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AUDITOR, Pierce County, WASHINGTON

| RANGE | TOWNSHIP | SECTION | QUARTER | SERIAL | NUMBER |
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After recording return to:

City Clerk
City of Puyallup
333 South Meridian
Puyallup, WA 98371

info@puyallupwa.gov

Document Title: Stormwater Outfall Management & BMP Facilities Agreement

Grantee: City of Puyallup

Grantor: SOUTHWEST CORNER PROPERTIES LLC

Legal Description: Section 28 Township 20 Range 04 Quarter 11 : COM AT INTER OF MERIDIAN ST & 5TH AVE NW

Complete Legal Description on 1 **Page of this Document**

Assessor's Tax Parcel or Account Numbers: 0420281162

Reference Number of Related Document(s): _____

Stormwater Management & BMP Facilities Agreement

- A. Parties.** The parties to this agreement are Grantee City of Puyallup, a Washington State municipal corporation (City), and Grantor landowner SOUTHWEST CORNER PROPERTIES LLC (Landowner).
- B. Property.** Landowner is the owner of certain real property (Property), which is legally described in this document and is located at the following address:
150 RIVER RD, PUYALLUP, WA 98371.
- C. Development Plan & Stormwater Facilities.** The site, subdivision or other development plan (Plan) for the Property, specifically known, entitled or described as Korum Lincoln Dealership, provides for detention, retention, treatment or management of stormwater that is associated with the Property through the use of identified stormwater facilities or best management practices (collectively, Stormwater Facilities). Upon approval of the Plan by the City, the Plan shall be incorporated herein by this reference. In accordance with the Plan, Landowner shall adequately construct, operate, use, maintain and repair the Stormwater Facilities.

D. Agreement. On the terms and conditions set forth herein, the City and Landowner agree as follows:

1. The Stormwater Facilities shall be constructed, operated, used, maintained and repaired by Landowner in accordance with the requirements of the Plan, and any other applicable law or regulation.
2. Landowner (which expressly includes its agents, successors and assigns, including any homeowners association) shall adequately and properly operate, use, maintain and repair the Stormwater Facilities as described in the maintenance and operations manual, which is on file with the City, and may be attached and recorded herewith as Exhibit A. This duty extends to all associated pipes and channels, as well as all structures, improvements, and vegetation that are provided to control the quantity and quality of the stormwater. Adequate maintenance shall mean maintenance that is sufficient to keep the Stormwater Facilities in good working order and operating so as to satisfy the design and performance standards of the Plan.
3. Landowner shall regularly inspect the Stormwater Facilities and shall submit an inspection report to the City at least once a year on a date prescribed by the City. The purpose of the inspection(s) is to ensure that the Stormwater Facilities are safe and functioning properly. The scope of the inspection shall include the entire Stormwater Facilities, including but not limited to, berms, outlet structures, pond areas, access roads, and so forth. Deficiencies and any performance or other related issues shall be noted by Landowner in the inspection report. The annual report shall be in a form and include content as prescribed from time to time by the City. An example copy of the report form may be attached hereto as Exhibit B.
4. Landowner hereby grants permission to the City to enter upon the Property to inspect the Stormwater Facilities. Except in case of emergency, the City shall provide Landowner with at least forty-eight (48) hours written notice prior to entering on to the Property. Landowner shall be entitled to have a representative accompany the City during such inspection. The City shall provide Landowner with copies of written inspection reports.
5. If Landowner fails to adequately and properly operate, use, maintain or repair the Stormwater Facilities, the City shall notify Landowner in writing and provide Landowner with a reasonable opportunity to cure. If Landowner fails to timely cure, then the City may enter upon the Property and remedy the issue(s) identified in the notice and those reasonably related thereto; Furthermore, if the City performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like while remedying the identified issues, the City may charge the cost of the remedy to Landowner, and Landowner shall promptly pay the costs to the City. Notwithstanding the foregoing, the City shall be under no obligation to inspect, maintain or repair the Stormwater Facilities.
6. Landowner shall defend, indemnify and hold the City, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with activities or operations, performed by Landowner, or on Landowner's behalf, that relate to the Stormwater Facilities and the subject matter of this agreement, except for injuries and damages caused by the negligence of the City.

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- E. Covenant.** The terms and provisions of this agreement constitute a covenant, which is subject to the following: This covenant is an equitable covenant. It touches and concerns the land that is described as the Property herein. The parties intend that this covenant shall bind the parties' successor and assigns. This covenant shall run with the land that is described as the Property herein, and shall bind whoever has possession of the land, in whole or in part, without regard to whether the possessor has title, or has succeeded to the same estate that granting parties have or had. Possessors shall include, but are not limited to, leasehold tenants, contract purchasers, subtenants, and adverse possessors. This covenant shall run with the land even in the absence of the transfer of some interest in land, other than the covenant itself, between Landowner and the City. This covenant shall not be governed by the mutuality rule. The burden of the covenant can run independently from the benefit of the covenant, and the benefit need not run. The benefit may be in gross or personal to Landowner or the City. Landowner waives its right to assert any defenses to the enforcement of this covenant, including, but not limited to, the change of neighborhood doctrine, laches, estoppel, balancing of hardships, and abandonment. If Landowner breaches any term of this covenant and agreement, then all remedies in equity and at law, including, but not limited to, injunctions, mandamus, declaratory judgments, and damages, shall be available to the City.
- F. Governing Law & Venue.** This agreement shall be governed by and construed in accordance with the laws of the State of Washington. The venue for any action that arises from or out of this instrument shall be the Pierce County Superior Court.

<signature page to follow>

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Dated: 09-01-2022

John Hall
Grantor: John Hall, Manager
Southwest Corner Properties, LLC

Dated: 9/1/2022

DocuSigned by:
Hans Hunger
1D7E80CED63646D

Grantee: City of Puyallup, Accepted by:
Hans Hunger, PE (City Engineer)

Dated: 9/1/2022

DocuSigned by:
Joseph N Beck
EF5BA5DC2E5544B

Approved as to form:
Joseph N. Beck (City Attorney)

STATE OF Washington)
)
COUNTY OF Pierce)

-SS

I certify that I know or have satisfactory evidence that John Hall is the person who appeared before me, and on 9-1-2022 said person acknowledged that he signed this instrument, on oath stated that he was authorized to execute the instrument and acknowledged it as the Manager of Southwest Corner Properties LLC to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 9-1-2022

Margie A Schwartz
Printed Name: Margie A Schwartz
Notary Public, State of Washington
My appointment expires: 6-10-2024



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Section 28 Township 20 Range 04 Quarter 11 : COM AT INTER OF MERIDIAN ST & 5TH AVE NW TH N ALG C/L OF MERIDIAN ST 955 FT TH W 411.73 FT TO E MAR OF 2ND ST NW TH ALG SD E MAR N 140 FT TH E 22.81 FT TO POB TH CONT E 92.19 FT ATH N 185.30 FT TO SLY MAR OF OF RIVER RD TH N 70 DEG 09 MIN 19 SEC W ALG SD SLY MAR 315.21 FT TH S 71.55 FT TH W 79.98 FT TH S 74 FT TH E 79.98 FT TH S 90 FT TH E 120 FT TO W MAR OF 2ND ST NW EXT TH S 27.69 FT TO PT OF CURV WHICH RAD BEARS S 76 DEG 24 MIN 36 SEC E AT 45 FT TH S ELY ALG CURVE HAVING DELTA OF 194 DEG 58 MIN RAD OF 45 FT & ARC DIST OF 153.13 FT TO POB APPROVED LOT COMB BY CY OF PUYALLUP PLANNING 3-30-98 COMB 1-060, 1-062, 1-095, 1-096, 1-156, 1-157 & 1-159 SEG J-0744 JU 4/28/98 JU AFN 8708140352 PROBLEM WITH LEGAL WORKED ON INTENT 02/13/2019MC 5435688DC 2/15/19DX

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Exhibit A

| | | | | | |
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KORUM LINCOLN STORMWATER SYSTEM OPERATION AND MAINTENANCE MANUAL

LARSON & ASSOCIATES, INC.
SURVEYORS, ENGINEERS AND PLANNERS
9027 PACIFIC AVENUE, SUITE 4
TACOMA, WA 98444 (253) 474-3404

Description of "Korum - Lincoln" Stormwater System.

