Recommendations for Regional Stormwater Monitoring

March 20, 2014

_x__ Decision

___ Discussion

___ Information

SUBJECT: **Agricultural Stormwater Effectiveness Monitoring**

ISSUE:

Effectiveness monitoring is an important component in program and project management. It can demonstrate and/or quantify the success or failure of actions, allowing for adaptive management to improve the actions when needed. Effectiveness monitoring has been recognized as significant need within the Puget Sound Stormwater Monitoring Strategy. Our discussion within the Agriculture Stormwater group built upon the work done by the Puget Sound Workgroup.

BACKGROUND:
What monitoring and assessment information is needed and why?

Stormwater effectiveness monitoring on agricultural activities is sparse in Washington State, but has been studied around common best management practices (BMPs) in other parts of the United States. Questions have been posed as to the transferability of those results to the Puget Sound Region. Reasons why this monitoring might be region-specific include the difference in BMPs from state to state. While the Natural Resources Conservation Service has nation-wide agricultural BMPs, each state can increase conservation benefit for state-specific needs. In Washington State, we have stricter state water quality standards compared to the national Clean Water Act requirements, and we have endangered species concerns for salmon and other species that can be impacted by impaired water quality.

In addition, there is a need for effectiveness monitoring on specific activities that appear to have not been evaluated in other studies. However, the first step prior to implementing any of the recommended studies should be a literature review to ascertain the current status of information.

Who was involved in the Subgroup, and how were decisions made?

Involvement: Heather Kibbey (City of Everett), Bobbi Lindemulder (Snohomish Conservation District), Karen Bishop (Whidbey Island Conservation District, phone), Bob Cusimano (ECY), Chery Sullivan (Washington Dept. of Agriculture), John Bolender (Mason Conservation District), George Boggs (Whatcom Conservation District), Rich Doenges (Thurston County), Monte Marti (Snohomish Conservation District), Rick Haley (Skagit County), Kelly McLain (Washington Dept. of Agriculture), and Carol Smith (WA Conservation Commission) participated in one or both of the two meetings when these were developed. In addition, Meghan

Adamire (Clallam Conservation District), Adam Lorio (Samish Indian Nation), Dino Marshalonis (EPA), Jay Gordon (WA Dairy Fed), Joe Holtrop (Clallam Conservation District), Carolyn Kelly (Skagit Conservation District), Western WA Agriculture, Clare Flanagan (NRCS), Sherre Copeland (NRCS), Bill Bowe (Snohomish Conservation District), Seth Book (Mason Conservation District), and Michael See (Skagit County) were provided with opportunities to participate in email reviews and discussions and a few of these did provide comment.

Decision Making Process: These recommendations were developed using the following process.

1) We reviewed the following ranking criteria spreadsheet developed by the Puget Sound Stormwater Work Group:
https://docs.google.com/viewer?a=v&pid=sites&srcid=ZGVmYXVsdGRvbWFpbnxwdWdldHNvdW5kc3Rvcm13YXRlcndvcmtncm91cHxneDoyZmRkYjdkYTJhMjg0Y2E0

The criteria of interest were:

- How many members submitted that particular study idea?
- Could others use the information from this study?
- What is the geographic impact of the study?
- What is the ecological impact of the study?
- Is it a resource intense study (not cost effective)?
- Does it provide quantifiable improvements?

2) Each member submitted agricultural stormwater effectiveness monitoring ideas to the Chair. We reviewed those at the July 2013 meeting. Although we didn't formally quantify how each topic performed relative to the criteria, we used the criteria to guide our prioritization.

3) Decisions were achieved via consensus of those present at the meetings. The decisions (recommendations) were sent out for review to all sub-group members. Questions from others were posed to the group and answered/addressed via email. All of the included recommendations were agreed-to by the Agriculture Stormwater Workgroup without dissent.

Where are we in the SWG approval process, and when are decisions needed?
Recommendations were presented at the November 2013 meeting with decision at the March 2014 meeting.

