5,000	$5,753	115.06%			Catering & Venue
35		Misc. (Summit Partners)	$1,100	$945	85.91%			Holiday Lunch and Committee Chair Lunch
36		**Total**	**$16,600**	**$12,320**	74.22%	**$4,280**		

BACWA Revenues and Expenses (as of May 31, 2016, 92% of FY)

	A	B	C	D	E	F	G	H
18		***Line Item Description***	**FY2016 Budget Amended**	**FY2016 Actuals May 2016**	**Actual % of Budget May 2016**	**Variance**		**NOTES**
38	**Communication**	Website Development/Maintenance						
39		Website Hosting (Computer Courage)	$600	$600				
40		File Storage (Box.net)	$720	$720				
41		Website Development/Maintenance	$1,200	$317				Domains, website changes, Logo EPS file
42		**Subtotal**	$2,520	$1,637				
43		IT Support & Software						
44		IT Support (As Needed)	$2,000	$1,940				
45		Email (Office 365/MS Exchange)	$480	$440				
46		Other Communication (Survey Monkey)	$288	$264				
47		**Subtotal**	$2,768	$2,644				
48		**Total**	**$5,288**	**$4,281**	80.96%	**$1,007**		
50	**Legal**							
51		Regulatory Support	$2,500	$70	2.80%	$2,430		
52		Executive Board Support	$2,000	$1,392	69.60%	$608		
53		**Total**	**$4,500**	**$1,462**	32.49%	**$3,038**		
55	**Committees**							
56		AIR	$50,000	$37,955	75.91%	$12,045		
57		BAPPG	$86,000	$77,872	90.55%	$8,128		Includes CPSC @ $10,000
58		Biosolids Committee	$3,100	$1,183	38.16%	$1,917		
59		Collections System	$10,000	$750	7.50%	$9,250		FY16 Actuals Includes $500 in Venue Costs from FY15
60		InfoShare Groups	$1,000	$956	95.60%	$44		funds for 2 workgroups (Asset Mgmt & O&M)
61		Laboratory Committee	$6,000	$2,291	38.19%	$3,709		
62		Permit Committee	$1,000	$0	0.00%	$1,000		
63		Pretreatment	$1,000	$989	98.90%	$11		
64		Recycled Water Committee	$1,000	$0	0.00%	$1,000		
65		Misc Committee Support	$30,000	$0	0.00%	$30,000		
66		**Total**	**$189,100**	**$121,996**	64.51%	**$67,104**		

BACWA Revenues and Expenses (as of May 31, 2016, 92% of FY)

	A	B	C	D	E	F	G	H
18		***Line Item Description***	**FY2016 Budget Amended**	**FY2016 Actuals May 2016**	**Actual % of Budget May 2016**	**Variance**		**NOTES**
68	**Collaboratives**							
69		**Collaboratives**						
70		State of the Estuary (biennial)	$0	$0	0.00%	$0		Bienniel in Odd Years
71		Arleen Navarret Award	$1,000	$1,577	157.70%	-$577		Bienniel in Even Years - FY14 & FY16
72		FWQC (Fred Andes)	$5,000	$5,000	100.00%	$0		
73		Stanford ERC (ReNUWIt)	$10,000	$10,000	100.00%	$0		
74		CWCCG	$35,000	$35,000	100.00%	$0		
75		**Total**	**$51,000**	**$51,577**	101.13%	**-$577**		
77	**Tech Support**	**Technical Support**						
78		Nutrients						
79		Watershed	$880,000	$870,000	98.86%	$10,000		$9,711 of FY16 requirement pd in FY15
80		Additional work under permit	$100,000	$20,340	20.34%	$79,660		Alpha Labs & LimnoTech
81		Opt/Upgrade/Annual Reporting Studies	$559,000	$204,225	36.53%	$354,775		
82		Nutrient Program Coordination	$50,000	$100,000	200.00%	-$50,000		$100,000 paid to SFEI for Program Coord Pilot
83		General Tech Support	$136,779	$64,432	47.11%	$72,347		
84		Chemicals of Concern	$15,000	$0	0.00%	$15,000		Pesticide Mgmt support
85		Risk Reduction	$17,500	$14,338	81.93%	$3,162		Contracts executed for $50k in FY16 to be paid over two years
86		**Total**	**$1,758,279**	**$1,252,995**	71.26%	**$484,944**		
88								
89		**TOTAL EXPENSES**	**$2,462,267**	**$1,821,661**	**73.98%**	**$620,266**		
90		**NET INCOME BEFORE TRANSFERS**	**-$483,648**					**5 Year Plan Est for FY 17 = $298,736**
91		**TRANSFERS FROM RESERVES**	$398,669					
92		**NET INCOME AFTER TRANSFERS**	**-$84,979**					

EXECUTIVE BOARD AUTHORIZATION REQUEST

AGENDA NO.: 3
FILE NO.: 17-16
MEETING DATE: July 15, 2016

TITLE: Request for BACWA Executive Board to Review and Approve No Amendments to the BACWA Conflict of Interest Code

☐ **RECEIPT** ☐ **DISCUSSION** ☐ **RESOLUTION** ☒ **APPROVAL**

RECOMMENDED ACTION

Authorize Staff to file a 2016 biennial statement by the October 1, 2016 deadline that the BACWA Conflict of Interest Code has been reviewed by the Board and no amendment is required.

SUMMARY

The Political Reform Act (Act) prohibits a public official from using his or her official position to influence a governmental decision in which he or she has a financial interest. Every state and local agency must adopt a conflict of interest code that identifies all officials and employees within the agency who make governmental decisions based on the positions they hold. The individuals in the designed positions must disclose their financial interests as specified in the agency's conflict of interest code. To help identify potential conflicts of interest, the law requires public officials and employees in designated positions in a conflict of interest code to report their financial interests on a form called Statement of Economic Interests (Form 700). The conflict of interest codes and the Form 700s are fundamental tools in ensuring that officials are acting in the public's best interest and not their own.

Over time, the structure of an agency will change because employees' duties shift, positions are renamed or eliminated, and the organizational structure is modified. When an agency makes these types of changes, the conflict of interest code must be amended accordingly. To ensure the codes remain current and accurate, a multi-county agency must review its code biennially during even-numbered years. When determining whether to amend, an agency should carefully review its current conflict of interest code and consider the following:

- Is the current code more than five years old?
- Have there been any substantial changes to the agency's organizational structure since the current code was adopted?
- Have any positions been eliminated or renamed since the current code was adopted?
- Have any new positions been added since the current code was adopted?
- Have there been any substantial changes in duties or responsibilities for any positions since the current code was adopted?
- If an agency answers "yes" to any of the above questions, most likely its conflict of interest code will need to be amended.

FISCAL IMPACT

There is no fiscal impact.

ALTERNATIVES

1. Do not approve the filing. This alternative is not recommended since BACWA would then be in violation of the Act.

Attachments:

BACWA Conflict of Interest Code
BACWA Consultants Requirements
2016 Biennial Notice

Approved: _____ Date: _____

Laura Pagano, Chair,
BACWA Executive Board

8293

3

RESOLUTION NO. 8004-16
RESOLUTION OF THE EXECUTIVE BOARD OF THE BAY AREA CLEAN WATER AGENCIES APPROVING CONFLICT OF INTEREST CODE

WHEREAS, the provisions of the Political Reform Act require California public agencies to adopt a conflict of interest code (Government Code Section 87300); and

WHEREAS, the governing body (the "Board") of the Bay Area Clean Water Agencies ("BACWA") wishes to adopt such a code (the "Code") so as to conform with the Political Reform Act and the associated regulations; and

WHEREAS, the Fair Political Practices Commission has determined the Political Reform Act requires the designation of positions in conflict of interest codes that may foreseeably have a material affect on financial interests within the BACWA boundaries; and,

WHEREAS, the Fair Political Practices Commission has determined that adopting a conflict of interest code is an action that requires a formal notice and comment period; and,

WHEREAS, BACWA has drafted a notice of intent to adopt a conflict of interest code; and,

WHEREAS, BACWA has scheduled a 45 day notice and comment period, beginning on March 9, 2001 and culminating on April 24, 2001, to accept written comments from the public and encourage public involvement in the decision-making process; and,

WHEREAS, no public hearing was requested in any comment received and BACWA has accepted and considered comments from interested persons throughout the comment period; and

WHEREAS, the Board has reviewed the Code attached hereto as Attachment A; and

WHEREAS, the Code requires the Board to designate a filing officer for BACWA.

NOW, THEREFORE, BE IT RESOLVED as follows:

1. The Board hereby adopts and approves the Code as BACWA's conflict of interest code, conditioned only upon the approval of the Code by the Fair Political Practices Commission.

2. The Board hereby authorizes and directs BACWA's Executive Director to submit the Code, together with a copy of this resolution, to the Fair Political Practices Commission for approval.

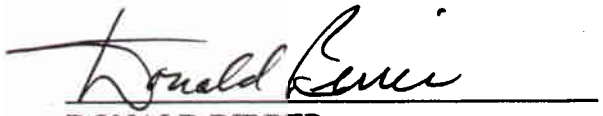
#359591.1

3. Upon approval of the Code by the Fair Political Practices Commission, BACWA's Executive Director is appointed as the designated filing officer for BACWA's conflict of interest code.

4. The Board hereby authorizes each of the officers of BACWA to execute all documents and take any other action necessary or advisable to carry out the purposes of this resolution.

CERTIFICATION

The foregoing Resolution was adopted by the Executive Board of Bay Area Clean Water Agencies at its regularly scheduled meeting held on April 26, 2001.



DONALD BIRRER,
Executive Director

#359591.1

ATTACHMENT A

BAY AREA CLEAN WATER AGENCIES
CONFLICT OF INTEREST CODE

The Political Reform Act (Government Code Section 81000 et seq.) requires state and local government agencies to adopt and promulgate conflict of interest codes. The Fair Political Practices Board has adopted a regulation, 2 California Code of Regulations Section 18730, which contains the terms of a standard conflict of interest code, which can be incorporated by reference, and which may be amended by the Fair Political Practices Board to conform to amendments in the Political Reform Act after public notice and hearings. Therefore, the terms of 2 California Code of Regulations Section 18730 and any amendments to it duly adopted by the Fair Political Practices Board, along with the attached Appendix in which officials and employees are designated and disclosure categories are set forth, are hereby incorporated by reference and constitute the conflict of interest code of the Bay Area Clean Water Agencies.

Designated employees shall file statements of economic interests with the Executive Director of the Bay Area Clean Water Agencies who shall make the statements available for public inspection and reproduction. (Gov.Code Section 81008.)

#359591.1

APPENDIX A

BAY AREA CLEAN WATER AGENCIES

CONFLICT OF INTEREST CODE

PART I

DESIGNATED POSITIONS

		Disclosure Categories to Report
1.	General Counsel	All
2.	Consultants*	All
3.	Members and Alternates of the Executive Board	All
4.	Executive Director	All

*Consultants shall be included in the list of designated employees. However, the Executive Director may determine in writing that a particular consultant, although in a "designated position," is hired to perform a range of duties that are limited in scope and thus is not required to fully comply with the disclosure requirements described in this section. Such written determination shall include a description of the consultant's duties and, based upon that description, a statement of the extent of disclosure requirements. The Executive Director's determination is a public record and shall be retained for public inspection in the same manner and location as the conflict of interest code.

It has been determined that the positions listed below manage public investments and will file a Statement of Economic Interest pursuant to Government Code § 87200: Treasurer.

APPENDIX B
BAY AREA CLEAN WATER AGENCIES
CONFLICT OF INTEREST CODE

Investments and business positions in business entities, and income from sources which provide facilities, services, supplies, or equipment of the type utilized by or within BACWA, including, but not limited to:

1. Office equipment and supplies
2. Safety equipment and facilities
3. Engineering services
4. Printing or reproduction services
5. Soil tests, compaction and grading
6. Audit and other accounting services
7. Environmental analysis
8. Geology services
9. Chemical or biological laboratory or field survey or testing services

#359591.1

This is the last page of the conflict of interest code for the **Bay Area Clean Water Agencies.**

CERTIFICATION OF FPPC APPROVAL

Pursuant to Government Code Section 87303, the conflict of interest code for the Bay Area Clean Water Agencies was approved on March 19, 2002. The code will be effective on April 18, 2002.

Mark Krausse
Executive Director
Fair Political Practices Commission

(Regulations of the Fair Political Practices Commission, Title 2, Division 6 of the California Code of Regulations.)

18730. Provisions of Conflict of Interest Codes.

(a) Incorporation by reference of the terms of this regulation along with the designation of employees and the formulation of disclosure categories in the Appendix referred to below constitute the adoption and promulgation of a conflict of interest code within the meaning of Government Code section 87300 or the amendment of a conflict of interest code within the meaning of Government Code section 87306 if the terms of this regulation are substituted for terms of a conflict of interest code already in effect. A code so amended or adopted and promulgated requires the reporting of reportable items in a manner substantially equivalent to the requirements of article 2 of chapter 7 of the Political Reform Act, Government Code sections 81000, *et seq*. The requirements of a conflict of interest code are in addition to other requirements of the Political Reform Act, such as the general prohibition against conflicts of interest contained in Government Code section 87100, and to other state or local laws pertaining to conflicts of interest.

(b) The terms of a conflict of interest code amended or adopted and promulgated pursuant to this regulation are as follows:

(1) Section 1. Definitions.

The definitions contained in the Political Reform Act of 1974, regulations of the Fair Political Practices Commission (2 Cal. Code of Regs. sections 18100, *et seq*.), and any amendments to the Act or regulations, are incorporated by reference into this conflict of interest code.

(2) Section 2. Designated Employees.

The persons holding positions listed in the Appendix are designated employees. It has been determined that these persons make or participate in the making of decisions which may foreseeably have a material effect on financial interests.

(3) Section 3. Disclosure Categories.

This code does not establish any disclosure obligation for those designated employees who are also specified in Government Code section 87200 if they are designated in this code in that same capacity or if the geographical jurisdiction of this agency is the same as or is wholly included within the jurisdiction in which those persons must report their financial interests pursuant to article 2 of chapter 7 of the Political Reform Act, Government Code sections 87200, *et seq*.

In addition, this code does not establish any disclosure obligation for any designated employees who are designated in a conflict of interest code for another agency, if all of the following apply:

(A) The geographical jurisdiction of this agency is the same as or is wholly included within the jurisdiction of the other agency;

(B) The disclosure assigned in the code of the other agency is the same as that required under article 2 of chapter 7 of the Political Reform Act, Government Code section 87200; and

receive any form of payment as a result of his or her appointment. Such persons shall not file either an assuming or leaving office statement.

(A) Any person who resigns a position within 30 days of the date of a notice from the filing officer shall do both of the following:

(1) File a written resignation with the appointing power; and

(2) File a written statement with the filing officer declaring under penalty of perjury that during the period between appointment and resignation he or she did not make, participate in the making, or use the position to influence any decision of the agency or receive, or become entitled to receive, any form of payment by virtue of being appointed to the position.

(6) Section 6. Contents of and Period Covered by Statements of Economic Interests.

(A) Contents of Initial Statements.

Initial statements shall disclose any reportable investments, interests in real property and business positions held on the effective date of the code and income received during the 12 months prior to the effective date of the code.

(B) Contents of Assuming Office Statements.

Assuming office statements shall disclose any reportable investments, interests in real property and business positions held on the date of assuming office or, if subject to State Senate confirmation or appointment, on the date of nomination, and income received during the 12 months prior to the date of assuming office or the date of being appointed or nominated, respectively.

(C) Contents of Annual Statements. Annual statements shall disclose any reportable investments, interests in real property, income and business positions held or received during the previous calendar year provided, however, that the period covered by an employee's first annual statement shall begin on the effective date of the code or the date of assuming office whichever is later.

(D) Contents of Leaving Office Statements.

Leaving office statements shall disclose reportable investments, interests in real property, income and business positions held or received during the period between the closing date of the last statement filed and the date of leaving office.

(7) Section 7. Manner of Reporting.

Statements of economic interests shall be made on forms prescribed by the Fair Political Practices Commission and supplied by the agency, and shall contain the following information:

(A) Investments and Real Property Disclosure.

When an investment or an interest in real property[3] is required to be reported,[4] the

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[3] For the purpose of disclosure only (not disqualification), an interest in real property does not include the principal residence of the filer.

[4] Investments and interests in real property which have a fair market value of less than $2,000 are not investments and interests in real property within the meaning of the Political Reform Act. However, investments or interests in real property of an individual include those held by the individual's spouse and dependent children as well as a pro rata share of any investment or interest in real property of any business entity or trust in which the individual, spouse and dependent children own, in the aggregate, a direct, indirect or beneficial interest of 10

designated employee shall list the name and address of each business entity in which he or she is a director, officer, partner, trustee, employee, or in which he or she holds any position of management, a description of the business activity in which the business entity is engaged, and the designated employee's position with the business entity.

(E) Acquisition or Disposal During Reporting Period. In the case of an annual or leaving office statement, if an investment or an interest in real property was partially or wholly acquired or disposed of during the period covered by the statement, the statement shall contain the date of acquisition or disposal.

(8) Section 8. Prohibition on Receipt of Honoraria.

(A) No member of a state board or commission, and no designated employee of a state or local government agency, shall accept any honorarium from any source, if the member or employee would be required to report the receipt of income or gifts from that source on his or her statement of economic interests. This section shall not apply to any part-time member of the governing board of any public institution of higher education, unless the member is also an elected official.

Subdivisions (a), (b), and (c) of Government Code section 89501 shall apply to the prohibitions in this section.

This section shall not limit or prohibit payments, advances, or reimbursements for travel and related lodging and subsistence authorized by Government Code section 89506.

(8.1) Section 8.1 Prohibition on Receipt of Gifts in Excess of $320.

(A) No member of a state board or commission, and no designated employee of a state or local government agency, shall accept gifts with a total value of more than $320 in a calendar year from any single source, if the member or employee would be required to report the receipt of income or gifts from that source on his or her statement of economic interests. This section shall not apply to any part-time member of the governing board of any public institution of higher education, unless the member is also an elected official.

Subdivisions (e), (f), and (g) of Government Code section 89503 shall apply to the prohibitions in this section.

(8.2) Section 8.2. Loans to Public Officials.

(A) No elected officer of a state or local government agency shall, from the date of his or her election to office through the date that he or she vacates office, receive a personal loan from any officer, employee, member, or consultant of the state or local government agency in which the elected officer holds office or over which the elected officer's agency has direction and control.

(B) No public official who is exempt from the state civil service system pursuant to subdivisions (c), (d), (e), (f), and (g) of Section 4 of Article VII of the Constitution shall, while he or she holds office, receive a personal loan from any officer, employee, member, or consultant of the state or local government agency in which the public official holds office or over which the public official's agency has direction and control. This subdivision shall not apply to loans made to a public official whose duties are solely secretarial, clerical, or manual.

(C) No elected officer of a state or local government agency shall, from the date of his or her election to office through the date that he or she vacates office, receive a personal loan from

of the Government Code.

(8.4) Section 8.4. Personal Loans.

(A) Except as set forth in subdivision (B), a personal loan received by any designated employee shall become a gift to the designated employee for the purposes of this section in the following circumstances:

1. If the loan has a defined date or dates for repayment, when the statute of limitations for filing an action for default has expired.

2. If the loan has no defined date or dates for repayment, when one year has elapsed from the later of the following:

a. The date the loan was made.

b. The date the last payment of one hundred dollars ($100) or more was made on the loan.

c. The date upon which the debtor has made payments on the loan aggregating to less than two hundred fifty dollars ($250) during the previous 12 months.

(B) This section shall not apply to the following types of loans:

1. A loan made to the campaign committee of an elected officer or a candidate for elective office.

2. A loan that would otherwise not be a gift as defined in this title.

3. A loan that would otherwise be a gift as set forth under subdivision (A), but on which the creditor has taken reasonable action to collect the balance due.

4. A loan that would otherwise be a gift as set forth under subdivision (A), but on which the creditor, based on reasonable business considerations, has not undertaken collection action. Except in a criminal action, a creditor who claims that a loan is not a gift on the basis of this paragraph has the burden of proving that the decision for not taking collection action was based on reasonable business considerations.

5. A loan made to a debtor who has filed for bankruptcy and the loan is ultimately discharged in bankruptcy.

(C) Nothing in this section shall exempt any person from any other provisions of Title 9 of the Government Code.

(9) Section 9. Disqualification.

No designated employee shall make, participate in making, or in any way attempt to use his or her official position to influence the making of any governmental decision which he or she knows or has reason to know will have a reasonably foreseeable material financial effect, distinguishable from its effect on the public generally, on the official or a member of his or her immediate family or on:

(A) Any business entity in which the designated employee has a direct or indirect investment worth two thousand dollars ($2,000) or more;

(B) Any real property in which the designated employee has a direct or indirect interest worth two thousand dollars ($2,000) or more;

(C) Any source of income, other than gifts and other than loans by a commercial lending institution in the regular course of business on terms available to the public without regard to official status, aggregating five hundred dollars ($500) or more in value provided to, received by

87300-87302, 89501, 89502 and 89503, Government Code.

EXECUTIVE DIRECTOR'S WRITTEN DETERMINATION REGARDING THE FILING OF STATEMENTS OF ECONOMIC INTEREST BY PARTICULAR CONSULTANTS RETAINED BY BACWA

The undersigned Executive Director of Bay Area Clean Water Agencies ("BACWA") hereby finds and determines that: (i) those Consultants retained by BACWA by contract to perform scientific, environmental or design studies and to report to the BACWA Executive Board or to a BACWA committee and/or to testify before State or Federal regulatory bodies, or to perform personnel training for BACWA or its Member Agencies, and (ii) those attorneys retained by BACWA not as General Counsel but, rather, to represent BACWA with regard to specific regulatory issues, perform a range of duties which are so limited in scope that such Consultants are not required to comply with the disclosure requirements described in BACWA's Conflict of Interest Code.

Amy Chastain, Executive Director

{00916150}

2016 Multi-County Agency Biennial Notice

Name of Agency: _____

Mailing Address: _____

Contact Person: _____ Phone No. _____

Email: _____ Alternate Email: _____

Counties Served: _____

No. of Employees: _____ No. of Form 700 Filers: _____

Accurate disclosure is essential to monitor whether officials have conflicts of interest and to help ensure public trust in government. The biennial review examines current programs to ensure that the agency's code includes disclosure by those agency officials who make or participate in making governmental decisions.

Please identify which statement accurately describes your agency's status.

❑ This agency has reviewed its conflict of interest code. The current code designates all positions which make or participate in making governmental decisions. The designated positions are assigned accurate disclosure categories that relate to the job duties of the respective positions. The code incorporates FPPC regulation 18730 so that all relevant Government Code Sections are referenced.

❑ This agency has reviewed its conflict of interest code and has determined that an amendment is necessary. An amendment may include the following:

- ○ New positions which involve the making or participating in the making of decisions which may foreseeably have a material impact on a financial interest.
- ○ Current designated positions need renaming or deletion.
- ○ Statutorily required provisions of the code need to be addressed.
- ○ Disclosure categories need revision.

Verification (to be completed if no amendment is required)

This multi-county agency's code accurately designates all positions that make or participate in the making of governmental decisions. The disclosure assigned to those positions accurately requires that all investments, business positions, interests in real property, and sources of income that may foreseeably be affected materially by the decisions made by those holding designated positions are reported. The code includes all other provisions required by Government Code Section 87302.

_____ _____

Signature of Chief Executive Officer *Date*

All multi-county agencies must complete and return this notice, including those agencies whose codes are currently under review. Please return this notice no later than **October 3, 2016** to the FPPC at biennialnotice@fppc.ca.gov or 428 J Street, Suite 620, Sacramento, California, 95814.

EXECUTIVE BOARD AUTHORIZATION REQUEST

AGENDA NO.: 4

FILE NO.: 17-17

MEETING DATE: July 15, 2016

TITLE: Request for BACWA Watershed Permit Fund Commitment for $880,000

☐ **RECEIPT** ☐ **DISCUSSION** ☐ **RESOLUTION** ☒ **APPROVAL**

RECOMMENDED ACTION

Authorize payment in the amount of $880,000 to SFEI in order to comply with the provisions of the Watershed Permit for FY17.

SUMMARY

The Watershed Permit for Nutrients from Municipal Wastewater Dischargers to San Francisco Bay, NPDES Permit No. CA 0068873 adopted April 14, 2014, requires the commitment of $880,000 per year from POTW Dischargers as a collective effort to fund needed scientific studies as part of the implementation of the Regional Water Quality Control Board's Nutrient Management Strategy. The commitment is on a fiscal year basis and began July 1, 2014. BACWA's role in meeting this commitment is to collect the needed funds from its membership and provide those funds for the undertaking of the scientific studies. The identification of the studies to be undertaken is through a stakeholder governance Steering Committee on which BACWA holds two seats. Several studies are on-going as a result of approvals by the Steering Committee for FY 15 & FY16.

This authorization of payment in the amount of $880,000 to SFEI will meet the third year of the Discharger's annual obligation under the Watershed Permit.

FISCAL IMPACT

This payment and subsequent annual payments to fund the scientific studies will be collected from the BACWA membership through a Nutrient Surcharge that is included on the annual dues invoices to the BACWA members. Funds are not currently available in the BACWA CBC Fund. With the distribution of the FY17 BACWA member invoices in July and August 2016, the needed funds will be received and a payment to SFEI will be made at that time (payment expected to be made by the end of September 2016 if not sooner).

ALTERNATIVES

Do not fund the Commitment. This alternative is not recommended since the payment is a regulatory requirement. BACWA members who do not participate in the payment of the Nutrient Surcharge will be handled individually by the Water Board, presumably through the Water Broad's 13267 authority to require funding of needed studies for regulatory issues.

Attachments: SFEI Invoice

Approved: _____ Date: _____

Laura Pagano, Chair,
BACWA Executive Board

July 13, 2016

Bay Area Clean Water Agencies
Attn: David R. Williams
PO Box 24055, MS 59
Oakland, CA 94623

Cc: Thomas Mumley, Naomi Feger, San Francisco Bay Regional Water Quality Control Board

Subject: Distribution of WS Permit Funds

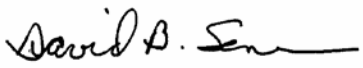
Dear Mr. Williams,

We request that BACWA transfer $880,000 of the Nutrient Watershed Permit FY2017 funds to SFEI. SFEI will use these funds to carry out the FY2017 studies approved by the Nutrient Management Strategy Steering Committee at their June 10, 2016 meeting, some of which had effective start dates of July 1, 2016.