The proposed building will be provided with a roof drain tightline around the perimeter of the building footprint to collect and convey roof drainage to and through a 6" perforated stub out connection to the existing storm system onsite. The onsite retained and/or replaced pavement parking/access areas will continue to be collected by associated existing or proposed catch basins onsite with conveyance to and through a basic water quality treatment filter vault prior to discharge to the existing storm system downstream with ultimate release to the city's public drainage system in River Rd.

RESPONSIBLE PARTY FOR THE MAINTENANCE OF THE PRIVATE STORM DRAINAGE SYSTEM UNTIL WHICH TIME THE HOME OWNER TAKES OVER RESPONSIBILITY:

KORUM AUTOMOTIVE GROUP
100 RIVER ROAD
PUYALLUP, WA. 98371
PH: (253) 286-5236
CONTACT: JOHN HALL

ESTIMATED ANNUAL COST OF MAINTENANCE OF THE PRIVATE STORM DRAINAGE SYSTEM AS IDENTIFIED IN ATTACHMENT "A" IS \$3,500 PER YEAR.

NOTE: THIS OPERATION AND MAINTENANCE MANUAL SHALL BE KEPT AT THE PROJECT SITE AT ALL TIMES AND SHALL BE MADE AVAILABLE TO THE CITY OF PUYALLUP FOR INSPECTION UPON REQUEST.

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ATTACHMENT “A”

ATTACHMENT "A"
MAINTENANCE PROGRAM

Inspection Period: _____

Number of Sheets Attached: _____

Date Inspected: _____

Name of Inspector: _____

Inspector's Signature: _____

INSTRUCTIONS FOR USE OF MAINTENANCE CHECKLISTS

The following pages contain maintenance needs for most of the components that are part of your drainage system, as well as for some components that you may not have. Let the City know if there are any components that are missing from these pages. Ignore the requirements that do not apply to your system. You should plan to complete a checklist for all system components on the following schedule:

- (1) Monthly from November through April
- (2) Once in late summer (preferable September)
- (3) After any major storm (use 1-inch in 24 hours as a guideline), items marked "S" only.

Using photocopies of these pages, check off the problems you looked for each time you did an inspection. Add comments on problems found and actions taken. Keep these "checked" sheets in your files, as they will be used to write your annual report. Some items do not need to be looked at every time an inspection is done. Use the suggested frequency at the left of each item as a guideline for your inspection.

ATTACHMENT "A" (CONTINUED)

Maintenance Checklist for Fencing/Shrubbery Screen/Other Landscaping

| Frequency | Drainage System Feature | ⌘ | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|---|--|--|---|
| M | 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. |
| M,S | | | Erosion | Erosion has resulted in an opening under a fence that allows entry by people or pets. | Replace soil under fence so that no opening exceeds 4 inches in height. |
| M | | | Unruly vegetation | Shrubbery is growing out of control or is infested with weeds. | Shrubbery is trimmed and weeded to provide appealing aesthetics. Do not use chemicals to control weeds. |
| A | Wire Fences | | Damaged parts | Posts out of plumb more than 6 inches. | Posts plumb to within 1-1/2 inches of plumb. |
| A | | | | Top rails bent more than 6 inches. | Top rail free of bends greater than 1 inch. |
| A | | | | 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. |
| A | | | | Missing or loose tension wire. | Tension wire in place and holding fabric. |
| A | | | | Missing or loose barbed wire that is sagging more than 2-1/2 inches between posts. | Barbed wire in place with less than 3/4-inch sag between posts. |
| A | | | | Extension arm missing, broken, or bent out of shape more than 1-1/2 inches. | Extension arm in place with no bends larger than 3/4 inch. |
| A | | | 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. |
| M | | | Openings in fabric | Openings in fabric are such that an 8-inch diameter ball could fit through. | No openings in fabric. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:

A=Annual (March or April preferred)

M=Monthly (see schedule)

S=After major storms (use 1-inch in 24 hours as a guideline)

ATTACHMENT "A" (CONTINUED)

Maintenance Checklist for Conveyance Systems (Pipes, Ditches, and Swales)

| Frequency | Drainage System Feature | ⌘ | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|---|---|--|---|
| M,S | Pipes | | Sediment & debris | Accumulated sediment that exceeds 20% of the diameter of the pipe. | Pipe cleaned of all sediment and debris. |
| M | | | Vegetation | Vegetation that reduces free movement of water through pipes. | All vegetation removed so water flows freely through pipes. |
| A | | | Damaged (rusted, bent, or crushed) | Protective coating is damaged; rust is causing more than 50% deterioration to any part of pipe. | Pipe repaired or replaced. |
| M | | | | Any dent that significantly impedes flow (i.e., decreases the cross section area of pipe by more than 20%). | Pipe repaired or replaced. |
| M | | | | Pipe has major cracks or tears allowing groundwater leakage. | Pipe repaired or replaced. |
| M,S | Open ditches | | Trash & debris | Dumping of yard wastes such as grass clippings and branches into basin. Unsightly accumulation of nondegradable materials such as glass, plastic, metal, foam, and coated paper. | Remove trash and debris and dispose as prescribed by the County. |
| M | | | Sediment buildup | Accumulated sediment that exceeds 20% of the design depth. | Ditch cleaned of all sediment and debris so that it matches design. |
| A | | | Vegetation | Vegetation (e.g., weedy shrubs or saplings) that reduces free movements of water through ditches. | Water flows freely through ditches. Grassy vegetation should be left alone. |
| M | | | Erosion damage to slopes | See Ponds Checklist. | See Ponds Checklist. |
| A | | | Rock lining out of place or missing (if applicable) | Maintenance person can see native soil beneath the rock lining. | Replace rocks to design standard. |
| Varies | Catch basins | | | See Catch Basins Checklist. | See Catch Basins Checklist. |
| M,S | Swales | | Trash & debris | See above for Ditches. | See above for Ditches. |
| M | | | Sediment buildup | See above for Ditches. | Vegetation may need to be replanted after cleaning. |
| | | | Vegetation not | Grass cover is sparse and | Aerate soils and reseed and |

| | | | | | |
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| M | | | growing or overgrown | seedy or areas are overgrown with woody vegetation. | mulch bare areas. Maintain grass height at a minimum of 6 inches for best stormwater treatment. Remove woody growth, recontour, and reseed as necessary. |
| M,S | | | Erosion damage to slopes | See Ponds Checklist. | See Ponds Checklist. |
| M | | | Conversion by homeowner to incompatible use | Swale has been filed in or blocked by shed, woodpile, shrubbery, etc. | If possible, speak with homeowner and request that swale area be restored. Contact the County to report problem if not rectified voluntarily. |
| A | | | Swale does not drain | Water stands in swale or flow velocity is very slow. Stagnation occurs. | A survey may be needed to check grades. Grades need to be in 1-5% range if possible. If grade is less than 1% underdrains may need to be installed. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:

A=Annual (March or April preferred)

M=Monthly (see schedule)

S=After major storms (use 1-inch in 24 hours as a guideline)

ATTACHMENT "A" (CONTINUED)

