

After recording return document to:

City of Lacey
Public Works
420 College St. SE
Lacey, WA 98503

Document Title: **Residential Stormwater Maintenance Agreement**
*Of the Stormwater Design Manual for Lacey and Appendix 'Q' of the
Development Guidelines & Public Works Standards*

Owner(s) (Last name first, then first name and initials):

1. Patricia A. Mosure & Henry Jakala
2. Craig D. & Jennifer C. Chapline
3. Ivy J. & Jacob C. Styron

City: City of Lacey

Abbreviated Legal Description (i.e. lot, block, plat or section, township, range):

THE WEST QUARTER OF THE NORTHWEST QUARTER OF THE
SOUTHWEST QUARTER OF SECTION 34, TOWNSHIP 18 NORTH, RANGE 1
WEST, W.M.; EXCEPTING THEREFROM THE SOUTH 20 FEET FOR COUNTY
ROAD KNOW AS 54th AVENUE SOUTHEAST.

IN THURSTON COUNTY, WASHINGTON Actual legal is on page _____
of document.

Assessor's Property Tax Parcel Number: 11834320000

Section, Township, Range: S 34, T 18 N, R 1 W, W.M.

Fronting Street: 54th Ave SE

Cross Street: _____

Project Name: 54th Ave. Short Plat

Project HTE #: 22-0142

**RESIDENTIAL AGREEMENT TO MAINTAIN STORMWATER FACILITIES AND TO
IMPLEMENT A POLLUTION SOURCE CONTROL PLAN**

**By and between the CITY OF LACEY, a Municipal Corporation, hereinafter called the CITY,
and
Patricia Mosure & Henry Jakala, Craig D. & Jennifer Chapline, Ivy J. & Jacob C. Styron
Their heirs, successors, or assigns, hereinafter called the OWNER,**

The upkeep and maintenance of stormwater facilities and the implementation of pollution source control best management practices (BMPs) is essential to the protection of water resources in the City's jurisdiction. All property owners are expected to conduct business in a manner that promotes environmental protection. This "Agreement" contains specific provisions with respect to maintenance of stormwater facilities and use of pollution source control BMPs.

LEGAL DESCRIPTION:

THE WEST QUARTER OF THE NORTHWEST QUARTER OF THE SOUTHWEST
QUARTER OF SECTION 34, TOWNSHIP 18 NORTH, RANGE 1 WEST, W.M.; EXCEPTING
THEREFROM THE SOUTH 20 FEET FOR COUNTY ROAD KNOWN AS 54th AVENUE
SOUTHEAST.

IN THURSTON COUNTY, WASHINGTON

Whereas, the OWNER has constructed improvements, including but not limited to buildings, pavement, and stormwater facilities on the legally described above "Property". In order to further the goals of the CITY to ensure the protection and enhancement of the City's water resources, the CITY and the OWNER hereby enter into this Agreement. The responsibilities of each party to this Agreement are identified below.

The OWNER shall:

- 1) Implement the stormwater facility maintenance program included herein as Attachment "A".
- 2) Maintain a record, in the form of a log book, of steps taken to implement the programs referenced in (1) above. The log book shall be available for inspection by City staff at the OWNER'S residence during normal business hours. The log book shall catalog the action taken, who took it, when it was done, how it was done, and any problems encountered or follow-up on actions recommended. Maintenance items ("problems") listed in Attachment "A" shall be inspected as specified in the attached instructions or more often if necessary. The OWNER is encouraged to photocopy the individual checklists in Attachment "A" and use them to complete its inspections. These completed checklists would then, in combination, comprise the log book.

- 3) Submit an annual report to the CITY regarding implementation of the programs referenced in (1) above. The report must be submitted on or before August 15th of each calendar year and shall contain, at a minimum, the following:
 - a) Name, address, and telephone number of the association, businesses, persons, or the firm responsible for plan implementation, and the person completing the report.
 - b) Time period covered by the report.
 - c) A chronological summary of activities conducted to implement the programs referenced in (1) above. A photocopy of the applicable sections of the log book, with any additional explanation needed, shall normally suffice. For any activities conducted by paid parties not affiliated with the OWNER, include a copy of the invoice for services.
 - d) An outline of planned activities for the next year.
- 4) Prevent any unauthorized modifications to the drainage system and prevent it from being dismantled, revised, altered or removed except as necessary for maintenance, repair or replacement. Any such actions will be covered under items 3 above and shall be approved of by the CITY. Modifications to the stormwater quantity control and stormwater quality system must be approved in advance by the CITY and may require the submittal of revised design drawings, supporting calculations, modifications to maintenance requirements and applications for permits.

THE CITY SHALL, AS RESOURCES ALLOW:

- 1) Provide technical assistance to the OWNER in support of its operation and maintenance activities conducted pursuant to its maintenance and source control programs. Said assistance shall be provided upon request at no charge to the OWNER.
- 2) Review the annual report and conduct occasional site visits to discuss performance and problems with the OWNER.
- 3) Review this Agreement with the OWNER and modify it as necessary.

REMEDIES:

- 1) If the CITY determines that maintenance or repair work is required to be done to the stormwater facilities located on the OWNER's Property, the CITY shall give the OWNER of the Property notice of the specific maintenance and/or repair required. The CITY shall set a reasonable time in which such work is to be completed by the persons who were given notice. If the above required maintenance and/or repair is not completed within the time set by the CITY, written notice will be sent to the persons who were given notice stating the CITY's intention to perform such maintenance and bill the OWNER for all incurred expenses. The CITY may also revoke stormwater utility rate credits (if applicable) if required maintenance is not performed.
- 2) If at any time the CITY determines that the existing system creates any imminent threat to public health or welfare, the CITY may take immediate measures to remedy said threat. However, the CITY shall also take reasonable steps to immediately notify either the Property Owner or the person in control of said Property of such imminent threat in order to enable such owner or person in control to take such immediate measures either independently or in cooperation with the CITY.
- 3) The OWNER hereby grants authority to the CITY for access to the stormwater system features, only for the purpose of performing maintenance, repair or inspection pursuant to the terms of this Agreement. The City is to be responsible, as provided by law, for any damage to the OWNER through its negligence in the construction, maintenance and operation of the stormwater facilities. Furthermore, the CITY agrees that: (a) any activities of the CITY on the Property shall not unreasonably interfere with OWNER's use of the Property; and (b) all work completed by the CITY pursuant to the rights granted hereunder shall be completed in a good and workmanlike manner and in accordance with all applicable laws, ordinances and codes.
- 4) Following any construction, installation, repair, replacement, improvement or reasonable enlargement of the capacity of the stormwater facilities, the CITY shall restore those portions of the Property affected by the CITY's construction, to the condition they were in immediately prior to such work, unless said work is at the express request of the OWNER, in which case the OWNER shall be responsible for restoration. All restoration that is the responsibility of CITY shall be performed as soon as reasonably possible following completion of any work, and shall be coordinated with OWNER so as to cause the minimum amount of disruption to the OWNER's use of the Property.
- 5) The City agrees to indemnify, defend, and hold harmless the OWNER from and against any and all liability incurred by the OWNER arising from or in any way related to the CITY's breach of any of its covenants, agreements, or obligations set forth in this Agreement, or from the CITY's negligence, intentional misconduct, or misuse of the stormwater facilities, but nothing herein shall require the CITY to indemnify the OWNER for that portion of any such liability attributable to the negligence of the OWNER.

