

# Summary of BASMAA Monitoring – Regional Monitoring Coalition (RMC)



Prepared by: Armand Ruby  
Armand Ruby Consulting



# Who Is the RMC?

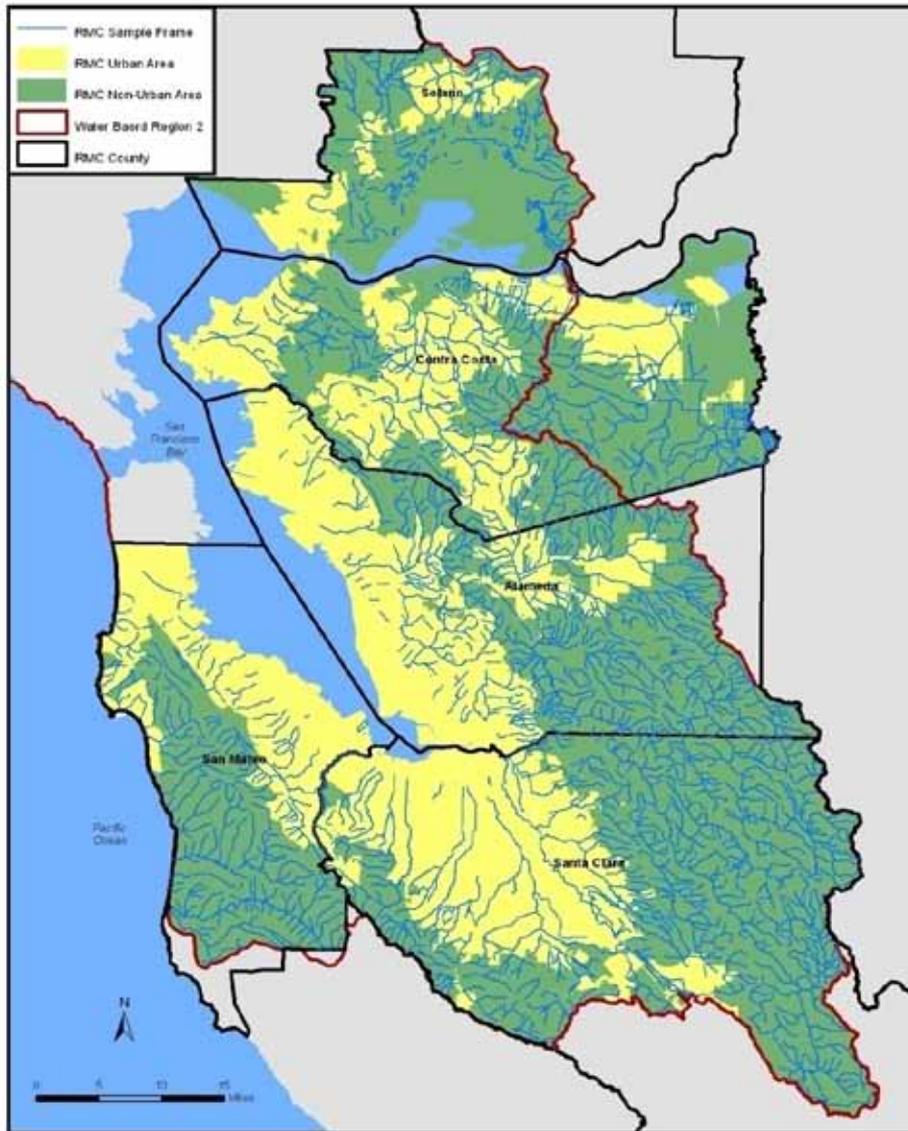
In early 2010, several members of the Bay Area Stormwater Management Agencies Association (BASMAA) formed the Regional Monitoring Coalition (RMC), to coordinate water quality monitoring required by Phase 1 municipal separate storm sewer systems (MS4) agencies under terms of the Bay Area **Municipal Regional NPDES Stormwater Permit (MRP)**.