Maintenance Checklist for Grounds (Landscaping)

| Frequency | Drainage System Feature | ⌘ | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|---|---------------------------|--|---|
| M | General | | Weeds (nonpoisonous) | Weeds growing in more than 20% of the landscaped area (trees and shrubs only). | Weeds present in less than 5% of the landscaped area. |
| M | | | Insect hazard | Any presence of poison ivy or other poisonous vegetation or insect nests. | No poisonous vegetation or insect nests present in landscaped area. |
| M,S | | | Trash or litter | See Ponds Checklist. | See Ponds Checklist. |
| M,S | | | Erosion of Ground Surface | Noticeable rills are seen in landscaped areas. | Causes of erosion are identified and steps taken to slow down/spread out the water. Eroded areas are filled, contoured, and seeded. |
| A | Trees and shrubs | | Damage | Limbs or parts of trees or shrubs that are split or broken which affect more than 25% of the total foliage of the tree or shrub. | Trim trees/shrubs to restore shape. Replace trees/shrubs with severe damage. |
| M | | | | Trees or shrubs that have been blown down or knocked over. | Replant tree, inspecting for injury to stem or roots. Replace if severely damaged. |
| A | | | | Trees or shrubs which are not adequately supported or are leaning over, causing exposure of the roots. | Place stakes and rubber-coated ties around young trees/shrubs for support. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:

A=Annual (March or April preferred)

M=Monthly (see schedule)

S=After major storms (use 1-inch in 24 hours as a guideline)

No. 5 – Catch Basins

| Maintenance Component | Defect | Conditions When Maintenance Is Needed | Results Expected When Maintenance is performed |
|-----------------------|--|---|---|
| General | Trash & Debris | Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%. | No Trash or debris located immediately in front of catch basin or on grate opening. |
| | | Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe. | No trash or debris in the catch basin. |
| | | Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height. | Inlet and outlet pipes free of trash or debris. |
| | | Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane). | No dead animals or vegetation present within the catch basin. |
| | Sediment | Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe. | No sediment in the catch basin |
| | Structure Damage to Frame and/or Top Slab | Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch (Intent is to make sure no material is running into basin). | Top slab is free of holes and cracks. |
| | | Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached | Frame is sitting flush on the riser rings or top slab and firmly attached. |
| | Fractures or Cracks in Basin Walls/ Bottom | Maintenance person judges that structure is unsound. | Basin replaced or repaired to design standards. |
| | | Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks. | Pipe is regouted and secure at basin wall. |
| | Settlement/ Misalignment | If failure of basin has created a safety, function, or design problem. | Basin replaced or repaired to design standards. |
| | Vegetation | Vegetation growing across and blocking more than 10% of the basin opening. | No vegetation blocking opening to basin. |
| | | Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart. | No vegetation or root growth present. |
| | Contamination and Pollution | See "Detention Ponds" (No. 1). | No pollution present. |

No. 5 – Catch Basins

| Maintenance Component | Defect | Conditions When Maintenance is Needed | Results Expected When Maintenance is performed |
|------------------------------|-------------------------------|---|--|
| Catch Basin Cover | Cover Not in Place | Cover is missing or only partially in place. Any open catch basin requires maintenance. | Catch basin cover is closed |
| | Locking Mechanism Not Working | Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread. | Mechanism opens with proper tools. |
| | Cover Difficult to Remove | One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is keep cover from sealing off access to maintenance.) | Cover can be removed by one maintenance person. |
| Ladder | Ladder Rungs Unsafe | Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges. | Ladder meets design standards and allows maintenance person safe access. |
| Metal Grates (If Applicable) | Grate opening Unsafe | Grate with opening wider than 7/8 inch. | Grate opening meets design standards. |
| | Trash and Debris | Trash and debris that is blocking more than 20% of grate surface inletting capacity. | Grate free of trash and debris. |
| | Damaged or Missing. | Grate missing or broken member(s) of the grate. | Grate is in place and meets design standards. |

No. 6 – Debris Barriers (e.g., Trash Racks)

| Maintenance Components | Defect | Condition When Maintenance is Needed | Results Expected When Maintenance is Performed |
|------------------------|------------------------|--|---|
| General | Trash and Debris | Trash or debris that is plugging more than 20% of the openings in the barrier. | Barrier cleared to design flow capacity. |
| Metal | Damaged/ Missing Bars. | Bars are bent out of shape more than 3 inches. | Bars in place with no bends more than 3/4 inch. |
| | | Bars are missing or entire barrier missing. | Bars in place according to design. |
| | | Bars are loose and rust is causing 50% deterioration to any part of barrier. | Barrier replaced or repaired to design standards. |
| | Inlet/Outlet Pipe | Debris barrier missing or not attached to pipe | Barrier firmly attached to pipe |

No. 15 – Manufactured Media Filters)

| Maintenance Component | Defect | Condition When Maintenance is Needed | Results Expected When Maintenance is Performed |
|-----------------------------|--|---|---|
| Below Ground Vault | Sediment Accumulation on Media. | Sediment depth exceeds 0.25-inches. | No sediment deposits which would impede permeability of the compost media. |
| | Sediment Accumulation in Vault | Sediment depth exceeds 6-inches in first chamber. | No sediment deposits in vault bottom of first chamber. |
| | Trash/Debris Accumulation | Trash and debris accumulated on compost filter bed. | Trash and debris removed from the compost filter bed. |
| | Sediment in Drain Pipes/Clean-Outs | When drain pipes, clean-outs, become full with sediment and/or debris. | Sediment and debris removed. |
| | Damaged Pipes | Any part of the pipes that are crushed or damaged due to corrosion and/or settlement. | Pipe repaired and/or replaced. |
| | Access Cover Damaged/Not Working | Cover cannot be opened; one person cannot open the cover using normal lifting pressure, corrosion/deformation of cover. | Cover repaired to proper working specifications or replaced. |
| | Vault Structure Includes Cracks in Wall, Bottom, Damage to Frame and/or Top Slab | Cracks wider than 1/2-inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the vault is not structurally sound. | Vault replaced or repairs made so that vault meets design specifications and is structurally sound. |
| | | Cracks wider than 1/2-inch at the joint of any inlet/outlet pipe or evidence of soil particles entering through the cracks. | Vault repaired so that no cracks exist wider than 1/4-inch at the joint of the inlet/outlet pipe. |
| | Baffles | Baffles corroding, cracking warping, and/or showing signs of failure as determined by maintenance/inspection person. | Baffles repaired or replaced to specifications. |
| | Access Ladder Damaged | Ladder is corroded or deteriorated, not functioning properly, not securely attached to structure wall, missing rungs, cracks, and misaligned. | Ladder replaced or repaired and meets specifications, and is safe to use as determined by inspection personnel. |
| Below Ground Cartridge Type | Media | Drawdown of water through the media takes longer than 1 hour, and/or overflow occurs frequently. | Media cartridges replaced. |
| | Short Circuiting | Flows do not properly enter filter cartridges. | Filter cartridges replaced. |

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ATTACHMENT "B"

INSTRUCTIONS FOR THE OWNER/S IN Korum - Lincoln

POLLUTION SOURCE CONTROLS

The attached material includes information on pollution source controls. Pollution source controls are actions taken by a person or person representing a business to reduce the amount of pollution reaching surface and ground waters. Pollution source controls also called "best management practices" (BMP's) include:

Altering the activity (e.g., substitute not-toxic products or recycle)

Enclosing or covering the activity.

Segregating the activity (e.g. diverting surface water runoff away from an area that is contaminated.)

Pollution source controls are needed because of the contamination found in surface water runoff from commercial areas and the effect of this contamination on aquatic life and human health. Research on urban runoff in the Puget Sound area and elsewhere has found oil and grease, nutrients, organic substances, toxic metals, bacteria, viruses, and sediments at unacceptable levels.

