

**Bay Area Stormwater Management Agencies Association**

**Regional Monitoring Strategy**

**February 19, 1998**

## **INTRODUCTION**

The Bay Area Stormwater Management Agencies Association (BASMAA) member agencies have been conducting storm water monitoring and Best Management Practice (BMP) effectiveness studies for several years. Although valuable information has been gathered through these efforts, both Regional Board staff and BASMAA Board believe that a monitoring strategy that coordinates the efforts of storm water programs in the region would increase the efficiency and usefulness of these monitoring efforts. It should be noted that BASMAA storm water programs have been and will continue to fund the Regional Monitoring Program (RMP). Although the RMP is not covered in detail in this report, it is an integral component of the storm water programs monitoring effort.

The BASMAA Regional Monitoring Strategy (BRMS) provides a foundation for a coordinated Bay Area storm water monitoring effort. There are six components of the strategy, Guiding Principles, Strategic Objectives, Study Design, Funds, Revisions, and Schedule.

## **GUIDING PRINCIPLES**

Monitoring should produce information with the potential for changing or confirming management practices. Monitoring activities without such potential should not be conducted.

Monitoring activities should focus upon accomplishing the Strategic Objectives.

Monitoring activities should produce data that has regional applicability whenever possible.

BASMAA's monitoring will be coordinated with other monitoring initiatives.

## **STRATEGIC OBJECTIVES**

The Strategic Objectives are intended to provide a manageable number of issues on which to focus storm water monitoring resources. The following list of objectives represent the current priority issues for storm water management in the Bay Area. The monitoring efforts of the BASMAA member agencies will focus on addressing these issues. It is anticipated that the objectives listed will be worked on for the next four to five years. Over that period of time, some of the objectives may be completed to the point that additional work is not warranted. These objectives will be removed from the list. Other objectives may be added as new issues arise. The first objective, to evaluate BMP effectiveness, will probably continue indefinitely as new technology is developed and needs to be reviewed.

Member agencies are not required to work on every objective. An agency may choose to focus its effort on one or two of the objectives. It is anticipated that through the combined effort of BASMAA agencies the objectives will be addressed. Issues may arise

which are not related to the Strategic Objectives but have important management implications. As appropriate the BASMAA Board will incorporate consideration of these issues into the BRMS.

Listed below are the current Strategic Objectives. A Monitoring Plan that lists the initial tasks that need to be completed to accomplish the objectives is included in Attachment 1.

**OBJECTIVE #1 - Evaluate BMP effectiveness.**

**Background**

Many BMP effectiveness studies have been conducted in the past. Two aspects of BMP effectiveness can be evaluated. The first is the effectiveness of a BMP at removing a constituent from or changing a characteristic of a storm water discharge. The second is the effect removing a constituent or changing a characteristic has on protecting or enhancing beneficial uses. This objective provides for a systematic review of both aspects of BMP Effectiveness. Additional studies should be conducted only when a credible hypothesis exists that a significant source of pollutants could be controlled through the implementation of a practical and affordable BMP.

**Management Implications**

BMPs currently scheduled for implementation may be adjusted based on the results of the effectiveness evaluation. Coordination will minimize duplication of efforts among agencies.

**OBJECTIVE #2 - Assess relative contribution of metals to San Francisco Bay from urban vs. non urban sources.**

**Background**

Many of the BMPs being implemented by local storm water programs are focused on reducing the loads of metals from urban areas to San Francisco Bay. It would be helpful to know the relative contribution of metals from urban vs. non-urban sources to determine the impact these BMPs will have on protecting or enhancing beneficial uses in the Bay.

This issue may be addressed through the South Bay Watershed Initiative and other watershed initiatives. BASMAA will coordinate with this effort to prevent duplication of effort.

**Management Implications**

If results of the evaluation indicate a significant percentage of the total metals load originates from non-urban sources additional efforts by the Regional Board and/or storm water programs to involve agencies responsible for these non-urban areas may be necessary in order to effectively control metal loads to tributary streams and the Bay. In addition further implementation of additional BMPs in the urban areas may not be warranted.