# But Who Is the RMC, really?

The RMC includes the following participants:

- Alameda Countywide Clean Water Program (ACCWP)
- Contra Costa Clean Water Program (CCCWP)
- San Mateo Countywide Water Pollution Prevention Program (SMCWPPP)
- Santa Clara Valley Urban Runoff Pollution Prevention Program (SCVURPPP)
- Fairfield-Suisun Urban Runoff Management Program (FSURMP)
- City of Vallejo and Vallejo Sanitation and Flood Control District (Vallejo)

The RMC study area covers 3,407 sq mi of land in the SF Bay Area.



BASMAA Regional Monitoring Coalition (RMC) study area

# Why Is the RMC?

The California Regional Water Quality Control Board, San Francisco Bay Region, issued Municipal Regional Stormwater NPDES Permit Order R2-2009-0074, NPDES Permit No. CAS612008, on October 14, 2009.

## MRP Provision C.8.a. Compliance Options

- i. Regional Collaboration – All Permittees shall comply with the monitoring requirements in C.8, however, Permittees may choose to comply with any requirement of this Provision through a collaborative effort to conduct or cause to be conducted the required monitoring in their jurisdictions. Where all or a majority of the Permittees collaborate to conduct water quality monitoring, this shall be considered a **regional monitoring collaborative**.

# But Why Is the RMC, really?

Formed to collaboratively address monitoring requirements in the MRP.

Two carrots were offered BASMAA agencies in the MRP to form a regional collaborative:

- An extra year to plan for implementation of the collaborative monitoring
- Reduced requirements for numbers of Stressor/Source ID projects to follow up on triggers

# What Is the RMC Doing?

Monitoring is conducted in flowing water bodies to meet MRP monitoring provisions C.8.c (Creek Status) and C.8.e (Pollutants of Concern, Loads and Long-Term Trends).

RMC monitoring covers:

- perennial and non-perennial creeks and rivers
- urban and non-urban areas
- portions of the five participating counties that fall within the SF Bay Region Water Board boundary, plus the eastern portion of Contra Costa County, which drains to the Central Valley Region

# What Is the RMC Doing?

RMC monitoring generates data to answer regional management questions about water quality and beneficial use condition in Bay Area creeks:

1. What is the condition of aquatic life in creeks in the San Francisco Bay Area; are water quality objectives met and are beneficial uses supported?
2. What are the major stressors to aquatic life?
3. What are the long-term trends in water quality in creeks over time?

# Annual Monitoring Requirements and # Sites per County

Creek Status Monitoring Elements, MRP Table 8.1

Status Monitoring Parameter	Minimum Sampling Occurrence	Minimum # Sample Sites to Monitor/Yr Santa Clara & Alameda Permittees/ Contra Costa & San Mateo Permittees/ Fairfield-Suisun & Vallejo Permittees
<p>Biological Assessment (Includes Physical Habitat Assessment and General Water Quality Parameters) Nutrients (total phosphorus, dissolved orthophosphate, total nitrogen, nitrate, ammonia, silica, chloride, dissolved organic carbon, suspended sediment concentration)</p>	<p>1/yr (Spring Sampling)</p>	<p>Spring 20 / 10 / 4</p>
<p>General Water Quality (dissolved oxygen, temperature, conductivity, pH)</p>	<p>2/yr (Concurrent with bioassessment &amp; during the Aug. - Sept. timeframe)</p>	<p>3 / 2 / 1</p>
<p>Chlorine (Free and Total)</p>	<p>2/yr Spring &amp; Dry Seasons</p>	<p>Spring 20 / 10 / 2 Dry 3 / 2 / 1</p>
<p>Temperature</p>	<p>60-minute intervals, April - Sept.</p>	<p>8 / 4 / 1</p>

# Annual Monitoring Requirements and # Sites per County

Creek Status Monitoring Elements, MRP Table 8.1, cont'd

Status Monitoring Parameter	Minimum Sampling Occurrence	Minimum # Sample Sites to Monitor/Yr Santa Clara & Alameda Permittees/ Contra Costa & San Mateo Permittees/ Fairfield-Suisun & Vallejo Permittees
Toxicity – Water Column	2/yr (1/Dry Season & 1 Storm Event)	3 / 2 / 1
Toxicity– Bedded Sediment, Fine-grained	1/yr	3 / 2 / 1 At fine-grained depositional area at bottom of watershed
Pollutants – Bedded Sediment, fine- grained	1/yr	3 / 2 / 1 At fine-grained depositional area at bottom of watershed
Pathogen Indicators	1/yr (During Summer)	5 / 5 / * *Fairfield-Suisun & Vallejo Permittees: 3 sites twice in permit term
Stream Survey (stream walk & mapping)	1 waterbody/yr	9 / 6 / 3 stream miles/year