All of the work carried out using the Nutrient Watershed Permit funds will be overseen by the Steering Committee, as outlined in the Nutrient Management Strategy Charter. SFEI will meet with and provide periodic updates to the Steering Committee on work progress and finances, and receive feedback on work to date and advising on future activities.

Please let me know if any other information is required. Thank you.

Sincerely,



David Senn, Ph.D.
4911 Central Ave.
Richmond, CA 94804
davids@sfei.org
p: 510-746-7366
f: 510-746-7300

Invoice

San Francisco Estuary Institute
4911 Central Ave.
Richmond, CA 94804
EIN 94-2951373

July 13, 2016
Project No: 1092.50
Invoice No: 1092501

Bay Area Clean Water Agency
PO Box 24055, MS702
Oakland, CA 94623

Project 1092.50 SF Bay Nutrient Strategy Support FY2017
attn: Sherry Hull

Professional Services from July 01, 2016 to June 30, 2017

Fee	**880,000.00**
Total this Invoice	**$880,000.00**

Contact Lawrence Leung at 510-746-7356 or lawrence@sfei.org for questions.

Optimization/Upgrade Report Workshop

EBMUD Large Training Resource Center (TRC)
375 11th St.
Oakland, CA

June 27, 2016

10:30 am – 1:30 pm

AGENDA

1. Background of Nutrient Watershed Permit
2. Overview of Project Approach and Current Status
3. Purpose and Organization of Reports
4. Common Assumptions
5. Case Studies
    a) Case 1 (Oro Loma)
    b) Case 2 (Benicia)
    c) Case 3 (Delta Diablo)
6. Initial Cost and Load Reduction Results for Wave 1 Plants
7. Additional Data Requests
    a) Recycled Water
    b) CIP
8. Report Feedback and Sign-Off Process
9. Schedule
    a) Wave 2, 3, 4
    b) Submittal of Final Report
10. Group Annual Report
11. Next Steps
12. Q & A Session

LUNCH BREAK (30 minute)

13. Update on Watershed Permit
14. Options for the Next Watershed Permit
    a) Membership Survey
15. Adjourn

Assessment of The BACWA Membership's Position on the 2nd Nutrient Watershed Permit Based on the "Straw Man" Survey

BACKGOUND: It is approaching two and one half years since the 2014 Watershed Permit was adopted. The first WS Permit took roughly two years to negotiate. It is not clear whether the 2nd WS permit will be easier or more difficult to negotiate. The Water Board has stated that their intent is to include a "no net loading increase" provision in the next WS Permit. Several BACWA members have stated that such a provision would be premature since there is no indication of pending impairment to the Bay. Although this argument has been made to the Water Board on several occasions, the WB has yet to be persuaded by the argument that since no impairment is currently observed that no management actions are needed in the 2nd WS permit. Therefore, the Water Board is pursing the use of the anti-degradation language in the CWA regulations to justify a load cap in the 2nd WS Permit. Some BACWA members feel that there is no justification for the use of anti-degradation in this manner. The Water Board has stated that they would be open to an alternative proposal from BACWA in lieu of including the NNLI provision in the 2nd Permit.

Given the two opposing positions and no indication at this time that either side would be persuaded to modify its position, one potential outcome is the issuance of the 2nd WS Permit with the NNLI provision included which would then force agencies who oppose the permit to either acquiesce, hope that their arguments finally make sense to the Water Board, or challenge the permit. This scenario could lead to litigation. The outcome of this approach is uncertain and therefore it is possible that some POTWs may feel it is in their best interest instead to negotiate a permit that either accepts the NNLI provision or offers alternatives that would be acceptable to the Water Board. If some POTWs choose this alternative approach it may have an unintended consequence of weakening the position of those who may choose to challenge the permit, but that itself is not clear and ultimately may be decided by the courts. This of course is not the only

possible outcome, but absent any proposal being put forth by BACWA, it may be one of the more likely outcomes.

REGULATORY PROCESS FOR INCREASING THE SCIENCE FUNDING: If there is a desire to increase the science funding in lieu of loading caps in the next watershed (WS) permit, a concern is how that would be accomplished. Members have expressed concerns about re-opening the permit as that approach may lead to unanticipated consequences and intervention by others and thus an administrative extension would be preferable if possible. The question on an administrative extension was posed to the WB. The WB responded that the Permit cannot be extended administratively but they also stated that the process for re-issuance could be minimized and be very straightforward. It should be noted that BayKeeper was the only commenter on the first permit and their main concern was that the science funding was not enough to make timely progress in determining if the Bay was in jeopardy of impairment. Informally BayKeeper has indicated they do not see an issue if the science was increased in lieu of a NNLI provision in the 2nd WS Permit.

STRAW MAN SURVEY: The purpose of the Straw Man survey was to determine a direction, albeit informal and tentative, that the majority of the BACWA members supported for the approach to negotiation of the 2nd WS Permit. The survey results and comments provided is shown in Attachment A. A total of 28 agencies responded with four of those being tributary to a BACWA Principal. Based solely on the averages of the responses, the following conclusions are drawn:

-a strong majority of BACWA members believe that continuing to participate in the WS Permit is in their interest.

-a mildly strong majority believe that offering increased funding for the NMS Science Program in lieu of loading caps in the 2nd WS Permit is a good option.

-there is a fair amount of interest in discussing the increased funding for the Science Program, at a significant level, now rather than in 2019 when the WS Permit expires.

-there is not strong support for pursuing early actions as an alternative to not including the NNLI provision in the next WS Permit, either with or without financial incentives being available.

-there is not strong support for only continuing dialogue with the Water Board until a draft of the 2nd WS Permit is released by the Water Board in late 2018.

PROPOSED NEXT STEPS: Given the BACWA watershed permit coalition is comprised of 37 POTWs, it is unlikely that concepts for a 2nd WS Permit proposal could be developed that has all the tenets of the ideal proposal envisioned by each of the 37 members. Therefore, the goal would be to develop concepts for a proposal and timing for discussion with the Water Board that would achieve a consensus of the 37 members even though it is not perfect for each member. It should also be recognized that a consensus of all 37 members may not be achievable which may lead to some members opting out of the 2nd WS Permit and negotiating their own nutrient permit. It should be noted that the Water Board's stated preference is to have one WS Permit with all members included. How that plays out for members who chose to opt out is something that they would need to evaluate. Proposed next steps and a schedule is provided in Attachment B. Feedback on the next steps will be sought at the July Board meeting.

ATTACHMENT A
Optimization/Upgrade Workshop #1 Survey Results

Survey #	Stmt 1	Stmt 2	Stmt 3	Stmt 4	Stmt 5	Stmt 6	Stmt 7	Stmt 8	Stmt 9
1	5	5	5	5	2	2	2	5	1
2	5	4	4	2	4	4	3	5	2
3	5	5	1	5	1	1	1	2	5
4	5	5	4	4	3	3	4	4	2
5	4	4	4	4	2	3	4	4	2
6	5	2	5	2	4	2	5	5	2
7	5	5	5	4	4	5	3	4	2
8	4	5	5	5	3	2	4	4	2
9	5	5	5	4	2	1	4	4	2
10	5	5	5	5	1	1	1	4	1
11	5	5	4	5	4	3	0	3	4
12	5	4	1	4	3	4	3	4	2
13	5	5	5	4	2	3	4	4	3
14	5	5	5	3	1	2	5	5	2
15	5	5	5	5	4	4	2	4	2
16	5	4	2	2	4	4	3	2	4
17	5	5	5	5	1	1	4	5	1
18	5	5	4	5	2	2	2	2	4
19	5	5	5	5	3	1	2	5	2
20	4	1	1	1	3	2	2	4	2
27	5	5	5	5	1	1	5	5	3
21	3	5	2	5	2	4	2	4	4
22	5	3	5	3	1	1	1	4	3
23	5	5	5	5	1	1	3	5	3
24	4	4	2	4	1	1	1	3	5
25	5	5	5	5	2	2	3	5	1
26	5	5	4	4	4	4	3	4	2
TOTAL	129	121	108	110	65	64	76	109	68
AVERAGE	**5.0**	**4.7**	**4.2**	**4.2**	**2.5**	**2.5**	**2.9**	**4.2**	**2.6**

COMMENTS

Stmt 1	**Given the likely provisions to be included in the 2nd Watershed Permit, your agency would likely continue with**
	1	We would need to see a benefit to leaving the BACWA approach, but it is an option
	2	We need to remain a unified group for a stronger voice.
	3	Our involvement with BACWA has been very beneficial.
	4	Would like continued engagement and support for associate agencies and voice in the process of decision making.
	5	Absolutely, BACWA is a great resource and there is strength in numbers and economies of scale.
	6	San Jose benefits from group participation - Other hand: San Jose is the largest agency, and one of only a few, that employs BNR. Our per capita nutrient loads are amongst the lowest. At some point nitrogen equity is an issue.

Stmt 2	**Given the difference in costs to your agency for increasing the funding for the nutrient science program it makes**
	1	Low cost option to get the best information and best decisions - we suggest offering $2 million (low cost across all BACWA Agencies) to show we are very serious about the need for science.
	2	Increasing costs are very difficult as they impact budgets & rate payers.
	3	Should give consideration to agencies contributing outside of the BACWA fees/watershed permit towards SFEI studies un
	4	Science may help not hurt our no to NNLI position.
	5	We have not made a decision about this. We contribute negligibly to the nutrient loading and we need to have more information. We may be in a positive position for tr
	6	Don't think trading science vs NNL will pass public test.
	7	Maybe not in lieu, but provide additional funding anyway. Comments from staff - not vetted by Board.
	8	The Bay continues to be unimpaired. Increased science funding is likely to be permanent. Current $1.1 to 1.7M/year nutrient science has not identified nutrient impairment. Both increasing funding and nitrogen limits would be premature and unjustified at this time.

Stmt 3	**Given the Water Board's interest at this time for increasing the funding for the science program, it makes sense**
	1	Do not like losing overall time of current permit, but like higher funding for science - take two years to negotiate and this be
	2	This group should make efforts to maintain amicable relationship with the Water Board.
	3	Three years does not seem like a long enough time for any assurances. Could get the same funding increase conversatior concerned about potential for other challenges by third parties to influence permit negotiations.
	4	Better chance EPA buy-in.
	5	Would rather do this administratively - not by opening up the permit.
	6	Agree with the point made about trying to extend without "re-opening" permit.
	7	Opening the permit now increases possibilty for inclusion of unwanted/unneeded provisions. Science is being developed. Signs of Bay impairment are not being dectected. Determination of Bay nitrogen limits needs much more work.

Stmt 4	**In lieu of having a NNLI requiremnt in the next watershed permit, my agency may be willing to significantly**
	1	Suggest $2 million from BACWA to show strong support for science
	2	Already funding additional science outside of the watershed permit fees.
	3	We have not made a decision about this. We contribute negligibly to the nutrient loading and we need to have more information. We may be in a positive position for tr
	4	Don't think NNLI trades exactly with other public.
	5	Let big plants pay.
	6	San Jose would not support significant increase. BACWA Principal Agencies pay $107K in 2016/7. Not clear how extra science funding will discourage determination of NNLI in next permit.

Stmt 5	**Even though it may be more complex and would take time to get BACWA membership buy-in, my agency**
	1	Either could work, but we believe better science is needed.
	2	The science of the entire bay is too complicated to allow one agency action to translate to entire bay.
	3	NGO community won't buy no action with just science.
	4	MVSD is currently looking at enhanced primary clarification and a pilot sidestream treatment option.
	5	I think it would be difficult to accomplish in the given timeframe.
	6	Depends on how this is determined. San Jose converted to BNR in 1998 and removed 3000 kg/d of nitrogen discharge. Does that count as early action? All agencies should be encouraged to reduce nitrogen discharges, but it will come at some cost.

Stmt 6	**My agency would seriously consider early actions to reduce nutrients in lieu of the NNLI in the next watershed**
	1	We are moving in this direction now, but some support would make it easier to get local support.
	2	Not interested in early action nor offering any incentives to others that may adopt early actions.
	3	Need some incentives to spend money. May negotiate separately.
	4	MVSD is currently looking at enhanced primary clarification and a pilot sidestream treatment option.
	5	We are looking into some projects that may reduce nutrients for other reasons (recycled water).
	6	San Jose has been at the forefront of nutrient removal for at least 2 dacades. We will continue to take all reasonable action to reduce nutrient discharge. AND, the Bay, particularly LSB in vicinity of Lower Coyote Creek is not impaired by nutrients.

Stmt 7	**My agency would seriously consider early actions to reduce nutrients in lieu of NNLI in the next watershed**
	1	We are moving in this direction now, but some support would make it easier to get local support.
	2	We are too small and our load is too limited to make this desirable.
	3	MVSD is currently looking at enhanced primary clarification and a pilot sidestream treatment option. No decisions have been made. Would benefit from consulting assistance.
	4	Nice idea although difficult to implement.
	5	Depends on timing - actively pursuing recycled water to decrease nutrients.
	6	San Jose would not seek specific incentivization to increase nutrient removal. If nutrients are a problem Bay-wide, we would expect that all agencies would be required to meet a minimum standard for nitrogen removal. Nitrogen impairment has not been identified.

Stmt 8	**BACWA should use the results of this survey to develop a straw-man proposal of key tenets for the 2nd**
	1	It is a good approach, but we cannot allow any options to be eliminated either as a group or as individual facilities.
	2	Internally it would be good to see. Concerned over giving WB ideas prior to science.
	3	We don't know what future studies will show. Perhaps no degradation is found why take action.
	4	Suggest pursue alternatives for funding sources without opening permit now. Risk of third party/other interests pushing it over in wrong direction like Sac Regional.
	5	We support the idea of exploring administrative routes to extend the permit and increase science funding.
	6	Too early. Comments from staff - not vetted by Board.
	7	Need more discussion before presenting to Water Board.
	8	This BACWA survey is a good tool for establishing the consensus opinion amongst agencies. Not sure when will be the right time to present proposals to Water Board.

Stmt 9	**BACWA should continue dialogue with the Water Board and wait and see what the 2nd draft of the watershed**
	1	This is a little more risky, but it avoids losing time on the existing permit and the 2nd draft will still be negotiable. Also, nego avoids NGO's from accusing the WB of "being in bed with" BACWA.

2 Continue pursuing additional funding sources to support science.
3 Some amount of negotiation should be done before the permit is drafted. However, BACWA should avoid making concessions. The current $1.1 to 1.7M/year science program was developed to determine if nutrients are impairing the Bay. So far, no impairment has been identified, therefore continue on course.

ATTACHMENT B						
NEXT STEPS ON DEVELOPING CONCEPTS FOR THE 2ND WATERSHED PERMIT						
Activity	July	August	September	October	November	December
Convene the Nutrient Strategy Team to develop concepts for a proposal	----------					
-amount of funding						
-how to account for agencies' current spending to support the science						
-recognition of beneficial activties						
-timing for incorporating any changes						
Identify possible NGOs/regulators/groups who would oppose increased funding of science		----------				
Informal discussion with the WB on vetting ideas for the proposal concepts and process for incoprorating into WS permit		----------				
Outreach to BACA membership on draft concepts			----------			
Develop tracking of other on-going early actions that will "sweeten' the proposal i.e. irrigation recycling, etc.	----------					
Present proposal concepts to the WB for consdieration				*		
Detailed discussion of a possible proposal with WB staff					----------	
Develop a presentation for use by the membership for updating their governing Boards						----------
WB staff to hold workshop for the Board members on nutrient permit activites and concepts for 2nd permit						*

Planning Subcommittee (PS) Meeting Summary No. 20

July 6, 2016

9:00 am – noon
Water Board Offices

Meeting Summary

Attendees: Tom M., David S., Ian W., Ben H., and Dave W. (notes)
Note: Action Items and Decisions are shown in *bold italic*.

1. **Agenda Modifications:** There were no modifications to the agenda
2. **Review Outstanding Action items:** Action Items were reviewed. All have been completed or are on the current agenda for discussion.
3. **Science Program update:** (see attached)
   a. **Staffing –** The SM will be interviewing for a biogeochemist and will be posting a position for a modeling professional. The plan is not to hire staff to do any additional HAB work at this time.
   b. **Other –** At Steering Committee (SC) meeting #9 the Science Manager (SM) was authorized to move forward with a suite of projects which represented more funds that were currently available. The SM reported that with input of new funds (i.e. SEP funds for modeling, Deltares in-kind match), he should be able to have enough funding to complete all projects thru P9. SEP funds may amount to $120k/year for two years but must go through a public process before the funds are secured.

      The SM was asked if he was pursuing foundation funding. He responded that short term he was focusing on readily identifiable funding but longer term would be seeking foundation funding. He also stated that Sunnyvale and Palo Alto have volunteered additional funding for modeling in the soughs and margins of LSB. Outreach to San Jose is also being conducted for possible funding as well as bringing their annual monitoring into the NMS "one tent" framework.

      A discussion then ensued about the possibility of increased funding by BACWA in lieu of loading caps in the next watershed (WS) permit. A question was asked if there was a desire to begin increased funding before the expiration of the existing 5 yr. permit, could that be done administratively by the Water Board (WB)? The WB responded that it can't be done administratively but the process for re-issuance could be minimized and be very straightforward. It was noted that BayKeeper was the only commenter on the first permit

and their main concern was that the science funding was not enough to make timely progress. A question was also asked if an agency takes an early action what would be the baseline for recognizing that action? If an early action was taken, language in the re-issued permit could be crafted that would recognize the action, however if the science determines that some reductions are needed going forward, it doesn't really matter what had been accomplished in the past.

The SM then questioned whether he should have a strict accounting of his time or, as the SM and Program Coordinator where his management and scientific duties are intermeshed, was an allocation of time appropriate. The PS felt that an allocation of time based on best estimate of routine work over the long run was appropriate.

4. **Priority Updates:**
   a. **Report-Outs:**
      i. **Technical Assistance document –** it was agreed that the SM should seek formal approval of the document at the next SC meeting.
      ii. **Other issues –** There were no other issues discussed.
   b. **Current Issues:**
      i. **Fundraising Plan feedback –** It was noted that the SC gave good feedback on the draft Fundraising Plan (see attached) including focusing on maintaining the USGS monitoring program, achieving full funding of the Science Plan and initiating work on alternative analyses. In addition to securing funds for work in the LSB and Suisun Bay the SM will be looking at opportunities for funding from EPA, grants and other sources. To assist in this effort, the WB will be discussing funding opportunities with EPA including funding for scenario planning.

      The Program Coordination (PC) team will also be working to bring other science funding inside the "one tent". There are four alternatives for doing this: 1. Fully incorporate the outside work; 2. Co-manage the outside work; 3. Conduct the work as affiliated projects; and 4. Expansion/Modification of existing programs (e.g. the IEP). It was suggested that the PC team look at external funding sources and not just focus on POTWs. The PC team intends to have targeted meetings with all SC members to discuss potential additional funding. The team realizes the importance of showing payback if the pilot PC program is to continue.

      Other suggestions for possible funding included teaming with NOAA who is doing work in the Bay or perhaps EPA's research arm in Cincinnati. ***Action Item: The WB will***

outreach to EPA to discuss possible sources of funding from the many EPA programs that have available funds.

ii. **Scenario Planning report/framework feedback** – The PC team then summarized their Scenario Planning document for nutrient management (see attached). The plan envisions outreach to stakeholders, holding workshops, identifying driving forces that impact the Bay beyond just nutrients, having a broad focus beyond just end of pipe treatment and developing "strawman" scenarios that present possible solutions. It is recognized that no one scenario will be completely right but through the adaptive management process, as things change, the scenarios can be adapted to better reflect possible solutions. A question was asked about such influences as "climate change" or "sea level rise". There can be tiers of scenarios that address these other influences.

The WB noted that the emphasis is on avoidance of impairment. That is one of the reasons that they are looking at anti-degradation as a means of taking interim management actions. It will be important to address the lead time that the various scenarios will be providing so enough reaction time is available to avoid any impairment.

It was suggested that the scenario planning needs to be viewed as a project with a schedule, budget and deliverables. Interactive workshops could be used to help develop the scenarios. It was suggested that ReNUWIt could help orchestrate the workshops or perhaps other players such as the Wheeler Institute. A series of papers could be an outcome. Stanford's Woods Institute was also mentioned as a possible resource.

The PC pilot concludes at the end of spring next year. Workshops could be held in November which coincides with the RMP annual meeting. The intent is to wrap-up the scenario planning effort by April.

iii. **Propose rescheduling Sep 9 SC meeting to Oct –** The discussion then turned to the need for a September SC meeting. The feeling was that the agenda may be a bit light (see attached). However, the SC is on a set schedule of quarterly meetings and there was a desire that, at least for the time being, not to disrupt that schedule. The suggestion was that instead of a full blown SC meeting to have a scaled back meeting and perhaps conduct it via a conference call or WebEx.

iv. **Agenda for next SC meeting –** If the September meeting becomes a scaled back meeting, the December quarterly meeting will have a very full agenda. One of the highest priorities for that meeting is to tee-up the science priorities for FY 18. The SM also noted that at the Nutrient Technical Workgroup meeting there was a request to better define what success on any HAB investigation would look like. There are three key items for future discussions; 1. Alternative scenario planning; 2. A robust monitoring program; and 3. What does HAB success look like.

It was agreed to have a "light" meeting in September along the lines of "this is what we are working on, with more to come in December". EBMUD also volunteered to do an update on the EPA side stream treatment grant at the September meeting.

A suggestion was made that at some point it would be good to do a presentation or hold a workshop for the Region 2 WB. If there were interest on the part of the POTW community to increase the funding for the science, this could be presented to the WB so they would be well briefed for approval at a subsequent meeting. An ideal time for such a workshop might be in February 2017.

c. **NMS Calendar Review:**

i. Review future SC and PS meeting schedules – The question was raised as to the need for a PS meeting in August. The August meeting is scheduled for the 3rd. In general, the feeling was that with a light SC meeting in September the August PS meeting was not needed, so at this point the August PS meeting is cancelled.

5. Other Updates:

a. **Progress report on development of a monitoring program proposal –** A question was raised as to the next steps on the monitoring program. The SC gave approval for the SM to start with the development a "5 pager" overview of the monitoring program. The SM plans to prepare the 5 pager and then do simulations to test the model. There is built-in funding in the budget to help build the institutional structure for the monitoring program in order to "house" the program. The 5 pager will not be presented at the September SC meeting. Ultimately there is envisioned to be a much more detailed description of the monitoring program following the production of the 5 pager. The program will have several versions as it is refined over time. The key is differentiating what is the optimal program versus what program can be afforded.

b. **Status update on the Suisun Synthesis –** This effort is in "wrap-up" mode and will be completed shortly. ***Action Item: The SM will wrap up the Suisun Synthesis***.

6. **Planning the next Subcommittee meeting:** the August meeting is canceled. The next regularly scheduled meeting will be Wednesday, October 5th.
    a. **Review of Action items from meeting:** The action items were reviewed.
    b. **Next steps**
7. **Parking Lot of Identified PS Future Agenda Items**
    a. **Brainstorming and options for attracting additional funds for use on the Science Plan**
    b. **Brainstorming on future priorities for the PS**
    c. **EPA nutrient criteria discussion**
    d. **Discuss concept of holding an annual forum on nutrients**
8. **Adjourn:** the meeting adjourned at 12:10

To:	NMS Planning Subcommittee
From:	David Senn
Re:	July 6 2016 Science Program Update

Financial Update

1. Fundraising
    a. Positive developments on several fronts, see bottom of memo for details
        i. P.8 Scenario Modeling: WB funding for $350k, highly likely
        ii. P.7 LSB slough/pond Modeling: 2 dischargers have agreed to fund at the level of 60k/yr for 2-3 years.
        iii. P.9 Discussions with CCCSD are continuing, nothing certain.
        iv. SEP funds to SFEI/RMP, and used to support core modeling, may free up ~120k/yr for 2 years for projects further down the list that were un- or under-funded.
        v. Deltares agreed to $50k match, needs to be 'research-y' for them. Specific project still to be defined
        vi. Possible EPA funding: Project descriptions shared with L Valiela.
2. Advice from PS on billing June hours.
    a. FY16 breakdown: DS originally distributed time between Science Program Coordination and Modeling (80:20 split).
    b. Science Program Coordination funds are consumed, without having covered DS time in June. But sufficient funds remaining in Modeling.
    c. Main issue: DS didn't evenly distribute the modeling effort over the year.
    d. If actual June hours billed, amount could be $25-28k.
    e. Seeking feedback from PS.

Science Program Management

1. Interviews underway for new biogeochemist position(s).
2. Modeler advertisement to be posted next week.
3. While good news on funding for modeling and 2 other projects, HABs work is still not funded (P.10). Ideally would like to fund at the 50-100k level for FY17.

More detailed fundraising update.

1. LSB slough/creek/salt pond modeling: Palo Alto and Sunnyvale have agreed to fund LSB slough/salt pond modeling work, $60k for FY17. We developed project description and a plan that distributed the work over 2-3 years. Sunnyvale also received approval to fund FY18, and Palo Alto indicated that this would also likely be possible. So far, San Jose has been luke-warm on funding this work.
    a. Next steps
        i. With the 2-3 year work plan, the current FY17 budget is enough to justify getting started. There's a limit to how far we can get with Phase I (hydrodynamic model development and calibration), but with 60k we can reach a natural and significant milestone - a functioning model that works better in some places than others (and could possibly even work very well, with some luck), with a refined calibration/validation reached in Phase II.
        ii. SCVWD, others. In addition to NMS, the initial hydrodynamic work will serve as a foundation for other efforts that need modeling, perhaps most currently pertinent being considerations of how different recycled water scenarios will influence the LSB salinity regime, and transport/mixing of any brine plumes discharged to the LSB.
        iii. South Bay Salt Pond Restoration Project (SBSPRP): We've been in touch regularly with the SBSPRP folks, and presented at their annual science meeting last October. The issue of 'co-management of salt pond operations and wastewater derived nutrients' is now named among the SBPSRP's science priorities. If they have an official RFP, I imagine we'll be in a competitive position for funding b/c of the on-going NMS work in the area and the science/monitoring gaps that remain unaddressed and are highly relevant to SBSPRP restoration planning and operation considerations. We also plan to be in regular touch with them in the meantime, in case there are less formal paths to funding at a lower level. We are in the process of setting up a meeting with them to update them on results and the slough/salt pond modeling project.
2. $350k, state water board for P.8, modeling/future scenario analysis. WB staff have indicated that this project is likely to go forward, and we have started developing the scope. This funding will be distributed over 2 years, and will support 0.75 FTE/yr.
3. SEP funding, $240k. Although it has not yet been finalized, the Water Board is negotiating a $240k settlement to be directed to SFEI/RMP and used to support

NMS work. If all goes according to plan, this funding will be used to support 'core modeling' distributed evenly between FY17-FY18. This will allow us to use ~$120k in FY17 to fund a couple projects that were a bit further down the list (HABs workshop, data management).