Effects of contaminate runoff include closure of shellfish harvesting areas and swimming areas, pollution of wells, mortality of young fish and other aquatic organisms, tumors on fish, and impairment of fish reproduction.

The Korum - Lincoln project contains impervious surfaces that will collect contaminants from automobiles, garbage, and improperly disposed of chemicals. These materials are conveyed to the storm drainage systems and will enter into the ground water, if not treated properly.

Attachment "B" contains a number of BMP's for various uses within the development site. Each owner shall give a copy of the BMP's suitable to this or her respective activity. If a certain activity is not contained in Attachment "B", please contact Larson and Associates at 253-474-3404 for a specific BMP activity type.

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REQUIRED ACTIONS OF ALL OWNERS

The following actions shall be taken by all owners to ensure that pollution generated on The Korum - Lincoln project is minimized.

- 1) Warning signs (e.g. "Dump no waste – drains to Stream") shall be stenciled or embossed adjacent to all catch basin inlets. They shall be repainted once a year or more as necessary.
- 2) Paved roadways shall be swept twice a year. It is recommended that newer high-velocity vacuum sweeper be used.
- 3) The storm drainage system shall be maintained per Attachment "A"
- 4) No activities shall be conducted on the property that is likely to result in a short-term high concentration discharge of pollution to the storm system. Such activities shall include, but are not limited to car washes, vehicle maintenance, and cleaning of equipment and or vehicles, unless the project has been properly permitted for such uses and the BMP's for such uses have been received by the owner.
- 5) Automobile fluids, chemicals etc. shall be disposed of legally and properly.
- 6) All garbage shall be contained in appropriate containers.

4.3 BMPs TO CONSIDER FOR ALL ACTIVITIES

This is a summary of items that each business/homeowner should consider. As stated before, most of these are common sense, housekeeping types of solutions, but if each business/homeowner would take some action on each of these, the improvement in water quality would be substantial.

1. Avoid the activity or reduce its occurrence

If you can, avoid the activity or do it less frequently. If there a substitute process or a different material you can use to get the job done? Can you do a larger run of a process at one time, thus reducing the number of times per week or month it needs to be repeated? For instance, raw materials could be delivered close to the time of use instead of being stockpiled and exposed to the weather. Perhaps you could avoid one solvent-washing step altogether. The Department of Ecology or the Tacoma-Pierce County Health Department can provide pollution prevention assistance.

2. Move the activity indoors

Sometimes it is fairly easy to move an activity indoors out of the weather. The benefits of this are twofold; you prevent runoff contamination, and you provide for easier, more controlled cleanup if a spill occurs. An example would be unloading and storing barrels of chemicals inside a garage area instead of doing it outside. Please be aware that moving storage areas indoors may require installation of fire suppression equipment or other building modifications as required by the Uniform Building Code, the Uniform Fire Code, or local ordinances.

3. Use less material

Don't buy or use more material than you really need. This not only helps keep potential disposal, storage and pollution problems to a minimum, but will probably save you money, too.

4. Use the least toxic materials available

Investigate the use of materials that are less toxic than what you use now. Perhaps a caustic-type detergent or a solvent could be replaced with a more environmentally friendly product. Such a change might allow you to discharge process water to the sanitary sewer instead of paying for expensive disposal (contact Pierce County Utilities @ 565-3013 to find out about allowable sanitary discharges and pretreatment permits). Remember that even if you do switch to a biodegradable product, nothing but uncontaminated water is allowed to enter the storm drain system.

5. Create and maintain vegetated areas near activity locations

Vegetation of various kinds can help filter pollutants out of stormwater, so it is advisable to route stormwater through vegetated areas located near your activity. For instance, many parking lots contain grassy islands, typically formed in a "hump". By creating those islands as depressions instead of humps, they can be used to treat runoff from the parking lot or roof. Also, don't forget the erosion control benefits of vegetation at your site.

6. Locate activities as far as possible from surface drainage paths

Activities located as far as possible from known drainage paths, ditches, streams, and drains will be less likely to pollute, since it will take longer for material to reach the drainage feature. This gives you more time to react in the event of a spill, or if it is a "housekeeping" issue may protect the local waters long enough for you to clean up the area around the activity. Don't forget that groundwater issues are always prominent, no matter where the activity is located so the actions taken on your site on a day-to-day basis are always important, even in dry weather.

7. Keep storm drain systems clean

Pollutants can concentrate over time in storm drainage structures such as catch basins, ditches and storm drains. When a large storm event occurs, it can mobilize these pollutants and carry them to receiving waters. Develop and implement maintenance practices, inspections, and schedules for treatment devices (e.g., detention ponds, oil/water separators, vegetated swales, etc.). Requirements for cleaning catch basins will be discussed later in the specific BMP S.9.

8. Reduce, reuse and recycle as much as possible

Always look for ways to recycle instead of just disposing. This can save money as well as keep both hazardous and non-hazardous materials out of the landfills. You can learn more about other businesses that have made process changes allowing recycling of chemicals by calling the DOE at 1-800-RECYCLE and requesting publication #9245 and 90-22. Another unique recycling opportunity for businesses is available through the "matchmaker", helping one company's waste become another company's asset. For instance, waste peach pits from a cannery become potpourri ingredients to another's business. Call IMEX at 206-625-623 to list your potentially usable solid or chemical waste in their publication.

9. Be an advocate for stormwater pollution prevention

Help friends, partners and business associates find ways to reduce stormwater pollution in their activities. Most people want clean water, and do not pollute intentionally. Share your ideas and the BMPs in this manual to get them thinking about how their everyday activities affect water quality.

10. Report Violators

Allowing anyone to pollute our waters is wrong. We all must do our part to protect water, fish, wildlife and our own health, by employing proper BMPs, and reporting those who are causing pollution. In Pierce County, call Pretreatment Inspections at 565-3013 to report dumping to sewers and Surface Water Management at 798-2725 to report incidents involving storm drains or ditches.

STORMWATER MANAGEMENT MANUAL FOR THE PUGET SOUND BASIN

II-5.10 BMPS FOR SMALL PARCELS

A Small Parcel Stormwater Management Plan must be developed which satisfies the Small Parcel Minimum Requirements found in Volume II, Chapter II-2. These in turn may be satisfied by employing a suitable selection from the following list of BMPs.

BMP ES.10 PLANNED CLEARING AND GRADING

Plan and implementation proper clearing and grading of the site. It is most important only to clear the areas needed, thus keeping exposed areas to a minimum. Phase clearing so that only those areas that are actively being worked are uncovered.

Note: Clearing limits should be flagged in the lot or area prior to initiating clearing.

BMP ES.20 EXCAVATING BASEMENT SOIL

Located excavated basement soil a reasonable distance behind the curb, such as in the backyard or side yard area. This will increase the distance eroded soil must travel to reach the storm sewer system. Soil piles should be covered until the soil is either used or removed. Piles should be situated so that sediment does not run into the street or adjoining yards.

BMP ES.30 BACKFILLING

Backfill basement walls as soon as possible and rough grade the lot. This will eliminate large soil mounds which are highly erodible and prepares the lot for temporary cover which will further reduce erosion potential.

BMP ES.40 REMOVAL OF EXCESS SOIL

Remove excess soil from the site as soon as possible after backfilling. This will eliminate any sediment loss from surplus fill.

BMP ES.50 MANAGEMENT OF SOIL BANKS

If a lot has a soil bank higher than the curb, a trench or berm should be installed moving the bank several feet behind the curb. This will reduce the occurrence of gully and hill erosion while providing a storage and settling area for stormwater.

