

Benefits of Storm Water Reuse, Part II

Collecting Storm Water for Reuse In and Around Buildings

Collecting and reusing storm water can help alleviate the problems caused by increased development of impermeable surfaces like roads and buildings. These hard-scapes decrease infiltration, which changes the hydrograph, which in turn, creates unfavorable conditions for salmon and other fish. Instead of a long, steady period of infiltration and stream recharge, impermeable surfaces cause sudden, high peak flow volumes which cannot infiltrate. The lack of infiltration causes a decrease in the overall base flow volume of streams. These erratic flow rates are detrimental to salmon and other fish because high volume peak flows carry too much silt into salmon redds, killing the eggs. The low base flow volumes in streams are not enough to keep the water fresh and cool.

Another reason storm water run-off is problematic, is because it deposits contaminants like metals and fecal coliform, into water bodies. For instance, copper deposited by run-off inhibits salmon's sense of smell and ability to sense vibration, which can prevent them from finding safe spawning locations and may be responsible for mortality.

One step toward balancing flow volumes and restoring water quality is establishing a storm water collection and reuse system. Collecting or harvesting storm water interrupts the high peak flows that sweep contaminants into streams and rivers, and instead makes it available for irrigating landscapes during dry weather. While the environmental impacts caused by storm water are widespread, each collection and reuse system makes a difference for better water quality.

The amount of storm water that can be diverted from storm drains and harvested for reuse depends on regional weather patterns and the size of the collection system. Different localities have different rainfall patterns and amounts, however, in many areas it is possible to collect and store rain water for reuse during the growing season. The water storage needs can be determined based on the rainfall pattern and projected water usage.

Uses for rainwater collected from rooftops include irrigating gardens and landscapes, cleaning tools, mixing concrete and flushing toilets. However, harvested rainwater is not considered potable because toxic roofing materials, such as copper and zinc, as well as herbicides and fungicides, not to mention bird droppings, can run off of roofs and into the collection system.

Storage containers for harvested rainwater are available in a variety of sizes and styles to match unique needs and goals, and to fit building systems of all sizes. Seattle Rain Barrels sells recycled, 55-gallon collection barrels previously used to import pickled peppers and olives from Greece. Underground cisterns are another popular storage option for small and large community buildings. The Cascade People's Center uses rainwater collected in a cistern to flush toilets (Seattle DPD, 2008). Imaginatively, the Beckoning Cistern in Seattle's Belltown transforms water efficiency into public art, demonstrating water conservation, green design, rain gardens, and bioswales as the central feature of a revitalization project (Seattle OACA, 2009). What's more, Seattle's Fire Station 10 captures rainwater and grey water used during drills, perfectly exhibiting the many and various lessons that water reclamation systems can teach and proving that storm water reuse saves lives, whether on an individual or ecosystem scale.

Another great demonstration of the benefits of storm water reuse is Seattle's King Street Center, where 1.4 million gallons of tap water are saved each year through its storm water reclamation system (USGBC, 2006). Beyond these enormous offsets to water costs and combined sewer overflow loads, the storm water reuse system earned building owners and designers high performance points and recognition through the Leadership in Energy and Environmental Design (LEED) rating system.



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Each of the storm water collection systems mentioned plays a role in balancing the hydrograph, improving water conservation, and restoring water bodies for recreation and aquatic life. By collecting storm water, whether on a residential or commercial scale, people are reducing storm water run-off and the amount of toxins deposited into water bodies. When harvested rain water is reused for gardens, it slowly infiltrates into the ground, contributing to aquifer recharge and an increased base flow, which is good for contributing more cool water via the groundwater, to streams for salmon and other fish. Water conservation techniques are limited only by our imagination and each small step makes a difference in the long run. Clearly, these alternatives provide a multitude of savings, both economically and environmentally, that will sustain our communities for future generations.

References:

- Seattle Office of Arts & Cultural Affairs (Seattle OACA). 2009. Permanently Sited Utility Facilities. Available at: <http://www.seattle.gov/arts/publicart/permanent.asp?cat=6&view=2&item=3&img=0>. Accessed March 4, 2009.
- Seattle Rain Barrels. 2006. Seattle Rain Barrels: Harvest Seattle's Greatest Resource. Available at: <http://www.seattlerainbarrels.com/>. Accessed March 10, 2009.
- United States Green Building Council (USGBC): Cascadia Chapter. 2006. King Street Center Project Notes. Available at: <https://www.usgbc.org/chapters/cascadia/king.pdf>. Accessed March 4, 2009.