

Building Cities in the Rain  
Working Group  
September 23, 2014  
Meeting Summary

Participants: Dan Gariepy and Abbey Stockwell, Ecology; Dale Nelson, Doug Navetski and Claire Jonson, King County; Jessica Knickerbocker and Dana de Leon, City of Tacoma; Chris May, Kitsap County, Heather Trim, Futurewise; Andy Rheaume, City of Redmond; Bruce Wulkan, Puget Sound Partnership; Erika Harris, Puget Sound Regional Council; Phyllis Varner, City of Bellevue; Larry Schaffner, Thurston County; Kerry Ritland, City of Issaquah; and Heather Ballash, Department of Commerce.

Public Comment

No comment.

Presentations

The following presentations were made to the group. The presentations are posted on the Building Cities in the Rain web site under Library/Documents/Meeting Materials, along with this summary.

1. City of Redmond Watershed Management Plan – Prioritization
2. Targeting Stormwater Retrofits Investments – Washington Department of Transportation’s Experience
3. Small Basin Program Retrofit Prioritization, King County Water and Land Resources Division
4. Kitsap County Stormwater Retrofit Program

Presenters were asked to address questions regarding their programs. A draft summary of their answers to these questions is attached.

The group will start work on scoping the prioritization guidance at the next meeting in October.

Stormwater Retrofit Investment Prioritization  
10-6-14 DRAFT\*

Program Provision	Redmond	WSDOT	King County	Kitsap County	Tacoma	Seattle Public Utility
<b>1. What do you use prioritization for - retrofits, new development and/or redevelopment?</b>	All 3. Redmond uses the prioritization to focus stormwater retrofits, in stream projects, and buffer improvements into watersheds where the moderately degraded stream will see the most ecological lift with investments. Development/redevelopment can buy in to retrofits in “highest restoration” watersheds, allowing for consolidation of stormwater controls in watersheds where they will have the most immediate benefit.	All 3.	Small basin retrofits. A stormwater capital needs assessment completed by Stormwater Services (SWS) in 2012 identified over 64 small streams/lakes in unincorporated King County considered to be degraded as a likely result of stormwater runoff from developed land because of (1) fair to poor biological health and/or a water quality impairment documented through County or State monitoring, and (2) the extent and age of development within the basin.	Retrofits only. Program goals are: <ul style="list-style-type: none"> <li>• Enhance groundwater recharge</li> <li>• Reduce local flooding</li> <li>• Stabilize stream channels</li> <li>• Reduce pollutant loading and improve water quality</li> <li>• Improve habitat and ecological integrity</li> </ul>		
<b>2. How did you develop your prioritization criteria?</b>	Redmond initially used data (discussed below) to characterize individual fish bearing water bodies and their watersheds. Redmond worked with Ecology to rerun the Puget Sound watershed characterization model locally, to prioritize watersheds based on hydrologic metrics (output bottom right). Output from the characterization was adjusted based on local data compilation.	WSDOT initially applied a stormwater outfall ranking index that was a cost/benefit tool. It was very data intensive and expensive. WSDOT developed a new strategy that utilizes aspects of the original method, but is much more streamlined. It aims to identify and protect the remaining relatively healthy receiving waters and their habitats. The emphasis is placed on preventing degradation, rather than on attempting to correct the damage after it occurs (i.e., conservation biology approach). The criteria and their associated weighting reflect the priorities and values of these resource agencies & contributed greatly to building buy-in. (chemistry vs. habitat value themes)	The prioritization criteria for small basins were developed by the Stormwater Services Section Manager, Curt Crawford. King County then used the prioritization criteria for project selection within the small basin. The project selection criteria were derived from the North Kitsap County, LID Retrofit Project Implementation Plan, 2013.	County staff know where most of the problems are – areas with the biggest pollutant loading. Staff took a quick approach from assessment to implementation and retrofits. <p>Retrofit Program targets:</p> <ul style="list-style-type: none"> <li>• Replace or upgrade failing or damaged drainage infrastructure</li> <li>• Add water quality enhancements to areas where there is little or no stormwater treatment</li> <li>• Upgrade stormwater flood/flow-control in areas where runoff controls are inadequate</li> </ul>		

\*NOTE: This summary was compiled by Heather Ballash. It has not been reviewed and edited by representatives from the respective agencies.