BMP ES.60 CONSTRUCTION ROAD ACCESS

Apply gravel or crushed rock to the driveway area and restrict truck traffic to this one route. Driveway paving can be installed directly over the gravel. This measure will eliminate soil from adhering to tires and stops soil from washing into the street. This measure requires periodic inspection and maintenance including washing, top-dressing with additional stone, reworking and compaction. (For further details see BMP E2.10, Chapter II-5.7.1).

BMP ES.70 SOIL STABILIZATION

Stabilized denuded areas of the site by mulching, seeding, planting, or sodding. For further details on standards and specifications, see BMPs No. E1.10, E1.15, E1.35, E1.40 in Chapter II-5.

BMP ES.80 STREET CLEANING

Provide for periodic street cleaning to remove any sediment that may have been tracked out. Sediment should be removed by shoveling or sweeping and carefully removed to a suitable disposal area where it will not be re-eroded.

II-5.11 References

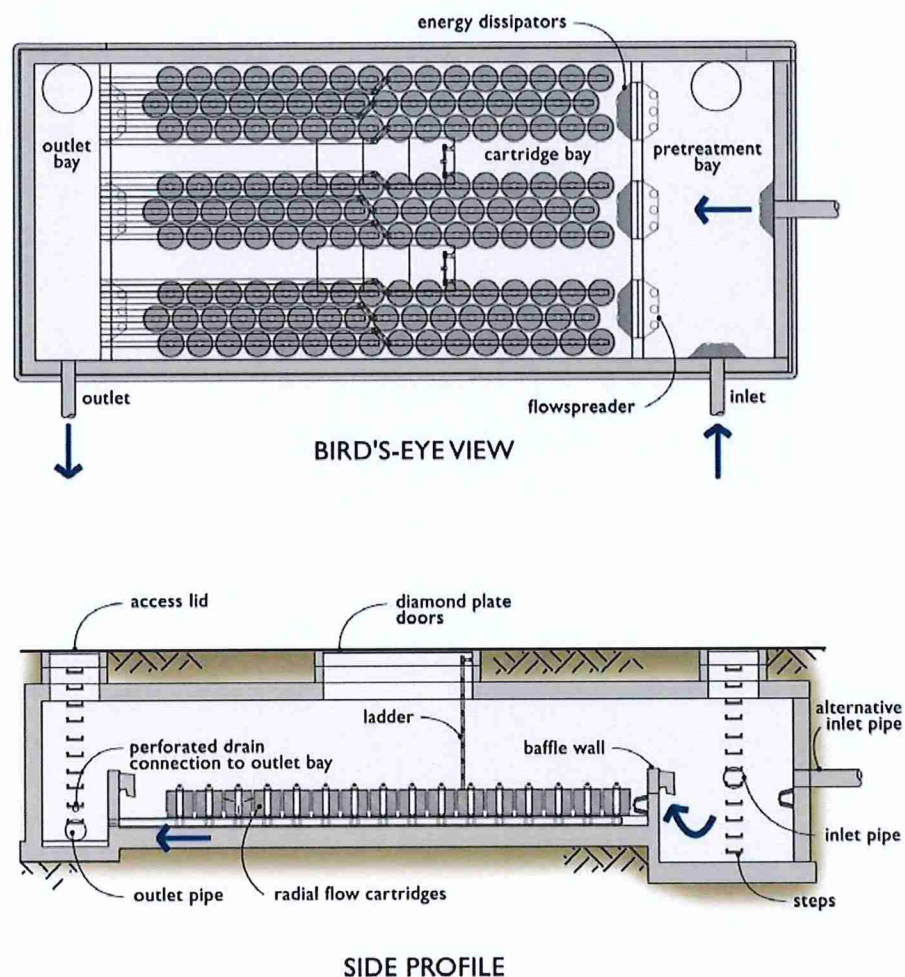
- (1) Goldman, Steven J., Erosion and Sediment Control Handbook, McGraw-Hill, 1986.
- (2) Horner, Richard R., Juno Guedry and Michael H. Kortenof, Highway Construction Site Erosion and Pollution Control Manual, Washington State Department of Transportation with the United States Department of Transportation Federal Highway Administration, WA-RD 200.2, January, 1990.
- (3) Metro, Summary of Preliminary Data Analysis -- BMP Survey of Single Family Residential Construction Sites, January, 1984.
- (4) Brandy, Nile C., The Nature and Properties of Soils, Eight Edition, MacMillan, 1974.

3.15 Stormfilter® Cast-In-Place, Precast, Linear Stormfilter and Catch Basin Units

This media filter technology has been under development in the Pacific Northwest since the early 1990s. During the early stages of development, leaf compost was used in fixed beds, replacing sand. Continued development of this technology is based on placing the media in filter cartridges (vertical media filters) instead of fixed beds.

The filter media can be housed in cartridge filters enclosed in concrete vaults or catch basin like structures. Assortments of filter media types are available from the manufacturer. The system functions by routing the stormwater through the filtering medium, which traps particulates and/or soluble pollutants.

Stormfilter® units are a proprietary manufactured system. See manufacturer's publications for additional maintenance information.



Stormfilter® Cast-In-Place, Precast, Linear Stormfilter Units and Catch Basin Units Checklist

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|--|---|--|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| M | Media filter vault | | | | | Sediment accumulation on top of filter cartridges | Sediment accumulation exceeds 0.25 inches on top of cartridges. | No sediment deposits on top of cartridges. Sediment on cartridges likely indicates that cartridges are plugged and require maintenance. |
| M | Media filter vault | | | | | Sediment accumulation in vault | Sediment accumulation in vault exceeds 2 inches. Look for other indicators of clogged cartridges or overflow. | Sediment in vault should be removed. Cartridges should be checked and replaced or serviced as needed. |
| M | Media filter vault | | | | | Trash and floatable debris accumulation | Trash and floatable debris accumulation in vault. | No trash or other floatable debris in filter vault. |
| S | Media filter vault | | | | | Filter cartridges submerged | Filter vault does not drain within 24 hours following storm. Look for evidence of submergence due to backwater or excessive hydrocarbon loading. | Filter media checked and replaced if needed. If cartridges are plugged with oil additional treatment or source control BMP may be needed. |
| M | Forebay | | | | | Sediment accumulation | Sediment accumulation exceeds 6 inches or 1/3 of available sump. | Sediment accumulation less than 6 inches. |
| M | Forebay | | | | | Trash and floatable debris accumulation | Trash and/or floatable debris accumulation. | Trash and/or floatable debris should be removed during monthly inspections. Significant oil accumulation may indicate the need for additional treatment or source control. |
| A | Below ground vault | | | | | Access cover Damaged/ Not working | One maintenance person cannot remove lid after applying 80 pounds of lift, corrosion or deformation of cover. | Cover repaired to proper working specifications or replaced. |
| A | Below ground vault | | | | | Damaged Pipes | Any part of the pipes are crushed or damaged due to corrosion and/or settlement. | Pipe repaired or replaced. |
| A | Below ground vault | | | | | Vault structure has cracks in wall, bottom, and damage to frame and/or top slab. | Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determine that the vault is not structurally sound. | Vault repaired or replaced so that vaults meets design specifications and is structurally sound. |
| A | Below ground vault | | | | | Vault structure has cracks in wall, bottom, and damage to frame and/or top slab. | Cracks wider than 0.5 inch at the joint of any inlet/outlet pipe or evidence of soil particles entering through the cracks | Vault repaired so that no cracks exist wider than 0.25 inch at the joint of inlet/outlet pipe. |

Stormfilter® Cast-In-Place, Precast, Linear Stormfilter Units and Catch Basin Units Checklist (Continued)

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|---------------------|---|---|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| A | Below ground vault | | | | | Baffles | Baffles corroding, cracking, warping, and/or showing signs of failure as determined by maintenance/inspection person. | Baffles repaired or replaced to design specifications. |
| A | Below ground vault | | | | | Ladder rungs unsafe | Maintenance person judges that ladder is unsafe due to missing rungs, misalignment, rust, or cracks. Ladder must be fixed or secured immediately. | Ladder meets design standards and allows maintenance persons safe access. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:

- (M) Monthly from November through April.
- (A) Once in late summer (preferable September)
- (S) After any major storm (use 1-inch in 24 hours as a guideline).