# How Is the RMC Doing That?

Through a combination of:

- “targeted” sampling, in which sites are selected based on local program data needs, and
- a “probabilistic” monitoring design, to establish a statistically representative understanding of aquatic life condition in wadeable creeks in the RMC area

# How Is the RMC Doing *That*?

The **Probabilistic design** is stratified by general land use category (urban vs. non-urban) and by county.

This stratification addresses the following questions:

- a. What is the condition of aquatic life in creeks within the RMC area?
- b. What is the condition of aquatic life in creeks within RMC participant counties?
- c. To what extent does the condition of aquatic life in urban and non-urban creeks differ in the RMC area?
- d. To what extent does the condition of aquatic life in urban and non-urban creeks differ in each of the RMC participating counties?

The Probabilistic design was developed using the Generalized Random Tessellation Stratified (GRTS) approach developed by USEPA and Oregon State University (Stevens and Olson 2004); consistent with PSA/SWAMP and SMC/SCCWRP designs

# How Does the RMC Manage All That?

- RMC Creek Status Monitoring Program guidance documents:
  - Creek Status and Long-Term Trends Monitoring Plan
  - Quality Assurance Project Plan
  - Standard Operating Procedures
  - Laboratory Contracting Templates
  - Information Management System Work Plan
  - Local Urban Creeks Monitoring Report Outline/Guidance
- Monthly RMC Monitoring Workgroup meetings
- RMC Monitoring Coordinator
- Coordination with BASMAA Monitoring and Pollutants of Concern Committee (MPC)
- RMC Information Management System (database)
- Regional Urban Creeks Monitoring Report

# Challenges of Regional Collaboration

- County Programs were used to operating independently; some procedural/institutional/administrative hurdles
- County Programs each have own monitoring consultants, contracting
- Additional cost and effort to implement regional collaboration through BASMAA, RMC
- Additional cost-sharing accounting

# Benefits of Regional Collaboration

- Permittees take advantage of two permit “carrots”:
  - Extra year to plan collaborative program, and
  - Fewer Stressor/Source ID projects
- Sharing of costs and effort to produce guidance documents, regional database, regional urban creeks monitoring report
- Regional consistency in monitoring methods and data management
- Ability to generate statistically-based, regional picture of ambient conditions through stratified probabilistic design; improved ability to answer management questions
- Ability to compare SF Bay regional probabilistic design results to PSA, SMC

# Answers to CWQMC Questions

- c. Has the coordination resulted in tools that would benefit coordination efforts by others? **Possibly the RMC SOPs (SWAMP SOPs are a work in progress).**
- d. Would a tool like the Central Valley Monitoring Directory have been helpful in getting the coordination going? **No; other regional monitoring programs were already in place (e.g., RMP), and BASMAA was already established to facilitate regional cooperation among MS4 agencies**
- e. How are the data being managed and made available? **Via the new RMC Access database; uploading to CEDEN**
- f. What are measures of success? **Completion of all required elements of MRP**
- g. How are portals fitting into your programs? **They aren't currently**
- h. What agency data are being integrated? **Only the local MS4 agencies, plus some Bay Area SWAMP-generated data (as part of the probabilistic design)**
- i. What is the role of citizen volunteer monitoring? **History of volunteer involvement esp. re: bioassessment monitoring in Bay Area; not yet fully integrated in RMC**
- j. What do you need from the Monitoring Council? **From CEDEN/SWAMP: Improved constituent list, BMI and algae taxa lists, and additional QA/QC codes, and related updates to SWAMP data checker**

# Questions/Comments?



Armand Ruby tel. 831-477-1214;  
[armand@armandrubyconsulting.com](mailto:armand@armandrubyconsulting.com)