

## Workgroup Activities – Third Quarter 2012

### A. Contaminant Fate Workgroup

#### Purpose of Workgroup

The purpose of the workgroup is to evaluate the fate of contaminants in the Bay, to understand the contribution of Bay margins to the overall health of the Bay, and to assess the potential impacts of Bay management actions on Bay recovery.

#### Meetings:

The Contaminant Fate Workgroup (CFWG) will meet in the fall to review tactical plans developed in coordination with the nutrient monitoring and modeling efforts and to further refine modeling work for 2013.

#### Milestones:

- Completion of the Bioaccumulation Conceptual Model. The document is currently undergoing final editing and layout for posting to the website. The report summarizes key datasets and current knowledge of bioaccumulation in the Bay, and identifies priorities for future monitoring and modeling to support management of bioaccumulative pollutants.
- Completion of the Margins Conceptual Model. The document can be found at the following link: (<http://www.sfei.org/documents/margins-conceptual-model>). The margins of the Bay are teeming with important activities: industrial activities such as airports, refineries, ports, and landfills as well as biological activities such as wetlands, bird rookeries, and seal haul-out sites. It represents a complex environment where the watersheds meet the Bay. This report identifies key processes – physical, chemical and biological – and explores modeling efforts that can be used to help us better understand this complex environment.

#### Activities for the Third Quarter of 2012:

- Development of tactical plan. Drs. Jones, Yee, Senn, and Davis discussed an outline of a plan with a smaller group of RMP stakeholders and Water Board staff on May 1<sup>st</sup> and June 4<sup>th</sup>. There was support for integrating the modeling efforts as much as possible, but some differences in the spatial and temporal scales of interest and timelines for products needed for various management questions. Partnering efforts with other agencies already modeling in the Bay will be explored and developed.
- A joint meeting of the full CFWG and its nutrient analog will occur in early fall to review the draft modeling workplan/ tactical plan. This would be open to a broader group.

For more information, see previous CFWG minutes and agendas at our website <http://www.sfei.org/rmp/cfwg> or contact the CFWG leader, Don Yee, at [don@sfei.org](mailto:don@sfei.org).

## **B. Sources Pathways and Loading Workgroup (SPLWG)**

### Purpose of Workgroup

The purpose of the workgroup is to monitor storm water, small tributaries, and delta outflow to understand contaminant loads to the Bay, to identify high priority tributaries for management actions, to evaluate how loads are changing over time, and to assess possible options for improving water quality.

### Meetings:

The SPLWG met on October 25<sup>th</sup>, 2011 to discuss progress on the Small Tributaries Loading Strategy multi-year plan, to receive an update on the spreadsheet model, to hear the results of the preliminary monitoring at 16 watersheds, to understand plans for monitoring at San Leandro Creek and Sunnyvale Channel East for 2012 and to get an update on event mean concentrations (EMC) literature review.

The Small Tributary Strategy Loading team meets almost monthly to assure that RMP activities are coordinated with the Municipal Regional Permit requirements, Regional Board staff and BASMAA staff.

### Milestones:

- Completion of Zone 4 Line A report that summarizes four years of data ([http://www.sfei.org/sites/default/files/Z4LA\\_Final\\_2012May15.pdf](http://www.sfei.org/sites/default/files/Z4LA_Final_2012May15.pdf)). This study of a small urbanized watershed had several important findings including: 1) some contaminant loads were on par with what has been observed in larger less developed watersheds; 2) small highly urbanized watersheds can be hard to characterize due to the rapid and variable mobilization of contaminants; and 3) dry weather flows tend to have lower percentage of the load as compared to wet weather loads.
- Completed Guadalupe HSPF technical report ([http://www.sfei.org/sites/default/files/Guad\\_HSPF\\_Model\\_forSPLRev\\_17Feb2012.pdf](http://www.sfei.org/sites/default/files/Guad_HSPF_Model_forSPLRev_17Feb2012.pdf)) The Hydrologic Simulation Program-FORTRAN (HSPF) was used to estimate sediment, mercury and PCBs loads moving through this mixed land use watershed as a tool for improved management. Model parameters for hydrology were widely available and were successfully calibrated to observed data at two tributary sites and validated at a downstream mainstem site. HSPF-specific parameters were developed for mercury and PCBs since they do not currently exist in the published literature. Current data limitations hindered the calibration of the sediment and water quality model.
- Completion of the Update of Regional Storm Water Spreadsheet Model (Year II). A GIS-based rainfall-runoff regional watershed spreadsheet model is under development to help assess which Bay tributaries contribute most to Bay impairment from contaminants, what the annual loads and concentrations for the tributaries are, what the long term loading trends are, and what sort of impact potential management actions might have. The second year of model development focused on refining the underlying hydrological model by adding calibration watersheds, removing incongruent data, and refining land-use categories.