4. $195k for Suisun/Delta modeling. DS and RH met with CCCSD last week (Lori and Mary Lou). Although still not final, they indicated that it's likely CCCSD will support this modeling work, distributed over FY17-FY18.
    a. Next steps
        i. Lori is meeting with senior management next week, and, if necessary, will set up a meeting for sometime in the next 2 weeks for us to present the project to Roger and others.
        ii. We're following up with RegionalSan/Lisa to see if they are able to also provide some support
        iii. Also following up with Sam Harader from Delta Science Program. At the June NMS SC meeting I asked Sam if DSP might be able to get behind this, and he said we should talk. He's on vacation, with a message in his inbox asking for us to talk.
5. $50k/yr, 2 years, match from Deltares (modeling firm from Netherlands). Deltares wrote us a few weeks ago and said they will do a 1:1 match with us on a project of mutual interest/need. The exact project and terms still need to be decided.
6. EPA funding. Following up on Tom's conversation with EPA/DaveSmith, we've had several discussions with Luisa Valiella to identify funding opportunities through EPA. We've prepared a few 1-pagers for Luisa. The idea is that, with a few back and forths on edits, these descriptions can be used internally to identify and hopefully secure EPA funds. The time lag before anything bears fruit will be ≥6 months.

NMS Fundraising and Outreach Strategy

Strategic Overview 2017-2019

Operating Plan 2017

Prepared for the Nutrient Management Strategy Steering Committee

Draft Version. First Draft June 2016; finalized XXX 2016

1. INTRODUCTION

This document is a strategic review of the fundraising and outreach goals and objectives the San Francisco Bay Nutrient Management Strategy (NMS). It includes a 3-year projected outlook and the operational plan for fiscal year 2017 (FY17).

The plan is premised on the fact that current funding levels (~$1.3 million) are insufficient to answer nutrient-related management questions in the Science Plan as prioritized by regulators, science experts, and the NMS Steering Committee. Further, limited funds have been identified for the development of nutrient load management strategies, under the presumption controls will be likely required at some point in the future to manage an expanding regional population within a sensitive ecosystem. Additional funding will likely be required from grants, local sources, and state and/or federal legislation.

2. GUIDING PRINCIPLES OF OUR FUNDRAISING STRATEGY

This fundraising strategy is informed and guided by the needs of the NMS Strategy, which articulates nutrient-related management objectives for San Francisco Bay and drives development of the Science Plan.[1] Just as our Science Program work enlists top-level scientists who can answer critical management questions, so is our fundraising strategy designed to target funding sources and partners who can most dramatically impact the program.

To this end, the guiding principles for this 3-year strategy:

1. Attract public funds for SF Bay nutrient research, to a level on par with comparable estuaries.
2. Coordinate and influence existing monitoring programs to achieve economies of scale, collect necessary data with limited funds, and enhance regional collaboration.
3. Secure new funding from stakeholders currently unaffiliated with the NMS.
4. Work with existing stakeholders to identify special projects of high priority to both the NMS and individual agencies.

Fundraising and outreach efforts will be initiated and led by the Program Coordination team - drawing expertise and management-level contacts from Steering Committee members and Science Program contacts.

3. GOALS AND OBJECTIVES

The goals for the next three years are:

- Enable full implementation of the NMS Science Plan, to answer identified nutrient-related management questions for San Francisco Bay.

[1] San Francisco Bay Regional Water Quality Control Board. 2012. *San Francisco Bay Nutrient Management Strategy*. Available at http://sfbaynutrients.sfei.org

- Secure funds and partnerships necessary to ensure long-term funding of the USGS nutrient monitoring program, or a currently undefined successor program.
- Fund long-range scenario planning for the purposes of potential nutrient reduction efforts and the regional/state/national partnerships necessary for implementation.

The objectives for the next three years are:

- To diversify income streams from sole reliance on funding by the San Francisco Bay Regional Monitoring Program (RMP) and Watershed Permit, through increased in-kind services, new grants, special projects with existing partners, and legislation-based funding.
- To more effectively engage existing stakeholders with access to new funds or funding networks.
- Enter into MOU's with partners to secure the long-term future of the nutrient monitoring program.

4. BUSINESS ASSUMPTIONS

In formulating this plan, we made certain business assumptions:

- The NMS will continue to have significant programmatic impact, in terms of implementing a science program capable of answering necessary management questions.
- The NMS will continue to maintain equivalent or greater support from the San Francisco Bay Regional Water Quality Control Board (Regional Board) and Steering Committee members.
- The NMS Science Program will continue to be housed at the San Francisco Estuary Institute, using external specialists, as appropriate.
- The economic climate in the Bay Area and US will not deteriorate significantly from its current status.

5. FUNDRAISING STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS

5.1. Strengths

- The quality of NMS Program Staff, housed primarily at the San Francisco Estuary Institute (SFEI), is exceptional and the Science Program claims world-class scientists and technical specialists as partners and collaborators.
- The NMS Steering Committee is comprised of regional leaders in water quality regulation, resource management and regulated entities.
- The NMS Science Program Manager has fostered incredible partnerships with agencies, research institutes and universities, allowing unprecedented collaborations and grant opportunities.
- There are strong, effective ties between NMS Program Staff and the Steering Committee, sufficient for Steering Committee members and partners to serve as NMS ambassadors.

5.2. Weaknesses

- The NMS is dependent on two main funding sources. Fundraising has not to this point been a major priority and capacity and expertise is limited.
- The NMS has weak recognition outside its core constituency of wastewater agencies and a handful of partner agencies.
- Staff members working directly on the NMS are primarily scientist and project managers with little experience tapping external funding resources from disparate sources.
- NMS staff members have limited time for fundraising and need to strike the right balance between Science Program implementation, committee maintenance, fundraising, and coalition building.

5.3. Opportunities

- There is unified agreement among Steering Committee members, partner agencies and informed observers that the regional nutrient monitoring program, led by the USGS, is under threat and a replacement or supplementary funding is required.
- Close ties with nationally-recognized experts in applicable fields enhances collaboration opportunities and the likelihood of securing competitive grant funding.
- Growing awareness, regionally and nationally, that infrastructure, including wastewater, is aging and in need of investment and re-imagination to achieve multiple needs and benefits.
- Access to regional leaders enhances the potential for state legislation or public grant funding, based on the nexus between wastewater, SF Bay ecology and sustainability.

5.4. Threats

- The USGS monitoring program for nutrients, the major source of data for the NMS, is outside our control and may be canceled, resulting in major impacts to finances and data collection.
- Litigation would constrain or eliminate opportunities for fundraising and collaboration.
- Drought, climate change and other regulatory drivers could compete with nutrients for the attention of water and wastewater managers, along with associated funding.

6. EXISTING SUPPORT

During FY16, NMS revenues totaled $1.28 million, received from three sources: the RMP, Watershed Permit and Program Coordination support from Bay Area Clean Water Agencies (BACWA).

6.1. Regional Monitoring Program

The RMP contributed $300,000 to the NMS budget in FY16, though $400,000 was originally allocated. This funding reduction reflects project prioritization and budget shortfalls in the RMP program, while the

intent is for the RMP to contribute a minimum of $400,000 in FY17 and beyond. This source of funding is variable, however, based on needs of the overall RMP budget and competing priorities.

Additional nutrient-related contributions from the RMP include support for USGS water-quality sampling in the San Francisco Bay. This USGS program, which began in 1969, collects monthly samples between the South Bay and the lower Sacramento River to measure salinity, temperature, turbidity, suspended sediments, nutrients, dissolved oxygen and chlorophyll a. The RMP contributes approximately 20% of the resources necessary to support the USGS data collection program. These contributions are not reflected in the NMS budget, though the San Francisco Bay Nutrient Management Strategy highlighted the need for sustainable funding of a long-term nutrient monitoring program.[2]

The USGS program is subject to considerable funding constraints, posing a threat to our ability to monitor long-term water quality trends. A programmatic and funding priority of the NMS is to secure lasting funding of the USGS monitoring program, or a comparable successor program.

6.2. San Francisco Bay Watershed Nutrient Permit

The Watershed Permit (Order No. R2-2014-0014) was adopted by the Regional Board on April 9, 2014 and expires on June 30, 2019. This Order requires thirty-four (34) wastewater dischargers to contribute $880,000 per year towards studies to assess potential impacts of nutrients on San Francisco Bay beneficial uses. This translates into payments from BACWA to SFEI, for support of the NMS Science Program.

This amount was considered appropriate by the Regional Board to support initial science plan development and implementation of receiving water monitoring for nutrients. During the adoption process of this Order, however, it was recognized that additional funds would be required to answer management questions within a reasonable time period and that reassessment of the requisite funding level may be required. To date, formal discussions of reconsidering the funding level have not taken place. In the event the Regional Board and BACWA negotiate either an amendment to the existing Watershed Permit or amended terms for the subsequent 2019 reissuance, the Science Program Manager will identify funding needs to answer priority management questions, to assist inform this process.

6.3. Program Coordination Support

In March 2016, the NMS Steering Committee awarded a 1-year contract to SFEI of $100,000, provided by BACWA, to fund enhanced program support, including meeting facilitation, fundraising, stakeholder engagement, and scenario planning for potential nutrient load management options. Development and implementation of this Fundraising Plan is included within this work effort.

[2] San Francisco Bay Regional Water Quality Control Board. 2012. *San Francisco Bay Nutrient Management Strategy*. Available at http://sfbaynutrients.sfei.org

Fundraising and scenario plan development are intended as the main work efforts under this contract, which is not at this time slated for renewal in FY18. Expect those activities supported through this 1-year effort to become incorporated elements of the NMS program, with project management and stakeholder engagement representing formal elements of the Science Program, while on-going fundraising and nutrient load management planning will be supported through planned support efforts.

7. PLANNED SUPPORT

From FY17-FY19, the NMS Science Program anticipates support from the RMP and Watershed Permit consistent with the amounts reflected above - $400,000 and $880,000, respectively. The NMS Science Plan, however, estimates this represents about half the funds necessary to support a program intended to answer identified management questions. Independent expert reviewers have also identified the existing budget as a major impediment to successfully implementation of the Science Program. For example, in FY17, $2.3 million in projects were identified as high priority needs - exceeding the available budget by approximately $1 million. To answer all the management questions within a reasonable (~10 year) time horizon, a $5 million budget may be more appropriate.

Over the next three years, funding shall be sought to address three (3) primary goals:

1. Address identified gaps in the NMS Science Program budget
2. Ensure the continuation of a long-term monitoring program
3. Conduct scenario planning and stakeholder engagement for nutrient load management

To meet these needs, additional funding sources from the following seven (7) categories shall be considered and actively pursued, as appropriate, under the guidance of the NMS Steering Committee.

7.1. Outputs, Desired Outcomes and Milestones

(TO BE COMPLETED PENDING STEERING COMMITTEE FEEDBACK)

Funding Category	Outputs	Outcomes	Milestones
State Funding			
Federal Funding			
New legislation			
Foundations			
Special Projects			
In-Kind Services			

By the September 2016 Steering Committee meeting, updates will be made regarding the short- (1-year) and medium-term (3-year) prospects of new funding through the following six (6) mechanisms.

7.2. State Funding

During the summer of 2016, outreach to the State Water Board, Department of Water Resources and CA Department of Fish and Wildlife will take place, in addition to an overall prospecting process, to explore the various funding mechanisms available through state agencies. This process shall include tabulation of all available funding for aquatic monitoring, such as through the Surface Water Ambient Monitoring Program (SWAMP); examples of projects suitable for Prop 1 funding; options for revolving funds; and other special programs and funds. This effort shall also explore options for supplemental funding mechanisms, such as a Public Goods Charge, as a means to pay for future water investments.

7.3. Federal Funding

During the summer of 2016, outreach will take place to EPA Region 9, EPA's Water Infrastructure Resiliency Finance Center at Cal State Sacramento, the National Oceanic and Atmospheric Administration, and US Fish and Wildlife Service, to assist identifying existing grant funding or innovative funding mechanisms for attracting federal funds, using local matches, where applicable. If time-sensitive grant application opportunities arise, the Steering Committee shall be notified to receive authorization, if significant staff resources are required for the application. All dates of pertinent grant deadlines or other time-sensitive matters shall be tracked and be subject to Steering Committee notification.

7.4. Legislation

Other major estuaries of the nation enjoy large support, via state and federal legislation, for monitoring and implementation of management measures. To date, efforts to expand EPA's San Francisco Bay Water Quality Improvement Fund (WQIF) have sporadically been proposed by Senator Feinstein, which seems to have stalled. And state legislation to fund monitoring projects outside the Delta has become increasingly scarce in California. A concerted effort of NMS Steering Members and staff is necessary if we wish to advance state and/or federal legislation to meet fundraising goals.

Over the summer of 2016, outreach shall occur to appropriate legislative contact to prospect potential sponsors and gauge interest. Over the summer and fall appropriate steps will be made to determine if funding requests to the state legislature are timely and likely to attract support. In parallel, efforts shall be made to reinitiate efforts to either expand the WQIF in a manner potentially beneficial to the NMS, or strategize with legislative aids on new federal funding mechanisms.

7.5. Foundations

Foundation funding for the purposes of conducting regulatory-related science is generally elusive. Funding requests more likely to spark interest among the foundation community are those which strive to seek consensus for, and build momentum towards, implementation of wide-scale multi-benefit water resource planning efforts. Within the context of the NMS, this could mean working towards Goal #3 identified in Section 8.0 (*Conduct scenario planning and stakeholder engagement for nutrient load management*).

Potential funding requests could involve the following:

- Building multi-stakeholder coalitions (regulators, elected officials, POTWs, NGOs, unions, trade/business coalitions) for the purposes of building support for drastic changes - and associated funding needs - to our wastewater infrastructure.
- Expansion of water recycling facilities and modernization of policies governing their operation.
- Expansion of treatment wetlands, retention and green infrastructure to meet multiple benefits.
- Building legislative and popular support for bonds and taxes to support urban water infrastructure modernization.

In FY17, the Program Coordination team intends to prospect and approach foundations with interests that align with the goals of the NMS. Proposals shall be drafted, following approval and feedback from the Steering Committee or Planning Subcommittee, as opportunities arise. During FY18, foundation support would hopefully be secured to advance longer-term goals of reducing nutrient loads while meeting additional benefits associated with habitat value, regulatory certainty, water resource availability and other sustainability metrics (e.g. greenhouse gas reduction, public amenities, property value).

7.1. Special Projects

As described in Appendix A (*Approach for Incorporating Projects into the NMS Science Program*) the NMS Science Program anticipates some high priority projects will be funded through mechanisms outside the RMP and Watershed Permit. This is expected to occur primarily in one of two ways: 1) particular stakeholders fund special projects for direct management by SFEI, or 2) particular stakeholders fund special projects and co-manage that project with SFEI.

To qualify for incorporation into the NMS program, Special Projects must either be pre-approved by the Steering Committee or subject to approval, determined by majority vote during Steering Committee meetings or through email. The number of projects and the value of those projects cannot be reliably quantified at this time, though the NMS Science Program hopes to secure funding for two (2) Special Projects in FY17. Beyond that point, the need for Special Project status will hopefully diminish as projects external to the NMS become more closely aligned to the NMS planning and approval process. Nutrient-related projects unaffiliated with the NMS are likely to continue, however, and efforts will be made to incorporate those into the NMS through one of the mechanisms identified in Appendix A.

7.2. In-kind Services

Currently, the NMS engages with several partners to conduct field monitoring and scientific studies. These partnerships result in significant expenditure of in-kind services, which generally go unaccounted for in the existing NMS budget. Enhanced accounting of existing and planned in-kind services does not necessarily increase the funding pool to carry out studies, but helps convey an accurate picture of the NMS Science Program and enables better accounting for the purposes of grant solicitation, enhancing the NMS brand, and demonstrating the breadth of contacts among leading experts.

In-kind support may arise when partners are providing matching funds on approved NMS projects, or where nutrient studies external to the NMS are formally accounted for in the NMS, consistent with the approach established in Appendix A (*Approach for Incorporating Projects into the NMS Science Program*). Accounting of existing and new in-kind services and the development of closer partnerships to facilitate completion of necessary studies are expected to result in the following:

- Accounting of FY17 in-kind support
- Projection of in-kind support in FY18 and beyond
- Formal accounting processes for in-kind support within the NMS budget

Appendix A: Approach for Incorporating Projects into the NMS Science Program

Introduction and Purpose

The Nutrient Management Strategy (NMS) is positioning itself as the central clearinghouse for nutrient-related studies in San Francisco Bay. The Steering Committee (SC) and other workgroups are comprised of representatives of most major entities which either fund or conduct nutrient investigations in the Bay. Pursuant to the NMS Charter, SC members have a responsibility to share pertinent information, with reasonable expectation that if they are conducting independent research or investigations, the scope and need of those projects should be coordinated with the SC or Science Program Manager. To date, coordination on a select number of projects has occurred, though several planned or approved projects are known to be taking place with little NMS coordination.

This memo serves to explore ways in which nutrient research projects are formally incorporated into the NMS structure, while permitting a degree of autonomy to the funding or coordinating agency.

Advantages of Incorporating Projects into the NMS

Advantages of incorporating projects into the NMS Science Program structure include:

- *Peer review* - Projects within the NMS Science Program will benefit from multiple forms of peer review, including the Nutrient Technical Workgroup (NTW), external peer reviewers, and Science Advisors. This includes review and oversight from recognized experts in multiple nutrient science and management arenas.
- *Project management efficiencies* - As a project within the NMS structure, management would take place through the San Francisco Estuary Institute's (SFEI) existing structure, thus achieving economies of scale and other benefits associated with all program management activities taking place through SFEI.
- *Regulatory feedback* - Presentation of projects to the SC permits agency feedback (Water Board, US EPA, state and federal fish and wildlife, etc.) serving to inform stakeholders whether the project is a useful investment and designed to answer critical management questions.

Project Incorporation Scenarios

Foreseeable options for incorporating external projects into the NMS structure include the following:

4. Fully Incorporated NMS Special Project

This preferred scenario involves a stakeholder approaching the Science Program Manager or Steering Committee with an interest in funding a special study through the NMS. The presumption follows that this project would be fully funded by the stakeholder(s) with a particular interest in the project that has

not already been prioritized for completion with NMS funds. Such projects are not subject to SC approval as part of the annual work plan process, though the Steering Committee shall review and approve or reject the project as determined by majority vote during Steering Committee meetings or through email, if necessary. Project rejection occurs when a majority of the SC decides the proposed project is outside the scope or interests of the NMS. Pending approval, the project is managed by the Science Program Manager, subject to oversight and review, consistent with provisions established in the NMS charter.

5. Co-Managed NMS Special Project

In instances where project management duties cannot be fully divested from stakeholder to Science Program Manager, though the project proponent appreciates the benefits of incorporation into the NMS structure, external projects may be co-managed by the Science Program Manager and a designee of the project funder. Projects would be presented to the SC, subject to rejection, as described above.

Co-managed special projects would be recognized in the NMS Science Program budget, though project management duties would be delegated on a case by case basis.

6. Affiliated Projects

Where stakeholders are unable or unwilling to manage projects through the NMS, project briefing on a bi-annual basis is expected of all projects undertaken by SC membership agencies and encouraged by all non-SC member agencies. Briefings will preferably take place during SC meetings, though other venues may be considered and updates may be provided to the Science Program Manager directly, in written or verbal form.

Such projects will not be recognized in the Science Program budget but shall be summarized in Annual Reports. On a case-by-case basis, some of these programs may be considered in-kind support, if they are considered to directly benefit the NMS program.

7. Expansion/Modification of Existing Programs

Where existing monitoring programs (i.e. Integrated Ecological Program) are conducting field monitoring efforts, the opportunity for collaboration and modification of those programs to meet multiple benefits, including needs of the NMS. These efforts shall be subject to agreements and will likely be initiated by the NMS Science Program Manager. Briefings will preferably take place during SC meetings, though other venues may be considered and updates may be provided to the Science Program Manager directly, in written or verbal form.

Such projects may be recognized in the Science Program budget, on a case-by-case basis, depending on the level of support provided by the NMS. All such efforts shall be summarized in Annual Reports.

NOTE: We are proposing to shift the meeting to a new date in October

San Francisco Bay Nutrient Management Strategy (NMS) Steering Committee Meeting

Date/Time: Oct X, 2016, 9:00 AM to 3:00 PM

Location: SF Bay Regional Water Board, Oakland, CA

Facilitator: Phil Trowbridge

AGENDA

	Agenda Item	Lead	Time
1	**Welcome, Introductions and Agenda Review**	PT	9:00-9:10
2	**Action items**	DW	9:10-9:20
3	**Program Update:** ● Science Program and Financial update ● Planning Subcommittee update *Materials*: TBD	IW DS	9:20-9:45
4	**Technical Update - Science Program** ● Review of Science Plan addendum ● Approve guidance document for retaining external advisors ● TBD ● Q&A discussion *Materials*: TBD	DS and staff	9:45-10:15
5	**Discussion Item: HABs: Multi-Year Plan*** ● TBD *Materials*: TBD	DS	10:15-11:00
	Break		11:00-11:15
6	**Discussion Item: Monitoring Program Development*** ● TBD	DS	11:15-11:45

	Materials: TBD		
7	**Discussion Item: Alternatives Analysis/Scenario Planning*** ● Presentation of approach and schedule for outreach ● Q&A/Feedback *Materials*: Draft Scenario Planning approach/outline	IW	11:45-12:30
	Lunch		12:30-1:00
8	**Discussion Item: Nutrient Management activities; Presentation of EBMUD WQIF project, HDR** *Materials*: TBD	Jun, EBMUD	1:00-1:45
7	**Discussion Item: Plus/Delta on the NMS after two years** Goals: Well-structured dialogue to discuss pros/cons and opportunities for improvement	PT	1:45-2:30
10	**Other Business** ● Updates from other activities ○ Region 5, workshop ● Other		2:30-2:50
11	**Action Items and Wrap-up**		2:50-3:00
	Adjourn		3:00

PARKING LOT: Topics to add to meeting agenda when appropriate.

- Findings from Regional San's studies
- Periodic updates on Assessment Framework
- Monitoring Program Development
- Letter from USGS regarding NMS donation for USGS research vessel

NOTES:

- *Public comment periods will be accommodated at the end of each agenda item (excluding item 1). The duration of each comment period will be at the discretion of the meeting facilitator.*
- *Breaks will be taken at the discretion of the meeting facilitator and the Steering Committee.*

Scenario Planning of Nutrient Management Strategies for San Francisco Bay

Draft outline for stakeholder feedback // June 2016 // Prepared for the SF Bay NMS

The Nutrient Management Strategy (NMS) Steering Committee has requested the development of a report that analyzes a range of potential nutrient load reduction strategies. This outline serves to introduce not only a report structure for presentation of implementation alternatives, but also a scenario planning-based approach for considering future states reflective of stakeholder priorities and the critical uncertainties for nutrient management in San Francisco Bay. We propose to use this scenario planning approach as a vehicle for meaningfully gathering stakeholder input, early identification of both potential opportunities and challenges, and revealing fundamental information or data gaps that must be addressed over the next several years.

Through careful outreach to NMS stakeholders the desired outcome by the Spring of 2017 is to generate and analyze an initial set of scenarios and identify the critical needs for further analysis. A key output from this effort will be a multi-year workplan for addressing information needs. Rather than merely compile the known implementation alternatives the intent is to establish the base of a long-term strategy for planning in the event nutrient load reductions are necessary, taking into account the myriad other forces influencing urban water management in 21st century California.

Scenario Planning is a systematic method for thinking creatively about possible complex and uncertain futures. The central idea of Scenario Planning is to consider a variety of possible futures that include many of the important uncertainties in the system, rather than to focus on the accurate prediction of a single outcome.[1] Since the uncertainties associated with nutrient management in SF Bay are numerous and hardly restricted to the scientific questions associated with water quality impairment, scenario planning offers hope that critical drivers will be considered under a range of disparate yet plausible scenarios.

The range of complex and uncertain forces associated with nutrient management, including ecosystem effects, stakeholder dynamics, and other water resource management priorities, demand a measured approach - aimed at thoughtfully soliciting stakeholder feedback and generating a combination of possible futures. This process intends to provide flexibility in planning, by offering a range of options with various degrees of similarity and overlapping common elements. Scenario planning also serves as a productive means for maintaining engagement among stakeholders, identifying areas of agreement among highly complex and historically divisive problems, and for prioritizing amongst diverse uncertainties.[2]

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[1] Peterson, G.D.; Cumming, G.S.; Carpenter, S.R. 2003. *Scenario Planning: A tool for conservation in an uncertain world*. Conserv. Biol., 17, 358–366.