<p><b>3. What are the criteria?</b></p>	<p>Puget Sound Flow metrics included: storage, delivery, recharge, and discharge. Local data included: land cover (forest/impervious/landscape), land use (residential/commercial), fish use, habitat (LWD, buffer canopy), water quality (BIBI, DO, temp), stormwater characteristics (High AADT, area without flow/treatment, culverts, outfalls).</p>	<p>Three-stage assessment process:</p> <p><i>Stage 1.</i> GIS screen applied to entire highway system – criteria:</p> <ul style="list-style-type: none"> <li>• Large, frequently travelled highways</li> <li>• Drinking water supply source</li> <li>• Fish bearing streams</li> <li>• Summer spawning areas</li> <li>• Small streams</li> <li>• High quality surface receiving waters</li> <li>• Urban fringe</li> </ul> <p><i>Stage 2.</i> Reconnaissance of top scoring Stage 1 sites – criteria:</p> <ul style="list-style-type: none"> <li>• Untreated closed, curbed, and/or impervious-lined conveyance systems</li> <li>• WSDOT observed erosion, pollution, or flooding problems</li> <li>• Discharges to 303(d) listed water bodies for certain pollutants of concern</li> <li>• Locally identified erosion, pollution, or flooding problems</li> <li>• Habitat suitability and value</li> </ul> <p><i>Stage 3.</i> Detailed site assessment:</p> <ul style="list-style-type: none"> <li>• Stage 2 with high scores</li> <li>• Highway drainage areas &gt; 5 acres</li> </ul>	<p><u>Basin selection using:</u></p> <ul style="list-style-type: none"> <li>• Benthic Index of Biotic Integrity (B-IBI)</li> <li>• 303(d) listing</li> <li>• Stream Channel Stability Indices</li> <li>• Percentage of basin developed</li> <li>• Catchment size</li> <li>• Ecology stormwater target watersheds</li> </ul> <p><u>Project selection</u> (using North Kitsap County LID Retrofit Project Implementation Plan, 2013)</p> <p><i>Level 1:</i></p> <ul style="list-style-type: none"> <li>• Site slopes</li> <li>• Available area</li> <li>• Effective Impervious Area Managed</li> <li>• Meets multiple objectives – water quality improvement, peak flow reduction, or local drainage improvement</li> <li>• Risk to the environment</li> </ul> <p><i>Level 2, Part 1:</i></p> <ul style="list-style-type: none"> <li>• Water quality</li> <li>• Drainage &amp; local flooding</li> <li>• Utility coordination</li> </ul> <p><i>Level 2, Part 2:</i></p> <ul style="list-style-type: none"> <li>• Constructability</li> <li>• Operation and maintenance</li> <li>• Ease of funding</li> </ul> <p>Fish bearing streams are not a criterion.</p>	<p>Basic retrofit strategy:</p> <ol style="list-style-type: none"> <li>1. Retrofit scoping/goals</li> <li>2. Desktop (GIS) analysis</li> <li>3. Reconnaissance</li> <li>4. Retrofit Inventory</li> <li>5. Evaluation/Ranking</li> </ol> <p>Used different consultants with prioritization criteria for four districts (two examples – similar criteria):</p> <p>1. <u>North Kitsap LID</u></p> <p>Evaluated retrofit opportunities and constraints to identify areas where potential LID projects would offer the greatest benefit.</p> <p><i>Level 1:</i></p> <ul style="list-style-type: none"> <li>• Shallow and deep infiltration potential</li> <li>• Site slopes</li> <li>• Available area</li> <li>• Utility coordination</li> <li>• Effective Impervious Area Managed</li> <li>• Meets multiple objectives</li> <li>• Risk to the environment</li> </ul> <p>Field assessment of top ranked sites for existing infrastructure, potential utility conflicts, estimate of drainage areas, available area in public right-of-way, and potential risk to surrounding environment.</p> <p><i>Level 2 Prioritization:</i></p> <ul style="list-style-type: none"> <li>• Water quality</li> <li>• Drainage and local flooding improvement</li> <li>• Constructability</li> <li>• Operation and maintenance</li> <li>• Ease of funding</li> </ul> <p>2. <u>Manchester LID Retrofit</u></p> <p><i>Step 1. Preliminary feasibility assessment:</i></p> <ul style="list-style-type: none"> <li>• GIS layers for existing topographical, civic, environmental, land use and infrastructure systems</li> <li>• Drainage complaints</li> <li>• Regional Opportunities and Constraints</li> <li>• Geotechnical evaluation and</li> </ul>		
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				infiltration assessment <ul style="list-style-type: none"> <li>• Field evaluation</li> </ul> <i>Step 2. Preliminary Site Characteristic Prioritization:</i> <ul style="list-style-type: none"> <li>• Soil infiltration potential</li> <li>• Site slopes</li> <li>• Risk to the environment</li> <li>• Area available for installing retrofit</li> <li>• Effective impervious area</li> <li>• Potential impact on the basin</li> </ul> <i>Step 3. Field visit and site evaluation:</i> Confirm and refine initial layout of LID facilities. <i>Step 4. Secondary Project Prioritization:</i> <ul style="list-style-type: none"> <li>• Ecological function</li> <li>• Economic function</li> <li>• Social function</li> </ul> Fish bearing streams are not a criterion.		
<b>4. How do you apply the criteria – weighting, etc.?</b>	No weighting was used; the data did not lend itself to weighting. Puget Sound watershed characterization was the basis, then adjusted based on local data.	<i>Stages 1 and 2</i> are weighted. In defining candidate sites from Stage 1, the “point bar” is intentionally low to avoid narrowing the eligibility pool prematurely during Stage 1. The scoring is not cumulative, but gets “zeroed out” for each stage. <i>Stage 3</i> is used to evaluate whether to package nearby retrofit priorities or bundle retrofit priorities with programmed improvement projects. Standalone retrofit priorities are queued by geographic region.	Each of the criteria are weighted.	North Kitsap - Yes, Levels 1 and 2 are weighted.  Manchester – Yes, Steps 2 and 4 are weighted.		
<b>5. Have you implemented policy or prioritized budget based on the prioritization (have you used the prioritization)?</b>	Yes. Used to prioritize capital budget, allocating millions to restoring streams. Used prioritization in Ecology grant applications. Used to focus programs in prioritized watersheds.	Yes? X number of projects have been identified and X have been built(?)	King County used the small basin prioritization criteria to pick the highest priority small basins for the Ecology Stormwater Grants. They then used the project selection criteria from the North Kitsap County, LID Retrofit Project Implementation Plan, 2013 to pick projects for three predesign reports for the Ecology Stormwater Grant.	Yes. About six projects have been funded to date.		

