Stormwater Management Workshop
July 25, 2016

Coastal Waccamaw
Stormwater Education Consortium
How to reduce pollution at home or at work

Recycle or properly dispose of chemicals

Maintain septic systems

Properly dispose of pet wastes

Don’t pour detergents & oils from cars down storm drains
Online Resources

- Clemson University
  Home-A-Syst
  Coast-A-Syst
  Creek-A-Syst
  Farm-A-Syst
  Rain Gardens
  Rain Water Harvesting
  Stormwater Pond Management
- Life at the Water’s Edge
The Water Cycle

- Precipitation
- Infiltration
- Runoff
- Water-vapor transport
- Evaporation
- Evapotranspiration
- Condensation
- Solar energy

Water table, ocean, groundwater flow.
Impacts of Development on the Water Cycle

- **Precipitation**
- **Condensation**
- **Solar Energy**
- **Evaporation**
- **Groundwater Flow**
- **Water Table**
- **Increased Runoff**
- **Increased Pollution**

Key Processes:
- **Water-Vapor Transport**
- **Decreased Infiltration**
Impervious Surfaces

Materials like cement, asphalt, roofing, and compacted soil that prevent percolation of runoff into the ground.
Intensity of Land Use (>10% IC)
Amount of Impervious Surface
Likelihood of Water Quality Problems
Components of Impervious Cover in the Urban Landscape

- Roads
- Parking
- Buildings
- Sidewalks
- Driveways
Point Source Pollution

Industrial/Commercial – each has its own discharge permit

Nonpoint Source Pollution

Where does this go?
Stormwater Pipes

Pipe Inflow at HCP2025
Coastal watershed
HOW CAN COMMUNITIES PROTECT THEIR WATERSHEDS?

1. Watershed Planning
2. Land Conservation
3. Aquatic Buffers
4. Better Site Design
5. Erosion & Sediment Control
6. Stormwater Management
7. Non-Stormwater Discharges
8. Watershed Stewardship

The 8 Tools of Watershed Protection
Better Site Design aka Green Infrastructure

SEA Program, City of Seattle
Green Roof
TREES

- Air Quality
- Sun Shading
- Wildlife Habitat
- Stormwater
  - Filter contaminants
  - Prevent soil erosion
  - Remove water
Stream Corridor Restoration

Inaugural EPA Region 4 Rain Catcher Award
August 2014

Crabtree Canal
Stormwater Education
Public Involvement

Monitor your watershed

EPA
www.epa.gov/owow

Beach Sweep River Sweep
South Carolina
1. Washing spilled motor oil and grass clippings into storm drains
2. Storing gasoline and other hazardous chemicals near children’s toys
3. Paving walkways instead of using porous material so that runoff increases
4. Not separating garbage for recycling
5. Improperly adjusting sprinklers so that water is wasted
6. Planting flowers that may require fertilizers and pesticides around the well cap
7. Burning garbage, which adds toxins to air that eventually settle on the ground
## Common Stormwater Pollutants

<table>
<thead>
<tr>
<th>Pollutant</th>
<th>Common sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silt, sand and clay particles and other debris</td>
<td>Construction sites; bare spots in lawns and gardens; wastewater from washing cars and trucks on driveways or parking lots; unprotected streambanks</td>
</tr>
<tr>
<td>Nutrients</td>
<td>Overused or spilled fertilizers; pet waste; grass clippings and leaves left on streets and sidewalks; leaves burned in ditches</td>
</tr>
<tr>
<td>Disease organisms</td>
<td>Animal waste and garbage</td>
</tr>
<tr>
<td>Hydrocarbons</td>
<td>Car and truck exhaust; leaks and spills of oil and gas; burning leaves and garbage</td>
</tr>
<tr>
<td>Pesticides</td>
<td>Pesticides over-applied or applied before a rainstorm; spills and leaks</td>
</tr>
<tr>
<td>Metals</td>
<td>Cars and trucks (brake and tire wear, exhaust); galvanized metal gutters and downspouts</td>
</tr>
</tbody>
</table>
Turbidity
Erosion
Reducing Pollutants in Runoff

- Are any car or truck wastes being carried away by stormwater?
- Are household products stored outside the reach of stormwater?
- Do you use and handle chemicals safely?
- How can you keep animal wastes from becoming a pollution problem?
- Are yard and garden wastes kept out of stormwater?
Landscaping and Site Management to Control Runoff

- Are there areas of bare soil around your home?
  - Planting grass or other ground covers is the best way to stop erosion.

- Can you eliminate paved surfaces or install alternatives?
  - Consider alternative gravel or wood chips for walkways. Avoid paving areas such as patios. Instead consider using a “porous pavement” made from bricks, interlocking cement blocks or rubber mats.

- Does roof water flow onto pavement or grass?
  - For roofs without gutters, plant grass, spread mulch, or use gravel under the drip line. Consider using cisterns or rain barrels.

- Can you change the layout of your landscape to reduce runoff?
  - Landscape low areas with shrubs and flowers to encourage water to soak into the ground.
Stormwater Treatment Practices

Buffers

Pervious Pavement

Bioretention

Rain Gardens
Managing Household Waste Products

- Follow label directions.
- Avoid the following practices:
  - Dumping oils, paints, pesticides or any other household chemicals on the ground, on roads or down storm sewers
  - Dumping products in a wetland, stream or any other body of water
  - Washing chemicals off the driveway with a hose
  - Spraying pesticides on a windy day
  - Burning containers in a barrel or outdoor fire

- Use up or share leftovers.
- Horry County SWA has a hazardous waste collection program at the county landfill on Hwy 90 on the 3rd Saturday of each month from 8AM–3PM or Monday–Friday by appt.
- Use a less hazardous alternative, buy only what you need and store safely.

Assessments 3.1, 3.2, 3.3
Yard and Garden Care

- Apply the proper amount of fertilizer according to the results of a soil test.
- Apply pesticides wisely.
- Practice integrated pest management (IPM).
- Water wisely.
- Grow drought-tolerant plants.
- Cut your grass to the proper height.
- Recycle your grass clippings for a healthier lawn and environment.
- Use a human-powered mower for small lawns.
- Aerate your lawn regularly.
- Make compost.

Assessments 6.1 & 6.2
Close the lid
We all live downstream ...

IF YOU THINK PICKING UP DOG POOP IS UNPLEASANT, TRY DRINKING IT.

Pet waste washes into storm drains, polluting our rivers, lakes and drinking water sources. Get the scoop.

www.Earth911.org | 1-877-EARTH911