[2] Scott, C.A., et al. 2012. *Scenario planning to address critical uncertainties for robust and resilient water–wastewater infrastructures under conditions of water scarcity and rapid development*. Water 4 (4), 848-868

1. **INTRODUCTION**

    a. Current state of nutrient management for San Francisco Bay

    b. Challenges to scenario planning for nutrient load reduction in the Bay Area (*summary of challenges for identifying the focal issue - in-depth discussion of challenges to follow*)

        i. Nutrient load reduction is the focal issue (*but there are others*)

        ii. Determining the appropriate planning scope (*e.g. treatment-only vs. IRWM*)

        iii. Stakeholder- and science-driven uncertainty

    c. Research objectives

        i. Identify key forces

        ii. Prioritize amongst diverse uncertainties

        iii. Bring stakeholders into agreement over complex and potentially divisive issues

        iv. Produce conceptual infrastructure results under scenarios that reflect what stakeholders believe are the critical uncertainties for nutrient management, as well as sustainable urban water management.

    d. Research assumptions (*i.e. point-source reduction priority, NMS-driven, stakeholder extent - who is in and who is out?*)

    e. Organization of this report

2. **SCENARIO DEVELOPMENT** (*process for developing stakeholder-led scenarios*)

    a. Scenario planning background

        i. Traditional scenario planning approaches (*brief lit review*)

        ii. Criteria for good scenarios (*brief lit review*)

        iii. Examples of scenario planning efforts in the water sector (*brief lit review*)

    b. Development of driving forces and critical uncertainties (*description of approach*)

        i. Stakeholder interviews (*individual NMS stakeholders*)

        ii. Stakeholder workshops (*NMS meetings and special workshop/charette in the Nov. 2016 time frame*)

        iii. Stakeholder surveys (*web-form*)

c. Scenario selection logic

i. Classification of driving forces (*the range of factors motivating change with brief analysis of each*)

1. ***Nutrient-based forces*** (e.g. harm to beneficial uses, nutrient load caps, approach to determining impairment & implementing the AF, uncertainty and factors controlling future loading)

2. ***Other pollution-based forces*** (e.g. CECs, microplastics, pesticides)

3. ***Regulatory-based forces*** (e.g. CWA, Porter-Cologne, Antidegradation Policy, water quality trading, scope of permittees subject to regulation)

4. ***Drinking water demand-based forces*** (e.g. population increase, regional economy, variability in demand portfolio)

5. ***Drinking water supply-based forces*** (e.g. existing supplies, potential supplies)

6. ***Cost-based forces*** (e.g. treatment cost, water reclamation cost, potable costs, funding alternatives, available pricing structures)

7. ***Perception-based forces*** (e.g. value of water quality, potable reuse perceptions, resistance to change/regulatory mandates)

8. ***Engineering-based forces*** (e.g. concentrate management, recharge ability, recycled water supply distribution)

9. ***Institution-based forces*** (e.g. regionalization vs. localization, silo-ization of various water agencies, sharing financial/technical resources, governance, uncertainty of stakeholder-driven decision making)

10. ***Macro-forces*** (e.g. federal/state funding, bond ratings, long-term population, drought, climate change)

ii. Ranking of driving forces (*stakeholder-led priorities for consideration*)

3. SCENARIO SNAPSHOTS *(brief narratives to frame potential futures of nutrient management in the Bay Area)*

Nine (9) straw-man scenarios for consideration are identified below, though other scenarios may be developed through interviews with stakeholders, who will then select up to four (4) for in-depth consideration.

To the extent possible, future scenarios shall be examined at several intervals (e.g. 2030, 2050, 2170), using existing information, present-day loading rates, and knowledge of available treatment alternatives.

Response-Driven Scenarios:

i. ***Keep on Truckin':*** Regulators have not imposed load caps or required any changes in treatment processes. Nutrient loads increase according to population and other socio-economic factors. Acute degradation has not been observed, while monitoring is on-going to track signs of rapid degradation.

ii. ***Slam on the Brakes:*** Regulators pursue Scenario i, though in fall 2023 large phytoplankton blooms in Central and Lower South Bay appear, accompanied by severe HAB-related shellfish toxicity in Richardson Bay and widespread DO-driven fish kills in Lower South Bay.

iii. ***No-Response Response:*** In 2025 signs of moderate Bay-wide degradation has been observed for several years though uncertainty and indecision among stakeholders has failed to result in actionable decisions or regulations. Shortly thereafter, action by US EPA and/or citizen groups requires a 60% reduction in TIN loading by 2030.

Regulatory-Driven Scenarios:

iv. ***Across the Board Treatment***: In 2020, nutrient loading from all sources has been capped for all applicable NPDES permit holders at 2015 levels. Mandated load reductions are obtained from each individual NPDES permit holders through plant optimization and treatment only.

v. ***Share the Load: Treatment Only***: Nutrient loads capped per Scenario iv. Load reductions are attained at the sub-embayment scale, using plant optimization and treatment approaches only, among applicable dischargers. Funding and implementation is facilitated through nutrient trading approaches and/or other collaborative governance structures.

vi. ***Share the Load by Any Means Necessary***: Loads capped per Scenarios iv and v. Load reductions attained at the sub-embayment scale, using a range of alternatives, including plant optimization and treatment, wastewater recycling, green infrastructure, on-site waste management. Funding and implementation is facilitated through nutrient trading approaches and/or other collaborative governance structures.

Water Supply/Demand-Driven Scenarios:

vii. **Desperate Times, Desperate Measures:** Although California has experienced some years of average precipitation, by 2022 the state has suffered through ten years of chronic drought and is considering a mixture of mandated and voluntary fixes amounting to wholesale water rights reform and truly integrated water management for achievement of multiple benefits.

viii. **Reduced-Discharge:** In 2018 the state legislature passes SB-163, as currently drafted, requiring gradual reduction in discharge of treated wastewater. By 2033, all POTWs must beneficially reuse, to the maximum extent practicable, 50% of treated wastewater otherwise intended for discharge through ocean or bay outfalls.

ix. **No-Discharge:** In 2018 the legislature passes the original draft of SB-163, requiring gradual elimination in discharge of treated wastewater. By 2036, all POTWs must beneficially reuse 100% of treated wastewater otherwise intended for discharge through ocean or bay outfalls.

4. AVAILABLE OPTIONS (*options available to enable scenario realization*)

a. **Point-source nutrient reduction -** (*each to include summary, opportunities and constraints, treatment performance estimates, high-level cost estimates, necessary evaluations*)

i. Nutrient Removal Technologies (synthesis of HDR analysis)

ii. Wastewater Recycling (i.e. IPR, DPR, agricultural use)

iii. Green Infrastructure (i.e. treatment wetlands, horizontal levee)

iv. On-site Waste Management

v. Others

b. **Non-point source nutrient reduction**

i. Agriculture (i.e. runoff management, nutrient management plans)

ii. Stormwater (i.e. recharge and infiltration, green infrastructure)

c. **Institutional/Governance strategies**

i. Nutrient Trading

ii. Recycled water policies

iii. Enhanced regionalization of POTW management/financing/technology

5. SCENARIO DETAILS (*data-driven analysis of future scenarios*)

For each considered scenario, examine the following

a. Assumptions

b. Regulatory considerations

c. Technology-based options (integration of technological options suitable for this scenario)

d. Institutional strategies (integration of institutional strategies suitable for this scenario)

e. Governance changes (integration of governance changes suitable for this scenario)

f. Anticipated nutrient load reductions/ambient concentrations

g. Ancillary benefits (sustainability metrics, e.g. habitat, carbon, urban amenities)

h. Precedent for implementation (national or international examples/case studies)

i. Driving forces

ii. Implementation plan (how did they do it)

iii. What was the result?

iv. Factors of success/failure & lessons learned

i. Capital costs

j. On-going costs

6. OUTCOMES AND CONCLUSIONS

Knowledge gaps and recommendations - Main conclusions and future work plan

7. NEXT STEPS

a. Examination of significant barriers to innovation and implementation (FY17-18)

   i. Prepare opportunities/constraints analysis in consultation with experts

   ii. Consider jurisdictional, regulatory and governance fragmentation

   iii. Examine models for change (e.g. Massachusetts Water innovation Initiative)

   iv. Detailed review of available funding mechanisms

b. Convene experts with experience in regional nutrient management plan implementation and wastewater innovation for multiple benefits (FY18-19)

c. Prioritize fundraising for implementation planning (FY18-19)

d. Consult experts on appropriate financing/governance models (FY18-19)

e. Develop proposals in consultation with stakeholders on alternative governance/institutional arrangements, where applicable (FY19-20)

8. APPENDICES

a. Acknowledgements

b. List of Acronyms

c. References

d. HDR Treatment Report (if available)

a. Technical Appendices, e.g., detailed analysis of credit trading options

Sherry Hull

From: Sherry Hull
Sent: Sunday, July 10, 2016 5:08 PM
To: Sherry Hull
Subject: EPA Proposes Greater Protection from Selenium in SF Bay & Delta

-------- Forwarded Message --------
Subject:FW: U.S. EPA Proposes Greater Protection from Selenium in San Francisco Bay and Delta
Date: Fri, 1 Jul 2016 17:17:19 +0000
From: Johnson, Bill@Waterboards <Bill.Johnson@waterboards.ca.gov>
To: Lorien Fono (lfono@bacwa.org) <lfono@bacwa.org>, Williams, David@@bacwa.org <dwilliams@bacwa.org>

As far as I know, most, if not all, Bay Area POTWs can't meet EPA's proposed Se criteria end-of-pipe and won't qualify for dilution credits because ambient Se exceeds the proposed criteria. My hope is that together we can head off this problem before it turns into a permitting nightmare. I'll talk to Naomi and Barbara about what we can do here on our end.

Bill Johnson
Senior Environmental Scientist
San Francisco Bay Regional Water Quality Control Board
510-622-2354

From: U.S. Environmental Protection Agency [mailto:noreply-subscriptions@epa.gov]
Sent: Friday, July 01, 2016 9:35 AM
To: Steenson, Ross@Waterboards
Subject: U.S. EPA Proposes Greater Protection from Selenium in San Francisco Bay and Delta

For Immediate Release: July 1, 2016
Media Contact: Michele Huitric, Huitric.michele@epa.gov

U.S. EPA Proposes Greater Protection from Selenium in San Francisco Bay and Delta

Threatened and endangered species at risk from selenium

SAN FRANCISCO – Today, the U.S. Environmental Protection Agency proposed a federal Clean Water Act rule to tighten the current selenium water quality criteria for the waters of San Francisco Bay and Delta. The proposed change would better protect aquatic species, including salmon, smelt, and diving ducks, that are dependent on the Bay and Delta ecosystem, from harmful exposure to elevated levels of selenium.

"Reducing selenium in the San Francisco Bay and Delta will benefit the wildlife that are part of this critical ecosystem," said Alexis Strauss, EPA's Acting Regional Administrator for the Pacific Southwest. "This proposal is based on years of scientific study, and will accelerate the restoration of the Bay and Delta."

The Bay and Delta support a significant diversity of fish and wildlife species including federally listed threatened and endangered green sturgeon, Chinook salmon, steelhead trout, delta smelt and the California Ridgway's rail, as well as many migratory bird species that use the estuary as a wintering ground.

Selenium levels from agricultural runoff and oil refinery discharges have been reduced due to previous state and federal regulatory requirements. EPA set selenium limits for the Bay and Delta in 1992, yet the latest research on

bioaccumulation of selenium indicates that the existing federal criteria of 5 parts per billion are insufficient to protect aquatic and aquatic dependent species in these water bodies. Today's proposal calls for more stringent selenium water quality criteria of 0.2 parts per billion, which would be the basis to limit selenium sources through the implementation of state regulations.

Ambient selenium conditions in the Bay and Delta must remain low to sustain healthy populations of fish and wildlife. The population explosion of an invasive clam species, commonly known as *Corbula*, has resulted in a rapid rate of acceleration of selenium accumulation in the food chain of fish and bird species in the Bay and Delta. EPA scientists considered this fact and the latest science on selenium toxicity and accumulation to determine the new and revised criteria for whole body and muscle fish tissue, clam tissue, and water column concentrations.

The proposed rule will be available to the public for a 60-day comment period following publication in the Federal Register. EPA will also host a virtual public hearing on August 22, and in-person public hearings in its San Francisco office on August 23. For more information, including a prepublication of the rule, please visit EPA's website at: https://epa.gov/wqs-tech/water-quality-standards-establishment-revised-numeric-criteria-selenium-san-francisco-bay.

Water Quality Standards: Establishment of Revised Numeric Criteria for Selenium for the San Francisco Bay and Delta, State of California

Summary

EPA is proposing to revise the current federal Clean Water Act (CWA) selenium water quality criteria applicable to the salt and estuarine waters of San Francisco Bay and Delta to ensure that the criteria are set at levels that protect aquatic life and aquatic-dependent wildlife, including federally listed threatened and endangered species.

EPA promulgated the San Francisco Bay and Delta's existing selenium criteria in 1992 as part of the National Toxics Rule (NTR), using EPA's CWA section 304(a) recommended aquatic life criteria for selenium at the time. However, the latest science on selenium fate and bioaccumulation indicates that the existing criteria are not protective of aquatic life and aquatic-dependent wildlife in the salt and estuarine waters of the San Francisco Bay and Delta. EPA determined that new or revised selenium criteria in the salt and estuarine waters of the San Francisco Bay and Delta are necessary to protect the designated uses for these waters. Therefore, to protect aquatic life and aquatic-dependent wildlife in the San Francisco Bay and Delta from the adverse effects of selenium, EPA is proposing the criteria in this rule using the best available science.

- Fact Sheet: Proposed Aquatic Life and Aquatic-Dependent Wildlife Criteria for Selenium in California's San Francisco Bay and Delta (PDF) (2 pp, 107 K, June 2016, EPA 820-F-16-006)
- Pre-Publication Proposed Rule: Water Quality Standards; Establishment of Revised Numeric Criteria for Selenium for the San Francisco Bay and Delta, State of California (PDF) (48 pp, 576 K, June 2016)
  (For assistance reading this document, please call Julianne McLaughlin at 202-566-2542.)

Related Information

- Water Quality Standards Regulations: California
- California Toxics Rule

Public Hearings

EPA is offering one virtual public hearing and two in-person public hearings so that interested parties may provide oral comments on EPA's proposed rule. Following a brief presentation from EPA, EPA will accept oral comments that will be limited to three (3) minutes per commenter so each commenter has an opportunity to present his or her views. The hearings will be recorded and transcribed, and EPA will consider all of the oral comments provided along with the written public comments submitted via the docket for this rulemaking.

If you are interested in joining the virtual or in-person hearings, please register using the links below.

- Monday, August 22 6:00 PM Virtual Public Hearing Exit
- Tuesday, August 23 9:00 AM Public Hearing Exit
- Tuesday, August 23 2:00 PM Public Hearing Exit

DRAFT

Executive Board Special Meeting Agenda

SF Bay Regional Water Board / BACWA Executive Board Joint Meeting

July 18, 2016 10:00-12:00 PM

SF Bay Water Board, 1515 Clay Street, St. 1400 Oakland, CA

ROLL CALL AND INTRODUCTIONS – 10:00

PUBLIC COMMENT – 10:05

DISCUSSION/OTHER BUSINESS- 10:10

Topic	Goal	Time
1. Nutrients a. Optimization and Upgrade studies b. NTW meeting c. Steering Committee d. Assessment Framework technical review and next steps	• Report-out from members facility report workshop; schedule next workshop with RWB • Follow up from NTW meeting and Steering Committee meeting • Next steps on technical review by BACWA consultant	10:15
2. Collection Systems issues	• PSL survey results • Collection system performance metrics • Who will be leading collection systems regulation after Lila's retirement?	10:50
3. Drought/Recycling	• Update on Prop 1 proposal • State General Order – enrolling 96-011 permittees over next three years • SB163 (Hertzberg) – Next year	11:00
4. Shallow Water Discharge Permitting	• How to facilitate wetlands projects	11:20
5. EPA Selenium Criteria	• Next steps to respond to proposed EPA criteria	11:30
6. Microplastics and CECs	• Recap from SFEI microplastics workgroup • Next steps on State Pilot CECs monitoring	11:40
7. Risk Reduction	• Summer meeting for Risk Reduction progress updates	11:50
8. Toxicity	• Updates from LACSD, State Water Board, or EPA	11:55

ADJOURNMENT

To: BACWA Board

From: BACWA Executive Director

Subject: Topics for Pardee 2016

Below is a listing of potential topics for our Pardee Technical Seminar in October. Please review and be prepared at the Board meeting on Friday the 15th to indicate any topics that you feel **do not warrant discussion at Pardee**. Also feel free to identify other topics that I may have missed.

Potential Topics for the Pardee Technical Seminar

1. **Financial Projections**
    - **a.** FY 17 budget status
    - **b.** 5 Year Plan update
    - **c.** Agency costs for increased funding for the science
2. **Membership**
    - **a.** Classes of membership
    - **b.** Membership outside the Region 2 jurisdiction
    - **c.** Brainstorming ideas for enhancing service to members
3. **Nutrients**
    - **a.** Optimization/Upgrade Status Updates
    - **b.** No Net Loading cost update
    - **c.** Second annual trending report
    - **d.** Next watershed permit negotiations – next steps for BACWA
        - **i.** Increase NMS funding in exchange for permit extension
        - **ii.** Equitable rewards for early actions
        - **iii.** How will "alternative" projects such as water recycling impact loads over the next ten years
    - **e.** State of the science – update from David Senn
4. **Drought/Water Recycling**
    - **a.** BACWA position on BARR
    - **b.** BACWA goals and strategy for increased recycled water
    - **c.** Transition to State General Order
    - **d.** Update on Prop 1 proposal
5. **State Toxicity Plan**
6. **Shallow Water Discharge Prohibition – how to permit near shore discharges**
7. **EPA Selenium Criteria**
8. **RMP Update**
    - **a.** CECs
    - **b.** Microplastics
    - **c.** Selenium strategy

    d. Update on funding via Alternate Monitoring Plan and SEPS
9. **Climate Change Issues**
    a. CARB survey for short-lived Climate Pollutants
    b. BAAQMD Clean Air Action Plan
10. **Chlorine Residual Compliance**
11. **PCB/Hg Watershed Permit reissuance (discuss with Regional Water Board)**
12. **Regulatory Issue Matrix**

SFEI AQUATIC SCIENCE CENTER 4911 Central Ave Richmond, CA 94804	**RMP Microplastic Workgroup** June 29th, 2016 10:00 AM – 4:00 PM

REMOTE ACCESS
Join the meeting: https://join.me/sfei-conf-cw1
On a phone or tablet, launch the join.me app (https://join.me/app) and enter meeting code: sfei-conf-cw1

Join the audio by phone:
United States - San Francisco, CA +1.415.655.0381
Access Code 943326397#

AGENDA

1.	**Introductions and Goals for Today's Meeting** The goals for today: ● Agree on Management Questions ● Identify Data Gaps ● Develop a Strategy for Monitoring Microplastic in the Bay	10:00 Philip Trowbridge
2.	**Elements of the Strategy, Conceptual Model and RMP Management Questions** Review of the RMP work to date, impetus for strategy development, and presentation of draft Management Questions Meeting Materials: ● Factsheet ● Conceptual Model ● Draft Management Questions <u>Desired Outcome</u>: Provide an overview, and frame the discussion for the day.	10:10 Rebecca Sutton
3a.	**MQ1: How much microplastic pollution is there in the Bay?** **Development of Microplastic Analytical Techniques - BACWA** Wastewater treatment plant effluent presents unique challenges to developing a reliable analytical method for microplastics. This presentation discusses results of BACWA's effort to develop a method that can characterize and quantify microplastic in wastewater treatment plant effluent at a reasonable cost.	10:40 Nirmela Arsem, EBMUD

3b.	**MQ1: How much microplastic pollution is there in the Bay?** **Development of Microplastic Analytical Techniques- USEPA** USEPA is working on method development for analysis of fish tissues and sediment.	11:05 Anna-Marie Cook, USEPA
3c.	**MQ1: How much microplastic pollution is there in the Bay?** **Discussion of Analytical Techniques** Are there readily available techniques that can be used to characterize microplastic in the Bay? If not, what will it take to develop robust methods? How will we validate the methods such that there is confidence in the results? Desired Outcome: Identification of appropriate methods or next steps to develop robust methods to monitoring microplastic in the Bay.	11:25 Group
4.	**MQ2: What are the health risks?** Microplastics may present a risk as a result of physical blockages or the impact associated with chemical exposures from the plastics or contaminants sorbed to the plastic. In addition, microplastics may bioaccumulate. Desired Outcome: Better understanding of risks to human health and aquatic life. Identification of the information gaps for the San Francisco Bay.	11:45 Chelsea Rochman, UC-Davis
	Lunch Break	12:30
5.	**MQ3: What are the sources, pathways, loadings, and processes leading to microplastic pollution in the Bay?** An evaluation of potential sources of microplastic may aid in the identification of potential management actions. With this management question, the RMP hopes to answer questions such as: Are there different loads from different pathways? Are sediments a potential source of microplastic? Desired Outcome: Better understanding of sources and pathways. Identification of information gaps associated with San Francisco Bay.	1:10 Sherri Mason; SUNY; Stephanie Karba, Bren School, UC-Santa Barbara

6.	**Identification of Data Gaps and Discussion of Monitoring Strategy** Currently, there are many data gaps regarding microplastics in the Bay. A draft list of monitoring and special studies to address these information needs has been developed. The group will discuss priorities and phasing of the activities (and any new suggested activities) to develop a multi-year strategy for answering the management questions about microplastics in the Bay. Meeting Materials: ● List of Potential Microplastic Monitoring and Studies for SF Bay <u>Desired Outcome:</u> Multi-year strategy to address information needs related to microplastics in San Francisco Bay	1:55 Phil Trowbridge, Meg Sedlak, and Becky Sutton
7.	**Identification of Next Steps and Action Items**	3:20 Phil Trowbridge
8.	**Adjourn**	3:45

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DATE: June 8, 2016

TO: RMP Microplastic Workgroup

FROM: Rebecca Sutton, SFEI Senior Scientist

RE: Microplastic Management Questions

The Regional Monitoring Program for Water Quality in San Francisco Bay (RMP) conducts special studies and status and trends monitoring to address management needs. Management questions developed through stakeholder input guide the RMP in selecting scientific projects that will be of greatest value to Bay water quality managers and stakeholders.

Provided below are draft microplastic management questions, accompanied by descriptive text that gives a more detailed explanation of the intent of each question. Also provided are RMP management questions that apply to the whole program, for context.

MQ1) How much microplastic pollution is there in the Bay?

> With this question, we address two issues: a) selection or development of appropriate methods for characterizing microplastic pollution, and b) presence and abundance of microplastic within the abiotic and biotic Bay environment. As an emerging contaminant, microplastic sample collection and analysis methods for matrices of interest are still in being developed. Selection or development of methods specifically validated to the matrix of interest is a key consideration for future monitoring studies. Also relevant is the fact that microplastic is a complex mixture of different polymers, particles types, and sizes. Through development of standardized methods, we will be able articulate a clear and consistent definition of microplastic, in terms of both size range and composition, which can be used across matrices.
>
> Microplastic has been identified in Bay surface water as part of an initial, screening study. Other matrices not yet monitored include the Bay water column at depth, ambient and margin sediment, and tissue from wildlife making up different parts of the Bay food web. An evaluation of microplastic in different Bay matrices would develop information on the presence and fate of this contaminant in the Bay environment. Assessments may identify regional or seasonal variation in contamination. Levels of Bay contamination relative to other ecosystems studied using comparable methods can inform prioritization of further monitoring and management actions in the Bay.

MQ2) What are the health risks?

With this question, we address risks to humans and wildlife from microplastic. Risks to wildlife include physical impacts such as blockages in the digestive tract, as well as impacts associated with chemical exposures from the plastic or from contaminants adsorbed to the plastic. Risks will vary among species, and may also vary with plastic particle shape, size, and composition. The potential for bioaccumulation of microplastic and associated contaminants in wildlife may exacerbate risk. Potential human risks may result from exposure to microplastic-associated contaminants via sport fish and shellfish consumption.

At this time, studies linking microplastic exposure to adverse impacts in wildlife via controlled laboratory settings have not resulted in development of specific aquatic or tissue-based toxicity thresholds. Evaluating the developing body of work on this subject can inform prioritization of monitoring and management actions.

MQ3) What are the sources, pathways, loadings, and processes leading to microplastic pollution in the Bay?

With this question, we consider how microplastic ends up in the Bay. Different sources of plastic produce microplastic particles of characteristic composition and shape or type. An evaluation of potential sources of microplastic may aid in identifying potential management actions. An evaluation of pathways of microplastic pollution, such as wastewater and stormwater, necessarily involves selection or development of sample collection and analysis methods validated for the matrix, as noted for Bay matrices (MQ1). Loadings of microplastic via these pathways must be evaluated alongside other identified pathways, including spills and illegal dumping as well as wind transport, and with the *in situ* Bay process of fragmentation of larger plastic debris to form microplastic.

MQ4) Have the concentrations of microplastic in the Bay increased or decreased?

With this question, we address long-term temporal trends, with the specific goal of understanding the forces that lead to any identified trends, including changes in sources (e.g., urban/consumer use of plastic), implementation of management actions relating directly or indirectly to control of plastic or microplastic, and other, larger variables such as climate change and drought. Pollution trends may vary with particle size and shape, potentially reflecting different trends relative to sources or pathways.

MQ5) Which management actions may be effective in reducing microplastic pollution?

With this question, we explore alternatives for reducing contamination. Source control is typically found to be the most effective and least expensive pollution prevention option, and may be the primary tool applied to reduce microplastic pollution. The federal ban on plastic microbeads in rinse-off personal care products is one example of microplastic-specific source control that will soon take effect. However, the sources of microplastic to the environment are diverse, and different sources or particle types may be more amenable to source control than others.

