

Permit Monitoring Elements and Context (PMEC) Subgroup of the Stormwater Work Group

Recommendations for SWG voting on October 13, 2010

Introduction

NPDES municipal stormwater permittees should participate in implementing a regional monitoring program designed to answer important questions about stormwater impacts and effectiveness of management activities. This regional program is outlined in the Stormwater Work Group's *2010 Stormwater Monitoring and Assessment Strategy for Puget Sound* (2010 Strategy). The program is referred to as the Stormwater Assessment and Monitoring Program for Puget Sound (SWAMPPS) and has four major components:

- Overall Monitoring Program Implementation
- Status and Trends in Small Streams and Marine Nearshore Areas
- Source Identification and Diagnostic Monitoring
- Effectiveness Studies

Recommendations for modifications to the program detailed in the 2010 Strategy and specific proposals for permittees' roles in implementing SWAMPPS are detailed in this report.

Overall Monitoring Program Implementation

1. Data management and analysis are an integral part of SWAMPPS. Permittees should be required to contribute funding for conducting these activities, regardless of whether they are paying in to a collective approach to conduct the monitoring or conducting the monitoring themselves. The purpose of this requirement is to provide the necessary infrastructure and processes to ensure that the data collected are useful and meaningful for adaptive management of municipal stormwater programs.
2. Permittees who conduct the monitoring themselves should be required to contribute to implementing SWAMPPS. The purpose of this requirement is to underscore the importance of launching a successful regional stormwater monitoring program during this next permit cycle.
3. Permittees who conduct the monitoring themselves should be required to apply all QAPPs, SOPs, reporting methods, etc. associated with SWAMPPS. The purpose of this requirement is to provide standardization and consistency, and to facilitate regional understanding of stormwater management impacts and effectiveness of management actions.

Status and Trends Monitoring

Small Streams

1. The permit should allow three years to conduct ramp-up activities (site selection, QAPP development, training, equipment purchases, etc.) in preparation for full implementation of the monitoring program in the fourth and fifth years of the permit. In year 1 of the permit cycle, permittees will not be required to contribute funding for these activities. In years 2-3 of the permit cycle, all permittees should contribute equitably to ramp-up costs.
2. During years 4-5 all permittees should contribute equitably to implementation of status and trends monitoring at the 100 randomly selected sites in wadeable Puget Sound lowland streams. This program follows the 2010 Strategy's recommendations with the following modifications:

- a. The number of sites for the Puget Sound regional status and trends program should be expanded from 30 to 100, with 50 located inside UGAs and 50 outside UGAs. This is based on a precision table published by EPA that determines how accurately you can see change over five year period given a certain number of sites ([EPA reference here](#)).
 - b. WRIA-scale status and trends monitoring (390 sites distributed across 13 sub-watershed areas) should not be implemented at this time because resources are limited and we want to see SWAMPSS move forward to successful implementation. We will answer our most important status and trends questions at the regional scale. Our goal is still to move toward the WRIA scale in the future, and other funding sources could be pursued to implement this more detailed design in one or more WRIAs at any time.
 - c. It might be reasonable to scale back the water column parameter list and increase the frequency to provide a better connection between instream conditions and stormwater inputs. We support Ecology facilitating these discussions prior to finalizing the sampling design and associated QAPPs.
 - d. Sediment sampling should occur once every five years. The timing of this sampling event should coincide with the state's EMAP sample collection schedule.
 - e. Habitat data are a necessary element of site characterization for stream benthos sampling, and therefore permittees should be required to collect this information.
 - f. Fish monitoring will not occur unless funding becomes available from another source.
 - g. Continuous flow monitoring might not be conducted. An analysis is needed to determine to what extent questions about loading, stream flashiness, etc. relevant to stormwater management can be answered with existing data, and to recommend what existing gages need to be maintained and what new gages need to be added to the network. Permittee pay-in contributions should fund the analysis and contribute to installing new gages if needed.
3. Permittees should contribute funding to conduct all of the sample collection and analysis regardless of where the randomly selected sites are located. It is anticipated that there will be a small number of sites located outside the geographic area covered by the permits. However, the full sample size is required in order to answer the questions: what percent of streams in Puget Sound lowlands meet various standards, how do urban and rural areas compare, and are conditions improving or worsening?
 4. Permittees should plan for ongoing data collection in future permit cycles.
 5. Permittees should pay into a collective analysis of initial data during the final six months of the permit cycle. Permittees should plan to continue data evaluation at appropriate intervals in future permit cycles.