- 6) The OWNER shall be responsible for the cost of maintenance and repair of the stormwater facility. Such responsibility shall include reimbursement to the CITY within 30 days of the receipt of an invoice for work performed by the CITY in maintaining or repairing such facility pursuant to the terms of this Agreement. Overdue payments will require the payment of interest at the current legal rate for liquidated judgements. The CITY shall have a lien for all unpaid charges together with such interest. However, notice of such lien shall not be filed by the CITY for a period of 60 days following mailing of the invoice for charges due. During such 60 days, the Property Owner or other person or agent in control of the Property shall have the right to appeal such charges to the CITY's Land Use Hearings Examiner for a final decision. Such appeal may challenge either the necessity of the maintenance or repairs performed by the CITY or the amount of the charges rendered for such maintenance or repair. Notice of such lien shall not be filed during the pendency of such appeal until final decision is rendered by the Land Use Hearings Examiner. The lien shall be foreclosed in the same manner specified by state statute for foreclosure of a mechanic's or materialman's lien. In any legal action to foreclose such lien or otherwise collect such charges, the prevailing party shall be entitled to an award for its attorney fees and costs incurred.

This Agreement is intended to protect the value and desirability of the Property described above and to benefit all the citizens of the CITY. This Agreement shall run with the land and be binding on all parties having or acquiring any right, title, or interest, or any part thereof, of real property in the subdivision. They shall inure to the benefit of each present or future successor in interest of said property or any part thereof, or interest therein, and to the benefit of all citizens of the CITY.

IN WITNESS WHEREOF, this instrument has been executed this _____ day of _____, 20 _____

Patricia J. Mosure

Henry Jakala

STATE OF WASHINGTON)
) ss
COUNTY OF THURSTON)

On this day personally appeared before me Patricia J. Mosure & Henry Jakala, to me known to be the individual(s) described in and who executed the within and foregoing instrument, and acknowledged that they signed the same as their free and voluntary act and deed, for the uses and purposes herein mentioned.

GIVEN under my hand and official seal this _____ day of _____, 20 _____

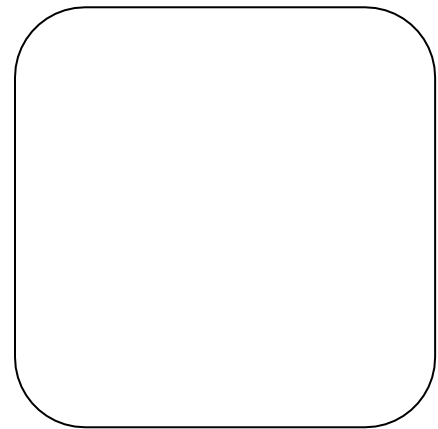
Signature of Notary Public _____

Notary (Print Name) _____

Notary Public in and for the State of Washington,
residing at _____

My commission expires: _____

My commission number: _____



Notary Seal

Craig D. Chapline

Jennifer Chapline

STATE OF WASHINGTON)
) ss
COUNTY OF THURSTON)

On this day personally appeared before me Craig D. & Jennifer Chapline, to me known to be the individual(s) described in and who executed the within and foregoing instrument, and acknowledged that they signed the same as their free and voluntary act and deed, for the uses and purposes herein mentioned.

GIVEN under my hand and official seal this _____ day of _____, 20 _____

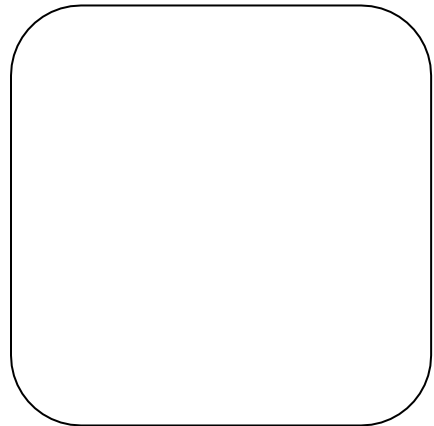
Signature of Notary Public _____

Notary (Print Name) _____

Notary Public in and for the State of Washington,
residing at _____

My commission expires: _____

My commission number: _____



Notary Seal

Ivy J. Styron

Jacob C. Styron

STATE OF WASHINGTON)
) ss
COUNTY OF THURSTON)

On this day personally appeared before me Ivy J & Jacob C. Styron, to me known to be the individual(s) described in and who executed the within and foregoing instrument, and acknowledged that they signed the same as their free and voluntary act and deed, for the uses and purposes herein mentioned.

GIVEN under my hand and official seal this _____ day of _____, 20 _____

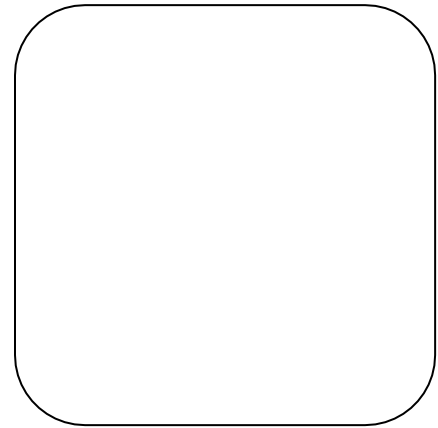
Signature of Notary Public _____

Notary (Print Name) _____

Notary Public in and for the State of Washington,
residing at _____

My commission expires: _____

My commission number: _____



Notary Seal

ACCEPTED by the City of Lacey, Washington this _____ day of _____, 20_____

BY: _____
Scott Egger
Director of Public Works

STATE OF WASHINGTON)
) ss
COUNTY OF THURSTON)

On this day and year above, personally appeared before me, **Scott Egger**, to me known to be the Public Works Director of the City of Lacey, a Municipal Corporation, who executed the foregoing instrument and acknowledged the said instrument to be the free and voluntary act and deed of said Municipal Corporation for the uses and purposes therein mentioned and on oath states he is authorized to execute the said instrument.