- Completion of the Regional Storm Water Spreadsheet Model and EMC literature review (Year 1). The first year focused on developing the hydrological and sediment transport models, which will be refined and extended to pollutants in subsequent years.

#### Activities for the Third Quarter of 2012:

- Selection of two watersheds for 2013 monitoring. New sites for consideration are: North Richmond and Pulgas pump station. The existing four sites are: San Leandro east, Sunnyvale, Lower Marsh, and Guadalupe. The sites that will be covered by the RMP have not yet been determined.
- Wet weather sampling activities for 2012.
  - a. Guadalupe watershed (Completed 3 storms)
  - b. Sunnyvale watershed (Completed 2 storms)
  - c. San Leandro watershed (Completed year 1 monitoring)
  - d. The STLS team decided to demobilize POC stations which concludes WY2012 POC monitoring. Remaining funding for these sites will be held for use in WY 2013.
- Writing summary report of 16 watersheds (reconnaissance work).
- The STLS team met at the end of June to discuss lessons learned from the 1<sup>st</sup> year of POC monitoring.

The next SPLWG meeting will be held on October 24th, 2012. For more information, see previous SPLWG minutes and agenda at our website <http://www.sfei.org/rmp/splwg> or contact the SPLWG lead, Lester McKee, at [Lester@sfei.org](mailto:Lester@sfei.org).

### **C. Exposure and Effects (EE) Workgroup**

#### Purpose of Workgroup

The Exposure and Effect workgroup seeks to answer the following questions: Are pollutants individually or in combination having adverse impacts on Bay biota?; Are there spatial and temporal trends?; Which pollutants are responsible for the impacts?; Are there cost-effective tools that can be used to easily monitor these impacts?; and What are the appropriate guidelines?

#### Meetings:

- The workgroup met with the Emerging Contaminants workgroup to discuss bioanalytical tools and EEWG projects for 2013. The workgroup reviewed the progress on the copper and olfactory nerve project and the PAH and juvenile flatfish. Preliminary copper experiments suggest that there is relatively little toxicity to the olfactory nerve at levels that are observed in the estuary. Confirmation studies will be conducted summer 2012. Similarly relatively few adverse outcomes were observed for juvenile flatfish at levels observed in the estuary; however, histology work remains to be completed.

#### Milestones:

- Completion of the draft report on effects of PAH on juvenile flatfish. A draft report was made available at the meeting; however, additional work needs to be incorporated into the report including histology.

Activities for the Third Quarter of 2012:

- Completion of the EEPS Summary document.
- Planning for the Mesohaline Index development for 2012 and the Causes of Moderate Toxicity workshop at the fall National SETAC meeting.

The next workgroup meeting will be held in Spring 2013. For more information, see previous EEWG minutes and agenda at our website <http://www.sfei.org/rmp/eewg> or contact the EEWG lead, Meg Sedlak, at [meg@sfei.org](mailto:meg@sfei.org).

## **D. Emerging Contaminants Workgroup**

### Purpose of Workgroup

The purpose of the emerging contaminant workgroup is to identify contaminants of emerging concern (CECs) that have the potential to adversely impact beneficial uses of the Bay.

### Meetings:

The ECWG met on May 16<sup>th</sup> to discuss the recently completed synthesis document, a strategy for prioritizing chemicals of emerging concern in the RMP, siloxanes, and an update on the non-targeted screening of Bay Wildlife. The bioanalytical tools proposal for 2013 was discussed and will be brought forward with some caveats. Other proposals for 2013 include an update on PBDEs, a review of current use pesticides and a method for updating the CEC strategy.

