Neighborhood and Commercial Stormwater Facilities

INSPECTING AND MAINTAINING YOUR FACILITY

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Topics

- Importance of maintenance
- First steps
- Systems overview
  - Key maintenance concerns and inspection activities
- What to do; when to do it; and who should do it
- Liabilities and record keeping
- Plan for current and future needs
Why is maintenance important?

- Small regular investments prevent costly repairs in the future
- Stormwater systems need regular maintenance to operate properly
- A properly functioning system protects aquatic ecosystems and reduces the risk of flooding and liability
What are the first steps?

- What do you own?
- What are you required to do?
- What condition is it in?
Specific maintenance and inspection requirements for:
Burlington
Mt. Vernon
Sedro-Woolley
Skagit County UGAs
Typical Neighborhood Stormwater System
Stormwater System Components

- Ditches
- Pipes
- Catch basins
- Ponds
- Vaults
- Bioswales
- Raingardens
Ditches

**Inspection:**
Monthly and after large storms

**BMPs:**
- Check dams – replace rocks if necessary
- Vegetation – mow, cut back & remove (no trees or shrubs)
- Structure – remove sediment; repair undercutting, scouring or slumping; remove trash

Grass taller than 9”, trees, or shrubs may impede the flow of water
Conveyances (ditches and pipes) along private roads are the owner’s responsibility. Conveyances along city and county roads are not owner’s responsibility, but they may impact your facility. Call for maintenance when needed.
Pipes

Inspect:
Monthly & after large storms

BMPs:

- Remove sediment if exceeds 20% of diameter
- Remove vegetation growth blocking openings and outlets
- Prevent erosion at inlets and outlets
- Repair damage that may create an obstruction or erosion
Type 1 Catch Basins

Inspect:
- Monthly and after storms check exterior
- Annually check interior for sediment and debris
- Catch Basins along public roads are maintained by the city

BMPs:
- Remove debris from grate
- Check structure and grout for cracking
- Remove sediment when 60% of sump is filled or <6 inches of invert clearance.
Type 2 Catch Basins

Inspect:
- Annually and after large storms

BMPs:
- Remove trash and debris
  - Remove sediment when it
    - <12" clearance to invert or
    - > than 1/3 of the sump depth.
- Caution! Confined space. Do not Enter without proper training and equipment!
  - Toxic Gas!
Catch basins

Vactor truck cleaning out catch basins

Checking sediment depth
Typical Stormwater Pond

- Access ramp into pond
- Energy dissipater
- Emergency overflow
- Pond Inlet Pipe
- Pond Outlet Pipe
- Control Structure
Dams, Berms, Spillways, and Ramps
Berm failure

- Erosion, bare soils, boring animals, settlement, and sloughing can lead to major costly problems

Photo: WA Department of Ecology

Photo: RE Sources
Trees vs. Grass?

- Trees in right places are good for aesthetics, stabilization and habitat
- Remember – no trees on berms!

- Access, visibility, shading, inspection, leaf and debris management
- Keep grass < 9” long and remove after cutting
Dams, Berms, Spillways, and Ramps

*Inspect*: Quarterly and after major storms

*BMPs:*

- Control vegetation – Remove trees >4” and brush; control invasive species
- Repair erosion – Keep slopes vegetated
- Address structural problems – Slumping and settling >4 inches; Get an engineer
- Protect the overflow – Keep rocked and limit vegetation growth
- Remove burrowing animals
Inlets and Outlets

- Keep inlets and outlets clear, and well marked

Marked inlet to pond

Blocked outlet to control structure
**Pond Bottom**

**Inspect:**
Check pond bottom annually during the dry season and check inlets and outlets monthly and after major storms

**BMPs:**
- Inlets and outlets – clear of vegetation, leaves and debris
- Erosion control – add or restore energy dissipaters
- Remove cattails and sediment if cattails cover 25-50% of the pond and sediment is > 12”
- Remove trees and woody vegetation
- Exposed or damaged liner – cover or repair
- Oils, fuel or chemical smells – investigate and report
- Debris and trash – remove
Cattails

• Build organic sediment
• Release nutrients

Fix by:
• Cut and remove annually
• Pulling out when small
• Removing with associated sediment
Good vegetation