GIVEN under my hand and official seal this _____ day of _____, 20_____

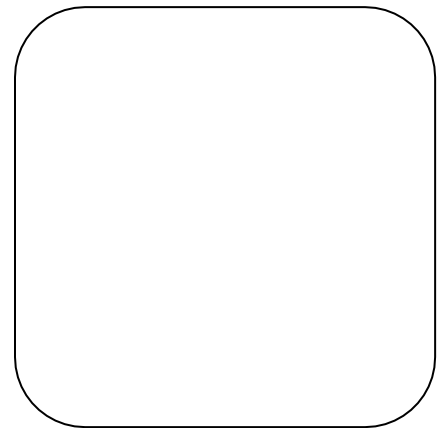
Signature of Notary Public _____

Notary (Print Name) _____

Notary Public in and for the State of Washington,
residing at _____

My commission expires: _____

My commission number: _____



Notary Seal

Attachment “A”

What is Stormwater Runoff?

When urban and suburban development covers the land with buildings, houses, streets and parking lots, much of the native topsoil, duff, trees, shrubs, and grass are replaced by asphalt and concrete. Rainfall that would have directly soaked into the ground instead stays on the surface as *stormwater runoff* making its way into storm drains (including man-made pipes, ditches, or swale networks), stormwater ponds, surface and groundwater, and eventually to Puget Sound.

What is a Storm Drain System and how does it work?

The storm drain system for most developments includes components *that carry, store, cleanse, and release* the stormwater. These components work together to reduce the impacts of development on the environment. These impacts can include *flooding* which results in property damage and blocked emergency routes, *erosion* which can cause damage to salmon spawning habitat, and *pollution* which harms fish and/or drinking water supplies.

The storm drain system provides a safe method to carry stormwater to the treatment and storage areas. Swales and ponds filter pollutants from the stormwater by *physically* settling out particles, *chemically* binding pollutants to pond sediments, and *biologically* converting pollutants to less-harmful compounds. The ponds also store the treated water, releasing it gradually to a nearby stream or to groundwater. The various components of storm drain systems are described in the glossary.

What does Stormwater Runoff have to do with Water Quality?

Stormwater runoff needs to be treated because it carries litter, oil, gasoline, fertilizers, pesticides, pet wastes, sediments, and anything else that can float, dissolve, or be swept along by the moving water. Left untreated, polluted stormwater can reach nearby waterways where it can harm and even kill aquatic life. It can also pollute groundwater to the extent that it must be treated before it can be used for drinking, which has actually happened in Pierce County. Nationally, stormwater is recognized as a major threat to water quality. Remember to keep everything out of stormwater systems except the rainwater they are designed to collect.

Your Stormwater Facility

Stormwater facilities can be attractive as well as functional. They can provide both active and passive-use recreation areas and open space for wildlife. Perhaps you’ve noticed a wet or dry pond in your neighborhood. These different types of ponds are designed for different purposes. For example, wet ponds primarily provide treatment of stormwater. They also provide good cover and habitat for birds and small mammals, making them fine “wildlife preserves”. Dry ponds or infiltration ponds are designed to provide storage for stormwater and gradually release it downstream or allow it to filter into the ground. These types of ponds can be maintained as grassy play areas, and may even be modified to house more formal play equipment.

Who is Responsible for Maintaining Stormwater Facilities?

All stormwater facilities need to be maintained. Regular maintenance ensures proper functioning and keeps the facility visually appealing. This Stormwater Facility Maintenance Guide was designed to help explain how stormwater facilities work and provide user-friendly, straightforward guidance on how to maintain them.

As a property owner or homeowner’s association, you are responsible for regularly maintaining privately owned ponds, catch basins, pipes and other drainage facilities within your subdivision. The City of Lacey maintains stormwater facilities located in public right-of-ways.

Maintenance Checklists

The checklists in this guide are for you to use when inspecting and maintaining the stormwater facilities that you are responsible for. If you feel that you are missing a particular checklist, or you have additional facilities not identified or addressed in this guide, please contact your site developer, design engineer or the City.

The checklists are in table format for ease of use and brevity. Each checklist tells you what part of the feature to check, how often to check, what to check for and the desired outcome after maintenance is performed. Log sheets are included to help you keep track of when you last surveyed the stormwater drainage system.

Those systems using approved “emerging technologies”, such as a StormFilter™, may not find a checklist covering the specific stormwater facility. Please refer to the manufacturer’s guidelines for the appropriate maintenance activity schedule. If a checklist is provided, it is for guidance purposes only and not meant to supersede the manufacturer’s recommendations.

Although it is not intended for the inspection to involve anything too difficult or strenuous, there are a few tools that will make the job easier and safer. These tools include:

- Gloves
- A flashlight.
- A long pole or broom handle.
- Some kind of pry bar or lifting tool for pulling manhole and grate covers.
- Standard yard tools, such as a rake and a shovel.
- Measuring tool.

SAFETY WARNING: For your safety and per OSHA regulations, you should never stick your head or any part of your body into a manhole or other type of confined space. When looking into a manhole or catch basin, stand above it and use the flashlight to help you see. Use a pole or broom handle that is long enough when you are checking sediment depths in confined spaces. NO PART OF YOUR BODY SHOULD BREAK THE PLANE OF THE OPEN HOLE.

Checklist Instructions

The following pages contain maintenance checklists covering most of the needs for the components of your drainage system, as well as for some components that you may not have. Let City staff know if there are any components of your drainage system that you do not recognize or are missing from these pages.

Refer to the City of Lacey Stormwater Code, LMC 14.25 for additional stormwater maintenance requirements, including maintenance frequency.

Using photocopies of these checklists and the log sheet, check off the problems that you look for each time you do an inspection. Add comments regarding problems found and actions taken on the log sheet. Keep the completed forms in your files for future reference.

You may call the City of Lacey at (360) 491-5600 for technical guidance. Please do not hesitate to call, especially if you are unsure whether a situation you have discovered may be a problem.