3.19 Fencing/Shrubbery Screen/Other Landscaping

Fencing and shrubbery screen are provided around open stormwater management facilities to limit unauthorized access for safety purposes and to minimize the visual impact of the facility.

Fencing/Shrubbery Screen/Other Landscaping Checklist

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|--|--|---|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| M | 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. |
| M,S | General | | | | | Erosion | Erosion has resulted in an opening under a fence that allows entry by people or pets. | Replace soil under fence so that no opening exceeds 4 inches in height. |
| M | General | | | | | Unruly vegetation | Shrubbery is growing out of control or is infested with weeds. | Shrubbery is trimmed and weeded to provide appealing aesthetics. Do not use chemicals to control weeds. |
| A | Fences | | | | | Damaged parts | Posts out of plumb more than 6 inches. | Posts plumb to within 1-1/2 inches of plumb. |
| A | Fences | | | | | Damaged parts | Top rails bent more than 6 inches. | Top rail free of bends greater than 1 inch. |
| A | Fences | | | | | Damaged parts | 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. |
| A | Fences | | | | | Damaged parts | Missing or loose tension wire. | Tension wire in place and holding fabric. |
| A | Fences | | | | | Damaged parts | Missing or loose barbed wire that is sagging more than 2-1/2 inches between posts. | Barbed wire in place with less than 3/4-inch sag between posts. |
| A | Fences | | | | | Damaged parts | Extension arm missing, broken, or bent out of shape more than 1-1/2 inches. | Extension arm in place with no bends larger than 3/4 inch. |
| A | Fences | | | | | 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. |
| M | Fences | | | | | Openings in fabric | Openings in fabric are such that an 8-inch diameter ball could fit through. | No openings in fabric. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Key:

(M) Monthly from November through April.

(A) Once in late summer (preferable September)

(S) After any major storm (use 1-inch in 24 hours as a guideline).

3.20 Gates

Gates typically consist of a chain link gate for fenced stormwater facilities to provide safety and allow vehicle and/or personnel access to the facility.

Gates Checklist

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|-------------------------------|---|---|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| M | General | | | | | Damaged or missing components | Gate is broken, jammed, or missing. | Pond has a functioning gate to allow entry of people and maintenance equipment such as mowers and backhoe. If a lock is used, make sure the County field staff has a key. |
| M | General | | | | | Damaged or missing components | Broken or missing hinges such that gate cannot be easily opened and closed by a maintenance person. | Hinges intact and lubed. Gate is working freely. |
| A | General | | | | | Damaged or missing components | Gate is out of plumb more than 6 inches and more than 1 foot out of design alignment. | Gate is aligned and vertical. |
| A | General | | | | | Damaged or missing components | Missing stretcher bands, and ties. | Stretcher bar, bands, and ties in place. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:

- (M) Monthly from November through April.
- (A) Once in late summer (preferable September)
- (S) After any major storm (use 1-inch in 24 hours as a guideline).

3.21 Grounds (Landscaping)

Landscaping is an essential component of stormwater management. Bare soil areas generate higher levels of stormwater runoff and sedimentation in stormwater facilities. The following check list gives some general guidance for landscape management.

Grounds (Landscaping) Checklist

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|---------------------------|--|---|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| M | General | | | | | Weeds (nonpoisonous) | Weeds growing in more than 20% of the landscaped area (trees and shrubs only). | Weeds present in less than 5% of the landscaped area. |
| M | General | | | | | Insect hazard | Any presence of poison ivy or other poisonous vegetation or insect nests. | No poisonous vegetation or insect nests present in landscaped area. |
| M,S | General | | | | | Trash or litter | See Ponds Checklist. | See Ponds Checklist. |
| M,S | General | | | | | Erosion of Ground Surface | Noticeable rills are seen in landscaped areas. | Causes of erosion are identified and steps taken to slow down/spread out the water. Eroded areas are filled, contoured, and seeded. |
| A | Trees and shrubs | | | | | Damage | Limbs or parts of trees or shrubs that are split or broken which affect more than 25% of the total foliage of the tree or shrub. | Trim trees/shrubs to restore shape. Replace trees/shrubs with severe damage. |
| M | Trees and shrubs | | | | | Damage | Trees or shrubs that have been blown down or knocked over. | Replant tree, inspecting for injury to stem or roots. Replace if severely damaged. |
| A | Trees and shrubs | | | | | Damage | Trees or shrubs which are not adequately supported or are leaning over, causing exposure of the roots. | Place stakes and rubber-coated ties around young trees/shrubs for support. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:

(M) Monthly from November through April.

(A) Once in late summer (preferable September)

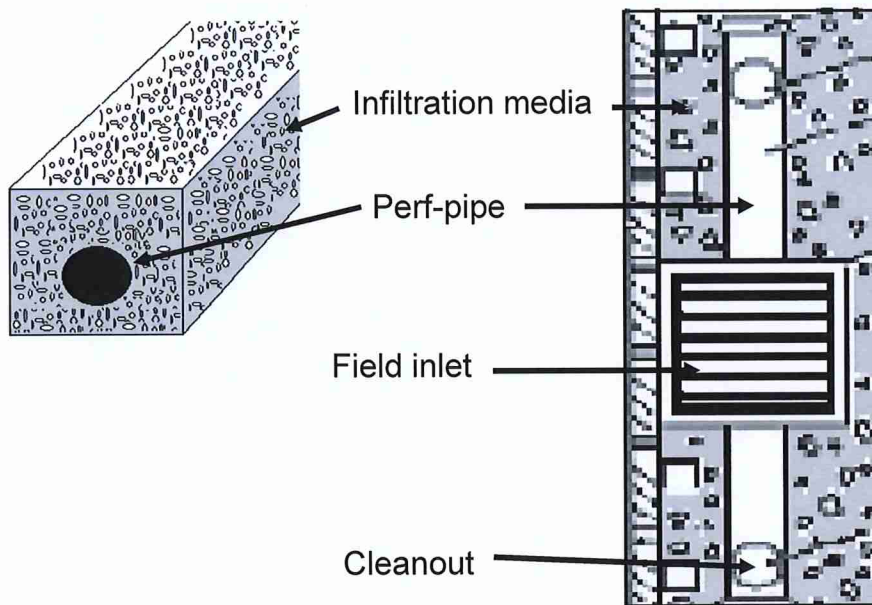
(S) After any major storm (use 1-inch in 24 hours as a guideline).

3.28 Infiltration Trench

A stormwater infiltration trench is a closed basin built by excavating below existing ground. Infiltration trenches temporarily store stormwater runoff during rain events. Infiltration trenches do not discharge to a downstream conveyance system or nearby surface water. Instead, infiltration trenches rely on the ability of the site's soils to absorb the stormwater into the ground.