**OBJECTIVE #3 - Investigate the extent and causes of storm water toxicity in the region.**

**Background**

Storm water throughout the region is often toxic to invertebrates in bioassays. Most of this toxicity has been attributed to two organophosphate insecticides (i.e. diazinon & chlorpyrifos). These insecticides are primarily associated with runoff from residential areas. Toxicity that appears to be caused by constituents other than insecticides has also occurred.

**Management Implications**

Results of the studies may lead to focused public awareness campaigns by BASMAA or individual agencies, and pursuit of regulatory initiatives.

**OBJECTIVE #4 - Design and initiate a survey of impacts of storm water on beneficial uses.**

**Background**

Storm water dischargers are required to assess the impacts of their discharges on receiving waters. In this region receiving waters include both local creeks and the Bay.

The storm water programs will continue to support the identification and updating of beneficial uses and the assessment of those uses. Working with other regional entities, BASMAA will help facilitate a consistent regional approach to data gathering and presentation. To the extent practical, storm water programs will work with volunteer monitors and watershed management initiatives.

**Management Implications**

Improved understanding of beneficial use impairment will provide a way to prioritize implementation of BMPs. In order to prevent future degradation, priority areas for BMPs may include watersheds where beneficial uses are currently achieved. Where beneficial uses are currently not achieved due to discharges that are the responsibility of stormwater agencies, current BMPs or performance standards may need to be revised.

## **STUDY DESIGN PLANS**

Study Design Plans will be used to assist with the development and review of monitoring studies. Member agencies will write Study Design Plans for each study to be completed as part of the Monitoring Strategy. Draft Plans will be submitted to the BASMAA Monitoring Committee for review and comment. Each Study Design Plan will provide the following information as appropriate (example Study Design Plan attached):

Name of Study

Lead Agency

Participating Agencies

Relevant Strategic Objective(s)

Objective of the study

Potential effect on management practices

Relevant background information

How has available information been used in the development of the study?

Is there region-wide applicability? How has it been accounted for?

Time Frame

Cost

Obstacle to success

Is the study designed to pick up a specified "signal"? If so, describe statistical method.

A description of the conceptual model of study including key assumptions

The study design including the constituents to be analyzed, number of samples, analytical methods and accuracy, and sample location.

## **FUNDS**

The accomplishment of the objectives will be pursued within the current level of funding allocated by the programs for monitoring. The combined level of funding is expected to be approximately \$500,000 per year. The level of effort of individual programs will vary according to the size of the program.

## **REVISIONS**

This strategy will evolve over time. The mechanism for revisions will be the Annual BRMS Status Report. The Report will be developed by the Monitoring Committee and submitted to the BASMAA Board. The report will include the following: 1) the status of the Strategic Objectives, 2) recommendations for changes to the Strategic Objectives, 3) the implications of study results on BMP implementation, 4) prioritization of BMP effectiveness studies, and 5) other recommendations for revisions as appropriate.

## SCHEDULE

<u>Task Description</u>	<u>Date</u>
<b>BASMAA Monitoring Committee (MC)</b> - Discuss studies for the following fiscal year including potential “Tasks of Regional Benefit” and coordination with the RMP.	Aug/Sep
<b>Member Agencies (MA)</b> - Submit Draft Study Design Plans (for following fiscal year) to MC for review.	Oct/Nov
<b>MC</b> - Review Draft Study Design Plans.	Nov/Dec
<b>MA</b> - Submit final Study Design Plans to MC.	February
<b>MC</b> - Compile/Submit final Study Design Plans to BASMAA Board	February
<b>MA</b> - Submit status reports on current studies to MC	April
<b>MC</b> - Submit Annual BRMS Status Report to BASMAA Board.	June
<b>MA</b> - Submit draft study reports to MC for review.	Ongoing
<b>MC</b> - Review draft reports	Ongoing
<b>MA</b> - Submit copies of final reports, abstracts, and raw data (if appropriate) to MC.	Ongoing
<b>MC</b> - Coordinate with RMP and Watershed Management Initiatives	Ongoing

Completion date is the date of the monthly meeting of the BASMAA Board or Monitoring Committee.