You should plan to complete a check for all system components on the following schedule:

- **Quarterly** - Plan to inspect the facility at least once during the following months; January, May, August, and November.
- **Annually** - The best time for an annual inspection is in the late summer, preferably September.
- **After Storms** - Also check all stormwater facilities after major storm events, defined as about 1 inch or more of precipitation in 24 hours.

Resource Listing

If you are unsure whether a problem exists, please contact the City at the number below and ask for technical assistance with your situation. Other resources are listed for your convenience and as references associated with the checklists.

Lacey Public Works Department

(360) 491-5600 <http://www.ci.lacey.wa.us/city-government/city-departments/public-works/water-resources/storm-and-surface-water-programs/private-facilities>

City of Lacey Spill Response Team

(360) 491-5644 <http://ci.lacey.wa.us/report-a-spill>

Thurston County Environmental Health

Hazardous Waste Disposal (oil, paint, pesticides, etc.)

(360) 754-4111 <http://www.co.thurston.wa.us/health/ehhw/index>

Solid Waste Disposal (yard waste, construction waste, contaminated soils, etc.)

(360) 786-5136 <http://www.co.thurston.wa.us/health/ehhw/index>

WSU Thurston Co. Extension (Water Resource Ed. Programs, Envir. Stewardship info.)

(360) 786-5445 <http://www.thurston.wsu.edu/water>

Stormwater Facility Inspection and Maintenance Procedure

Stormwater facilities play an important role in managing the 4 feet of rainfall we receive in Lacey in an average year. The term “stormwater facility” refers to any landscaped or structural feature that collects, conveys, cleans or infiltrates runoff water. There are many types of stormwater facilities, ranging from simple swales and ponds to more complicated filter systems and flow control devices. Your on-site stormwater facilities work together to control runoff water, reduce flooding, and prevent pollution.

Owners of commercial property, multifamily residential property, or single-family residential properties with privately-owned drainage and stormwater facilities are required by the City of Lacey Codes to maintain their facilities to established standards for full functionality (City of Lacey Stormwater Code, LMC 14.25). Facility owners are responsible for performing inspections of stormwater facilities, and for performing any maintenance identified by the inspections.

Basic maintenance work may be performed by the owner or property manager, although some tasks are best left to an experienced contractor. The inspection of stormwater facilities and any required maintenance work must be completed and reported annually to the City of Lacey Public Works Department by the date specified on the *Stormwater Facilities Inspection and Maintenance Annual Reporting Form* obtainable on the City’s web site at:

<http://www.ci.lacey.wa.us/city-government/city-departments/public-works/water-resources/storm-and-surface-water-programs/private-facilities>.

Again, note that most large development sites will also have a Maintenance and Source Control Manual that was prepared as part of the site development, and should have been provided to the property owners. Look to your site’s Maintenance and Source Control Manual for information on the project, the facilities on the site, maintenance responsibilities, and maintenance activities.

Where a Maintenance and Source Control Manual is not available, the following steps are provided as general guidance:

Step 1. Identify

The first step is facility identification, so you know what types of stormwater facilities you have. Look on the site plan of your property, and note the main facility types indicated (such as rain gardens and infiltration trenches), along with related drainage components (such as catch basins, pipes, and debris barriers). Locate the various facilities on the ground.

Note that most drainage systems consist of components for four main purposes: stormwater collection (e.g., catch basins), conveyance (e.g., pipes and swales), water quality treatment (e.g., wet ponds) and flow control (via infiltration and/or surface discharge).

To assist you in identifying components, refer to the definitions on the pages that follow.

Step 2. Inspect

For all facility components that you have identified, conduct an inspection. You may conduct the inspection yourself and/or with co-owners, or you may use a property manager or vendor to perform the inspection. Refer to the following Stormwater Facility Maintenance Checklists, which describe the maintenance standards for each component, and also identify and describe defects and their remedies.

For each facility, note on the Inspection and Maintenance Checklist the condition of the facility (good, fair or poor), and any problems or other observations.

Step 3. Maintain

For all facility components, if the inspection indicates maintenance is needed; have the work performed by competent personnel. Basic maintenance tasks may be performed by the property owner(s) or property manager, but difficult or potentially dangerous tasks should be performed by a qualified vendor. Be safe! Use caution when inspecting and working on or near facilities, and stay out of confined spaces such as catch basins and manholes.

Note the action taken and the date, and record this information on the Log Sheet. Mark the check boxes on the Inspection and Maintenance Checklist corresponding to the maintenance accomplished on each facility.

Step 4. Submit

Submit the completed *Stormwater Facilities Inspection and Maintenance Annual Reporting Form* by August 15 each year to: Lacey Water Resources, 420 College Street SE, Lacey, WA 98503. The completed checklist may be mailed, e-mailed (if available) or delivered in person to Lacey City Hall.

Common Stormwater Facilities: Identification and Actions

Note: General actions are described for each facility type below. Please refer to the Stormwater Facility Maintenance Standards for further details.

Detention Pond:

A shallow bowl-like depression in the land, with an area to collect and temporarily store stormwater. The pond is generally lined with grass and is intended to store stormwater to reduce runoff volumes during storms.

Actions to keep detention ponds functioning:

- Remove litter, sediment, yard debris, and problem vegetation such as Scotch broom.
- Maintain a healthy grass cover to prevent erosion and weed growth.
- Repair erosion, and replace rock riprap at pipe ends.
- Inspect pond berms for any structural deficiencies

Bioretention Cell:

A shallow stormwater system with a designed soil mix and plants. Bioretention is a “low-impact development” (LID) practice that is integrated into a site to retain stormwater near its source. Bioretention cells are designed to mimic a forested condition by controlling stormwater through detention, infiltration, and evapotranspiration. They also provide water quality treatment through sedimentation, filtration, adsorption, and phytoremediation. Bioretention cells function by storing stormwater as surface ponding before it filters through the underlying amended soil.

Actions to keep bioretention cells functioning:

- Remove litter, weeds and fallen leaves. Do not use herbicides or pesticides.
- Check inflow and outflow systems, and remove any obstructions.
- Repair erosion; cover bare spots with organic mulch.
- Perform plant maintenance as needed, such as pruning branches.
- Remove dead vegetation and replace dead plants with same varieties.

Ditch:

A V-shaped channel, usually along the side of a road that collects and conveys runoff.

Actions to keep ditches functioning:

- Remove debris, litter and flow obstructions from the ditch.
- Do not fill-in the ditch – prevent dirt, rocks, and weeds from accumulating.
- Repair erosion on ditch side-slopes.