Facility objects that are typically associated with an infiltration facility include:

- access road or easement
- fence, gate, and water quality sign
- bioswale
- infiltration basin
- field inlet



Infiltration Trench Checklist

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|----------------------------|---|---|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| M | General | | | | | Contaminants and Pollution | Any evidence of oil, gasoline, contaminants or other pollutants in or around facility. | Remove. (Coordinate removal and cleanup with local water quality response agency). |
| M | General | | | | | Drainage Slow | Drainage Trench - decreased capacity that indicates slow drainage. | Verify facility design rate. Clean perforated drain pipe. Do not allow removed sediment and water to discharge back into the storm sewer. |
| M | General | | | | | Sediment & Debris | Sediment depth is greater than 20% of pipe diameter. | Clean pipe and remove material. |
| M | General | | | | | Trash & Debris | Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%. | No Trash or debris located immediately in front of catch basin or on grate opening. |
| M | General | | | | | Trash & Debris | Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe. | No trash or debris in the trench. |
| M | General | | | | | Trash & Debris | Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height. | Inlet and outlet pipes free of trash or debris. |
| M | General | | | | | Trash & Debris | Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane). | No dead animals or vegetation present within the catch basin. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:

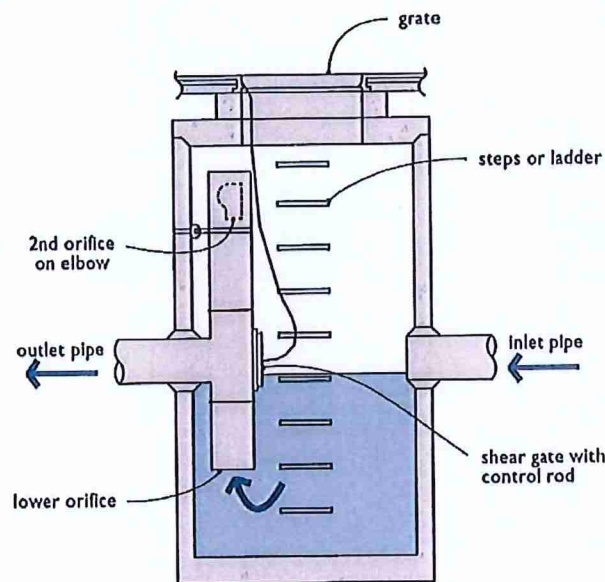
(M) Monthly from November through April

(A) Once in late summer (preferably September)

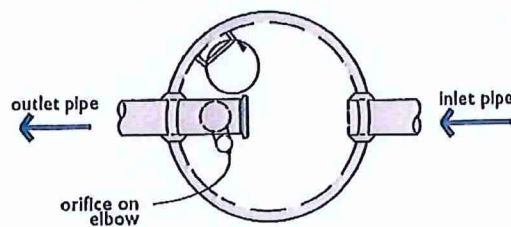
(S) After any major storm (use 1-inch in 24 hours as a guideline)

3.4 Control Structure/Flow Restrictor

Control structures/flow restrictors are located on the outlet pipe of a detention system. The control structure is typically a Type 2 concrete catch basin (see Section 3.5 for catch basin description) with a riser (vertical pipe). The control structure reduces the discharge rate of stormwater from a detention facility. The flow is regulated by a combination of orifices (holes with specifically sized diameters) and weirs (plates with rectangular or vee shaped notch). Lack of maintenance of the control structure can result in the plugging of an orifice. This can result in flooding of the stormwater system and/or an increase in the rate of discharge from the site potentially damaging downstream property.



BIRD'S-EYE VIEW



SECTION PROFILE

Control Structure/Flow Restrictor Checklist

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|--------------------------------------|---|---|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| M | General | | | | | Trash and Debris (Includes Sediment) | Material exceeds 25% of sump depth or 1 foot below orifice plate. | Control structure orifice is not blocked. All trash and debris removed. |
| A | General | | | | | Structural Damage | Structure is not securely attached to manhole wall. | Structure securely attached to wall and outlet pipe. |
| A | General | | | | | Structural Damage | Structure is not in upright position (allow up to 10% from plumb). | Structure in correct position. |
| A | General | | | | | Structural Damage | Connections to outlet pipe are not watertight and show signs of rust. | Connections to outlet pipe are water tight; structure repaired or replaced and works as designed. |
| A | General | | | | | Structural Damage | Any holes--other than designed holes--in the structure. | Structure has no holes other than designed holes. |
| A | Cleanout Gate | | | | | Damaged or Missing | Cleanout gate is not watertight or is missing. | Gate is watertight and works as designed. |
| A | Cleanout Gate | | | | | Damaged or Missing | Gate cannot be moved up and down by one maintenance person. | Gate moves up and down easily and is watertight. |
| A | Cleanout Gate | | | | | Damaged or Missing | Chain/rod leading to gate is missing or damaged. | Chain is in place and works as designed. |
| A | Cleanout Gate | | | | | Damaged or Missing | Gate is rusted over 50% of its surface area. | Gate is repaired or replaced to meet design standards. |
| A | Orifice Plate | | | | | Damaged or Missing | Control device is not working properly due to missing, out of place, or bent orifice plate. | Plate is in place and works as designed. |
| M,S | Orifice Plate | | | | | Obstructions | Any trash, debris, sediment, or vegetation blocking the plate. | Plate is free of all obstructions and works as designed. |
| | Overflow Pipe | | | | | Obstructions | Any trash or debris blocking (or having the potential of blocking) the overflow pipe. | Pipe is free of all obstructions and works as designed. |
| A | Manhole | | | | | Cover Not in Place | Cover is missing or only partially in place. Any open manhole requires maintenance. | Manhole is closed. |

Control Structure/Flow Restrictor Checklist (Continued)

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|-------------------------------|--|---|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| A | Manhole | | | | | Locking Mechanism Not Working | Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread (may not apply to self-locking lids). | Mechanism opens with proper tools. |
| A | Manhole | | | | | Cover Difficult to Remove | One maintenance person cannot remove lid after applying normal lifting pressure. Intent is to keep cover from sealing off access to maintenance. | Cover can be removed and reinstalled by one maintenance person. |
| A | Manhole | | | | | Ladder Rungs Unsafe | Ladder is unsafe due to missing rungs, misalignment, not securely attached to structure wall, rust, or cracks. | Ladder meets design standards. Allows maintenance person safe access. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:

- (M) Monthly from November through April.
- (A) Once in late summer (preferable September)
- (S) After any major storm (use 1-inch in 24 hours as a guideline).

3.5 Catch Basins

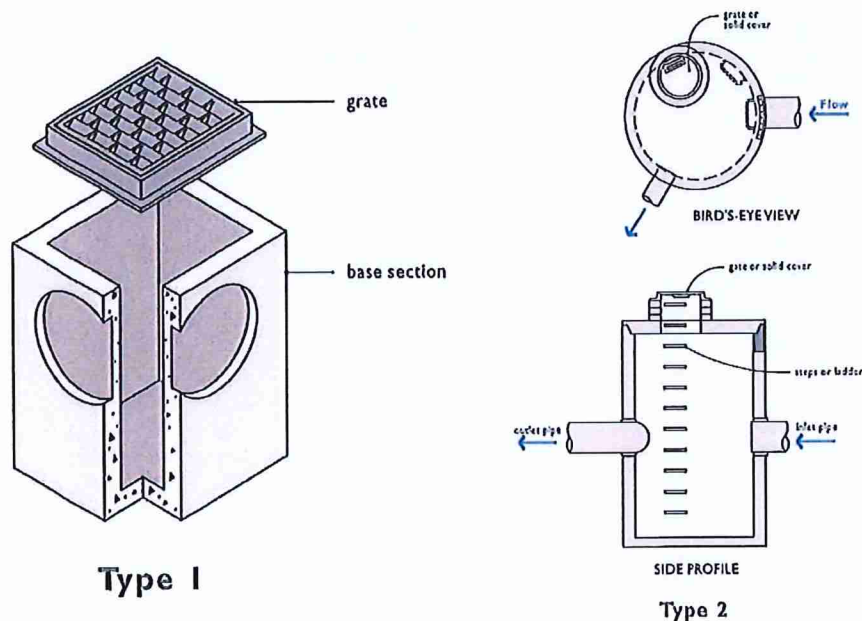
Catch basins are underground concrete structures typically provided with a slotted grate to collect stormwater runoff and route it through underground pipes. Catch basins can also be used as a junction in a pipe system and may have a solid lid. There are two catch basin types.