<b>6. Who were the stakeholders when you set out to prioritize?</b>	Washington Department of Ecology, Internal departments, Muckleshoot Tribe, Washington Department of Fish and Wildlife.	The new prioritization approach emerged through collaborative engagement with the WA Ecology, USFWS, and NOAA Fisheries.	The residents of unincorporated King County and Ecology.	Kitsap County's <i>Water as a Resource</i> policy guides everything related to stormwater. Surface and Stormwater Management also coordinates with other departments to partner on projects – e.g. sewer and roads. They meet quarterly with sewer, transportation, parks, etc. to look at projects together.  The County engages the public early in the process with education outreach, postcards, signs, community advisory committee meetings, walkabouts and surveys.		
<b>7. What data sources did you use, and how readily available is the data?</b>	We used local data, Puget Sound wide data, statewide data, and national data.		See the list of criteria under #3.	North Kitsap: GIS data, flow monitoring, historical flood complaints, and relevant as-built drawings for capital drainage projects recently built but not in GIS data.  Manchester: See the criteria above, plus the Manchester Community Plan Update (2007), Kitsap County Stormwater Design Manual, Kitsap County LID Guidance Manual, 1999 and Manchester Drainage Plan.		
<b>8. What local data did you use?</b>		The program factors in local knowledge.	<ul style="list-style-type: none"> <li>• King County's BIBI database</li> <li>• Percent of basin developed(?)</li> <li>• Project selection criteria(?)</li> </ul>	GIS data, including topographic contours, geohazard areas, soils, wells, waterbodies, zoning, public right-of-way, storm drain infrastructure, and ortho photos.		
<b>9. Did you use modeling?</b>	No.	No?	No?	No.		
<b>10. Does your program allow off-site retrofits?</b>	Yes. The program carefully decouples the difference in flow control between existing conditions and forested conditions and allows stormwater controls that address the difference to be sited in other target areas within the watershed.	Yes. Project-trigger retrofit obligations not falling within the project boundaries may be mitigated outside the project boundaries using the following sequence: 1. Within the same sub-Water Resource Inventory Area (WRIA) basin as where the project obligation was incurred. 2. Within the same WRIA as where the project obligation was incurred. 3. Within the same region as where the project obligation was incurred. (Eastern Washington, the Puget Sound Basin, and the rest of western Washington outside Puget Sound .)	No.	No.		

<p><b>11. Does your program target areas with the highest environmental value or degraded areas?</b></p>	<p>The program targets areas with highest environmental value rather than degraded areas.</p>	<p>The program targets areas with highest environmental value rather than degraded areas.</p>	<p>The program targets the most degraded areas first. The tributary areas of these small basins range in size from 0.2 to just over 10 square miles. Many of these small basins drain to larger water bodies with similar documented degradation. Based on these factors, SWS deemed that all of the identified small basins were in need of some amount of stormwater retrofitting. As a result of the 2012 assessment, the Small Basin Stormwater Retrofit Program was funded in 2013/14 to begin developing basin-wide retrofit plans and identifying and implementing retrofit projects aimed at restoring stream health/water quality in each basin.</p>	<p>No. Most streams are in fairly good shape.</p>		
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