

SAM PROPOSAL FP1 – REVIEWER COMMENTS AND PROPOSAL TEAM RESPONSES

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Responses to Primary Comments

1. **Final deliverable should be something practical for permittees or a clear recommendation. A final white/review paper without clear actionable findings would be short lived.**

Other relevant comments we considered to develop our response: Outcome should be synthesis paper, not a simple literature review paper. Consider providing a guidance document, perhaps as a separate document, to better assist permittees to select BMP for their site and pollutant types.

Response: *We will revise Task 3 in the scope of work to include more specifics on the guidance developed for applying study results. The White Paper Chapter 6, “How to Apply Study Results”, will be moved to the Appendix and formatted as a standalone document that could be used to provide future training. This appendix will provide guidance and recommendations on using PSD in stormwater decision making including:*

- *Under what conditions should PSD be considered?*
- *When is the receiving water body likely to be impacted by PSD?*
- *When is pre-treatment (i.e. settling) needed based on PSD?*
- *Which post-construction BMPs are the most effective based on PSD?*

The guidance document will align with existing design guidance manuals and provide recommendations. For example, it could recommend incorporating PSD into the BMP selection process (such as the BMP Selection Flow Chart at the end of this document) to guide the selection of the most effective BMPs as a function of particle size. We will also consult with the TAC to identify other decision support systems (DSSs) that the PSD guidance could be developed to support.

2. **The project schedule - Is 9 months enough?**

Other relevant comments we considered to develop our response: Schedule seems short to conduct the study. Need to be very efficient to meet schedule, may need to increase duration. The schedule and Appendix 1 seem to indicate much of this work is leveraging already existing work. Project management cost is high.

Response: *We have extended the schedule to one year to provide more flexibility. A copy of the updated schedule is attached (Figure 1). Moving the schedule and adding a fully developed guidance document will increase the cost of Tasks 3 and 4 slightly, however, we will reduce the fees for Task 1 Project Administration and Management to 10% of the budget to accommodate that increase. There will be no change to the total project budget.*

Figure 1. Project Schedule Updated

Task and Deliverables	Calendar Year & Quarter		2021											
	Q1			Q2			Q3			Q4				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec		
1. Project Administration & Management														
D1.1 Project Schedule														
D1.2. 1 st Status Report														
D1.3. 2 nd Status Report														
D1.3. 3 rd Status Report														
D1.3. 4 th Status Report														
2. Matching SW problems to effective behavior change tools														
D2.1 Synthesis of Literature														
D2.2 Annotated Bibliography														
D2.2 Matrices of data														
3. Report and Communicate Findings														
D3.1 Draft Automated Tool														
D3.2 Final Automated Tool														
D3.3 Draft Whitepaper														
D3.4 Final Whitepaper addressing TAC comments														
D3.5 Draft Factsheet														
D3.6 Final Factsheet addressing TAC comments														
D3.7 Draft/Final Presentation to SAM														
4. Develop Website decision-support Tool														
D4.1 Confirmed List of TAC Memebers														
D4.2 TAC Meeting #1/Kick Off Meeting: Agenda/Minutes														
D4.3 TAC Meeting #2: Agenda & Minutes														
D4.4 TAC Meeting #3: Agenda & Minutes														

3. Lacking permittees involvement is a big concern.

Other relevant comments we considered to develop our response: No permittees involved or actively engaged (TAC only "potential") other than possible review of permittee data as available from effectiveness studies. Should include more Phase I & II permittees in the TAC to help frame the study and outcome. Need to get more regional participation. Also include Ecology in the TAC.

Response: We have confirmed three TAC members for this study from the City of Tacoma, WSDOT, and Ecology. If the study is awarded, one of our first tasks will be to identify at least one more Phase I permittee and two-Phase II permittees for the TAC. We have also met with the proposal reviewers (which included permittees) and incorporated their comments into these our responses (for this document) and will include them in the scope of work. In addition, we intend to collect and incorporate TAC feedback at the kick-off meeting to tailor the study as needed to produce results that provide the most benefit for permittees.

Responses to Additional Comments:

4. **Study Should Support Municipal Stormwater Permit.** Needs more explanation how results and findings can be used by permittees. Addresses priority topic [but] lacks explicit connection to permit. Outcomes are unclear, especially how they will integrate with existing design standards.

***Response:** Total suspended solids (TSS) is a regulated pollutant in the NPDES MS4 permit. PSD testing of TSS samples identifies the specific fractions of particle sizes found in stormwater and removed by the BMP. TAPE includes PSD testing as a required screening parameter and some treatment technologies that meet the required 80% reduction criteria are not approved because they do not reduce the finer fractions of TSS. Many of the BMPs approved for TSS removal in the Ecology stormwater manual were developed prior to the TAPE requirements and at the time they were adopted into the Ecology manuals, they were not evaluated to determine the reduction of TSS based on PSD. Research conducted since then has reported changes in PSD as a function of BMP effectiveness that could provide help select more suitable BMPs. The proposal Appendix includes a list of potential sources for this study including results from TAPE studies, the International BMP Database, etc. to identify the effectiveness of a BMP for removing specific particles sizes of TSS. Furthermore, understanding PSD can provide additional insights into pollutant impacts and pollutant loads.*

5. **Task 2 Needs More Detail.** This [task] could use more info on how this project will connect to current guidance and Ecology SSC project.