Stormwater Facility Maintenance Checklists

Maintenance Standards

The following pages contain facility-specific maintenance standards, which are intended to be observable conditions for determining whether maintenance actions are required.

Group 1: Flow Control and Treatment Facilities

- 1m Bioretention Cells, Swales and Planter Boxes
- 1u Fencing, Shrubbery Screen, Other Landscaping

Group 2: Structure and Pretreatment

None

Group 3: Miscellaneous Facilities and Features

3a Conveyance Pipes, Culverts, Ditches and Swales

3b Access Roads and Easements

Group 1

Flow Control & Treatment

1m. Bioretention Cells, Swales, and Planter Boxes

Bioretention areas are shallow stormwater systems with a designed soil mix and plants adapted to the local climate and soil moisture conditions. They are designed to mimic a forested condition by controlling stormwater through detention, infiltration, and evapotranspiration. Most routine maintenance procedures are typical landscape care activities.

Bioretention Cells, Swales, and Planter Boxes					
Drainage System Feature	Problem or Defect	Conditions To Check For	✓ Check	What To Do for Desired Condition	✓ Done
General	Trash	Trash and debris present.		No trash and debris present. Remove and properly dispose of all trash and debris.	
Concrete Sidewalls	Cracks or Failure in Concrete Planter Reservoir	Cracks wider than 0.5 inch or maintenance/inspection personnel determine that the planter is not structurally sound.		Concrete repaired or replaced.	
Rockery Sidewalls	Unstable Rockery	Rock walls are insecure.		Rockery sidewalls are stable (may require consultation with professional engineer, particularly for walls 4 feet or greater in height).	
Earthen Side Slopes and Berms	Failure in Earthen Reservoir (embankments, dikes, berms, and side slopes)	Erosion (gullies/rills) greater than 2 inches around inlets, outlet, and alongside slopes.		Source of erosion eliminated and damaged area stabilized (regrade, rock, vegetation, erosion control blanket). For deep channels or cuts (over 3 inches in ponding depth), temporary erosion control measures are in place until permanent repairs can be made.	
		Erosion of sides causes slope to become a hazard.		The hazard is eliminated and slopes are stabilized.	
		Settlement greater than 3 inches (relative to undisturbed sections of berm).		The design height is restored with additional mulch.	
		Downstream face of berm or embankment wet, seeps or leaks evident.		Holes are plugged and berm is compacted. May require consultation with professional engineer, particularly for larger berms.	
		Any evidence of rodent holes or water piping around holes if facility acts as dam or berm.		Rodents (see "Pests: Insects/Rodents") removed and berm repaired/compacted.	
Ponding Area	Sediment or Debris Accumulation	Accumulation of sediment or debris to extent that infiltration rate is reduced (see "Ponded water") or surface storage capacity significantly impacted.		Sediment cleaned out to restore facility shape and depth. Damaged vegetation is replaced and mulched. Source of sediment identified and controlled (if feasible).	

Bioretention Cells, Swales, and Planter Boxes

Drainage System Feature	Problem or Defect	Conditions To Check For	√ Check	What To Do for Desired Condition	√ Done
	Leaf Accumulation	Accumulated leaves in facility.		No leaves clogging outlet structure or impeding water flow.	
	Basin Inlet via Surface Flow	Soil is exposed or signs of erosion are visible.		Erosion sources repaired and controlled.	
Curb Cut Inlet	Sediment or Debris Accumulation	Sediment, vegetation, or debris partially or fully blocking inlet structure.		Curb cut is clear of debris. Source of the blockage is identified and action is taken to prevent future blockages.	
Splashblock Inlet	Water Not Properly Directed to Facility	Water is not being directed properly to the facility and away from the inlet structure.		Blocks are reconfigured to direct water to facility and away from structure.	
	Erosion	Water disrupts soil media.		Splashblock is reconfigure/repaired.	
Inlet/ Outlet Pipe	Damaged Pipe	Pipe is damaged.		Pipe is repaired/replaced. No cracks more than 0.25 inch wide at the joint of inlet/outlet pipes exist.	
	Clogged Pipe	Pipe is clogged.		Pipe is clear of roots or debris. Source of the blockage is identified and action is taken to prevent future blockages.	
Inlets/ Outlet and Access Pathways	Blocked Access	Maintain access for inspections.		Vegetation is cleared within 1 foot of inlets and outlets. Access pathways are maintained.	
Ponding Area	Erosion	Water disrupts soil media.		No eroded or scoured areas in bioretention area. Cause of erosion or scour addressed. A cover of rock or cobbles or other erosion protection measure maintained (e.g., matting) to protect the ground where concentrated water enters or exits the facility (e.g., a pipe, curb cut, or swale).	
Trash Rack	Trash or Debris Accumulation	Trash or debris present on trash rack.		No trash or debris on trash rack. Clean and dispose trash.	
	Damaged Trash Rack	Bar screen damaged or missing.		Barrier repaired or replaced to design standards.	
Check Dams and Weirs	Sediment or Debris Accumulation	Sediment, vegetation, or debris accumulated at or blocking (or having the potential to block) check dam, weir, or orifice.		Blockage is cleared. Identify the source of the blockage and take actions to prevent future blockages.	

Bioretention Cells, Swales, and Planter Boxes					
Drainage System Feature	Problem or Defect	Conditions To Check For	√ Check	What To Do for Desired Condition	√ Done
	Erosion	Erosion and/or undercutting is present.		No eroded or undercut areas in bioretention area. Cause of erosion or undercutting addressed. Check dam or weir is repaired.	
	Unlevel Top of Weir	Grade board or top of weir damaged or not level.		Weir restored to level position.	
Flow Spreader	Sediment Accumulation	Sediment blocks 35 percent or more of ports/notches or, sediment fills 35 percent or more of sediment trap.		Sediment removed and disposed of.	
	Damaged or Unlevel Grade Board/Baffle	Grade board/baffle damaged or not level.		Board/baffle removed and reinstalled to level position.	
Overflow/ Emergency Spillway	Sediment or Debris Accumulation	Overflow spillway is partially or fully plugged with sediment or debris.		No sediment or debris in overflow.	
	Erosion	Native soil is exposed or other signs of erosion damage are present.		Erosion repaired and surface of spillway stabilized.	
	Missing Spillway Armament	Spillway armament is missing.		Armament replaced.	
Underdrain	Blocked Underdrain	Plant roots, sediment or debris reducing capacity of underdrain. Prolonged surface ponding (see "Bioretention Soil").		Underdrains and orifice are free of sediment and debris.	
Bioretention Soil	Ponded Water	Excessive ponding water: Water overflows during storms smaller than the design event or ponded water remains in the basin 48 hours or longer after the end of a storm.		Cause of ponded water is identified and addressed: <ol style="list-style-type: none"> 1. Leaf or debris buildup is removed 2. Underdrain is clear 3. Other water inputs (e.g., groundwater, illicit connections) investigated 4. Contributing area verified If steps #1–4 do not solve the problem, imported bioretention soil is replaced and replanted.	
Bioretention Soil	Protection of Soil	Maintenance requiring entrance into the facility footprint.		Maintenance is performed without compacting bioretention soil media.	