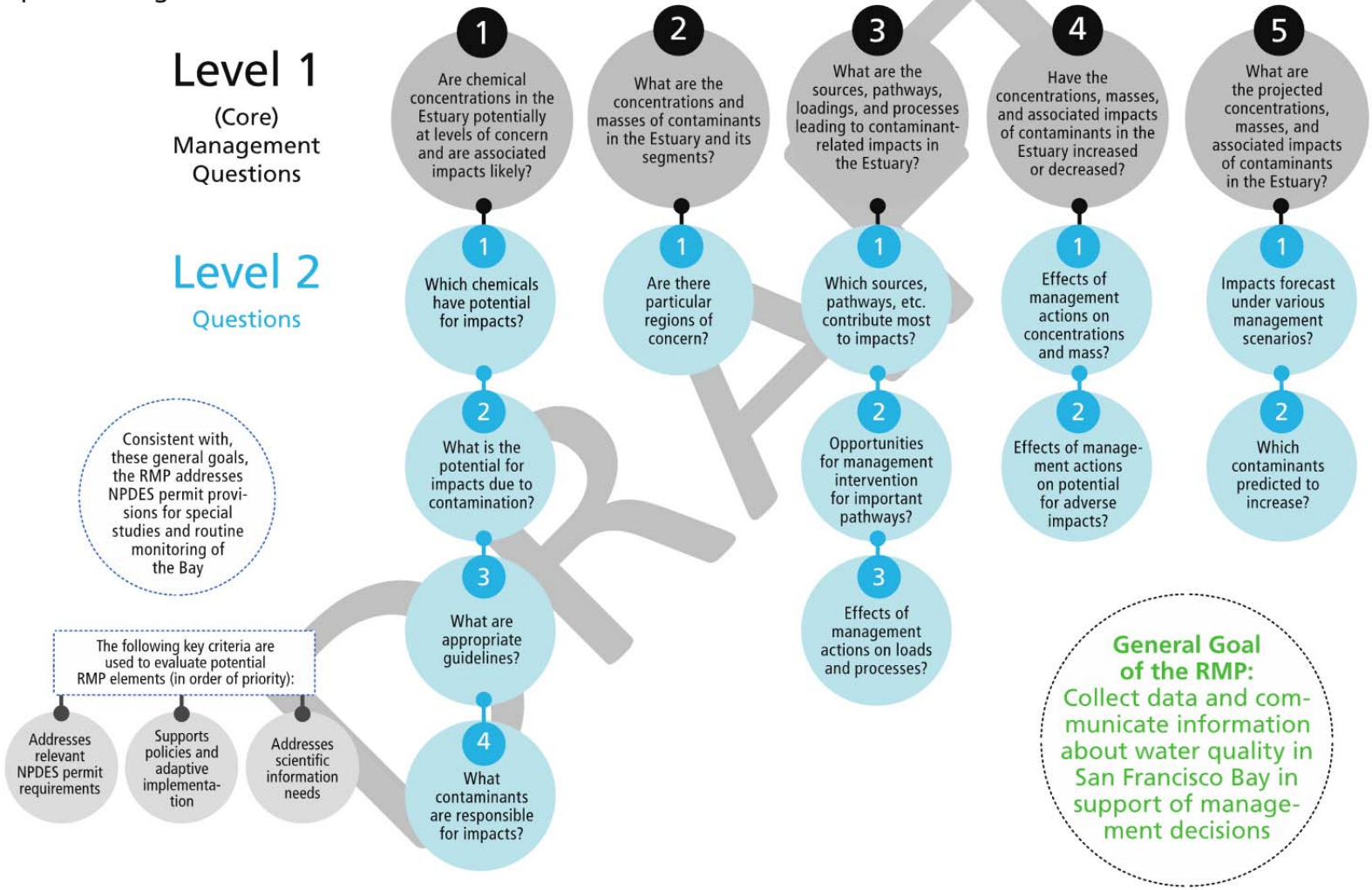
Current wastewater treatment technologies may be assessed for their existing ability to reduce microplastic loads to the Bay. Treatment technologies for both wastewater and stormwater that are likely to be implemented in the future for other reasons may also be assessed for the potential co-benefit of reducing microplastic pollution.

Management actions can be evaluated based on projected impacts and cost to help prioritize options for implementation. Measured impacts of current management actions may be assessed over time via MQ4.

Next Page: For reference, core RMP Management Questions (see RMP 2014 Update, pg 14)

RMP GOAL AND MANAGEMENT QUESTIONS

RMP stakeholders have articulated an overarching goal and a tiered framework of management questions that organize and guide RMP studies. The management questions are closely linked to existing and planned regulations.



Legend: Green dot indicates the project provides significant information to answer MQ. Yellow dot indicates that the information from the study partially answers the MQ.

Project Name	Project Description	Year	MQ1: How much microplastics is there?	MQ2: What are the health risks?	MQ3: What are sources, pathways, loadings & processes?	MQ4: Have the concentrations of microplastic in the Bay increas./decreas.?	MQ5: Which management actions may be effective in reducing microplastic pollution?	Priority & Comments
Synthesis	Scope would need to be defined; could include synthesis of information on: analytical methods, fate, risks, trends, and current/potential management actions.	2017	Green	Green	Yellow		Green	
Development of robust analytical methods	Focused on matrices lacking robust methods, such as stormwater. Could include method development via an RFP, or facilitation of an interlaboratory comparison. Characterization may lead to source identification.	2017	Green		Yellow		Yellow	
Monitor stormwater	Collect and analyze stormwater from multiple urban creeks during several storms.		Green		Green		Yellow	
Monitor effluent	Collect and analyze effluent from multiple wastewater treatment facilities		Green		Green		Yellow	
Monitor water and sediment	Collect and analyze water and sediment samples to develop better spatial understanding of distribution. Collect and analyze water and sediment samples to develop better spatial understanding of distribution. Water samples may include surface water or water column; sediment samples may include ambient or margin sediment.	Initiating sooner will be helpful for a baseline.	Green	Yellow	Yellow	Yellow	Yellow	
Monitor sportfish and prey fish	Collect and analyze sportfish and prey fish		Green	Green		Yellow	Yellow	
Monitor bivalves	Collect and analyze bivalves			Yellow		Yellow		
Quantify persistent pollutants sorbed to microplastics	Determine levels of PCBs, PBDEs, or other persistent compounds on particles.			Yellow				
Quantify plastic additives in microplastic particles	Determine levels of phthalates, bisphenols, organophosphates or other common components of plastic that pose potential risks to wildlife and/or people.			Green				

Outline of the Microplastic Strategy Report

1. Background on Microplastic
    a. Definition of types of microplastic and sources/uses
    b. Conceptual model of microplastic transport to the Bay
    c. Fate of microplastic in the environment (e.g., water, sediment, and biota)
    d. Monitoring of San Francisco Bay

2.Methods for Sample Collection and Identification of Microplastic
    a. Methods for sample collection
    b. Methods for analysis of microplastic

3.Toxicity of microplastic
    a. Human health
    b. Bay biota

4. Identifying Monitoring Data Gaps
    a. Ambient Bay
    b. Stormwater
    c. Effluent
    d. Sediment
    e. Fish

5. Monitoring Strategy: Multi-Year Plan

6. Current and Potential Future Management Actions
    a. Source Control
    b. Pathway Control

7. Partners and Funding Strategy

8.Appendix: Decision Matrix

Sherry Hull

From: Sherry Hull
Sent: Friday, July 8, 2016 12:00 PM
To: Sherry Hull
Subject: Rebecca - AP inquiry Microplastics
Attachments: Sutton_etal._2016-MicroplasticSanFranBay.pdf

From: Rebecca Sutton [mailto:rebeccas@sfei.org]
Sent: Friday, July 8, 2016 11:01 AM
To: Connor, Mike <mconnor@ebda.org>; David Williams <dwilliams@bacwa.org>
Cc: Warner Chabot <warnerc@sfei.org>; Davis, Jay <jay@sfei.org>; Phil Trowbridge <philt@sfei.org>; Hale, Tony <tonyh@sfei.org>; meg <meg@sfei.org>
Subject: Fwd: Rebecca - AP inquiry

Hi Mike and Dave - Warner suggested that you may wish to see our clarification to a recent media (AP) fact-check inquiry about our 2015 microplastic study, as it relates to the recent SF ban on foamed polystyrene.

Thanks - Becky

---------- Forwarded message ----------
From: **Rebecca Sutton** <rebeccas@sfei.org>
Date: Fri, Jul 8, 2016 at 10:56 AM
Subject: Re: Rebecca - AP inquiry
To: "Har, Janie" <JHar@ap.org>

Hi Janie - Thanks for reaching out! Let me tease apart our most relevant findings for you.

In 2015, the Regional Monitoring Program for Water Quality in San Francisco Bay (RMP) conducted a pilot study that found levels of microplastic in the Bay that were generally higher than other urban water bodies studied in North America.

The average level of microplastic in the Bay was nearly 7 times higher than what was observed in Lake Erie, the most contaminated of the Great Lakes.

Relevant to the focus of your article, 8% of the particles in the Bay were identified as foam, likely derived from foamed polystyrene plastics like the ones targeted by the recent ban.

Since the focus of your article is on foam, our findings on particles in treated wastewater discharged to the Bay are not so relevant. Wastewater doesn't typically contain foamed plastic. Foamed plastic debris usually ends up in the Bay via creeks and storm drains carrying discarded litter.

You can review this fact sheet on our findings for a bit more information:
http://www.sfei.org/microplasticfacts

I'm also attaching our "in press" scientific article on the subject, just in case you need extra documentation.

Hope this helps, let me know if you have any other questions.
Rebecca

On Thu, Jul 7, 2016 at 6:39 PM, Har, Janie <JHar@ap.org> wrote:

> Rebecca, hi!
>
> I'm writing about SF's foam ban and wanted to make sure I report this correctly because I can't read science talk.
>
> Is it accurate to say that in 2015 the San Francisco Estuary Institute reported at least 3.9 million pieces of plastic are going into the bay each day from eight sewage treatment plants? And that's triple the levels in Lake Erie, which is the most polluted of the Great Lakes?
>
> Thanks much! I hope you can get back to me tomorrow!
>
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Microplastic contamination in the San Francisco Bay, California, USA

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ABSTRACT

Despite widespread detection of microplastic pollution in marine environments, data describing microplastic abundance in urban estuaries and microplastic discharge via treated municipal wastewater are limited. This study presents information on abundance, distribution, and composition of microplastic at nine sites in San Francisco Bay, California, USA. Also presented are characterizations of microplastic in final effluent from eight wastewater treatment plants, employing varying treatment technologies, that discharge to the Bay. With an average microplastic abundance of 700,000 particles/km^2, Bay surface water appears to have higher microplastic levels than other urban waterbodies sampled in North America. Moreover, treated wastewater from facilities that discharge into the Bay contains considerable microplastic contamination. Facilities employing tertiary filtration did not show lower levels of contamination than those using secondary treatment. As textile-derived fibers were more abundant in wastewater, higher levels of fragments in surface water suggest additional pathways of microplastic pollution, such as stormwater runoff.

1. Introduction

While plastic pollution of the marine environment has been reported for decades, only recently have estuaries and freshwater systems been a focal point of similar studies (Dubaish and Liebezeit, 2013; Eriksen et al., 2013; Castañeda et al., 2014; Free et al., 2014; Yonkos et al., 2014; Davis and Murphy, 2015). A key component of this pollution, microplastic describes fragments of plastic that are smaller than 5 mm (Thompson et al., 2009; Masura et al., 2015). Sources of microplastic to the environment include microbeads used in personal care products, pre-production pellets used as precursors to manufacture plastic products, fibers derived from clothes and fabrics made with synthetic materials (e.g., polyester and acrylic) or fishing line, fragments from the photodegradation of larger plastic items, and plastic foam particles from polystyrene products or cigarette filters (Fendall and Sewell, 2009; Browne et al., 2011; Eriksen et al., 2013; Free et al., 2014; van Franeker and Law, 2015). Microplastic can enter the aquatic environment through wind advection, stormwater runoff, or illegal dumping of plastic materials (Eriksen et al., 2013). Additionally, both microbeads from personal care products and fibers from synthetic clothing can be washed down the drain and enter wastewater treatment plants, where their small size, buoyancy, and lack of reactivity limits removal, resulting in release via treated wastewater (Browne et al., 2011; NYS OAG, 2015).

Microplastic particles pose risks to wildlife because the particles may be mistaken for food and ingested (Wright et al., 2013). The particles are also small enough that they can be ingested by planktonic organisms and other filter feeders (Browne et al., 2008; Cole et al., 2013). The hydrophobicity and high surface area to volume ratio of microplastic particles leads to sorption of persistent organic pollutants such as polycyclic aromatic hydrocarbons (Teuten et al., 2007). Organisms that ingest microplastic particles may thus receive higher doses of sorbed contaminants, potentially causing additional harm (Wright et al., 2013). Ingestion of microplastic can block the digestive tract, reduce growth rates, block enzyme production, lower steroid hormone levels, affect reproduction, and may lead to greater exposure to plastic additives with toxic properties (Wright et al., 2013).

Despite widespread detection of microplastic pollution in the marine environment, data describing microplastic abundance in urban estuaries and microplastic discharge via treated municipal wastewater are limited. This initial, screening study characterized microplastic in treated wastewater effluent from eight facilities employing a range of treatment technologies and discharging to San Francisco Bay, hereafter referred to as the Bay. Treated wastewater is considered an important

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0025-326X/

pathway for microplastic to enter receiving waters, but only a few studies of this matrix are available (Carr et al., 2016; Mason et al., in review). In addition, this study provides data on microplastic in surface waters of the Bay, the largest estuary on the west coast of North America, which is surrounded by a dense urban population and drains roughly 40% of the waters of California.

2. Materials and methods

2.1. Wastewater

Treated wastewater is discharged to San Francisco Bay from more than 30 different discharge locations. Eight facilities, providing approximately 60% of measured wastewater flows directly to the Bay, permitted researcher access to final effluent sinks or other available ports, allowing us to collect samples. Samples of microplastic discharged from wastewater treatment plants were collected by passing flows of final, treated effluent through 8-in. diameter stacked Tyler sieves with 0.355 mm and 0.125 mm stainless steel mesh, typically for 2 hours during each facility's peak flow. The 0.125 mm mesh has been found to be particularly useful for retention of microbeads discharged to the sewer via use of personal care products (Napper et al., 2015; Carr et al., 2016). A single set of two samples, differentiated by sieve mesh size, was collected in the fall of 2014 at each of the eight facilities. Facilities participated voluntarily, and were selected based on multiple factors, including higher discharge levels, geographic diversity, and range of treatment technologies (secondary vs. tertiary filtration; Table 1). Rate of flow at the point of collection was measured before and after each sample was obtained (to ensure consistency), allowing calculation of number of particles per volume of treated wastewater. Each facility provided the 24-h discharge flow rate for the day of sample collection, allowing estimation of the number of particles discharged to the Bay per day.

In order to remove labile organic material, samples were processed via a wet peroxide oxidation (WPO) based upon a National Oceanic and Atmospheric Administration method (Masura et al., 2015), which has been tested to ensure that the most common plastic materials survive. Briefly, samples were reacted with a 30% hydrogen peroxide solution in the presence of an iron (II) catalyst in order to oxidize natural organic material, leaving the synthetic plastic material behind. Wastewater samples were processed as individual samples according to the collected size classification (i.e., 0.125–0.355 mm or >0.355 mm).

After processing, samples were once again filtered though a stacked sieve set (0.355 mm and 0.125 mm) and rinsed using deionized (DI) water into petri dishes. Given their density relative to that of DI water and most natural materials, floating particles within this medium are assumed to be plastic, a common technique within this field of research (Hidalgo-Ruz et al., 2012; Rocha-Santos and Duarte, 2014). Using a dissection microscope, plastic particles were removed, enumerated, and categorized into five classifications: fragment, pellet (spherical particle), fiber/line, film or foam (Free et al., 2014; McCormick et al., 2014). While instrumental analysis methods such as infrared or Raman spectroscopy are necessary for polymeric identification (i.e., polyethylene versus polypropylene), numerous studies have employed only visual identification for microplastic classification (e.g., Bond et al., 2014; Lavers et al., 2014; Devriese et al., 2015; Rochman et al., 2015; Romeo et al., 2015; Fossia et al., 2016; Hammer et al., 2016; Miranda and Carvalho-Souza, 2016; Nicolau et al., 2016; Peters and Bratton, 2016). Given the source (i.e., wastewater), fibers obtained in this processing would presumably be anthropogenic and derived from textiles, though a portion of fibers observed in wastewater may not be plastic, instead derived from other anthropogenic sources (Remy et al., 2015; Nirmela Arsem, personal communication).

2.2. Surface water

Single surface water microplastic samples were collected from each of nine sites in San Francisco Bay over the course of 2 days in January 2015 (Fig. 1). Central and southern portions of the Bay contain higher levels of litter, including macroplastic debris, than northern stretches, and were the focus of this study (Rubissow-Okamoto, 2014). During sample collection, conditions were calm: the sea state on the Beaufort

Table 1
Microplastic particles present in treated wastewater, and estimates of discharge per liter and per day.

Wastewater treatment plant	Flow[a] (MLD)	Highest level of treatment	Size category (mm)	No. plastic particles by type						No. plastic particles	
				Fragment	Pellet	Fiber	Film	Foam	Total	Per liter[b]	Per day[a]
San José-Santa Clara	310	Tertiary filtration	0.125–0.354	0	0	26	0	0	26		
			≥0.355	0	0	33	0	0	33		
			total	0	0	59	0	0	59	0.047	15,000,000
East Bay Municipal Utilities District (EBMUD)	170	Secondary	0.125–0.354	1	0	11	1	0	13		
			≥0.355	7	0	5	3	0	15		
			total	8	0	16	4	0	28	0.071	12,000,000
Palo Alto	76	Tertiary filtration	0.125–0.354	3	0	24	0	0	27		
			≥0.355	8	0	23	2	0	33		
			total	11	0	47	2	0	60	0.13	9,600,000
Central Contra Costa	110	Secondary	0.125–0.354	21	0	28	0	0	49		
			≥0.355	5	0	10	0	0	15		
			total	26	0	38	0	0	64	0.072	8,100,000
Fairfield-Suisun	45	Tertiary Filtration	0.125–0.354	2	0	43	0	0	45		
			≥0.355	2	0	50	2	0	54		
			total	4	0	93	2	0	99	0.092	4,100,000
East Bay Dischargers Association (EBDA)	190	Secondary	0.125–0.354	1	0	11	0	0	12		
			≥0.355	1	0	9	0	0	10		
			total	2	0	20	0	0	22	0.022	4,100,000
San Mateo	31	Tertiary filtration	0.125–0.354	20	0	24	0	3	47		
			≥0.355	7	0	21	3	0	31		
			total	27	0	45	3	3	78	0.064	2,000,000
San Francisco Airport Sanitary (SFO)	2.3	Secondary	0.125–0.354	5	0	49	0	0	54		
			≥0.355	4	0	42	0	1	47		
			total	9	0	91	0	1	101	0.19	460,000
Total count			total	87	0	409	11	4	511		
Percentage by type			total	17%	0%	80%	2%	1%	100%		

[a] Measured discharge on day of sample collection, used to calculate plant discharge per day.
[b] Calculated using average flow rate at point of sample collection, see Supplementary Content.

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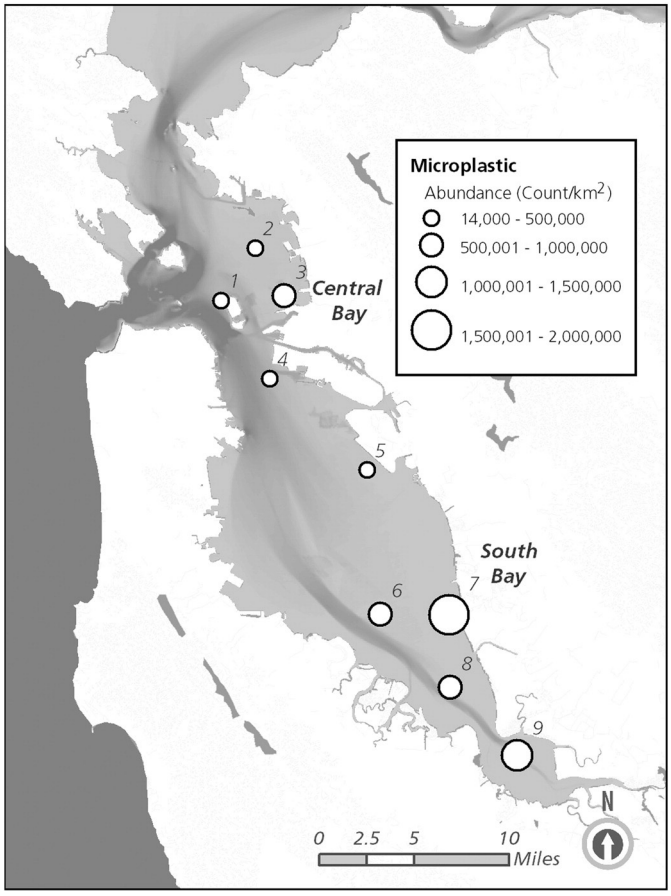

Fig. 1. Estimated abundance of microplastic particles in surface water at nine sites in San Francisco Bay. Site numbers correspond to those listed in Table 2; circles are located at trawl midpoints.

Scale remained between 0 and 2 for all sites. Samples were collected using a Manta Trawl with a rectangular opening 16 cm high by 61 cm wide, and a 3 m long 333 μm mesh net with a 30 × 10 cm^2 collecting bag, a sample collection technique now in common use (e.g., Eriksen et al., 2013; Free et al., 2014; Masura et al., 2015). Sampling took place over the course of 30 min at each site, with tow speeds from 2 to 4 knots and the vessel maintaining a consistent heading. Coordinates were recorded at the start and finish of each trawl to establish tow length; this length, multiplied by the width of the trawl, provided the surface area sampled, allowing calculation of standardized values per square kilometer.

Most samples were collected during flood tides, with two samples, at sites 5 and 9, collected during slack tides. For the central Bay, where tidal exchanges are significant, flood tides may result in reduction of microplastic abundance due to the addition of ocean water with lower levels of urban contaminants; therefore, microplastic abundances measured in the central Bay should be considered lower-bound estimates. Abundances measured in southern stretches of the Bay, where oceanic exchange is significantly reduced, are not expected to be significantly affected by tidal flushing. All samples were placed in sample jars and preserved with 70% isopropyl alcohol.

Nine small fish were collected as accidental by-catch at one site (6). Although fish collection was not planned, the abundance of microplastic in these fish was determined after thorough rinsing to remove external contaminants; results are provided in Supplementary Content.

Surface water samples then went through a pre-processing stage where each sample was visually inspected to remove any obvious larger (i.e., >1 mm) plastic debris, as well as any larger vegetative debris (such as leaves, twigs, seeds, feathers, and insects), which would be difficult to chemically process (as described below). All materials were thoroughly rinsed prior to removal and vegetative debris was discarded. Samples were then subjected to the WPO treatment to remove seston and other labile organic matter, sieved into three different size classifications using 8-in. diameter stacked Tyler sieves of 0.355 mm, 1.00 mm and 4.75 mm stainless steel mesh, and rinsed thoroughly with deionized (DI) water. After processing, all samples and all size classifications were analyzed using a dissection microscope and plastic particles within were removed, enumerated, and categorized as described above.

A single field blank sample, created by rinsing sieves employed during both Bay and wastewater sample collection, and four lab blank samples in which DI water was stored within sample containers for periods of 1–14 days, were processed in the same manner as all other samples. While the field blank sample revealed the presence of four fibers measuring less than 1 mm, the lab blank samples were not found to have any microplastic contamination. The fibers within the field blank are thus most likely derived from sample cross-contamination (e.g., particles that adhered to the mesh bag or the sieves themselves), as lab blank samples would indicate that contamination from the containers, lab or processing was negligible. Nevertheless, field blank contents were subtracted from all sample counts.

3. Results

3.1. Wastewater

The eight San Francisco Bay wastewater treatment plants discharged an average of 0.086 microplastic particles per liter (or 0.33 particles per gallon) and 7 million microplastic particles per day (Table 1). These levels were higher than those found in effluent from nine municipal wastewater treatment facilities in the Midwest and Northeast U.S. analyzed using the same method (0.050 particles per liter and 2 million particles per day; Mason et al., in review), as well as eight southern California facilities analyzed with a different analytical method (all facilities discharged <0.001 particles per liter; Carr et al., 2016). In total, the eight Bay facilities, representing approximately 60% of treated wastewater flows to San Francisco Bay, discharged 56 million microplastic particles per day. If levels of microplastic in effluent from these eight facilities are assumed to be generally representative of the region, an estimated 90 million microplastic particles per day may be discharged into San Francisco Bay. This estimate does not include contributions of microplastic discharged by treatment plants into the Sacramento-San Joaquin River Delta, which ultimately drains to the Bay.

Fibers were the dominant form of particulate pollution in effluent, followed by fragments (Table 1). The San José-Santa Clara Regional Wastewater Facility, which employs tertiary granular filtration, discharged only fibers during sample collection. However, overall there were no consistent differences between the proportions of fibers and fragments discharged by facilities employing secondary treatment only (EBMUD, Central Contra Costa, EBDA, SFO) versus those that included tertiary filtration as well (San José-Santa Clara, Palo Alto, Fairfield-Suisun, San Mateo). Likewise, plants employing tertiary granular filtration did not display consistently lower concentrations of overall microplastic per liter than those employing only secondary treatment technologies.

Comparable numbers of smaller (0.125–0.355 mm) and larger (>0.355 mm) microplastic particles were discharged by most facilities (Table 1). The Central Contra Costa Sanitary District facility was an exception, discharging three times more smaller particles than larger ones.

3.2. Surface water

All nine surface water samples contained microplastic pollution (Table 2). Average abundance for Bay samples was 700,000 ± 600,000 particles/km^2 (range: 15,000–2,000,000 particles/km^2), higher than average measurements from the Great Lakes (Eriksen et al., 2013),

Please cite this article as: Sutton, R., et al., Microplastic contamination in the San Francisco Bay, California, USA, Marine Pollution Bulletin (2016), http://dx.doi.org/10.1016/j.marpolbul.2016.05.077

Table 2
Count, tow length, and abundance of microplastic particles in surface waters at nine sites within San Francisco Bay.

Site	Total count	Tow length, meters	Abundance, particles/km^2
Central San Francisco Bay			
1	26	2855	15,000
2	107	1708	100,000
3	994	1776	920,000
4	188	1655	190,000
Southern San Francisco Bay			
5	438	2302	310,000
6	1192	2017	970,000
7*	3641	2959	2,000,000
8*	1247	2799	730,000
9*	1665	2643	1,000,000

* Samples included considerable bulky vegetation.

the Chesapeake Bay (Yonkos et al., 2014), and the Salish Sea (Davis and Murphy, 2015). All samples contained fragments, fibers, and to a lesser extent pellets in the smallest (0.355–0.999 mm) size class (see Supplementary Content). One site (1) lacked foamed microplastic particles in the smallest size class, while another (site 2) lacked films in the smallest size class. Larger size classes were most often dominated by fragments and fibers (Table 3). Preliminary data from nine small, prey fish obtained as accidental by-catch suggested high levels of microplastic contamination, particularly by particles in the 0.355–0.999 mm size class (see Supplementary Content).