### Milestones:

- Preparation of an Emerging Contaminants Synthesis report.
- Submitted article on alternative flame retardants in San Francisco Bay (accepted). (<http://www.sfei.org/documents/alternative-flame-retardants-sfbay-sediments-and-wildlife>)
- Submitted draft report/manuscript on alkylphenols and PPCPs in San Francisco Bay.
- Completion of a draft PFC sources paper.

Activities for the Third Quarter of 2012:

- Development of an Emerging Contaminants Strategy.
- Two manuscripts summarizing the National Mussel Watch sampling in California for chemicals of emerging concern. One paper will focus on personal care products, alkylphenols, current use pesticides and nanomaterials. The second paper will focus on flame retardants and perfluorinated compounds.
- Continuation of NIST broadscan work. Samples of harbor seals and mussels have been sent to NIST for method development and analysis.

Next ECWG meeting will be held Spring 2013.

For more information, see previous EC workgroup minutes and agenda at our website <http://www.sfei.org/rmp/ecwg> or contact the ECWG lead, Meg Sedlak [meg@sfei.org](mailto:meg@sfei.org).

## **E. Nutrients**

### Purpose of Workgroup

The purpose of this workgroup is to evaluate nutrients, methods for monitoring nutrients/ indicators, and scenarios that may result in adverse impacts to the Bay.

### Meetings

The Nutrient Stakeholder Advisory Group Technical Subcommittee (SAG-TC) met on June 22<sup>nd</sup>, 2011, and provided detailed feedback on a funding proposal to the RMP for 2013, and on draft of the nutrient strategy for the Bay.

### Milestones

- A draft version of the nutrient strategy was presented to the SAG on June 22<sup>nd</sup> 2012. A revised draft strategy will be developed by September that addresses the feedback, with a final strategy distributed in December that is intended to be a living document that will be updated on an as needed basis.
- The approach for developing the nutrient conceptual model was developed in February-April, through literature review and meetings with regional scientists and stakeholders
- A nutrient conceptual model technical team meeting was held on May 7-8. Technical team members include Jim Cloern (USGS), Lisa Lucas (USGS), Anke Mueller-Solger (IEP), Raphael Kudela (UCSC), Mark Stacey (UC-Berkeley), Mike Connor (EBDA), Tim Hollibaugh (U-Georgia), Dick Dugdale (SFSU-RTC), Wim Kimmerer (SFSU-RTC), Martha Sutula (SCCWRP), and David Senn (SFEI). Accomplishments of the meeting include:
  - agreeing on a structure for the conceptual models (organized largely around measureable indicators and drivers: phytoplankton biomass, dissolved oxygen, nitrogen cycling, phytoplankton community composition, algal biotoxins, and hydrodynamics)
  - developing draft conceptual models for phytoplankton biomass, nitrogen cycling, and phytoplankton community composition
  - discussion of problem statement: what would a problem look like in SF Bay if one were to occur?
  - identification of major data gaps or uncertainties
- Initial work on the RMP-funded nutrient load project commenced in the second quarter. Loads from POTWs to individual Bay segments were computed based treatment types and design flows, and, where data was available, actual flows and effluent composition were used. As an example, in the case of Central Contra Costa Sanitary District, the approximate method and the estimate based on real data agreed to within <10% for NH<sub>4</sub> loads.
- Field work for nutrient stormwater measurements was carried out in January-April 2012. Final nutrient data arrived at SFEI in late May, and the RMP data management group

completed QA/QC on June 12. Across all 4 sites, concentrations varied over a relatively narrow range.