Bioretention Cells, Swales, and Planter Boxes

Drainage System Feature	Problem or Defect	Conditions To Check For	√ Check	What To Do for Desired Condition	√ Done
Vegetation	Bottom Swale and Upland Slope Vegetation	Less than 75 percent of swale bottom is covered with healthy/surviving vegetation.		Plants are healthy and pest free. Cause of poor vegetation growth addressed. Bioretention area is replanted as necessary to obtain 75 percent survival rate or greater. Plant selection is appropriate for site growing conditions.	
Trees and Shrubs	Causing Problems for Operation of Facility	Large trees and shrubs interfere with operation of the basin or access for maintenance.		Trees and shrubs do not hinder facility performance or maintenance activities. Prune or remove large trees and shrubs.	
	Dead Trees and Shrubs	Standing dead vegetation is present.		Trees and shrubs do not hinder facility performance or maintenance activities. Dead vegetation is removed and cause of dead vegetation is addressed. Specific plants with high mortality rate are replaced with more appropriate species.	
Trees and Shrubs Adjacent to Vehicle Travel Areas (or areas where visibility needs to be maintained)	Safety Issues	Vegetation causes some visibility (line of sight) or driver safety issues.		Appropriate height for sight clearance is maintained. Regular pruning maintains visual sight lines for safety or clearance along a walk or drive. Tree or shrub is removed or transplanted if presenting a continual safety hazard.	
Emergent Vegetation	Conveyance Blocked	Vegetation compromises conveyance.		Sedges and rushes are clear of dead foliage.	
Mulch	Lack of Mulch	Bare spots (without much cover) are present or mulch covers less than 2 inches.		Facility has a maximum 3-inch layer of an appropriate type of mulch and mulch is kept away from woody stems.	
Vegetation	Accumulation of Clippings	Grass or other vegetation clippings accumulate to 2 inches or greater in depth.		Clippings removed.	
	Weeds	Weeds are present (unless on edge and providing erosion control).		Weed material removed and disposed of. It is strongly encouraged that herbicides and pesticides not be used in order to protect water quality.	

Bioretention Cells, Swales, and Planter Boxes

Drainage System Feature	Problem or Defect	Conditions To Check For	√ Check	What To Do for Desired Condition	√ Done
Noxious Weeds	Poisonous Vegetation and Noxious Weeds	Any poisonous or nuisance vegetation which may constitute a hazard to the public. Any evidence of noxious weeds as defined in the Thurston County Noxious Weeds List .		Eliminate danger of poisonous vegetation where maintenance personnel or the public might normally be. Completely remove invasive, noxious, or nonnative vegetation in accordance with applicable regulations. (<i>Coordinate with Thurston County Health Department.</i>) Do not spray chemicals on vegetation without guidance or city approval. It is strongly encouraged that herbicides and pesticides not be used in order to protect water quality. (Apply requirements of adopted integrated pest management policies for the use of herbicides.) <i>Complete eradication of noxious weeds may not be possible.</i>	
Excessive Vegetation	Adjacent Facilities Compromised	Low-lying vegetation growing beyond facility edge onto sidewalks, paths, or street edge poses pedestrian safety hazard or may clog adjacent permeable pavement surfaces due to associated leaf litter, mulch, and soil.		Vegetation does not impede function of adjacent facilities or pose as safety hazard. Groundcovers and shrubs trimmed at facility edge. Excessive leaf litter is removed.	
	Causes Facility to Not Function Properly	Excessive vegetation density inhibits stormwater flow beyond design ponding or becomes a hazard for pedestrian and vehicular circulation and safety.		Pruning and/or thinning vegetation maintains proper plant density and aesthetics. Plants that are weak, broken, or not true to form are removed or replaced in-kind. Appropriate plants are present.	
Irrigation (if any)	NA	Irrigation system present.		Manufacturer's instructions for O&M are met.	
Plant Watering	Plant Establishment	Plant establishment period (1–3 years).		Plants are watered as necessary during periods of no rain to ensure plant establishment.	
Summer Watering (after establishment)	Drought Period	Longer term period (3+ years).		Plants are watered as necessary during drought conditions and trees are watered up to 5 years after planting.	

Bioretention Cells, Swales, and Planter Boxes

Drainage System Feature	Problem or Defect	Conditions To Check For	√ Check	What To Do for Desired Condition	√ Done
Spill Prevention and Response	Spill Prevention	Storage or use of potential contaminants in the vicinity of facility.		Spill prevention measures are implemented whenever handling or storing potential contaminants.	
	Spill Response	Any evidence of contaminants such as oil, gasoline, concrete slurries, paint, etc.		Spills are cleaned up as soon as possible to prevent contamination of stormwater. No contaminants or pollutants present. <i>(Coordinate source control, removal, and/or cleanup with City of Lacey Spill Response Team (360) 491-5644, Moderate Risk Waste Program at Thurston County Environmental Health (360) 754-4111, and/or Dept. of Ecology Spill Response (800) 424-8802.)</i>	
Safety	Safety (slopes)	Erosion of sides causes slope to exceed 1:3 or otherwise becomes a hazard.		Actions taken to eliminate the hazard.	
	Safety (hydraulic structures)	Hydraulic structures (pipes, culverts, vaults, etc.) become a hazard to children playing in and around the facility.		Actions taken to eliminate the hazard (such as covering and securing any openings).	
Aesthetics	Aesthetics	Damage/vandalism/debris accumulation.		Facility restored to original aesthetic conditions.	
	Edging	Grass is starting to encroach on swale.		Edging repaired.	
Pest Control	Pests: Insects/Rodents	Pest of concern is present and impacting facility function.		Pests removed and facility returned to original functionality. Do not use pesticides or <i>Bacillus thuringiensis israelensis (Bti)</i> .	
	Mosquitoes	Standing water remains in the basin for more than three days following storms.		All inlets, overflows and other openings are protected with mosquito screens. No mosquito infestation present.	