Sites in the southern portion of San Francisco Bay had higher average microplastic abundance, 1,000,000 particles/km^2, than sites in the central Bay, which averaged 310,000 particles/km^2. Flood tides occurring during sampling in the central Bay could contribute to reduced abundances measured at these sites. Southern sites typically contained higher levels of small fragments (Table 3); three of these samples also included large amounts of bulky vegetation (Table 2).

4. Discussion

Overall levels of microplastic pollution measured in this initial, screening study were greater than comparable measurements available for other urbanized areas of the U.S., including treated wastewater from municipal wastewater treatment facilities located in other parts of the U.S. (Carr et al., 2016; Mason et al., in review) and surface waters of the Great Lakes, Chesapeake Bay, and the Salish Sea (Eriksen et al., 2013; Yonkos et al., 2014; Davis and Murphy, 2015). Bay Area wastewater facilities investigated here typically serve large populations that have implemented significant water conservation measures due to severe drought, in contrast to the facilities from other regions for which consistently measured data are available (Mason et al., in review); these differences provide a potential explanation for the increased concentrations of microplastic particles in Bay Area wastewater, as the same overall amounts of urban contaminants would be more concentrated if released with lesser amounts of water. The apparent elevation of San Francisco Bay surface water microplastic pollution can be at least partially explained by a dense urban population surrounding a small body of water with limited interchange with the Pacific Ocean.

Southern Bay levels of microplastic were generally higher than those of the central San Francisco Bay. A similar regional pattern has been observed for a number of contaminants derived largely from treated wastewater (e.g., Klosterhaus et al., 2013). Surface waters in the southern Bay receive a large volume of treated wastewater and urban stormwater, have the highest hydraulic residence time relative to other portions of the Bay, and experience the least amount of dilution.

However, the observation that small fragments drove the higher microplastic levels measured at southern Bay sites, while wastewater discharges were primarily composed of fibers, suggests that treated wastewater was not the only source of microplastic pollution for southern stretches of the Bay. Instead, microplastic from other pollution pathways, such as stormwater, and in situ processes including the fragmentation of larger plastic debris, in combination with the long residence times, may have contributed to higher levels of microplastic contamination.

An additional qualitative observation was that some of the largest counts of plastic were associated with Bay samples containing substantial quantities of vegetation (Table 2). The potential for vegetation to entrain microplastic merits exploration in future studies. Of particular concern, the presence of surface vegetation can result in more concentrated feeding activity nearby. If microplastic levels are higher in these zones, wildlife may be more likely to ingest these particles.

Comparison of wastewater treatment plants employing typical secondary treatment versus those equipped with additional tertiary filtration did not indicate a significant effect on microplastic particle discharge or distribution of particle types. Additional monitoring is needed to explore this finding, which is consistent with observations from a study of New York State treatment facilities focusing exclusively on plastic pellets (NYS OAG, 2015). Assessment of microplastic content in associated influent and biosolids would better elucidate the impacts of different treatment types on microplastic particles in wastewater. A study exploring microplastic levels at different points in the wastewater treatment train found considerable removal via skimming during initial stages of treatment (Carr et al., 2016). Nevertheless, the limited data currently available suggest that granular tertiary filtration may not be an effective means of controlling microplastic pollution.

Fibers were the dominant particle type found in treated wastewater from Bay Area facilities, a finding common in similar microplastic analyses of wastewater in other locations (e.g., Browne et al., 2011; Mason et al., in review). An alternative study, which utilized a different method for effluent processing and analysis, did not detect anthropogenic fibers, only microbially derived detritus (Carr et al., 2016). A recent examination of artificial fibers found in the digestive tracts of aquatic invertebrates suggests some portion of these fibers may be derived from cellulose rather than plastic (Remy et al., 2015). Some cellulose-derived fibers can survive the wet peroxide oxidation process that all samples were subjected to in this study (Nirmela Arsem, personal communication); as fibers were not subjected to Raman nor FTIR spectroscopy to confirm their identity, it is possible that the presence of anthropogenic, cellulose-derived fibers resulted in overestimates of the overall levels of plastic fibers in these samples. However, given previous studies indicating high levels of plastic fibers in synthetic clothing wash water as well as in wastewater samples subjected to greater levels of spectroscopic examination (Browne et al., 2011), synthetic plastic is likely to be a dominant source of fibers in the wastewater examined in this study.

Table 3
Average abundance and type of particles in three size classes in central and southern San Francisco Bay surface water samples.

Central San Francisco Bay	0.355–0.999 mm	1.000–4.749 mm	≥4.75 mm	% of Total
Fragment	68,000	35,000	2100	34%
Pellet	3100	970	0	1%
Fiber	80,000	67,000	1200	48%
Film	8200	22,000	3500	1%
Foam	2300	12,000	460	5%
Total Count/km^2	160,000	140,000	7200	
% of Total	53%	45%	2%	

Southern San Francisco Bay	0.355–0.999 mm	1.000–4.749 mm	≥4.75 mm	% of Total
Fragment	450,000	150,000	5400	60%
Pellet	17,000	2500	0	2%
Fiber/ine	140,000	86,000	2800	22%
Film	25,000	37,000	6700	7%
Foam	35,000	52,000	2300	9%
Total Count/km^2	670,000	330,000	17,000	
% of Total	66%	32%	2%	

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Of note, fibers are more reliably identified through visual inspection as plastic than fragments (Lenz et al., 2015).

Multi-colored, spherical plastic pellets in the size class <1 mm, likely derived from rinse-off personal care products, were detected at low levels in all Bay sites, but in none of the treated wastewater samples. While the absence of these clearly identifiable pellets in treated wastewater was somewhat unexpected, it does not indicate a lack of personal care product-derived contamination. Most of the microplastic particles in personal care products are rough and irregular in shape and therefore classified as fragments (Napper et al., 2015; Carr et al., 2016), with less than 10% consisting of spherical pellets (unpublished data, S.A. Mason). It is likely that a significant portion of the microplastic fragments detected in treated wastewater samples in this study were derived from personal care products containing microbeads.

5. Conclusion

The results of this initial, screening study indicate that microplastic contamination, a global concern, may be higher in San Francisco Bay than in other urban areas in North America for which data are available, including the Great Lakes (Eriksen et al., 2013), the Chesapeake Bay (Yonkos et al., 2014), and the Salish Sea (Davis and Murphy, 2015). Effluent samples from Bay Area treatment facilities also showed higher levels of contamination than seen in other facilities in the U.S. (Carr et al., 2016; Mason et al., in review).

Results from this study indicate the need for method development and standardization to assess microplastic found in common pollution pathways. The increased proportion of fragments over fibers in Bay water samples relative to treated wastewater suggested that other pathways, such as stormwater, may be important contributors to microplastic pollution in the Bay. As yet, there are no established methods for measuring microplastic in stormwater discharges; until such methods are developed, a hypothesis about the relative contributions of stormwater versus wastewater to overall microplastic pollution in receiving waters cannot be tested. The method employed in this study to characterize effluent was originally developed for ambient receiving waters and could be further refined, particularly given the wide range of anthropogenic fibers that may be found at higher concentrations in wastewater. In addition, 24-hour effluent samples could provide a more comprehensive picture of microplastic pollution in treated wastewater, in particular because peak personal care product use follows distinct diurnal patterns.

Ultimately, concerns about microplastic pollution are driven by potential impacts to wildlife or humans. Recent detection of microplastic, including fibers, within sport fish from coastal California as well as Indonesia (Rochman et al., 2015) indicates exposure is occurring; at this time, studies linking microplastic exposure to adverse impacts in controlled laboratory settings have not resulted in development of specific aquatic or tissue-based toxicity thresholds. By-catch prey fish collected at a single site in this study also contained microplastic, especially fibers (Supplementary Content). Of note, most microplastic monitoring in wildlife focuses on microorganisms, invertebrates, or sport fish (e.g., Wright et al., 2013; Rochman et al., 2015), with relatively few data available for smaller, prey fish such as those examined here. Additional study of small, prey fish species is recommended to develop an understanding of microplastic exposure and potential impacts throughout the food web.

Acknowledgments

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Appendix A. Supplementary content

Supplementary content to this article can be found online at http://dx.doi.org/10.1016/j.marpolbul.2016.05.077.

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Sherry Hull

From: Sherry Hull
Sent: Monday, July 11, 2016 3:10 PM
To: Sherry Hull
Subject: Office of Information Management and Analysis Brown Bag seminar
Attachments: OIMA BrownBag Flyer - July28 2016.pdf

Importance: High

This is a message from the State Water Resources Control Board.

Microplastic Contamination in San Francisco Bay
By Rebecca Sutton, Ph.D., Senior Scientist, San Francisco Estuary Institute (SFEI)

Thursday, July 28, 2016 | 12:00-12:30 PM
Cal EPA Building, Training 2 East/West, 2nd Floor
1001 I Street, Sacramento, CA
Remote access available – see attached flier

We are pleased to announce that the Office of Information Management and Analysis Brown Bag seminar will be held on July 28th from 12:00 – 12:30 p.m. via Global Meet and in person in CalEPA building, 1001 I Street, Sacramento. The brown-bag will be about microplastic contaminants. Microplastic, tiny particles of plastic smaller than 5 mm, are contaminants of emerging concern in aquatic environments around the world. Beauty products with microbeads, synthetic clothing, plastic bags, polystyrene foam packaging, and disposable plastic items can all contribute to microplastic pollution. In 2015, the Regional Monitoring Program for Water Quality in San Francisco Bay (Bay RMP) detected microplastic particles in the Bay. The Bay RMP study also indicated that a portion of these tiny particles were able to pass through Bay Area wastewater treatment plants, even those using the most advanced technologies. The Bay RMP is now developing a monitoring and science strategy to address microplastic in San Francisco Bay.

Thanks
Dawit

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Water Boards

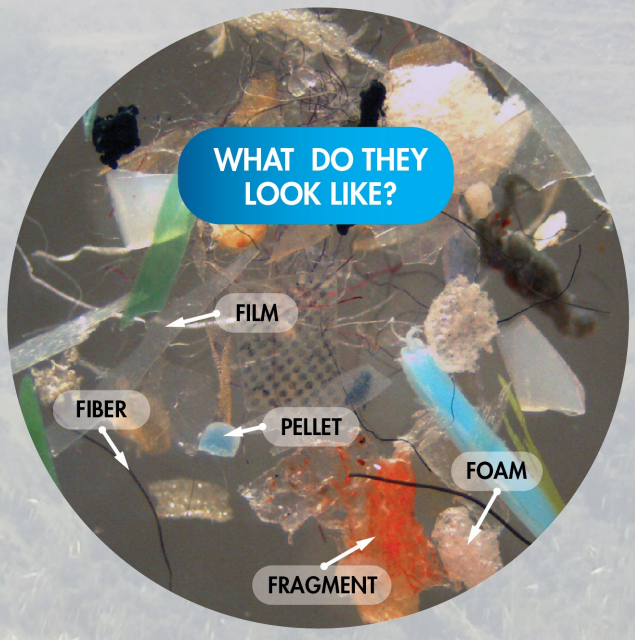
THE OFFICE OF INFORMATION MANAGEMENT & ANALYSIS

BROWN BAG SEMINAR

Microplastic Contamination in San Francisco Bay

Speaker: Rebecca Sutton, Ph.D., Senior Scientist
San Francisco Estuary Institute (SFEI)

JULY 28, 2016 | 12:00-12:30 PM



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Draft Pre-Proposal Introduction and Scope of Work

Treatment of Reverse Osmosis Concentrate by Advanced Oxidation Processes and Engineered Treatment Wetlands

Prepared by:
Santa Clara Valley Water District
University of California at Berkeley
Stanford University
San Francisco Estuary Institute
Bay Area Clean Water Agencies

Introduction

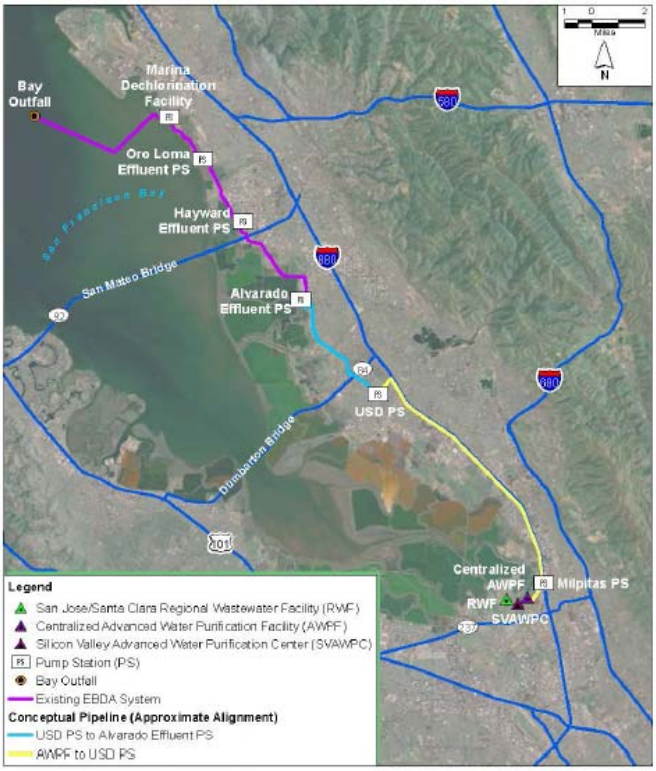
Indirect and direct potable reuse are key solutions to California's water crisis because they don't require identification of new water sources. They allow use of existing potable water distribution systems, rather than the construction of costly new purple pipe distribution systems to serve relatively few users. Key to any potable reuse project is the use of advanced treatment, such as Advanced Oxidation Processes (AOPs), and Reverse Osmosis (RO) to remove chemical and biological contaminants from wastewater effluent.

With the use of RO treatment, approximately 80 to 90 percent of the original recycled water volume becomes RO permeate which is used to supplement potable water supplies, and 10 to 20 percent becomes RO concentrate. The concentrate contains the salts and organic contaminants rejected by the membrane at roughly 6-fold concentration relative to their concentrations in the RO influent. The RO permeate for potable reuse projects in California will typically have a total dissolved solids (TDS) of less than 100 parts per million (ppm) and the concentrate will typically have a TDS of between 8,000 ppm and 10,000 ppm. In addition to a relatively high concentration of salts, the RO concentrate also contains relatively high concentrations of dissolved organic carbon, pathogens, nutrients, and pollutants of concern, including emerging contaminants.

The Santa Clara Valley Water District (District) is moving forward with its plans for potable reuse. RO treatment is a core process unit of Full Advanced Treatment (FAT) trains for potable reuse in California. RO treatment is attractive because it serves as a broad-screen physical removal barrier, capable of removing salts and a wide array of organic contaminants at high efficiencies. AOPs applied downstream of RO provide a broad-screen chemical removal barrier against most organic contaminants that permeate the RO membranes, and can also be used to reduce pollutant concentrations in the RO concentrate. Generally, AOPs such as ozone, ozone/hydrogen peroxide, or UV/hydrogen peroxide, operate by generating hydroxyl radicals, non-selective radicals capable of reacting with a wide array of contaminants with nearly diffusion-limited rate constants.

The District has studied various alternatives for managing the RO concentrate and the following have been determined (either alone or in combination) to be the most feasible at this time:

1. Discharge to a sewer line that goes to a regional wastewater treatment plant (WWTP).
2. Discharge to the Bay with dilution water (with effluent from a WWTP or stormwater).
3. Discharge to a deep Bay outfall.
4. Treatment wetlands, followed by direct discharge to the Bay.
5. Treatment of metals, nutrients, and organics in the concentrate to produce a high quality brackish supply that can be used for habitat restoration close to the facility.
6. Pre-treatment of RO concentrate, followed by one of the above options.



There are water quality concerns associated with discharging RO concentrate into the Bay. Because of the relatively high concentrations of pollutants in RO concentration, discharge of concentrate stream produced by RO processes, through existing outfalls could potentially lead to NPDES permit violations for constituents such as metals or toxicity. Additionally, there may be impacts from higher concentrations of constituents such as nutrients and emerging contaminants, which are not regulated via water quality objectives but are monitored via the San Francisco Bay Nutrient Management Strategy[1], and Contaminants of Emerging Concern Strategy[2], respectively.

In the work proposed here, the University of California at Berkeley (Berkeley) and Stanford University (Stanford), in partnership with the San Francisco Estuary Institute (SFEI), and the Bay Area Coalition Wastewater Agencies (BACWA), will help the District in evaluating the technical and economic feasibility of treating RO concentrate via Engineered Treatment Wetlands and AOPs to reduce concentration of priority pollutants, emerging contaminants, metals and nutrients, as follows:

(1) *Engineered wetland treatment of RO concentrate*. Wetland-based treatment has the potential to remove organic contaminants, nutrients, metals and pathogens, while increasing the TDS (through evaporation) and providing brackish water habitat. To assess the efficacy of engineered wetland treatment of RO concentrate, experiments will be conducted under conditions likely to be encountered in a full-scale treatment system.

(2) *AOP treatment of RO concentrate*. AOPs can degrade dissolved organics and inactivate

[1] See http://sfbaynutrients.sfei.org/

[2] See http://www.sfei.org/projects/contaminants-emerging-concern-strategy

pathogens. When used as a pretreatment for engineered wetland treatment, AOPs may increase the efficiency of engineered wetland treatment by partially breaking down recalcitrant organic compounds, rendering them more susceptible to further biological degradation, and by increasing the UV/visible light transmittance, aiding photodegradation. They also may aid the removal of metals within the wetland by liberating metals from strong complexes (e.g., EDTA). The project team will study the efficacy of ozone and UV/hydrogen peroxide treatment (and other potential oxidants) of RO concentrates alone and in combination with engineered wetland treatment.

Although the TDS of the concentrate is below the ~30,000 mg/L TDS of the San Francisco Bay (Bay), it is in line with the brackish zones of salinity which are common in the South Bay region and which range from 1,000 ppm to 10,000 ppm. Discharging this brackish water locally could help in the ongoing restoration of marshes in the South Bay salt ponds. Historically the tule salt marshes would have been connected to creek mouths, moist meadows, cattail and willow groves that once served as transition zones, or "ecotones," between tidal habitats and terrestrial ones. Restoring historical creek connections is not possible in many places, but the RO concentrate could be substituted as a source of freshwater in the same zone: pipelines used for the distribution and discharge of the brackish water into the wetlands. Recreating these salinity gradients and their associated habitats may be ecologically beneficial, increases their resiliency to climate change and increases flood protection to the communities behind them as sea level rises.

This project is being developed in conjunction with water and wastewater agencies in the Lower South Bay, however, the problem of RO concentrate management will need to be solved wherever potable reuse projects are being planned. As such, the conclusions from this study are applicable both Regionally and Statewide. This team that plans to work on this proposal of top scientists and a ready-made coalition of water agency and wastewater agencies. The team is also working with staff at the Regional Water Board to ensure than any future full scale project will be permittable. It is an excellent example of a multi-benefit project, which will help facilitate increased water reuse, improve receiving water quality, and enhance habitat. This will be the first pilot project to use wetland to treat RO concentrate in California, and the innovations developed as part of this research will set a precedent that can be used to develop potable reuse projects as the State expands its water reuse portfolio.

Scope of Work

This project will be divided into the following phases and tasks:

Project Management

Task 1 Workplan preparation and project management

Stanford, Berkeley, SFEI, BACWA and the District will develop a mutually agreed upon phased workplan that will meet the specific tasks mentioned below. Quarterly project meetings will allow the project partners to report progress, exchange ideas and develop deliverables.

Deliverable: Project workplan. Quarterly project meetings

Phase 1: Research

Task 2 Identify contaminants of concern

SFEI, in collaboration with Berkeley, Stanford, and BACWA, will develop a list of priority wastewater contaminants based upon the literature and SFEI's ongoing research related to the Bay. Bay regional action plans for contaminants of emerging concern (CECs) will inform the prioritization. This list will serve as the basis for the CECs to be evaluated in later tasks.

Deliverable: Technical memorandum reporting on CECs to target.

Task 3 Laboratory experiments to facilitate pilot-scale system design

Laboratory experiments will be conducted by Berkeley and Stanford to assess the required dose of oxidants, extent of photosynthetic respiration needed to raise solution pH to levels that will precipitate metals and the survival and growth of algae in the concentrate. Berkeley will assess performance of organisms from an open water unit process wetland in contaminant treatment through batch experiments using biomat materials collected from a demonstration-scale system. Stanford will evaluate the application of ozone and UV/hydrogen peroxide AOP treatment of RO concentrate at laboratory-scale. The efficacy of this treatment will be evaluated in terms of the dose requirements needed to achieve removal of the water quality parameters evaluated under Task

Additionally, Stanford would consider the potential for generation of unwanted byproducts (e.g., bromate). Laboratory work will include the evaluation of the ability of these treatments to degrade metal-EDTA complexes and the subsequent removal of treated water by the biomat from the open water system.

Deliverable: Technical memorandum reporting on the results of the laboratory-scale evaluation of AOP Treatment of RO concentrate.

Task 4 Design, construct, and test engineered pilot wetland

A pilot-scale system will be designed by Berkeley, Stanford, SFEI, BACWA and District to test hypotheses about the performance of wetland systems and oxidative pre-treatment. The most likely location for the system is adjacent to the Silicon Valley Advanced Water Treatment Facility, where RO concentrate is readily available, or another site agreed upon by all parties. District will provide infrastructure for the study, including power, RO concentrate from the Advanced Water Purification Center, secure space, and discharge for the pilot engineered treatment wetland effluent.

On the basis of previous results and design experience, the team anticipates that the pilot-scale system will consist of an open water unit process wetland system and flow-through oxidative treatment system. The system will likely occupy approximately 500 ft^2 and would treat approximately 5,000 gallons per day (~3.5 gpm). The team anticipates splitting the cell into two parallel cells: one receiving untreated RO concentrate and one received oxidative pre-treatment to compare these scenarios side-by-side. For the oxidative pre-treatment, this would require a ~2 gpm flow-through unit (e.g., ozone treatment unit) for rental at the site.

Deliverable: Technical memorandum on pilot system design.

Task 5 Combination of AOP and Engineered Mesocosm or Wetland Treatment of RO Concentrate.

Operation and water quality monitoring of the wetland is part of this task. The set of water quality parameters to monitor, and the monitoring frequency, will be agreed upon in consultation with the District; parameters will primarily include CEC's and other ancillary parameters such as organic contaminants, nutrients, and metals. The testing may include the effect of system parameters (e.g., installation of bio-barriers to enhance nutrient removal) and seasonal variations.

The technical team (Berkeley, Stanford, SFEI, BACWA) will evaluate the combination of AOP treatment followed by engineered wetland treatment of RO concentrate, both at pilot-scale. As part of this task the team will evaluate whether the combination of treatments may be more efficient than either process alone for key water quality parameters. The AOP laboratory tests (Task 3) will inform this task with respect to the type of AOP (i.e., ozone or UV/hydrogen peroxide) and dose requirements to evaluate. The batch experiments conducted with the biomat will inform design decisions with respect to hydraulic residence times needed to achieve adequate treatment.

Deliverable: Technical memorandum reporting on the results of the combination of AOP and engineered wetland treatment.

Task 6 Data integration, analysis, and reporting

Task 6 is divided into four subtasks as follows:

Task 6.1: The Technical Team will prepare a technical memorandum on the results for the experimental work undertaken in Task 3, 4 and 5. The memorandum will evaluate the technical feasibility of RO concentrate treatment by AOP or engineered wetland treatment alone or in combination, and make recommendations.

Task 6.2: SFEI will develop sections of the technical memorandum on impacts to Bay water quality including potential changes to CECs loadings and mass balances with respect to regional CEC action plans, and evaluation of permit issues.

Task 6.3: SFEI will develop sections of the technical memorandum describing opportunities and constraints for local discharge of treated brackish water into Bayland marshes; provide concepts of how the discharges may be incorporated into the marshes; envision scenarios for regional fresh water balance; and assess the co-benefits of such discharges including meeting Bayland restoration goals and enhancing local restoration actions.

Task 6.4: SFEI will host a stakeholder workshop to report on the findings of Phase 1 tasks and allow discussion of the regional issues related to the discharges. The workshop discussion will be reported as a section of the technical memorandum and will help define the scope for Phase 2.

Deliverable: Phase 1 Technical memorandum reporting on Results of Pilot Project and Feasibility Analyses. Stakeholder Workshop

Phase 2: Full scale-implementation and Bay-wide impacts

This phase will be under a separate contract from Phase 1.

Task 7 Design of a demonstration- or full-scale system

Based on the results of Phase 1, the technical team (Berkeley, Stanford, SFEI, BACWA) would work with a technical consultant to design a demonstration- or full-scale system for the Advanced Water Quality Center at the District according to a detailed scope of work to be decided in consultation with the District. The system will likely include:

- AOP treatment
- Contaminant removal from RO concentrate in wetlands
- Local discharge to the Bayland marshes

This task involves working with the San Francisco Regional Water Board and any applicable resource agencies to ensure the permittability of the full scale project.

Deliverable: Technical design memorandum reporting on planning the implementation of a full-scale system design.

