The Many Dimensions of Municipal Stormwater

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2010 by WA Legislature

Provide technical and research assistance

Four main programs:

- Low Impact Development
- Business Education and Outreach
- Municipal Resources
- TAP-E Program
Low Impact Development

Research Facility – WSU Puyallup
Municipal Resource Program

Permit assistance for municipalities throughout Washington.
Business Resource Program

Helping Businesses with their Stormwater Permitting and Management Needs
Fostering the development and use of new SW treatment technologies
One Water, Many Designations

- Municipal Waste Water
- Process Waste Water
- Drinking Water
- Reused Water
- Dry Season Runoff
- Ground Water
- In Stream Flow
- Marine Water
- Fresh Water
- Bottled Water
- Gray Water
- Wash Water
- Bilge Water
- Well Water
- Line Flushing Water
- Stormwater
One Stormwater, Many Designations

- Industrial Stormwater
- Construction Stormwater
- Stormwater from Boatyards
- Stormwater from Sand and Gravel Mines
- Municipal Stormwater
What is stormwater?

- Water that originates during precipitation events
- Water from rain, snow, sleet, hail, that flows across the ground and pavement or when snow and ice melt.
- Precipitation is a GOOD THING, right
It’s not the WATER that’s a problem in Stormwater

- It’s what Happens to that WATER
- It’s the pollution that it picks up from paved surfaces
  - Oil, heavy metals, dirt, bacteria, litter, chemicals, soaps, pesticides, dumpster juice,
- It’s all that pollution running, untreated, to our surface water bodies
- So what do we do??? What are the Solutions?
Stormwater is a problem for two reasons:

- Quality - Pollutants
- Quantity - Erosion
Basic Elements, Many Dimensions

- Control the sources of pollution
  - Elimination of copper brake pads
  - Move potential pollutant materials under cover
  - Use a different process design
  - Coat galvanized surfaces – zinc prevention
More Basic Elements

- **Identify and Remove Illegal Pollutant Discharges**
  - Cross connections with sanitary sewers
  - Illegal dumping

- **Treatment and Flow Control**
  - Approved through TAPE, Stormwater Management Manuals
Basic Elements, Continued

- **Operation and Maintenance of SW systems**
  - Cleaning Stormwater Systems
  - Working properly

- **Education and Outreach**
  - Citizens, residents, businesses

- **Control Runoff from new development, redevelopment and construction**
  - LID requirement
Water Cycle - Before and after increased impervious surface

Before development almost all rainfall is taken up by plants, evaporates or infiltrates through the ground. After conventional development, surface runoff increases significantly while evaporation and infiltration into the ground decrease.
Traditional way of managing stormwater – Just Get it Outta Here!!!
Traditional Stormwater Containment and Treatment
One Water.....
Low Impact Development - Trying to make this:
Behave like this:
LID Concepts:

- Mimic Natural Hydrology
- Infiltrate
- Filter
- Detain
- Recharge
- Evaporate
- Control & Treat Runoff Near the Source
- Don’t Concentrate Flows
LID Examples

- Bioretention/Bioswales
- Infiltration
- Permeable pavements
- Green Roofs
- Rain Gardens
Bioretention/Rain Gardens
Porous Asphalt/Permeable Concrete
Green Roofs
Bioretention – Rain gardens, mesocosms

Permeable Paving – Concrete and Asphalt

Natural Storms and Cisterns – known quantities of pollutants

Bioretention column research
We may not be able to prevent all stormwater pollution....
But we can work toward more solutions

Contact the WSC

Washington Stormwater Center

Offering stormwater management assistance to Washington NPDES permittees and stormwater managers by providing access to information, training, permit assistance, research and emerging technologies.

- [www.wastormwatercenter.org](http://www.wastormwatercenter.org)
- 1-855-WASTORM