Marine Nearshore Areas

1. The permit should allow three years to conduct ramp-up activities (such as site selection, QAPP development, training, equipment purchases, etc.) in preparation for full implementation of the monitoring program in the fourth and fifth years of the permit. In year 1 of the permit cycle, permittees will not be required to contribute funding for these activities. In years 2-3 of the permit cycle, all permittees should contribute equitably to ramp-up costs.
2. During years 4-5 of the permit cycle, permittees should contribute funding for:
 - a. Fecal coliform sampling monthly at 50 sites in UGAs (to be compared to WDOH sampling locations in rural shellfish growing areas).

- b. Sediment chemistry every five years at 30-50 sites in UGAs (to be compared to PSAMP sampling locations outside UGAs).
 - c. Mussel Watch annually beginning in the fourth year of the permit cycle at 30-50 sites near stormwater outfalls (to be compared with Mussel Watch sampling locations away from stormwater outfalls).
- 3. The approach outlined in the 2010 Strategy is recommended with the following modifications:
 - a. Consider increasing the number of samples to 50 from 30; a power analysis for the nearshore sampling should back up the decision: if there is a compelling increase in level of information provided with the additional samples, then we should collect them.
 - b. Consider pursuing other funds to sample marine benthos to get more holistic picture of the health of nearshore.
 - c. Consider pursuing other funds to survey eelgrass.
- 4. Permittees should be expected to pay for sample collection and analysis regardless of where the randomly selected sites are located. It is anticipated that there will be a small number of sites located outside the geographic area covered by the permits. However, the full sample size is required in order to answer the questions: what percent of marine nearshore areas in Puget Sound UGAs meet various standards, how do urban and rural areas compare, and are conditions improving or worsening?
- 5. Permittees should plan for ongoing data collection in future permit cycles.
- 6. Permittees should pay into a collective analysis of initial data during the final six months of the permit cycle. Permittees should plan to continue data evaluation at appropriate intervals in future permit cycles.

Source Identification and Diagnostic Monitoring

- 1. For the next permit, the 2010 Strategy should provide a guidance tool for other permit requirements, but not result in stand-alone monitoring requirements. Local monitoring needs vary from place to place. When impairments are discovered, prioritization of local problems will allow for effective allocation of resources to address issues. A coordination function for local jurisdictions should still be considered.
- 2. SWAMPPS will contribute standard methods and tools, analysis of existing information and dissemination of lessons learned. SWAMPPS status and trends data will be a credible data source for informing Compliance with Standards investigations of problems identified by other monitoring.
- 3. In the next permit cycle, permittees should contribute funding to: conduct a literature review, develop a QAPP library with DQOs and report templates, build a repository for information to evaluate current source identification programs, and design a database and reporting requirements to support Puget Sound scale analyses to identify problems that can be addressed by regional source control initiatives.

Effectiveness Studies

- 1. Permittees should contribute up to about \$7M/year in years 2-5 of the next permit to support effectiveness studies, a literature review, and associated development of SOPs. (This is the amount recommended in the 2101 Strategy; it represented about half of the total annual SWAMPPs program costs. We recommend reconsidering this number after all cost estimates are completed.)

2. The Stormwater Work Group should articulate a recommended process and criteria by which studies will be selected from among those ideas submitted by Phase I and Phase II jurisdictions in their annual reports due March 31, 2011 along with other ideas submitted by members of the caucuses of the Stormwater Work Group. This process should be informed by the findings of the literature review.
3. Once the studies are selected, a list of needed SOPs should be identified and developed.