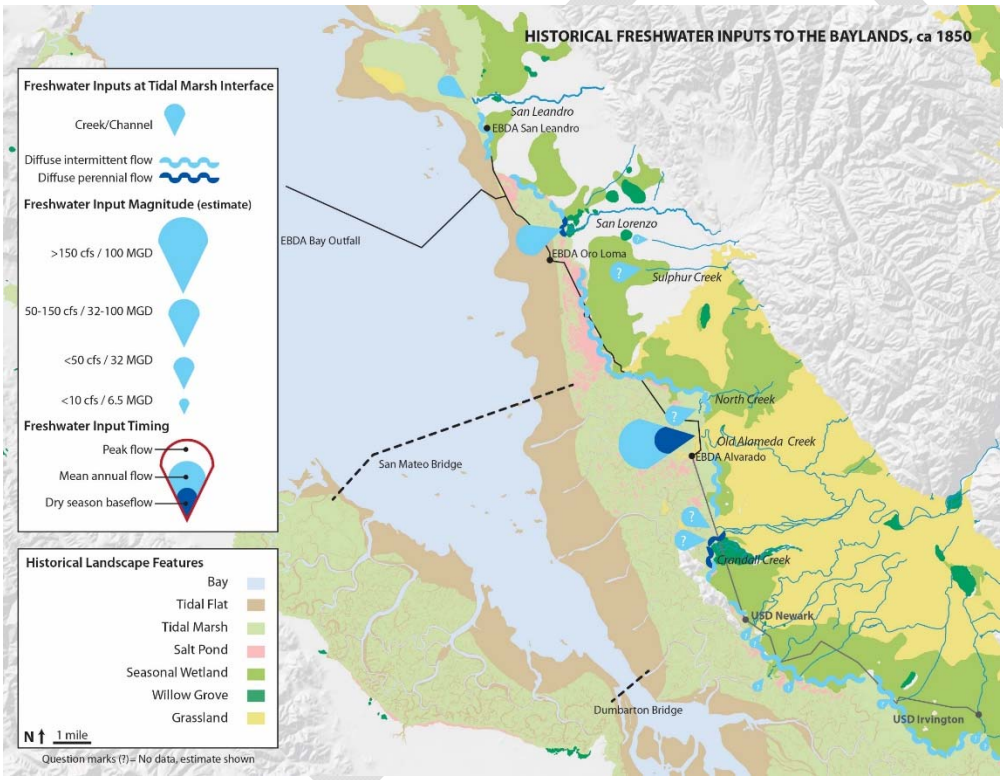
Task 8 Evaluation of treatment potential at other facilities

The District expressed an interest in pilot-testing at other facilities considering wastewater reclamation by RO treatment. Such facilities include treatment plants operated by the Cities of Palo Alto and Sunnyvale. Berkeley and Stanford will assess this option based upon the results obtained at the District's Advanced Water Purification Center. These facilities feature greater space restrictions and do not currently have RO pilot facilities to generate a RO concentrate. If the Phase 1 results suggest that the treatment system is promising, testing at additional facilities would be useful to capture potential variations in treatment efficacy arising from different RO concentrate water qualities. The scope of work would be delineated in consultation with the

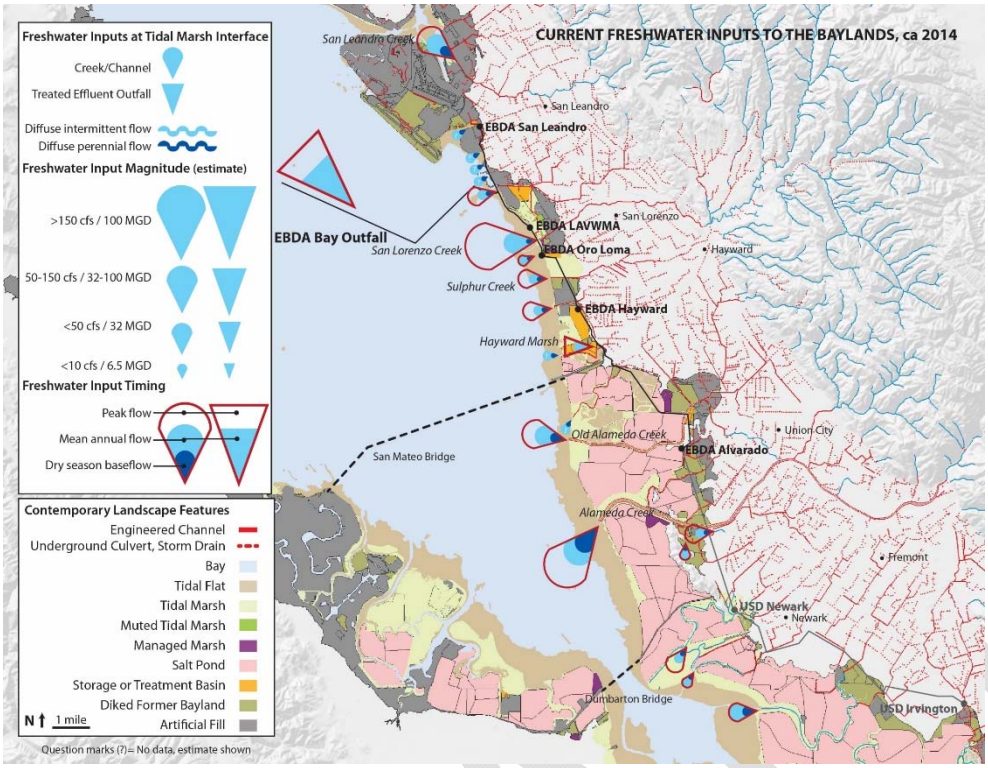
District, but may involve additional laboratory or pilot-scale testing to evaluate any site-specific differences from the District's Advanced Water Purification Center.

Task 9 Vision for Water Management in the Lower South Bay

SFEI will address how the historical and present discharges functioned and what are the regional opportunities and constraints for local discharge of brackish water into the South Bay marshes –similar to work undertaken by SFEI in the East Bay (see figure below). A stakeholder workshop hosted by SFEI will allow discussion of the regional issues related to the discharges. SFEI will provide concepts of how the discharges may be incorporated into the local marshes; and assess the co-benefits of such discharges including meeting Bayland restoration goals and enhancing local restoration actions.



Historic freshwater discharges to the Bay



Present discharges to the Bay

Deliverable: Technical design memorandum reporting on impacts of the implementation of the full-scale system in the South Bay, including workshop discussion notes.

	Facility-Place Name	Place No.	Agency Name (Party, Organization)	Party No.	Order No.	Reg Measure	County	ROWD Date
1	American Canyon Water Recycling Program	764886	American Canyon City	1520	R2-1996-011	349009	Napa	01-01-2004
2	Calistoga Water Recycling	212749	Calistoga City	7484	R2-1996-011	351859	Napa	11-01-2004
3	Central Contra Costa Sanitary District Water Recycling	741394	Central Contra Costa Sanitary District	220151	R2-1996-011	368741	Contra Costa	11-13-1996
4	Delta Diablo Sanitation District Water Recycling	723734	Delta Diablo Sanitation District	12599	R2-1996-011	349731	Contra Costa	04-26-2000
5	Dublin San Ramon Services District Water Recycling	643640	Dublin San Ramon Services District (Water Recycling Program	353989	R2-1996-011	316139	Alameda	05-01-2004
6	East Bay Municipal District (EBMUD) Water Recycling- RARE WTP	753205	EBMUD Water Recycling (RARE Water Project)	522865	R2-1996-011	374449	Contra Costa	04-07-2010
7	East Bay Municipal District (EBMUD) Water Recycling- E. Bayshore Project	753305	EBMUD Water Recycling (E. Bayshore)	522938	R2-1996-011	374448	Alameda	03-28-2002
8	Fairfield Suisun Water Recycling	224084	Fairfield Suisun Sewer District	15842	R2-1996-011	382017	Solano	04-04-2011
9	Las Gallinas Recycled Water- Tertiary Facility	779440	Las Gallinas Valley Sanitary District	25562	R2-1996-011	384183	Marin	01-25-2012
10	Livermore Recycled Water Program	237193	Livermore City	26061	R2-1996-011	380601	Alameda	01-07-2005
11	Napa SD Recycled Water Program	764881	Napa Sanitation District	31164	R2-1996-011	380595	Napa	02-21-1996
12	North Marin Water District Recycled Water Distribution	772664	North Marin Water District (Recycled Water, SF Bay Region)	524741	R2-1996-011	382037	Marin	08-19-2011
13	North San Mateo County Sanitation District Water Recycling	244722	North San Mateo County Sanitation District	31673	R2-1996-011	298679	San Mateo	03-24-2004
14	North San Mateo County Sanitation District - Harding Park Recycled Water	742856	North San Mateo County Sanitation District	31673	R2-1996-011	388686	San Francisco	08-17-2012
15	Novato Sanitary District & North Marin Water District Recycled Water- Deer Island WWTP	757331	North Marin Water District (Recycled Water, SF Bay Region)	524741	R2-1996-011	376109	Marin	03-01-2004
16	Novato Sanitary District Recycled Water- Davidson Street RWTF	769213	Novato Sanitary District	31742	R2-1996-011	380584	Marin	06-28-2011
17	Pacifica Recycled Water Project	759193	North Coast County Water District	525243	R2-1996-011	376837	San Mateo	12-22-2011
18	Petaluma City Water Recycling Program	248081	Petaluma, City	34168	R2-1996-011	298662	Sonoma	08-10-2005
19	Pleasanton City Recycled Water Program	812113	Pleasanton, City	812113	R2-1996-011	402067	Alameda	05-28-2015
20	Redwood City Water Recycling	255832	Redwood City Recycled Water Project	495370	R2-1996-011	351616	San Mateo	01-17-1996
21	San Leandro Recycled Water- Monarch Bay Golf Course	642939	San Leandro City (Recycled Water)	543138	R2-1996-011	314782	Alameda	08-14-2006
22	Sewerage Agency of Southern Marin Recycled Water Program	765314	Sewerage Agency of Southern Marin	40518	R2-1996-011	378562	Marin	01-19-2000
23	Sonoma Valley County Sanitation District Recycled Water Program	257753	Sonoma Valley County Sanitation District	147379	R2-1996-011	388228	Sonoma	07-01-2013
24	South Bay Advanced Water Treatment Facility	777018	Santa Clara Valley WD (Recycled Water in SF Bay Region)	531726	R2-1996-011	383082	Santa Clara	01-10-2012
25	Yountville Water Recycling	274528	Yountville, Town of	52191	R2-1996-011	378567	Napa	04-16-2004
26	Sonoma Valley Water Recycling	257753	Sonoma Valley County Sanitation District	147379	R2-1996-011	388228	Sonoma	09-20-2013

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California State Senate

SENATOR
ROBERT M. HERTZBERG
EIGHTEENTH SENATE DISTRICT
REPRESENTING LOS ANGELES COUNTY

COMMITTEES
GOVERNANCE AND FINANCE
CHAIR
ELECTIONS AND
CONSTITUTIONAL AMENDMENTS
ENERGY, UTILITIES
AND COMMUNICATIONS
JUDICIARY
NATURAL RESOURCES
AND WATER

June 24, 2016

To the Supporters of Senate Bill 163:

I am writing to thank you for your support and assistance on Senate Bill 163 this year. I also want to let you know that I will be introducing legislation next year, building on this and requiring coastal wastewater dischargers to eliminate the practice of throwing good water into the ocean.

Senate Bill 163 was an attempt to preserve a precious resource – fresh water – by setting a reasonable goal for treated water reuse while offering relief for those entities that need it. Unfortunately, we were unable to work with the opposition on technical aspects of the bill and they remained opposed to any mandate. This is unacceptable to me, and when faced with weakening the bill for this week's hearing in the Assembly, I chose to shelve it for the year and begin with a fresh bill next year.

As you know, California and the world are rapidly urbanizing. Coastal cities and towns will bear the brunt of this future growth. Coupled with California's cyclical droughts and changing climate, local governments will struggle to keep pace with increased demands to provide sufficient drinking water. Yet one good resource is going to waste every day as California water agencies pour between 1 and 3 billion gallons of treated water into the ocean daily – enough for 3-8 million California households!

We face a real challenge about how to address water reliability and supply issues in the future. Solutions will require us to upset some preconceived notions; starting with the notion that treated water is not a waste product, but a valuable resource to be protected.

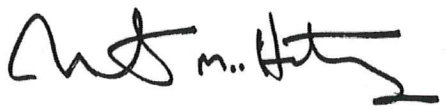
Getting to solutions will require institutional changes at the state and local level, as well as system redesigns to ensure new alternatives for water supply and reliability are available in the next ten to 15 years. Historically – and unfortunately – there is a strong preference in government to focus on immediate spending and benefits, rather than the long-term.

My bill next year will begin to recreate that framework on a few levels. First, we will protect treated water as a valuable resource. Second, we will build up the expectation that local

governments will be held accountable for long-term investments in sustainable water supplies. And third, we will develop a coalition of partners to inform members and the public about the importance and benefits of water reuse. Because the current model of praying for rain and moving water across vast deserts is unsustainable.

I look forward to working with you next year to set California on a path to a more sustainable water future.

Sincerely,



ROBERT M. HERTZBERG
Senator, Eighteenth District

Joint Powers Agreement Members

Inland Empire Utilities Agency

Irvine Ranch Water District

Los Angeles Department of Water and Power

Orange County Sanitation District

Orange County Water District

West Basin Municipal Water District

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Memorandum

To: Jing-Tying Chao, P.E.
Division of Drinking Water
State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

From: Adam Olivieri, Dr.P.H., P.E., EOA, Inc.
Expert Panel Co-Chair

James Crook, Ph.D., P.E., Environmental Engineering Consultant
Expert Panel Co-Chair

Jeffrey J. Mosher, National Water Research Institute
Expert Panel Administrator

Subject: Expert Panel Draft Key Research Recommendations Related to the Development of Uniform Water Recycling Criteria for Direct Potable Reuse in the State of California (under SWRCB Agreement No. 13-21041)

Date: June 30, 2016

On behalf of the Expert Panel, the National Water Research Institute (NWRI) is pleased to transmit this memorandum to the California State Water Resources Control Board (State Water Board) regarding preliminary key research recommendations related to the feasibility of developing uniform water recycling criteria for direct potable reuse (DPR). Note that the key research recommendations are draft recommendations and may be edited or otherwise modified as the Expert Panel's report is finalized.

Charge of the Expert Panel

Per California Water Code Section 13565(a)(1), the Expert Panel is charged with advising the State Water Board on the "feasibility of developing uniform water recycling criteria for direct potable reuse (DPR). The expert panel shall assess what, if any, additional areas of research are needed to be able to establish uniform regulatory criteria for DPR. The expert panel shall then recommend an approach for accomplishing any additional needed research regarding uniform criteria for DPR in a timely manner."

The Panel finds that there is no need for additional research to be conducted to establish uniform water recycling criteria for DPR. However, there are some areas of research that would enhance the understanding and acceptability of DPR in the State of California. The Panel encourages the State Water Board to address the following research recommendations.

Current Status of DPR Research

The Expert Panel notes that applied research has played a significant role in advancing potable water reuse. During the 1990s, the State of California Department of Public Health (now the State Water Board's Division of Drinking Water) pioneered the development of analytical methods for monitoring chemical contaminants and identified compounds to be monitored at potable reuse facilities (i.e., the compounds for which Notification Levels have been established). More recently, the WateReuse Research Foundation (now called the Water Environment & Reuse Foundation) funded research projects on treatment technologies and performance reliability that have been instrumental to advancing DPR. The Expert Panel is impressed by the research that has been funded by the WateReuse Research Foundation and supports the continuation of such research.

Nonetheless, the Expert Panel has identified important areas not being addressed in the WateReuse Research Foundation's research program related to public health, including efforts to identify new contaminants of concern and develop better monitoring techniques. As such, the Expert Panel believes the State Water Board or other agencies that have expertise in this area (e.g., the Department of Toxic Substances Control) should provide oversight and direction for research efforts designed to address these areas.

Expert Panel Research Recommendations for California

The Expert Panel identified several areas of research, as described below, that should be conducted to further ensure the protectiveness of DPR, which would best be supported directly by the State of California. The Expert Panel notes that the recommendations could be done either before and/or concurrent with the development of DPR criteria. While the results of the research could be used by the State to inform the development of draft DPR criteria, the absence of better information is not a barrier to the feasibility of establishing uniform criteria. The recommendations are as follows:

- **Research Recommendation #1**: To better inform targeted monitoring for source control and final water quality, the State Water Board should be proactive in monitoring the literature on the potential health risks that could present serious harm to health over short durations of exposure by compounds likely to be present in recycled water. Of specific concern are chemicals that adversely affect the development of fetuses and children. Other compounds that produce such effects will undoubtedly be discovered in the future. This activity could be initiated concurrently with the development of DPR regulations and continued as an ongoing effort. The Expert Panel recommends that a formal process be established by the State that includes: (1) an internal process to monitor the literature and (2) an external peer review process to address the results of the internal efforts to maintain a high level of awareness of the issues. See **Chapter 3** in the Expert Panel's final report.

- **Research Recommendation #2:** The State Water Board should adopt the use of probabilistic QMRA to confirm the necessary LRVs of viruses, *Cryptosporidium,* and *Giardia* needed to maintain a risk of infection equal to or less than 10^{-4} per person per year. The State should provide oversight, direction, and funding for implementing probabilistic QMRA. The purpose of using probabilistic QMRA is to provide a better assessment of the performance of DPR treatment trains and to provide an opportunity to identify additional effective DPR treatment trains.

Input values for pathogen concentrations should be based on descriptive pathogen statistics resulting from additional review of the literature (as well as information collected from **Research Recommendation #3**). Also, as DPR systems are built, owners and regulators need to take advantage of such full-scale systems to sample and assess actual as-built performance and reliability characteristics. See **Chapter 7**.

- **Research Recommendation #3:** To better inform decisions associated with updating LRVs as well as probabilistic-based QMRA modeling, the State Water Board needs to include monitoring requirements in a regulatory permit to measure pathogens (i.e., *Giardia* cysts, *Cryptosporidium* oocysts, and several human viruses) in raw (untreated) wastewater feeding a DPR system that provide more complete information on concentrations and variabilities. Improved methods should be used that will allow better characterization and improved precision of concentrations of pathogens. See **Chapters 5** and **7**.

- **Research Recommendation #4**: The State Water Board should investigate the feasibility and, where feasible, collect pathogen concentration data for raw wastewater associated with community outbreaks of disease. See **Chapters 5** and **7**.

- **Research Recommendation #5:** The State Water Board should encourage the conduct of short-term research to identify suitable options for final treatment processes that can provide some "averaging" with respect to potential chemical peaks (in particular, for chemicals that have the potential to persist through advanced water treatment). These options might involve: (1) use of a buffer tank (clear well) of a sufficient size, potentially blended with an alternative water source prior to releasing it into the drinking water supply distribution system, or using two tanks feeding into the drinking water supply distribution system; (2) removal of volatile contaminants during a degassing step (decarbonization) similar to the approach that is commonly employed after reverse osmosis treatment in established AWTFs for potable reuse; (3) use of a biologically-active filter after reverse osmosis/advanced oxidation, to provide an additional opportunity for microorganisms (if microorganisms will be able to survive in that environment) to degrade contaminants that may otherwise pass through the filter; or (4) other options. See **Chapter 8**.

- **Research Recommendation #6:** It is important to focus on non-targeted analysis and, furthermore, low molecular weight compounds. For example, the inability of reverse-phase liquid chromatography/mass spectrometry to detect many uncharged, low molecular weight compounds (e.g., halogenated solvents, formaldehyde, and 1,4-dioxane) problematic for potable reuse projects demonstrates the limitations of current analytical approaches for the detection of unknowns that are likely to pass through reverse osmosis membranes. Research is needed to develop more comprehensive methods to identify low molecular weight unknown compounds. It is possible these compounds may be detected by gas chromatography interfaced with time-of-flight mass spectrometers or hydrophilic interaction liquid chromatography (HILIC) coupled with reversed-phase (RP) chromatography prior to triple quadrupole mass spectrometry; however, to date, these methods have not been applied to potable reuse projects to detect these compounds. These methods or others need to be developed to increase the understanding of the make-up of the remaining total organic carbon composed of low molecular weight compounds. In addition, these methods also could address the potential vulnerability of AWTF treatment processes to unintended spills or batch releases of chemicals in the sewershed. See **Chapter 3**.

BACWA Information Requests to Members

	Significance	Status	Next Steps
Recycled Water Survey	Determine how water recycling contributes to nutrient load reductions to the Bay, now and in the future	Ongoing - Consultant is distributing survey to agencies with Facility Reports	Include results in optimization/upgrade studies
CIP Survey	Understand which agencies are planning projects to reduce nutrient concentrations in their effluent	Ongoing - Consultant is distributing survey to agencies with Facility Reports	BACWA will use information to inform negotions within BACWA and with RWB on next watershed permit
Biosolids Survey	How do agencies manage biosolids, and how with that change in the future.	In development	The survey will be distributed to members this summer.
Sewer Rate Survey	Compilation of agency sewer fees.	Last updated May 2015	To be updated in August based on agencies' adopted budgets.
Previous Information Requests			
POTW Budget Survey	Understand how much the Region spends on POTW Operations and Capital Costs	Completed October 2015	To be updated in the future at Executive Board discretion
Private Sewer Lateral Survey	Understand how collection system agencies govern private sewer laterals	Completed May 2015	Deliver results to Regional Water Board, SFEP for CCMP

AIR Committee –
Report to BACWA Board

AIR Committee Meeting on: 6/15/16
Executive Board Meeting Date: 7/15/16
Committee Co-Chairs: Nohemy Revilla and Randy Schmidt

Committee Request for Board Action: None

Annual meeting with Bay Area Air Quality Management District Staff
32 attendees representing 11 member agencies (8 BAAQMD Staff in attendance)

Meeting with BAAQMD

The BACWA AIR Committee held their annual meeting with BAAQMD on June 15, 2016 at their new offices on Beale Street in San Francisco. There were several presentations given by BAAQMD staff, including the following:

- 2016 Clean Air Plan/Regional Climate Protection Strategy by Christianne Riviere, Principal Planner (see presentation slides and handouts [WR1 and WR2])
- OEHHA Guideline Changes and District Implementation by Carol Allen, Supervising Air Quality Engineer (see attached handout)
- Digester Gas Venting by Brenda Cabral, Supervising Air Quality Engineer
- Concerns Over Organic Waste Diversion Projects by Paul Grazzini, Air Quality Inspector II
- Hydrogen Sulfide Regulation by Simrun Dhoot, Air Quality Engineer I (see presentation slides)
- Electronic Reporting Status Update by Kevin Oei, Air Quality Engineer II

The key messages from these presentations and accompanying discussions are as follows:

- Draft Clean Air Plan control measures have been posted on BAAQMD's Open Air Forum. These measures are largely exploratory at this stage, but will help guide prioritization of future actions.
- Air Toxics:
  - BAAQMD is working on revisions to Regulation 2, Rule 5 – New Source Review of Air Toxic Contaminants. Revised rule language should be available in August, for consideration by the Board in September. At this time, BAAQMD is not proposing any changes to the current significance thresholds.
  - BAAQMD is considering a new policy or rule to address air toxics from existing facilities. This policy/rule is expected to be developed sometime in 2017 and is likely to have the following features:
    - It would only apply to facilities with cancer risks > 10 in a million.
    - At these subject facilities, sources exceeding the current source significance thresholds (cancer = 1 in a million; chronic/acute = 0.2) would be required to install T-BACT.
    - Risks would be based on actual emissions, not potential.
    - BAAQMD will roll out the changes on an as-needed basis by re-assigning facility prioritization scores. These scores are documented on each facility's annual permit renewal, where scores > 10 would trigger the need for a revised screening health risk assessment.
  - In the permitting and planning phase, facilities should think about where the nearest residents and workers are, what the predominant wind direction is, what the proposed stack height is, etc., as all of these factors contribute to the predicted risk.
- BAAQMD is re-evaluating the enforcement of Regulation 9, Rule 2 – Hydrogen Sulfide as new permit applications or permit modification requests are received for digesters. The goal is to develop case-by-case permit conditions that allow digester gas venting up until a certain quantity of hydrogen sulfide has been released (# lbs/hour). This limit is intended to correlate to the downwind concentration allowed by Regulation 9, Rule 2.
- Given the forthcoming waste diversion regulations, BAAQMD's Organic Waste Workgroup is researching both barriers and incentives for organic waste diversion projects (permitting issues, best management practices, economic incentives, etc.). Contact Carol Allen/BAAQMD if you have any feedback to help promote these projects moving forward.

The primary action item identified during this meeting is that BACWA will consider facilitating a meeting between the various agencies that regulate POTWs (BAAQMD, SWRCB, ARB, etc.). This type of meeting may better help address cross-media concerns over developing regulations.

Next Meeting: The next meeting will be in September, likely at the San Francisco Carollo offices. Beginning in July, the committee is fully integrated into BACWA.

Committee Budget: $44,691 of $52,000 spent as of the end of May, 2016.

Operations and Maintenance Infoshare Group Report to BACWA Board

Committee Meeting on: 6/29/16
Executive Board Meeting Date: 7/15/16
Committee Chair: David Stoops

Committee Request for Board Action: None

14 attendees representing 7 member agencies

Highlights of New Items Discussed and Action Items

Managing your Agency's Knowledge Base - Round Table Discussion

The topic for the committee's discussion was "How to manage your agency's knowledge base, SOPs, manuals, record drawings, and other information". The discussion focused on how agencies can capture institutional knowledge on paper so it is not lost when staff retire. The key points of the discussion were as follows:

- Agencies use various databases to manage data in different disciplines, ranging from off-the-shelf to do-it-yourself systems. When choosing to purchase an of-the-shelf system, it is important to consider all costs. These systems can be expensive, and require ongoing manufacturer assistance for additional fees.
- Rotating data management staff into engineering and into the field allows them to get a better sense of the challenges faced by the staff who will be using the data.
- Some agencies get consultant support to assess asset management strategies and teach asset management to staff. Consultant support can also be used for data management.
- It is imperative to sustain a culture of sharing, rather than hording knowledge, to improve everyone's effectiveness.
- Requiring contractors to develop "written control narratives" in addition to O&M manuals upon design and construction of a new system can help capture how to handle "outside of the box" situations.
- Getting funding for robust document management systems is often a low priority for agencies. Funding may be easier to secure after an enforcement action.

Committee Business

An online survey was used to prioritize future meeting topics. The following topics are listed from most to least interest amongst committee members:

- How to manage your agency's knowledge base, SOPs, manuals, record drawings, and other information
- Paperless Operation & Maintenance
- Asset Management Software
- Computer Maintenance Management System
- Equipment (pumps, pipes, assets) condition assessment
- Yard piping as-built drawings and field verification
- Staff Training Best Practices - SOPs, video tape training, hands-on and refresher training, contract services
- Nutrient removal - impacts to O&M
- Succession Planning - How to hire new staff, train in-house staff, retain historical experience
- Hydrogen sulfide control
- Central repository of data
- Recycled Water - Impacts to O&M
- Alarm Notification - Best practices and software
- Impact of drought on facilities
- NFPA70 - How are agencies meeting requirements
- State Operator Advisory Committee
- Outfall condition assessment
- Peracetic acid as an alternative disinfectant - O&M issues
- Alternative compliance for chlorine residual - measuring chlorine decay in the outfall
- Instrumentation for lab analyses

Next Meeting: September 28, 2016, CCCSD

Permits Committee – Report to BACWA Board

Permits Committee Meeting on: 7/12/16
Executive Board Meeting Date: 7/15/16
Committee Chair: Eric Dunlavey

Committee Request for Board Action: None

16 attendees, representing 13 member agencies

Adoption of Permits/Permit Amendments:
July – *Napa* – Napa is fine with their TO, which includes an updated discharge prohibition period.