## ATTACHMENT 1

### WORKPLAN

Where it is not explicitly stated, these tasks may be completed by the BASMAA Monitoring Committee or by a member agency.

#### **OBJECTIVE #1 - Evaluate BMP effectiveness.**

##### Tasks

- 1) **Develop list of BMPs.** The BASMAA Monitoring Committee will develop a report that lists current and potential BMPs. The list will initially focus on those BMPs that are currently listed as performance standards for member agencies. The following information will be included for each BMP using available information: a description of the BMP, targeted pollutants, effectiveness at removing targeted pollutants, effectiveness at protecting or enhancing beneficial uses, current extent of implementation, environmental and financial cost of implementation, non-storm water benefits and potential BMP effectiveness studies.
- 2) **Prioritize BMP effectiveness studies.** The BASMAA Monitoring Committee will develop a process to prioritize BMP effectiveness studies. The following are possible criteria: 1) potential for changing management practices, 2) level of implementation, 3) cost of implementation, 4) cost of the study, 5) urgency, and 6) potential for enhancing beneficial uses. The potential BMP effectiveness studies from Task 1 will then be prioritized.
- 3) The BASMAA Monitoring Subcommittee will coordinate implementation of BMP effectiveness studies. The subcommittee will evaluate study plans submitted by member agencies prevent overlap of studies and provide comments on study design and execution.

#### **OBJECTIVE #2 - Assess relative contribution of metals to San Francisco Bay from urban vs. non urban sources.**

##### Tasks

- 1) Gather existing data on loading of metals to the Bay from urban and non urban sources. Data could include storm water program loads assessments, USGS data, Santa Clara Valley Metal Control Measures Plan and erosion studies.
- 2) Summarize and evaluate existing data. Prepare a report on findings.
- 3) If the question can not be adequately addressed through evaluation of existing data, the potential for additional monitoring will be evaluated.

**OBJECTIVE #3 - Investigate the extent and causes of storm water toxicity in the region.**

**Tasks**

- 1) **Estimate the range of concentrations of diazinon & chlorpyrifos in runoff from residential areas throughout the region.** Runoff from a few residential areas has been analyzed for insecticides. Samples from other sites throughout region will be analyzed to characterize concentrations throughout the region. BASMAA will also coordinate with the Regional Monitoring Program (RMP) to investigate the extent of in-bay toxicity due to insecticides in urban runoff.
- 2) **Estimate the relative contribution from proper or improper use.** Initial studies indicate that the insecticides in storm water may be due to proper use. Additional information will be gathered. This will help guide efforts to reduce concentrations.
- 3) **Investigate whether other sources of toxicity are present in storm water in the region.** Occasional screening using bioassays will be conducted to determine if other sources of toxicity are present. If there appears to be other sources of toxicity, an attempt will be made to determine the cause.

**OBJECTIVE #4 - Design and initiate a survey of impacts of storm water on beneficial uses.**

**Tasks**

- 1) Each program will compile a list of the designated beneficial uses of water bodies within its jurisdiction.
- 2) Each program will begin to evaluate one or more of those water bodies to assess whether beneficial uses are impacted and the cause of those impacts.
- 3) Coordinate development of regional assessment guidelines. BASMAA will coordinate the development of regional beneficial use assessment guidelines. The assessment guidelines will include data needs, evaluation methods and benchmarks for determining the extent of impairment.
- 4) BASMAA will collaborate with the RMP to assess the impact of urban runoff on the beneficial uses of the Bay. The review of the relative contribution of metals (Objective #2) and toxicity (Objective #3) will provide information for this assessment.