#### Activities for the Third Quarter of 2012:

- A subset of the conceptual model technical team (augmented by specialists in nitrogen cycling) will reconvene in August for a focused discussion on nitrogen cycling, specifically on data availability for key processes or parameters, prioritization of data needs, and recommendations on potential studies. A draft conceptual model report will be developed during Summer 2012 with input from key technical team members. The technical team will reconvene in early September to discuss the draft, and the goal is to distribute a draft to RMP stakeholders by end of September.
- A technical memo presenting and analyzing the 2012 stormwater data will be completed in August. This data will inform any sampling that may be carried out in 2012-2013.
- Work will continue on the nutrient loading study in Summer 2012. Key goals include refining POTW loads to individual Bay segments based on actual historic data (2004-2011) that may become available through a request from the Regional Board, and through individual requests by SFEI staff to POTW managers. Nutrient data from the stormwater study, combined with past data collected in the region and at other locations with comparable land-use and climate, will be used to calculate approximate loads from stormwater to individual Bay compartments. A plan is also being developed to quantify seasonally-varying loads that enter Suisun Bay from the Delta, an estimate that is complicated by the differing sources and speciation between the Sacramento and the San Joaquin, and the complex hydrology.

For more information, please contact David Senn at [davids@sfei.org](mailto:davids@sfei.org).

## **F. Dioxin**

The dioxin strategy team met on October 26<sup>th</sup>, 2011 to review the sediment, water, and biota samples that have been collected to date. The water samples were dominated by the octa and the hepta congeners. Sediment samples were collected in both wet and dry seasons and no significant differences were noted; similarly, concentrations remain the same as those observed in 2000. Spatial patterns suggest broad regional trends. Again sediments are dominated by octa and hepta congeners. In the sediment cores, there appears to be a peak after WWII followed by a decline. Dioxin concentrations in shiner surfperch and white croaker continue to exceed the RWQCB guidelines. It was proposed that upon completion of the dioxin studies, it would be appropriate to conduct a dioxin synthesis (2014). Some members thought mass balance and food web model products should be folded into the synthesis rather than as separate reports.

#### Activities for the Third Quarter of 2012:

- Develop a scope of work for dioxin analysis of cores based on strategy team recommendation.

For more information, please contact Don Yee at [don@sfei.org](mailto:don@sfei.org).

## G. Status and Trends Sport Fish

### Purpose of Workgroup

The purpose of the workgroup is to design RMP studies relating to sport fish contamination.

### Meetings

The workgroup met on July 10<sup>th</sup> for a general update and to hold initial discussions of information gaps that could be addressed in the next round of sampling. RMP sport fish monitoring has been switched from a three-year cycle to a five-year cycle to maximize cost-effectiveness and to coordinate with state-wide monitoring efforts. The next round of sampling will occur in 2014.

### Milestones

The report on the 2009 SWAMP/RMP sport fish monitoring report has been released and is available on our website at <http://www.sfei.org/contaminants-fish-california-coast>. The report on the full two-year statewide coast survey, which provides valuable context for interpreting contaminants in Bay sport fish, was released in May 2012: <http://www.sfei.org/node/4075>

For more information, please contact Jennifer Hunt at [jhunt@sfei.org](mailto:jhunt@sfei.org).

## H. Items of Interest

There are a number of interesting activities that are not RMP-related but nonetheless of interest to the RMP community.

### Delta RMP

Brock Bernstein and Thomas Jabusch (Aquatic Science Center) have prepared a first draft proposal for the “Monitoring and Assessment Framework and its Implementation” for the Delta Regional Monitoring Program. This document is intended to be a carefully considered **starting point** for detailed implementation decisions among involved stakeholders. An **all-day meeting is planned for August 15<sup>th</sup>** at the Central Valley Regional Water Board to discuss comments, the document, and the program with stakeholders. The second edition of the Pulse of the Delta, which includes a new Status and Trends section, has been under production and is nearing completion. For more information, go to the Central Valley Regional Water Board's Delta RMP website:

[http://www.waterboards.ca.gov/centralvalley/water\\_issues/delta\\_water\\_quality/comprehensive\\_monitoring\\_program/index.shtml](http://www.waterboards.ca.gov/centralvalley/water_issues/delta_water_quality/comprehensive_monitoring_program/index.shtml).

### SWAMP Bioaccumulation

Jay Davis is assisting monitoring biota at the State level. Current activities include preparing a report on contaminants in fish in California rivers and streams (due May 2013), a study of mercury effects on wildlife in California lakes (sampling summer 2012), a workshop on biotoxin monitoring this fall, a forthcoming report documenting long-term trends in bioaccumulation in mussels, and development of a statewide strategy for bioaccumulation monitoring, assessment, and communication.