Selenium

- *EPA proposes Selenium Criteria for SF Bay and Delta* – EPA is proposing to revise the current federal Clean Water Act selenium water quality criteria applicable to the salt and estuarine waters of San Francisco Bay and Delta. EPA staff have said verbally to Regional Water Board staff that they intend to approve the North Bay TMDL, which applies to all dischargers from EBMUD Northward, so it is possible that these criteria may only impact South Bay and Lower South Bay (LSB) dischargers. The proposed water column criterion of 0.2 ppb is problematic. Ambient LSB and South Bay water column concentrations are regularly above the 0.2 ppb EPA draft criterion for water. LSB averages around 0.3 ppb, South Bay averages just below 0.2 ppb but regularly goes above the 0.2 ppb at times. It is likely that all the POTWs in South Bay/LSB can't meet the 0.2 ppb dissolved Se criterion at end of pipe. Regional Water Board staff are also concerned about these criteria and how they will lead to permitting problems down the line, and have met with EPA staff to discuss. Additionally, Eric has shared selenium monitoring data from the South Bay/LSB with EPA staff that they were not previously aware of. The rule has not yet been released in the Federal Register, which is expected in early July, and will then begin a 60-day comment period. EPA will also host hearings in August (online Aug 22 and in person Aug 23) on the proposed criteria.
- *SFEI Selenium Workshop* – As part of its selenium strategy, SFEI is hosting a workshop to develop an early warning monitoring strategy to determine if selenium will pose a threat to San Francisco Bay biota.

Microplastics and CECs

- *Microplastics Workshop* – The workshop focused on prioritizing science strategy focus areas. BACWA member agencies attended, and made the point that the methods are not sufficiently developed to make a reliable distinction between microplastics and other microparticles. Another key point was that fish need to be studied to determine any adverse impacts, to know whether this is a serious issue in the San Francisco Bay. Patagonia, the clothing company, presented findings from a garment washing study that concluded there isn't significant difference in shedding between their products and cheaper products.
- Rebecca Sutton of SFEI will be giving a talk for Cal OIMA entitled "Microplastics Contamination in the San Francisco Bay" on July 28. Committee members expressed concern about this title since it implies a problem where we are not sure there is one. Karin North will contact Dr. Sutton about changing the title.
- *Plastic Foam Ban* – Both San Francisco and Palo Alto have banned plastic foam in packaging and various novelty items.

Nutrients

- *Optimization/Upgrade Studies* – The consultant team released the first wave of facility reports on May 9 (see schedule). BACWA hosted a workshop on June 27 to discuss the facility reports with its members. The permits committee's reaction the workshop was generally favorable. A second workshop to be held later this year will include Regional Water Board staff.
- *Nutrient Watershed Permit Survey* - As part of the workshop (above), BACWA polled its membership to get an idea of the desired direction for the next watershed permit negotiations. There was a sense among the committee members that some of the questions in the survey were unclear.
- *Annual Reporting* – HDR provided a revised data worksheet for agencies to input their data for the Nutrient Annual Report. Data are due to HDR on July 31. In addition to effluent data, HDR is now collecting influent data from agencies that choose to do influent monitoring.

Drought/Recycling

- *State General Order for Recycled Water* – The State Water Board will require enrollment of Regional Permittees in the General Order within three years. BACWA will discuss the enrollment process with the Regional Water Board at the joint meeting next Monday. One possibility is for BACWA to develop a checklist of requirements for Engineering Reports and O&M Reports to help streamline the enrollment.
- *SB163 (Hertzberg)* – This bill was dropped by its author, but will likely be reintroduced next year.
- *Recycled Water Survey* – BACWA is issuing surveys with Optimization/Upgrade facility reports so that the consultant can calculate loads removed through water recycled. BACWA worked to make sure that the data requested is convergent with that which will be requested by DWR in a survey that they plan to issue later this summer, so agencies will not have to generate two sets of numbers.
- *RO Concentrate Study* **–** Santa Clara Valley water district will fund a pilot project looking at advanced oxidation and wetlands treatment of RO concentrate. BACWA is continuing to work with them and the science team to get Proposition 1 funding to offset costs.

NPDES Update

EPA has issued Proposed Updates to the NPDES rule, impacting items such as toxicity, antidegradation, and dilution. In general, these changes reflect standard practice in Region 2, so no impacts are anticipated. CASA is commenting on the proposed amendments. One of their key objections is a provision that allows use of actual, rather than design, flow when calculating mass-based effluent limits. There was some confusion about the CASA letter wording on the mass-based effluent limits that Lorien Fono will work to clarify.

Announcements

- Toxicity – State Water Board still targeting July for new draft of Toxicity Plan.
- Lila Tang has retired from the Regional Water Board.

Report out from the 4/15 Executive Board meeting and 5/3 Joint meeting with the Regional Water Board

- *ELAP Certification* - Nirmela Arsem gave a presentation on the ELAP standards. Full TNI standard are no longer on the table, but regardless of the exact standard, the requirements will be more documentation-intensive than at present. Lab certification fees have already increased and will do so again next month.
- *Arleen Navarret Award Recipients* – Karri Ving described her trip to visit King County's biosolids recycling project. Rosey Jenks described her trip to visit the Bullitt Building, which has a closed water system.
- *AIR Committee Meeting with BAAQMD* – The AIR committee held their annual meeting with the Air District. The key issues were the Clean Air Plan, which will include ways to reduce green house gas emissions related to the Water Sector, as well as development of regulations on digester gas venting and hydrogen sulfide emissions. Beginning in FY17, the AIR committee will be supported by Sarah Deslauriers (Carollo) and Courtney Mizutani (independent consultant).
- *Bay Area Regional Resiliency Task Force (BARR)* – There was a robust discussion on BACWA's position on water recycling as part of BARR.

Next BACWA Permits Committee Meeting: Tuesday, August 9, EBMUD.

Pretreatment Committee – Report to BACWA Board

Pretreatment Committee Training
Executive Board Meeting Date:
Committee Chairs: Tim Potter, Kirsten Struve

Committee Request for Board Action: None

The BACWA Pretreatment Committee co-hosted a training event. Specifically, the BACWA Pretreatment committee identified training topics and provided feedback to EEC on the agenda and BACWA Pretreatment member San Leandro provided the venue. This Board Report summarizes the training event.

Trainer	EEC Environmental
Subject and Outline	Pretreatment Training (see attached flyer): • 40 CFR Key Provisions • Program Elements • Regulatory Climate Forecast • Updating Local Limits • Audit Preparation • Categorical Standards • Program Modification
Date and Location	June 22, 2016 at San Leandro Community Library (thank you to City of San Leandro for organizing)
Duration	8 hours
Cost	No BACWA funds were used, EEC provided training and food
Contact hours	CWEA contact hours (8); certificates will be distributed by EEC
Attendees	92 Attendees from 25 Agencies
Feedback	No official surveys were collected, however, verbal feedback from participants was very positive.

Industrial Pretreatment Training

Location: San Leandro, CA.
Public Library Lecture Hall
300 Estudillo Ave.
(See Attachment)

June 22, 2016

EEC ENVIRONMENTAL

EEC Environmental (EEC) recognizes the unique challenges of an industrial pretreatment program, and has developed a training workshop that addresses these challenges. The training is designed for inspectors, permit writers, compliance officers, and other pretreatment personnel, with the goal of increasing basic knowledge of the Clean Water Act and the National Pretreatment Program. Additionally, the training will cover unique situations in areas such as permit writing, specific industry categories, local limits evaluations and enforcement. Attendees will have the opportunity to engage in one on one discussion with industrial pretreatment experts to address questions specific to their operation.

Featured presenters are some of EEC's foremost experts in the field. The following is a brief description of their areas of expertise:

Mr. Keith Silva worked for the U.S. EPA at the Agency's Headquarters, and Regions 7 and 9 for more than 38 years implementing and enforcing environmental laws, primarily the Clean Water Act. Keith's work as the industrial pretreatment program manager consisted of training, advising, educating, collaborating, and conducting technical and regulatory research and analysis. He brings the unique and invaluable perspective of an EPA regulator.

Dr. John Parnell is regarded as a pretreatment expert by wastewater professionals throughout the United States. He specializes in pretreatment program evaluation and has more than 20 years of extensive experience in implementing and administering industrial pretreatment programs and working with both municipalities and industrial users to solve pretreatment challenges.

Mr. Najib Saadeh has more than 20 years of experience in process and environmental engineering and more than 15 years of experience in project management. Najib's experience in industrial pretreatment program evaluation, remedial plan development, and local limits development affords him the perspectives of both public agencies and private industry.

Mr. Jim Kolk is an industrial engineer with more than 20 years of expertise in wastewater/sewer system program support, including FOG program development, sanitary sewer overflow (SSO) response and data management, stormwater compliance, collection system characterization, and geographic information system (GIS) / database integration.

Pretreatment Training Agenda

7:30am – 8:00am

Check-in with coffee and snacks

AM Session 8:00am – 12:00pm (**4 hours**)

A. 40 CFR Key Provisions
    a. *Prohibited discharges* – Brief overview of the general prohibitions and their location in 40 CFR
    b. *SIU Classifications* – Overview of triggers and borderline facilities
    c. *Categorical Facilities* – Discuss the major categories and how to properly classify facilities

B. Program Elements
    a. *Legal Authority* – Important ordinance considerations, ERP, local limits, multi-jurisdictional agreements
    b. *Industrial Waste Survey* – Procedures, sources, important information from IUs, tracking
    c. *Permitting* – Types, duration, accuracy of information, Permit Basis document, CWF
    d. *Inspections* – Frequency, announced vs. unannounced, procedures, level of detail, inspection reports
    e. *Monitoring and Reporting* – Monitoring points, SMR, POTW monitoring, timing, data/document management
    f. *Enforcement* – Typical ERP actions, escalation criteria, timely and defensible, scenarios

C. Regulatory Climate Forecast
    a. Dental Industry
    b. Changes to Categorical Classifications
    c. Emerging Pollutants
    d. Nutrients

Noon – 1:00pm

Lunch and visiting (Lunch provided by EEC)

PM Session 1:00pm – 5:00pm (**4 Hours**)

A. Updating Local Limits
    a. Regulatory Requirements
    b. Ongoing Sampling of Key Parameters at Headworks and in Process
    c. Conducting the Technical Evaluation – Safety factor, capacity, statistical analysis (outliers, ND)
    d. Allocations methodologies (uniform concentrations vs. mass allocation)

B. Audit Preparation
    a. Important documentation, ride-along inspections
    b. Mock Audit

C. Categorical Standards
    a. Bio-engineering specifics
    b. New technologies
        i. Solar energy production
        ii. Water reclamation

D. Program Modification
    a. Standard Operating Procedures for evaluation and modification
    b. Control Authority and internal approvals
    c. Required Frequency

E. Panel Discussion

5:00 pm

Adjourn

Executive Director's July 2016 Report

NUTRIENTS:

Completed a variety of tasks and activities associated with BACWA's interests on nutrients and collaborating with the Water Board including:
- Attended and participated in conference calls as well as the 20th meeting of the NMS Steering Committee's Planning Subcommittee and provided BACWA in-kind services by serving as scribe. Following the meeting prepared detailed meeting minutes and summary of action items.
-Chaired the monthly CMG meeting with the main topic being the review of the new cost tables.
-Coordinated with the OP/Upgrade consulting team on technical and administrative issues.
-Coordinated with the Limnotech project manager on the preparation of the scientific critique of the Assessment Framework documents.
-Hosted the fourth bi-weekly conference call with Limnotech on the review of the Assessment Framework documents.
-Prepared for and presented permit alternatives at the Workshop to review the Optimization/Upgrade study results with the BACWA membership.
-Coordinated with the EBMUD project manager on the EPA Sidestream Treatment research grant for review of a manuscript for presentation at the WEF Nutrient Conference.
-Provided a presentation to the CWEA Professional Development Committee on the status of nutrients in San Francisco Bay.

BACWA BOARD MEETING AND CONFERENCES:

-Worked with staff in preparing for the July BACWA Board meeting including reviewing the agenda with the Board Chair.
- Prepared for and attended the BACWA monthly Board meeting in June.
-Prepared for the next bi-monthly Joint Meeting with the Water Board in July.
-Continuing to track all action items to completion.
-Worked with the AED to visit and select a venue for the 2017 Annual Meeting

PERMIT COMMITTEE:

-Engaged in discussions on the next steps in response to the upcoming release of the new EPA selenium water quality objectives for San Francisco Bay.

COLLECTION SYSTEM COMMITTEE:

-Attended the monthly meeting of the Committee.

ASC/SFEI:

-As a member of the Executive Committee, coordinated with SFEI Executive Director on Board activities and participated in the June committee conference call meeting.

-Represented BACWA at the Mircoplastics Workshop.
-Chaired the Governance Committee conference call to discuss transition to a new Executive Committee.

CASA:

-Participated in the planning conference call to discuss launching a UTOF web page that would service as a resource for Summit Partner members.

NACWA:

-Attended the annual summer conference discussing Leadership Strategies for the Smart Utility

FINANCE:

-Reviewed the monthly BACWA financial reports with the AED.
-Continued coordinating with the AED in tracking the revenues coming in from the BACWA FY 16 member invoices.
-Worked with the AED to begin the close-out process for FY 16.

AIR COMMITTEE:

-Coordinated with the Committee on the transition to the new consultant providing technical support.

RECYCLED WATER COMMITTEE:

-Participated in the conference call for preparation of the Prop 1 grant proposal for funding a recycled water research project.

LAB COMMITTEE:

-Coordinated with the Lab Committee Chair on progress on developing protocols for testing wastewater effluent for microplastics and the presentation at the June 29th Microplastics Workshop.

WOT:

-coordinated with the BACCWE leadership in putting in place a contract for assistance in launching the new program a Gavilan College.

ADMINISTRATION:

Held the monthly BACWA staff meeting to coordinate and prioritize activities.

-Signed off on invoices, reviewed correspondence, prepared for upcoming Board meeting, responded to inquiries on BACWA efforts, oversaw updating of web page and provided general direction to BACWA staff.
-Worked with the RPM in the preparation of the monthly BACWA bulletin.
-Coordinated with the AED to plan activities and review duties, schedules, and priorities.
-Developed and responded to numerous emails and phone calls as part of the conduct of BACWA business on a day-to-day basis.
-Participated in a conference call with the BACWA file service provider to discuss improvements in the file storage system.
-Met with BACWA staff and EBMUD accounting staff to discuss transition to FY 17 and potential additional investment opportunities for BACWA reserves.

MISCELLANEOUS MEETINGS/CALLS:

-EBMUD's program manager on Prop 50 and Prop 84 and transition of program administration to ABAG
-BACWA Chair and Committee Chairs on items that arose during the month
-Water Board staff on coordinating the nutrient activities
-other misc calls and inquiries regarding BACWA activities
-participated in coordination calls with the HDR project manager
-responded to Board member's requests for information

BACWA BAY AREA CLEAN WATER AGENCIES

BACWA BOARD CALENDAR

August 2016 to July 2017

DATE	AGENDA
7/18/2016	
Joint Meeting	**Other Business: Discussions**
Items due: ?	Presentation: Risk Reduction
Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono	
8/19/2016	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 8/12	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	Update on FY18 Invoicing
Williams; Fono; Hull	**Authorizations & Approvals**
	Approval: Solano Comm College Agrmt - Fall 2016
	Other Business - POLICY/STRATEGIC
	Discussion: Draft Agenda Pardee Technical Seminar
	Discussion: WB Joint Meeting Debrief
	Discussion: RMP Update (Phil Trowbridge)
	Discussion: Risk Reduction Update
	Other Business - OPERATIONAL
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)
8 or 9/?/2016	
Joint Meeting	**Other Business: Discussions**
Items due: ?	
Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono	
9/16/2016	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 9/9	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	**Authorizations & Approvals**
Williams; Fono; Hull	**Other Business - POLICY/STRATEGIC**
	Discussion: Draft Agenda Pardee Technical Seminar

	Discussion: Annual Meeting Planning
	Discussion: Draft Agenda Jt Meeting Water Board
	Other Business - OPERATIONAL
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

9/?/2016	
Nutrient Optimization/Upgrade Workshop #2	
Pagano; Connor; Horenstein; Ervin; Bailey	Optimization/Upgrade Studies
Williams; Fono	Water Board

10/12-14/2016	
Pardee Technical Seminar	
Pagano; Connor; Horenstein; Ervin; Bailey	
Williams; Fono; Hull	

11/18/2016	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 11/11	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	FY16 Annual Report & Audited Financials
Williams; Fono; Hull	**Authorizations & Approvals**
	Other Business - POLICY/STRATEGIC
	Discussion: Pardee Debrief & Survey
	Discussion: Draft Agenda Joint Meeting with WB
	Discussion: Biannual Update on CWCCG (SDeslauriers)
	Other Business - OPERATIONAL
	Discussion: Annual Meeting Planning
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

12/?/2016	
Joint Meeting	**Other Business: Discussions**
Items due: ?	
Pagano; Connor; Horenstein; Ervin; Bailey	
Williams; Fono	

12/16/2016	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)

Items due: 12/9 Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono; Hull	Monthly Treasurer's Report (EBMUD Accounting) **Authorizations & Approvals** **Other Business - POLICY/STRATEGIC** Discussion: HDR Quarterly Update on Optimization/ Upgrade studies Discussion: WB Joint Meeting Debrief **Other Business - OPERATIONAL** Discussion: FY18 Budget Planning Schedule Discussion: Annual Meeting Planning **Reports** Committee Reports (Committee Chairs) Board Reports (Executive Board) ED Report (ED) RPM Report (RPM)

1/27/2017 **Annual Members Mtg** Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono; Hull	

2/17/2017 **Monthly Board Mtg** Items due: 2/12/15 Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono; Hull	**Consent** Previous Board Meeting Minutes (AED) Monthly Treasurer's Report (EBMUD Accounting) **Authorizations & Approvals** Approval: Solano Comm College Agrmt - Spring 2016 **Other Business - POLICY/STRATEGIC** Presentation: CPSC Update (Heidi Sanborn) **Other Business - OPERATIONAL** Discussion: FY2017 Budget Planning Discussion: Annual Meeting Debrief **Announcements** Pardee Seminar Dates **Reports** Committee Reports (Committee Chairs) Board Reports (Executive Board) ED Report (ED) RPM Report (RPM)

3/17/2017 **Monthly Board Mtg** Items due: 3/? Pagano; Connor; Horenstein; Ervin; Bailey Williams; Fono; Hull	**Consent** Previous Board Meeting Minutes (AED) Monthly Treasurer's Report (EBMUD Accounting) **Authorizations & Approvals** **Other Business - POLICY/STRATEGIC** Discussion: WB Joint Meeting Debrief Discussion: HDR Quarterly Update on Optimization/ Upgrade studies Discussion: Draft Agenda April Water Board Jt Mtg

	Presentation: CPSC Update (Heidi Sanborn)
	Other Business - OPERATIONAL
	Discussion: Second Draft of FY17 Budget
	Announcements
	Conflict of Interest Filing Deadline - April 1st
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

4/21/2017	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 4/?	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	**Authorizations & Approvals**
Williams; Fono; Hull	Approval: FY18 Budget
	Other Business - POLICY/STRATEGIC
	Discussion: WB Joint Meeting Draft Agenda
	Other Business - OPERATIONAL
	Discussion: Succession Planning FY18
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

5/?/2017	
Joint Meeting	**Other Business: Discussions**
Items due:	
Pagano; Connor; Horenstein; Ervin; Bailey	
Williams; Fono	

5/19/2017	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 5/?	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	**Authorizations & Approvals**
Williams; Fono; Hull	Approval: FY18 Amendments/Agreements
	Approval: Officers: Chair & Vice-Chair
	Approval: BACWA Reps to ASC/SFEI Governing Board
	Authorization: Legal Support Amendments
	Other Business - POLICY/STRATEGIC
	Discussion: Biannual Update on CWCCG (SDeslauriers)
	Discussion: WB Joint Meeting Debrief
	Discussion: Pesticides Update (Kelly Moran)
	Other Business - OPERATIONAL

	Request for updated Board Designee Letters for FY17
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

6/16/2017	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 6/?	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	**Authorizations & Approvals**
Williams; Fono; Hull	Approval: FY18 Agreements
	Other Business - POLICY/STRATEGIC
	Discussion: HDR Quarterly Update on Optimization/ Upgrade studies
	Discussion: WB Joint Meeting Draft Agenda
	Other Business - OPERATIONAL
	Discussion:
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

6/?/2017	
BAAQMD Workshop	
Pagano; Connor; Horenstein; Ervin; Bailey	
Williams; Fono	

7/21/2017	**Consent**
Monthly Board Mtg	Previous Board Meeting Minutes (AED)
Items due: 7/8	Monthly Treasurer's Report (EBMUD Accounting)
Pagano; Connor; Horenstein; Ervin; Bailey	**Authorizations & Approvals**
Williams; Fono; Hull	Approval: Annual Nutrient WS Payment
	Approval: FY17 Agreements
	Other Business - POLICY/STRATEGIC
	Discussion: Draft Agenda Pardee Technical Seminar
	Discussion: RMP Update (Phil Trowbridge)
	Discussion: Risk Reduction Update
	Other Business - OPERATIONAL
	Reports
	Committee Reports (Committee Chairs)
	Board Reports (Executive Board)
	ED Report (ED)
	RPM Report (RPM)

CURRENTLY UNSCHEDULED & SIGNIFICANT	* Aug 2017: Discussion: FY18 Arlene Navarrett Award * BACWA Membership Engagement Opportunities * Tech Seminar/Workshop: CCCSD Cogen explosion need to schedule * SFPUC force main leak and repair, need to schedule * Chlorine Residual Analyzer Investigation * Suggestions for Monthly Meeting Guest Speakers/Presenters: i.e. Jim McGrath, State Water Board

BACWA ACTION ITEMS

Number	Subject	Task	Deadline	Status
	Action Items from June 17, 2016 BACWA Executive Board Meeting			
2016.6-97	AIR Committee long time consultant	send special letter of thanks to CH2M (AED/Chair)	7/15/2016	pending
2016.6-96	NMS Science Plan Funding	Prepare invoices for Palo Alto and Sunnyvale for $30k each to fund P7 (AED)	6/25/2016	completed
2016.6-95	Digester Gas Venting	Request AIR Committee to develop set of BMPs (RPM)	7/15/2016	completed
2016.6-94	BARR Task Force	Invite Doug Wallace of EBMUD to Board Meeting (ED)	7/15/2016	completed
2016.6-93	NMS Steering Committee	Work With David Senn and Jim Ervin to get studies inside the tent (ED)	8/30/2016	pending
2016.6-92	Executive Board Meeting Calendar	Correct dates for Pardee and send Outlook Invitations to Board (AED)	6/21/2016	completed
2016.6-91	Add to BodCal Unscheduled	ELAP Certification Standards/BARR Taskforce Message Consensus/PPIC Sponsorship (AED)	6/20/2016	completed
2016.6-90	AF Technical Document Review	Create high-level points that BACWA can agree on (ED)	7/5/2016	pending
2016.6-89	Opt/Upgrade Workshop	Send reminder email with updated survey attached (AED)	6/20/2016	completed
	Action Items Remaining from Previous BACWA Executive Board Meetings			
2016.5-82	Biosolids Literature Review	Committee to consider alternatives and matching funds for further Board deliberation (AC)	9/30/2016	pending
2016.5-77	Opt/Upgrade Workshop	Schedule a 2nd Workshop in last summer (ED)	9/30/2016	pending
2016.3-65	Proposition 84	Develop agreement between BACWA & ABAG to transfer Prop 84 admin responsibilities (AED/Paul Gilbert-Snyder)	7/30/2016	pending
2016.3-61	Membership Policy	Develop policy for out of region agency membership (ED)	7/30/2016	pending

FY 16: *89 of 97 Action Items completed.*
FY 15: *90 of 90 Action Items completed.*
FY 14: *128 of 128 Action Items completed.*
FY 13: *67 of 67 Action Items completed.*

Regulatory Program Manager's Report to the Board

June 20, 2016 – July 13, 2016
Prepared for the June 15, 2016 Executive Board Meeting

NUTRIENT SUPPORT: Participated in CMG conference call. Reviewed Watershed Permit negotiation survey and communicated with member agencies about their responses. Provided information to member agency staff about Optimization/Upgrade studies. Worked with consultant on Optimization/Upgrade studies progress report.

BACWA BULLETIN: Drafted and distributed July BACWA Bulletin.

PROPOSITION 1 PROPOSAL: Worked with SFEI staff, Dr. David Sedlak and Dr. Bill Mitch of ReNUWIt, and Santa Clara Valley Water District staff to develop a draft pre-proposal to study engineered wetland and advanced oxidative treatment of reverse osmosis concentrate. Hosted conference call on pre-proposal.

SELENIUM CRITERIA: Reviewed proposed EPA Selenium criteria. Communicated with WSPA, BACWA member agency staff, and Regional Water Board about potential BACWA response.

SHALLOW DISCHARGE PROHIBITION: Discussed permitting strategies with Regional Water Board Staff.

CECs: Worked with SFEI staff to distribute information about CECs sampling opportunity.

COMMITTEE SUPPORT:
AIR – Communicated with new consultant about scope of work and September meeting. Drafted Board report for June meeting with Air Board and posted presentations and other materials to website.
Biosolids: Discussed setting up Google Group for committee. Discussed development of biosolids survey with chair.
Collection Systems – Drafted agenda. Communicated with SFEP about CCMP action on Private Sewer Laterals.
Operations/Maintenance Infoshare – Attended meeting and drafted Board report.
Permits – Attended meeting, and drafted agenda and Board Report for meeting.
Recycled Water – Attended meeting.
Executive Board – Drafted agenda for joint meeting with Regional Water Board on 7/18. Contributed to meeting minutes for 6/17 Executive Board meeting, and 7/15 Executive Board meeting packet.
Staff Meeting – Met with BACWA staff.

MEETINGS ATTENDED: Operations/Maintenance Infoshare (6/29), Staff meeting (7/6), CMG Conference Call (7/8), Prop 1 proposal conference call (7/12), Permits Committee (7/12), Recycled Water Committee (7/13).