

**Letter of Intent to  
Submit an NPDES Effectiveness Study Proposal**

*All fields must be completed*

1. Proposed Study Title: **Bioretention Hydrologic Performance (BHP) Study II - Monitoring**

2. Short Description of Proposed Study:

The current BHP study funded by the RSMP is underway with the purchase of monitoring equipment and monitoring of ten bioretention facilities distributed throughout the Puget Sound Region. This proposed Phase II of monitoring is intended to utilize the same purchased equipment to monitor a new set of bioretention facilities that have been modeled and designed under the new 2012 SWM Manual for Western Washington. As before, the intent of the monitoring is to document the actual performance of constructed facilities, compare their performance with their design models, and recommend improvements to the ongoing design of bioretention facilities in the Puget Sound region.

2. What specific Stormwater Management Program condition(s) or other permit condition(s) in the NPDES W. WA. Phase I and/or Phase II Municipal Stormwater Permit does your study address?

Phase I Permit: **S5.C.5, Controlling runoff from new development, redevelopment, and construction sites.**

Phase II Permit: **S5.C.4, Controlling runoff from new development, redevelopment, and construction sites.**

3. How will this study inform, assess effectiveness and/or support implementation of the specified NPDES permit conditions (e.g., project goal) and future permit conditions?

Bioretention facilities are becoming the cornerstone of the LID implementation requirements under the NPDES permits. It is clear that long term success of LID will depend on our accurate design and performance of bioretention facilities. As with the current BHP study, this proposal intends to conduct the same hydrologic performance studies on constructed bioretention facilities, but the studies would be applied to facilities designed under the 2012 SWM Manual. The 2012 manual has considerable changes to the bioretention design process, including changes to the design modeling algorithms, as well as new minimum requirement number MR 5 that specifies LID facilities must control discharges between 8% and 50% of the two year flow. These are significant new elements that need to be evaluated for their performance in facilities that have been designed using the new model and have targeted these outcomes.

4. What are the anticipated measurable outcomes or deliverables of this proposed study?

The measureable outcomes will again be actual measured hydrologic mass balance in 2012-design facilities. The facilities will be measured for rainfall, inflow, infiltration, and outflow. These measured results will then be compared to the predicted hydrologic results from the modeled design. Soil composition, groundwater fluctuation, infiltration rates, and plant community conditions will again be measured to help provide a basis for understanding the measured hydrologic performance. Results of these measured elements and the system as a whole will lead to recommendations for improved design, construction, and maintenance of facilities designed under the 2012 manual.

5. How does this study advance regional understanding for stormwater management?

As with the current BHP study, many 2012-designed candidate facilities will be evaluated from throughout the Puget Sound basin for inclusion in the study. The beneficial result is that facilities will be selected representing a wide range in hydro-geologic near surface conditions and meteorological conditions. The results will then be applicable to numerous jurisdictions throughout the Puget Sound Basin.

6. Applicant(s) Contact Information:

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7. Permittees you are coordinating with (Provide contact information):

We reached out to approximately 30 different jurisdictions in our original candidate selection process for the BHP study, and all showed a high degree of interest in the performance of bioretention facilities. We continue to work with 8 jurisdictions whose facilities have been selected to be monitored. We anticipate that a similar outreach program would be implemented with many of the same 30 permittees (as well as others) and we expect a similar high degree of interest. The current participating jurisdictions include: Bellevue (Rick Watson, 425-452-4896), Bellingham (Eli Mackiewicz, 360-778-7742) Issaquah (Kerry Ritland 425-837-3410), Issaquah School District (Dan Sheffer, 425-837-5052), Mill Creek Community Association (Mary Anne Heine, 425-316-3344), Olympia (Jake Lund 360-753-8152), Pierce County (Dawn Anderson, 253-798-4671), and Poulsbo (Anja Hart, 360-394-9753).

8. Select Stormwater Work Group study category (select all that apply):

- |   |                                    |   |
|---|------------------------------------|---|
| <input type="checkbox"/> Source Control | <input type="checkbox"/> Retrofits | <input type="checkbox"/> Education & Outreach |
| <input checked="" type="checkbox"/> LID | <input type="checkbox"/> O&M       | <input type="checkbox"/> Other:               |

Submit LOI to Brandi Lubliner (WA Department of Ecology) via email at [Brandi.Lubliner@ecy.wa.gov](mailto:Brandi.Lubliner@ecy.wa.gov)