Response:

- *Current guidance in the SWMM manuals does not include PSD so this project would provide supplemental guidance for permittees to determine when PSD should be considered and which BMPs are most effective for different particle sizes. See response to comment 1 for more details.*
- *TSS is being considered as a pollutant of concern in the SCC Project however PSD is not. We will build upon information from the SSC study to focus the work in this study on items that are a priority to permittees. For example, we will use information from the SCC jurisdictional interviews to focus on common site-specific conditions for characterizing stormwater.*

6. **Task 3 Deliverable:** Task 3 would benefit from more info on how the tables, flow charts, and white paper will be used with the SWMMWW.

***Response:** We envision that this study will provide guidance that can be used in conjunction with the SWMMWW. One example would be to develop recommendations for how BMP selection could be added to the flow chart logic (like the one at the end of this document). A modified flow chart would allow better BMPs to be selected based on the BMP's effectiveness for treating different particle sizes. Another example would be to provide guidance to help determine the requirements and conditions for considering PSD. We will discuss these concepts with the TAC and incorporate their ideas to develop guidance for this study.*

7. **Ambitious Scope:** The scope and proposed outcomes seem more ambitious than what can reasonably be expected given the data available. The project should focus on data gaps found in the literature and what we do or don't understand about stormwater sediment characteristics in the PNW. In contrast, another reviewer said that showing the list of available data resources in

Appendix 1 was very helpful to assess practicality of this study and the PI seems to understand the needs about this topic.

Response: *Once the study starts, we will review the available data, determine the data gaps, and identify the best data available to meet the study objectives. We anticipate that the available data/information will help us narrow the focus of our study and we will also seek input from the TAC. We recognize that we might only be able to address a few land uses and BMPs based on the available data.*

8. **Does Not Include Known Sources:** Advances regional understanding in theory, but doesn't make connections to existing guidance (SWMMWW, LID guidance, and highway runoff manual) or USGS studies or methods. Add 2008 stormwater characterization report to literature. Do other decision support systems (DSSs) need to be part of review? Focus is on Ecology stormwater manuals, but are there other DSS tools to also target for findings communication? Should nutrients be part of review?

Response:

We have conducted an initial literature search to identify data and publications that appear applicable to this study. Appendix 1 was an example of potential sources and known DSSs (e.g. International Stormwater BMP Database, Highway Runoff Database). We plan to expand the literature survey and available DSSs further during the project. We plan to look at common pollutants regulated by the MS4 permit and used in TMDLs to help determine the effect of PSD on these contaminants.

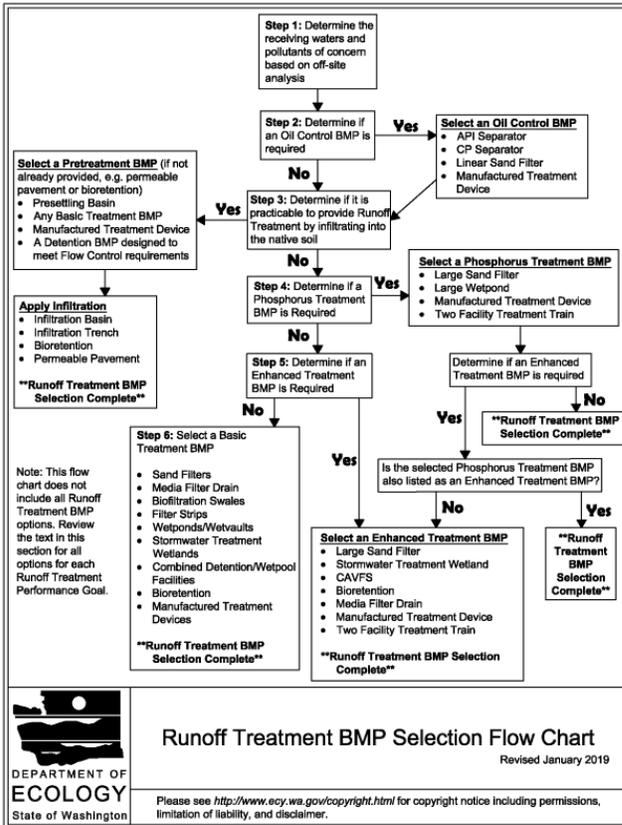
9. **Team Structure:** Team structure provided but no rationale about who does what; partner descriptions generic and not specific to this proposal.

Response: *The project management roles are included on page 7-9 of the proposal.*

10. **Data Synthesis Approach Needs More Detail:** No detail description about how to synthesize literature data. Study should how to deal with a large complex data set with mixed, conflicting results.

- *We will use a metadata analysis approach, commonly used for large and messy datasets.*
- *The first step is to conduct a systematic literature review and extract a good-quality set of information suitable for this study.*
- *The quality of the information in these articles will then be graded and assessed for method of PSD analysis and heterogeneity.*
- *A high-quality PSD dataset will be analyzed by using various statistical tests. Correlation or odds ratios can be used to infer association of variables and forest plots or box plots can be used to summarize these statistics. Publication bias can be analyzed using funnel plots.*
- *Finally, regression analysis will be used to capture the overall effects of PSD on pollutant loads or BMP performance and help determine if there are subgroups of results.*

Figure III-1.1: Runoff Treatment BMP Selection Flow Chart



Runoff Treatment BMP Selection Flow Chart

Revised January 2019

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