How and when are recommendations envisioned to be implemented?
The agriculture stormwater subgroup will develop an implementation and funding plan in a future set of meetings. We want to develop this plan after we have a full set of agriculture recommendations to facilitate prioritization. Also, we only want to develop this plan for approved recommendations.

What are the funding implications? See answer above.

ALTERNATIVES CONSIDERED:
Alternative:
1) No adoption of recommendations. No change or improvement. Lack of coordination across areas.
2) Partial adoption of recommendations.

RECOMMENDATIONS AND REASONING:

We decided upon a two-tiered prioritization. We discovered that most of the ideas fit into a few categories and those were deemed highest priority and equal to each other in priority. These were placed in Tier 1. They rank higher because they met all of the following criteria:

- More than one member submitted that particular study idea
- Others could use the information from this study
- These have a broader geographic scope
- These have a greater ecological benefit

The remaining ideas are important and could also benefit others, but are more specific and limited, and therefore a slightly lower in geographic scope and ecological benefits. They are listed in a second group as Tier 2.

It is recommended that a literature review be conducted on these topics as a first step.

Tier 1 Highest Priority:

What is the effectiveness of the typical suite of agricultural BMPs on reducing pollutants via stormwater into Puget Sound streams? This includes, for example, ___. Hypothesis form: Commonly prescribed agricultural BMPs have no effect on preventing agricultural stormwater pollution from impacting water. Specific needs: There is a high confidence in the practices, but low confidence in behavior. Need to do this at a larger scale, such as watershed or sub-watershed. Should monitor over time to study adoption rate and continued implementation over time. Another set of related questions: what is the best combination of practices per activity (hobby farm, dairy, etc.)?

What is the effectiveness of drainage and stormwater-specific BMPs in reducing polluted run-off from agricultural lands? This includes stormwater retention facilities, such as ponds, and roof runoff and tiling. Hypothesis form: Stormwater and drainage BMPs do not reduce agricultural pollutants from entering surface water. A related need is a study to show how upland sources from other land uses (urban, forestry) impact runoff from agricultural lands that are located more proximate to surface waters.

What is the effectiveness of ecological restoration to improve hydrology and other natural functions? This would include trees, healthier soils, and compost and viewing the farm as an ecological unit. Hypothesis form: Ecological restoration does not reduce stormwater impacts to surface water from agriculture lands. This ties into the effort by Ecological Services in Whatcom

looking at CREP sites. Another example is found in the Whidbey Island District, where a project is assessing increased root masses and water flows. Ebey's watershed provides an opportunity to test flow in a similar manner. Consider soil classification in designing these studies.

What are the greatest barriers to landowner participation in agricultural and, where applicable, stormwater-specific, BMP use? Conduct a survey to determine the social factors to stormwater improvements. For example, is information protection a major barrier? Some literature might be available to refine this question (Chesapeake). Focus group work might be useful.

Consider exploring opportunities for additional studies or expansion of these studies to address impacts to groundwater and/or drinking water.

Tier 2 Medium Priority:

What is the effectiveness of roof runoff structural practices, such as dry wells and hard-lining to a field ditch to avoid bird fecal contributions? Hypothesis form: Dry wells and hard-lining do not improve water quality from bird inputs to roof run-off from agricultural structures.

What is the effectiveness of media filters (barley straw, compost, etc.) at reducing nutrients, sediment, and bacteria? Hypothesis form: Media filters have no effect on reducing stormwater pollution inputs into Puget Sound waters.

What is the effectiveness of settling tanks to treat runoff from non-manured production areas, such as feed/commodity areas, then running the effluent through a field/filter strip? This is a method recently used in Thurston County to deal with washed dairy water. Hypothesis form: Dairy run-off treated with settling tanks and grass filters show no change in water quality.

Other Supporting Documentation

USGS study of ground/surface water interactions in the Nooksack Basin for fecals and nitrates.
http://pubs.usgs.gov/sir/2005/5255/index.html