1u. Fencing/Shrubbery Screen/Other Landscaping

Fencing, shrubbery screening, and landscaping provide flow control via interception, transpiration, and increased infiltration as well as slope protection. Most routine maintenance procedures are typical landscape care activities.

Fencing/Shrubbery Screen/Other Landscaping					
Drainage System Feature	Problem or Defect	Conditions To Check For	√ Check	What To Do for Desired Condition	√ Done
General	Missing or Broken Parts/Dead Shrubbery	Any defect in the fence or screen that permits easy entry to a facility.		Fence is mended or shrubs replaced to form a solid barrier to entry.	
	Erosion	Erosion has resulted in an opening under a fence that allows entry by people or pets.		Soil under fence replaced so that no opening exceeds 4 inches in height.	
	Unruly Vegetation	Shrubbery is growing out of control or is infested with weeds. See also Thurston County Noxious Weeds List .		Shrubbery is trimmed and weeded to provide appealing aesthetics. Do not use chemicals to control weeds.	
Fences	Damaged Parts	Posts out of plumb more than 6 inches.		Posts plumb to within 1.5 inches of plumb.	
		Top rails bent more than 6 inches.		Top rail free of bends greater than 1 inch.	
		Any part of fence (including posts, top rails, and fabric) more than 1 foot out of design alignment.		Fence is aligned and meets design standards.	
		Missing or loose tension wire.		Tension wire in place and holding fabric.	
		Missing or loose barbed wire that is sagging more than 2.5 inches between posts.		Barbed wire in place with less than 0.75-inch sag between posts.	
		Extension arm missing, broken, or bent out of shape more than 1.5 inches.		Extension arm in place with no bends larger than 0.75 inch.	
	Deteriorated Paint or Protective Coating	Part or parts that have a rusting or scaling condition that has affected structural adequacy.		Structurally adequate posts or parts with a uniform protective coating.	
	Openings in Fabric	Openings in fabric are such that an 8-inch-diameter ball could fit through.		No openings in fabric.	

Group 2

Structures & Pretreatment

Group 3

Miscellaneous Facilities & Features

3a. Conveyance Pipes, Culverts, Ditches, and Swales

These features contain and direct the flow of water from one location to another.

Conveyance Pipes, Culverts, Ditches, and Swales					
Drainage System Feature	Problem or Defect	Conditions To Check For	√ Check	What To Do for Desired Condition	√ Done
Pipes	Sediment, Debris, and Vegetation	Accumulated sediment should not exceed 20 percent of the diameter of the pipe. Vegetation should not reduce free movement of water through pipes. Ensure that the protective coating is not damaged or rusted. Dents should not significantly impede flow. Pipe should not have major cracks or flaws allowing water to leak out.		Clean out pipes of all sediment and debris. Remove all vegetation so that water flows freely through pipes. Repair or replace pipe.	
Open Ditches	Trash and Debris	There should not be any yard waste or litter in the ditch.		No trash or debris present. Remove and properly dispose of all trash and debris.	
	Sediment Buildup	Accumulated sediment should not exceed 20 percent of the depth of the ditch.		Clean out ditch of all sediment and debris.	
Open Ditches and Swales	Overgrowth of Vegetation	Check for vegetation (e.g., weedy shrubs or saplings) that reduces the free movement of water through ditches or swales.		Clear blocking vegetation so that water moves freely through the ditches. Grassy vegetation should be left alone.	
	Erosion	Check around inlets and outlets for signs of erosion. Check slopes for signs of sloughing or settling. Action is needed where eroded damage is over 2 inches deep and where there is potential for continued erosion.		Eliminate causes of erosion. Stabilize slopes by using the appropriate erosion control procedure (e.g., compact the soil, plant grass, reinforce with rock).	
	Missing Rocks	Native soil beneath the rock splash pad, check dam, or lining should not be visible.		Replace rocks to design standard.	
Swales	Vegetation	Grass cover is sparse and weedy, or areas are overgrown with woody vegetation.		Aerate soils and re-seed and mulch bare areas. Keep grass less than 8 inches high. Remove woody growth, re-contour and re-seed as necessary.	

Conveyance Pipes, Culverts, Ditches, and Swales					
Drainage System Feature	Problem or Defect	Conditions To Check For	√ Check	What To Do for Desired Condition	√ Done
Swales (continued)	Homeowner Conversion	Swale has been filled in or blocked by shed, woodpile, shrubbery, etc.		Speak with the homeowner and request that the swale area be restored. Contact the city to report the problem if not rectified voluntarily.	
	Swale Does Not Drain	Water stands in the swale, or flow velocity is very slow. Stagnation occurs.		A survey may be needed to check grades. Grades should be in 1 to 5 percent range if possible. If grade is less than 1 percent, underdrains may need to be installed.	

3b. Access Roads and Easements

These features provide access to drainage facilities for inspection and/or maintenance.

Access Roads and Easements					
Drainage System Feature	Problem or Defect	Conditions To Check For	√ Check	What To Do for Desired Condition	√ Done
General	Access	Check to determine if there is adequate access to your stormwater facilities for maintenance vehicles.		If there is not adequate access, check with the city to determine whether an easement exists. If so, a maintenance road may need to be constructed there.	
Access Road	Blocked Roadway	Debris that could damage vehicle tires (glass or metal).		Clear all potentially damaging material.	
	Blocked Roadway	Any obstructions that reduce clearance above and along the road to less than the required width (minimum of 15 feet).		Clear above and along roadway so there is enough clearance.	
Road Surface	Bad Road Conditions	Check for potholes, ruts, mushy spots, or woody debris that limits access by maintenance vehicles.		Add gravel or remove wood as necessary.	
Shoulders and Ditches	Erosion	Check for erosion along roadway.		Repair erosion with additional soil or gravel.	

Glossary of Stormwater Terms

Best Management Practices (BMPs) – Structural features or procedures that reduce the adverse impacts of development on the quantity and/or quality of runoff water.

Biofilter (Swale) – A wider and flatter vegetated version of a ditch over which runoff flows at a uniform depth and velocity. Biofilters perform best when vegetation has a thick mat of roots, leaves, and stems at the soil interface (such as grass).

Biofiltration – The process through which pollutant concentrations in runoff water are reduced by filtering runoff through vegetation.

