

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

*All fields must be completed*

1. Proposed Study Title: Assessment of flow and pollutant load reduction as a function of LID density.

2. Short Description of Proposed Study:

The City of Puyallup has worked with homeowners to install multiple raingardens in seven neighborhoods. These neighborhood clusters of raingardens provide a unique opportunity to compare stormwater volume and pollutant loads from basins with raingardens to adjacent basins without raingardens using a paired-watershed approach. We propose to measure continuous flow at the outlets of the basins with rain gardens and at the outlets of adjacent basins of similar size, slope, land use, etc. that do not have rain gardens. In addition, flow-weighted composite samples will be collected from the basin outlets during storm and baseflow conditions to calculate pollutant loading from each basin. We will compare the flow between raingarden and non-raingarden basins based on flashiness, total runoff volume and lag-time. We will compare total pollutant loading from raingarden and non-raingarden basins. In addition we will examine pollutant and flow reductions as a function of LID density as a percentage of basin area treated.

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, S5.C.6

Phase II Permit: S5.C.4

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?

Results from this study will provide insight into effective rain garden density for stormwater control. This will assist municipalities in their stormwater management plans and in refining the LID component of development code revisions.

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

Comparison of flow and pollutant load from LID retrofitted basins and non-LID retrofitted basins.

Analysis of the effectiveness of rain gardens in reducing flow and pollutant load as a function of rain garden density (percent area treated).

If results will support it, a regression between the density of rain gardens and pollutant load reduction will be developed.

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

Results will help determine the density of rain gardens (based on percentage of basin area) needed to achieve measurable reductions in stormwater pollutant loading and flow to receiving waters.

6. Applicant(s) Contact Information:

Name: Mark Palmer

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

Potential partners are: City of Seattle (Shanti Colwell Seattle Public Utilities 206-386-1501), City of Kirkland-(Jenny Gaus 425-587-3850) and City of Shoreline (Tina Kendall 206-801-2455). Other jurisdictions have been contacted and are considering participating but could not confirm their ability to participate prior to the submittal deadline. We are open to adding rain garden basins from any interested jurisdiction to represent a broader range of site conditions.

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

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Source Control | <input checked="" 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)