A Type 1 catch basin is a rectangular box with approximate dimensions of 3'x2'x5'. Type 1 catch basins are utilized when the connected conveyance pipes are less than 18 inches in diameter and the depth from the gate to the bottom of the pipe is less than 5 feet.

Type 2 catch basins, also commonly referred to as storm manholes, are round concrete structures ranging in diameter of 4 feet to 8 feet. Type 2 catch basins are used when the connecting conveyance pipe is 18 inches or greater or the depth from grate to pipe bottom exceeds 5 feet. Type 2 catch basins typically have manhole steps mounted on the side of the structure to allow for access.

Both catch basin types typically provide a storage volume (sump) below the outlet pipe to allow sediments and debris to settle out of the stormwater runoff. Some catch basins are also provided with a spill control device (inverted elbow on outlet pipe) intended to contain large quantities of grease or oils.

The most common cleaning method for catch basins is to utilize a truck with a tank and vacuum hose (vactor truck) to remove sediment and debris from the sump. Catch basins may be an enclosed space where harmful chemicals and vapors can accumulate. Therefore, if the inspection and maintenance requires entering a catch basin, it should be conducted by an individual with training and certification in working in hazardous confined spaces.



Catch Basins Checklist

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|--|---|---|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| A | General | | | | | "Dump no pollutants " Stencil or stamp not visible | Stencil or stamp should be visible and easily read | Warning signs (e.g., "Dump No Waste-Drains to Stream") shall be painted or embossed on or adjacent to all storm drain inlets. |
| M,S | General | | | | | Trash & Debris | Trash or debris which is located immediately in front of the catch basin opening or is blocking inletting capacity of the basin by more than 10%. | No trash or debris located immediately in front of catch basin or on grate opening. |
| M | General | | | | | Trash & Debris | Trash or debris (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of six inches clearance from the debris surface to the invert of the lowest pipe. | No trash or debris in the catch basin. |
| M | General | | | | | Trash & Debris | Trash or debris in any inlet or outlet pipe blocking more than 1/3 of its height. | Inlet and outlet pipes free of trash or debris. |
| M | General | | | | | Trash & Debris | Dead animals or vegetation that could generate odors that could cause complaints or dangerous gases (e.g., methane). | No dead animals or vegetation present within the catch basin. |
| M | General | | | | | Sediment | Sediment (in the basin) that exceeds 60 percent of the sump depth as measured from the bottom of basin to invert of the lowest pipe into or out of the basin, but in no case less than a minimum of 6 inches clearance from the sediment surface to the invert of the lowest pipe. | No sediment in the catch basin |
| A | General | | | | | Structure Damage to Frame and/or Top Slab | Top slab has holes larger than 2 square inches or cracks wider than 1/4 inch (Intent is to make sure no material is running into basin). | Top slab is free of holes and cracks. |

Catch Basins Checklist (Continued)

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|--|---|--|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| A | General | | | | | Structure Damage to Frame and/or Top Slab | Frame not sitting flush on top slab, i.e., separation of more than 3/4 inch of the frame from the top slab. Frame not securely attached. | Frame is sitting flush on the riser rings or top slab and firmly attached. |
| A | General | | | | | Fractures or Cracks in Basin Walls/ Bottom | Maintenance person judges that structure is unsound. | Basin replaced or repaired to design standards. |
| A | General | | | | | Fractures or Cracks in Basin Walls/ Bottom | Grout fillet has separated or cracked wider than 1/2 inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering catch basin through cracks. | Pipe is re-grouted and secure at basin wall. |
| A | General | | | | | Settlement / Misalignment | If failure of basin has created a safety, function, or design problem. | Basin replaced or repaired to design standards. |
| M | General | | | | | Vegetation | Vegetation growing across and blocking more than 10% of the basin opening. | No vegetation blocking opening to basin. |
| M | General | | | | | Vegetation | Vegetation growing in inlet/outlet pipe joints that is more than six inches tall and less than six inches apart. | No vegetation or root growth present. |
| M | General | | | | | Contamination and Pollution | Any evidence of oil, gasoline, contaminants, or other pollutants (Coordinate removal/cleanup with local water quality response agency). | No contaminants or pollutants present. |
| A | Catch Basin Cover | | | | | Cover Not in Place | Cover is missing or only partially in place. | Any open catch basin requires maintenance. Catch basin cover is closed |
| A | Catch Basin Cover | | | | | Locking Mechanism Not Working | Mechanism cannot be opened by one maintenance person with proper tools. Bolts into frame have less than 1/2 inch of thread. | Mechanism opens with proper tools. |
| A | Catch Basin Cover | | | | | Cover Difficult to Remove | One maintenance person cannot remove lid after applying normal lifting pressure. (Intent is to keep cover from sealing off access to maintenance.) | Cover can be removed by one maintenance person. |

Catch Basins Checklist (Continued)

| Frequency | Drainage System Feature | Date | | | | Problem | Conditions to Check For | Conditions That Should Exist |
|-----------|-------------------------|------|---|---|---|----------------------|---|--|
| | | ✓ | ✓ | ✓ | ✓ | | | |
| A | Ladder | | | | | Ladder Rungs Unsafe | Ladder is unsafe due to missing rungs, not securely attached to basin wall, misalignment, rust, cracks, or sharp edges. | Ladder meets design standards and allows maintenance person safe access. |
| | Grates | | | | | Grate opening Unsafe | Grate with opening wider than 7/8 inch. | Grate opening meets design standards. |
| M,S | Grates | | | | | Trash and Debris | Trash and debris that is blocking more than 20% of grate surface inletting capacity. | Grate free of trash and debris. |
| A | Grates | | | | | Damaged or Missing. | Grate missing or broken member(s) of the grate. | Grate is in place and meets design standards. |

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:

- (M) Monthly from November through April.
- (A) Once in late summer (preferable September)
- (S) After any major storm (use 1-inch in 24 hours as a guideline).

| | | | | | |
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| | | | | NUMBER | NUMBER |

Exhibit B

Annual Inspection Report **City of Puyallup - Stormwater BMP Facilities Inspection and Maintenance Log**

Facility Name _____

Address _____

Begin Date _____ End Date _____

| Date | BMP ID# | BMP Facility Description | Inspected by: | Cause for Inspection | Exceptions Noted | Comments and Actions Taken |
|------|---------|--------------------------|---------------|----------------------|------------------|----------------------------|
| | | | | | | |
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Instructions:

Record all inspections and maintenance for all treatment BMPs on this form. Use additional log sheets and/or attach extended comments or documentation as necessary. Submit a copy of the completed log with the Annual Independent Inspectors' Report to the City, and start a new log at that time.

BMP ID# — Always use ID# from the Operation and Maintenance Manual.
 Inspected by — Note all inspections and maintenance on this form, including the required independent annual inspection.
 Cause for inspection — Note if the inspection is routine, pre-rainy-season, post-storm, annual, or in response to a noted problem or complaint.
 Exceptions noted — Note any condition that requires correction or indicates a need for maintenance.
 Comments and actions taken — Describe any maintenance done and need for follow-up.

Return Form to:

Stormwater Engineer/City of Puyallup
 333 South Meridian
 Puyallup, WA 98371

Annual Inspection Report

City of Puyallup - Stormwater BMP Facilities Inspection and Maintenance Log

Facility Name

[illegible]

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