- Low growing plants with less biomass
- Native species enhance habitat and beauty of a pond
Energy dissipaters

- Add rock to prevent erosion and to maintain energy dissipaters
Control Structures

The heart of the stormwater facility!
Control Structures

Caution! Confined space!
Do not enter!
Control Structures

*Inspect:*

Annually and after storms

if ponding levels abnormal

*BMPs:*

- Cover & Ring – Repair grouting, reposition ring
- Sediment – Remove if clearance <12” or more than 1/3 of sump depth
- Debris and Trash - Remove
- Piping – Repair cracks in concrete and grouting; secure pipes
- Shear Gate – Operational; handle or chain intact; leakage; closed
- Water level - should be about bottom of shear gate between storms
Control Structures

- Watch for indications of high water and high water for long periods of time (tub line)
Vaults

Remember – No entry to confined spaces!
Vaults

*Inspect:* Annually and after major storms

*BMPs:*
- Sediment – Remove if clearance to invert <12” or more than 1/3 of sump depth
- Debris and trash – Remove (pool net)
- Oils, fuel or chemical smells – note and report
- Control Structure - Grouting, strapping, piping, vertical
- Shear Gate – Operational, handle or chain intact, leakage, closed
- Water level - should be about bottom of shear gate between storms
Bioswales

*Inspect*: Quarterly and after large storms

*BMPs*:
- Remove excess sediment
- Replant bare spots
- Maintain desirable plants and remove inappropriate species
- Clear inlets and outlet
Bioretention and Raingardens

- Follow same inspection schedule and BMPs as bioswales
Access Control

**Inspect:**
Quarterly

**BMPs:**
- Access – Maintain perimeter access to inlets, outlets, berm, overflow, and control structure
- Poisonous plants and insects – Remove if they limit access
- Yard waste dumping – Work with property owners
Invasive Vegetation

*Inspection*: Semi-annually, during growing season

*BMPs*:  
- Remove or control using appropriate methods  
- Pull out or cut back before they go to seed

[Image of English Ivy]  
[Image of Knotweed]  
[Image of Blackberry]

[Link to Whatcom County Current Weed List](http://www.whatcomcounty.us/923/Current-Weed-List)
Discharge to Streams

- Observe turbidity of water
- Outlets should have energy dissipaters
- Check for proper placement of rocks, and replace if necessary
What can you do?

- Grass cutting and brush clearing
- Trash rack clearing
- Cattail & brush removal near inlets and outlets
- Garbage clean-up
- Fence and signage upkeep
- Clean catch basin grates (dog walks)
Other things you can do...

- Observe seasonal pond conditions
- Control access and unauthorized uses
- Prevent encroachments that limit access
- Prevent dumping of yard waste or garbage
- Keep leaves and bark out of the street
- Request street sweeping and catch basin cleaning when needed
- Watch out for runoff from construction piles
Safety Concerns

- Confined spaces
- Steep and slippery slopes
- Insects and poisonous plants
- Lifting and exertion
- Equipment
What work should professionals do?

- Vault inspections and cleaning
- Confined spaces
- Pesticide application
- Large vegetation removal
- Sediment removal
- Structural or plumbing repairs or improvements
- Design planting program
What are your liabilities?

- Personal injury
- Damage to public or private property
- Regulatory – water quality and/or habitat
Record Keeping

- Record observations on paper
- Take photos of issues
- Report any problems to managers
- Keep in a file
Planning current and future needs

- Understand **condition** of your facilities and how they function over time
- Identify ongoing and major **maintenance** requirements
- Understand your **liabilities** and water quality concerns
- Consider **enhancements** if opportunities are there
- Seek **support** of neighbors and/or members
- Develop a **simple plan** with a prioritized list of activities and projects
Budgeting current and future needs

- Evaluate what work can be done in house vs. contracted
- Prioritize projects
- Solicit estimates
- Develop budget scenarios
- Get support and approval
- Use annual assessments
- Implement plan
- Review your plan and facility conditions each year
Maintaining your stormwater system will:

- Reduce long-term maintenance and repair costs
- Protect water quality
- Protect downstream property from flooding and erosion
- Retain and enhance property values
- Provide a green space amenity
QUESTIONS?

Please contact the Kulshan Services Stormwater Team

www.KulshanServices.com