Buffer – The zone along a sensitive area that provides protection and stability for the area's functioning. As an integral part of a stream or wetland ecosystem, the buffer provides shading, slope and bank stabilization, and input of organic debris and coarse sediments to streams. It allows room for variation in aquatic system boundaries (due to hydrologic or climatic effects), attenuation of surface water flows from precipitation and stormwater runoff, habitat for wildlife, and protection from harmful disturbance or intrusion by humans or domestic animals.

Catch Basin – An inlet box set into the ground, usually rectangular and made of concrete, capped with a grate that allows stormwater to enter. A sump in the bottom catches sediment.

Check Dam – A dam (of rock, logs, etc.) built in a gully or drainage channel to reduce flow velocity, minimize erosive scouring, promote sediment deposition, and/or enhance infiltration.

Compost Stormwater Filter – A treatment facility that removes sediment and pollutants from stormwater by percolating water through a layer of specially-prepared Bigleaf Maple compost. Clean water exits the bottom of the facility through a pipe, while stormwater flows in excess of the facility design overflow the compost bed and bypass the facility.

Constructed Wetland – A wet pond with dead storage at various depths and planted with wetland plants to enhance its treatment capabilities.

Control Structure or Flow Restrictor – A manhole and/or pipe structure with a flow-regulating or metering device such as a weir or plates with small holes known as orifices. The structure controls the rate at which water leaves the pond.

Conveyance – A mechanism or device for transporting water, including gutters, pipes, channels (natural or man-made), culverts, manholes, etc.

Critical Areas – Areas such as wetlands, streams, steep slopes, etc., as defined by ordinance or resolution by the jurisdiction. Also known as environmentally-sensitive areas.

Culvert – A conveyance device (e.g. concrete, metal or plastic pipe) which conveys water from a ditch, swale, or stream under (usually across) a roadway, driveway or embankment.

Dead Storage – The volume of storage in a pond below the outlet which does not drain after a storm event. This pool provides treatment of the stormwater by allowing sediments to settle out.

Detention Facility – A facility (e.g. a pond, vault, or pipe) in which surface water or stormwater is temporarily stored.

Detention Pond – A detention facility in the form of an open pond.

Dispersion Trench – An open-top trench filled with rip rap or gravel that takes the discharge from a pond, spreads it out, and spills (bubbles) the flow out along its entire length. Dispersion trenches are used to simulate “sheet flow” of stormwater from an area, and are often used to protect sensitive areas.

Drainage System – A combination of facilities for the collection, conveyance, containment, treatment, discharge and/or disposal of stormwater runoff.

Drop Structure – A structure for dropping water to a lower elevation and/or dissipating energy. A drop may be vertical or inclined.

Dry Pond – A detention facility that drains completely after a storm. This type of pond has a pipe outlet at the bottom.

Easement – A legal encumbrance placed against a property’s title to reserve access. Drainage easements typically provide access to pipes and/or ponds, and are generally 15 to 20 feet wide.

Emergency Overflow or Spillway – An area on the top edge of a pond that is slightly lower in elevation than areas around it and is normally lined with riprap for erosion protection. The emergency overflow is used only if the primary and secondary outlets of the pond fail, in the event of extreme storms or if the infiltration capability of the pond becomes significantly diminished. If the emergency overflow ever comes into play, it may mean that the pond needs to be upgraded.

Energy Dissipater – A rock pad at an outlet (of a pipe, channel, etc.) designed to slow the flow velocity, spread out the water leaving the outlet, and reduce the potential for erosion.

Freeboard – The vertical distance between the design high water mark and the top of a pond (or other structure). Most ponds have one to two feet of freeboard to prevent them from overflowing.

Infiltration – The soaking of water through the soil surface into the ground (percolation is essentially the same thing). Many ponds are designed to infiltrate or retain stormwater, and thus do not have a regularly used discharge pipe.

Infiltration Facility (or Structure) – A facility (pond or trench) which retains and percolates stormwater into the ground, having no discharge (to any surface water) under normal operating conditions.

Junction – Point where two or more drainage pipes or channels converge (e.g. a manhole).

Jurisdiction – Lacey, Olympia, Tumwater, or Thurston County (as applicable).

Lined Pond or Conveyance – A facility, the bottom and sides of which have been made impervious (using, for example, a plastic liner or clay/silt soil layer) to the transmission of liquids.

Live Storage – The volume of storage in a pond above the outlet, which drains after a storm event. This storage capacity provides flood control and habitat protection for nearby streams.

Manhole – A larger version of the catch basin, often round with a solid lid. Manholes allow access to underground pipes (such as storm sewers) for maintenance.

Natural Channel – A stream, creek, river, lake, wetland, estuary, gully, swale, ravine or any open conduit where water will concentrate and flow intermittently or continuously.

Oil-Water Separator – A structure or device used to remove oil and greasy solids from water. They operate by using gravity separation of liquids that have different densities. Many catch basins have a down-turned plastic elbow that provides some oil-water separation.

Outfall – The point where water flows from a man-made conduit, channel, or drain into a water body or other natural drainage feature.

Retention Facility – A facility that is designed to retain water and allow for infiltration.

Retention Pond – A retention facility that is an open basin or “pond.”

Revetments – Materials such as rock or keystones used to sustain an embankment, such as in a retaining wall.

Riprap – Broken rock, cobbles, or boulders placed on earth surfaces, such as on top of a berm for the emergency overflow, along steep slopes, or at the outlet of a pipe, for protection against the erosive action of water. Also used for entrances to construction sites, to prevent sediment tracking.

Runoff – The portion of water originating as precipitation that becomes surface flow. See “stormwater” below.

Sand Filter – A treatment facility that removes pollutants and sediments from stormwater by percolating stormwater through a layer of sand. Clean water exits the bottom of the facility through a pipe.

Stormwater – The portion of precipitation that falls on property and that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes or other features into a defined surface water body or a constructed infiltration facility. Stormwater includes wash-down water and other wastewater that enters the drainage system.

Swale – A shallow surface drainage conveyance with relatively gentle side slopes, generally with flow depths less than 1 foot. Essentially a broad, flat-bottomed ditch. See “biofilter.”

Trash Rack or Bar Screen – A device (usually a screen or bars) that fits over a pipe opening to prevent large debris such as rocks or branches from entering and partially blocking the pipe.

Wet Pond – A stormwater treatment pond designed with a “dead storage” volume to maintain a continuous or seasonal static water level below the pond outlet elevation.