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AUDITOR, Pierce County, WASHINGTON

RANGE	TOWNSHIP	SECTION	QUARTER		
04E-	20N-	33	04	059	1/4
DOCUMENT NUMBER				SERIAL NUMBER	PAGE NUMBER

Name & Return Address:

CITY CLERK
CITY OF PUYALLUP
333 SOUTH MERIDIAN
PUYALLUP, WA 98371

AUDITOR'S NOTE

LEGIBILITY FOR RECORDING AND COPYING UNSATISFACTORY IN A PORTION OF THIS INSTRUMENT WHEN RECEIVED

Washington State Recorder's Cover Sheet (RCW 65.04) Please print legibly or type information.

Document Title(s)
STORMWATER MANAGEMENT & BMP FACILITIES AGREEMENT

Grantor(s)
MOTU - HP HOLDING LLC
____ Additional Names on Page _____ of Document

Grantee(s)
CITY OF PUYALLUP
____ Additional Names on Page _____ of Document

Legal Description
(Abbreviated: i.e., lot, block & subdivision name or number OR section/township/range and quarter/quarter section)

33, 20, 4 EAST
Complete Legal Description on Page 41 of Document

Auditor's Reference Number(s)

Assessor's Property Tax Parcel/Account Number(s)
0420334034, 0420334111, 0420334206

Non Standard Fee $50.00

By signing below, you agree to pay the $50.00 non standard fee.

I am requesting an emergency non standard recording for an additional fee as provided in RCW 36.18.010. I understand that the recording processing requirements may cover up or otherwise obscure some part of the text of the original document.

Signature of Party Requesting Non Standard Recording

NOTE: Do not sign above or pay additional $50.00 fee if document meets margin/formatting requirements.

The Auditor/Recorder will rely on the information provided on this cover sheet.
Staff will not read the document to verify the accuracy or completeness of the indexing information provided herein.

RANGE	TOWNSHIP	SECTION	QUARTER		
04E-	20 N-	33	04	0069	2/4
DOCUMENT NUMBER				SERIAL NUMBER	PAGE NUMBER

After recording return to:

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

Document Title: Stormwater Outfall Management & BMP Facilities Agreement
Party #1: City of Puyallup
Party #2: Motu-HP Holdings LLC
Legal Description: See Exhibit C
Complete Legal Description on 40 **Page of this Document**
Assessor's Tax Parcel or Account Numbers: 0420334034, 0420334111 and 0420334206
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 Motu-HP Holdings 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: 2008 South Meridian, 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 Huntington Place Apartments, provides for detention, retention, treatment or management of stormwater that is associated with the Property through the use of indentified 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.

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.

~~[name of Landowner if entity]~~
MOTU-HP HOLDINGS LLC

Dated: 10/21/19

By: JOE AMARO, Trustee of its
Its: managing member:
Jamaro LTD LLC
Defined Benefit Plan

City of Puyallup, Accepted by

Dated: 10/21/19

By: Hans Hunger
Its: City Engineer

City of Puyallup, Approved as to form

Dated: 10/21/2019

By: Joseph N. Beck
Its: City Attorney

RANGE	TOWNSHIP	SECTION	QUARTER		
04E	20 N	33	04	009	5/41
DOCUMENT NUMBER				SERIAL NUMBER	PAGE NUMBER

State of Washington

County of Pierce } **ss.**

I certify that I know or have satisfactory evidence that Joe Amaro is the person who appeared before me, and said person acknowledged that he or she signed this instrument, on oath stated that he or she was authorized to execute the instrument and acknowledged it as the trustee of its managing member of MOTU-HP Holding LLC to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: 10-21-19

Teresa M. Patterson
Notary Public, State of Washington
My appointment expires:
March 6, 2022

[seal or stamp] TERESA M. PATTERSON NOTARY PUBLIC COMMISSION EXPIRES March 6, 2022 STATE OF WASHINGTON

State of Washington

County of Pierce } **ss.**

I certify that I know or have satisfactory evidence that _____ is the person who appeared before me, and said person acknowledged that he or she signed this instrument, on oath stated that he or she was authorized to execute the instrument and acknowledged it as the _____ of _____ to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Dated: _____

_____
Notary Public, State of Washington
My appointment expires:

[seal or stamp]

_____

Exhibit A

(Operations and Maintenance Manual – Stormwater BMPs)

Auditor's notation to facilitate scanning process

RANGE	TOWNSHIP	SECTION	QUARTER		
04E	20 N	33	04	069	7/41
DOCUMENT NUMBER				SERIAL NUMBER	PAGE NUMBER

C.E.S. NW Inc.
Civil Engineering & Surveying

OPERATION AND MAINTENANCE MANUAL FOR DRAINAGE FACILITIES (ATTACHMENT "A") FOR HUNTINGTON PLACE APARTMENTS

SEPTEMBER 2017

PREPARED FOR:

MOTU-HP HOLDINGS LLC
100 PRINGLE AVENUE #570
WALNUT CREEK, CA 94596

PREPARED BY:

ERIC OEHLER, SENIOR PROJECT ENGINEER

C.E.S. NW, INC.
310 29TH STREET NE, SUITE 101
PUYALLUP, WA 98372
(253) 848-4282

ATTACHMENT "A"

OPERATION AND MAINTENANCE MANUAL FOR DRAINAGE FACILITIES

FOR

Huntington Place Apartments
Puyallup, Washington

December 2016
Revised September 2017

Prepared for:

Motu-HP Holdings LLC
100 Pringle Avenue #570
Walnut Creek, CA 94596

Prepared by:

Eric Oehler, Senior Project Engineer

Approved by:

Cara Visintainer, P.E.

REPORT #05138.2

Operation and Maintenance Information

Project Information

Address:	2006 S. Meridian, Puyallup, WA 98371
Tax Parcel Numbers:	042033 – 4034, 4111, 4112
Ownership:	Motu-HP Holdings LLC
Maintenance Responsibility:	Motu-HP Holdings LLC, Contact: TBD, Phone Number (XXX) XXX-XXXX
Record Keeping:	The Operation and Maintenance Manual shall be made available for inspection by the City of Puyallup and shall be kept with the building manager.

System Description

The proposed project consists of constructing a new 2 building apartment complex on 3 existing parcels of land. One of the proposed apartment buildings will consist of 14 units while the larger of the two buildings will consist of 24 units for a total of 38 proposed units.

The proposed apartment complex will be accessed from South Meridian by a new 30-ft. wide standard commercial approach located near the northeast corner of the site. Asphalt pavement drive aisles and parking stalls will provide onsite circulation and parking for the proposed tenants. A combination of 38 standard parking stalls and 38 compact parking stalls for a total of 76 parking stalls will be provided for the use of the proposed tenants. The site will be complete with cement concrete vertical curb and gutter, cement concrete extruded curb, cement concrete sidewalks, a gravel/bark pedestrian pathway, and interior and exterior landscaping. Bidder designed cut and fill retaining walls will be constructed around much of the existing boundary of the site in order to provide grade

transition between the proposed finish grading of the site and the surrounding existing elevations. Once the multi-family residential construction has been completed the remaining developed areas will be appropriately landscaped by the project owner.

A 20-ft. emergency vehicle access driveway will extend from the southern portion of the site and connect to 21st Ave. SW. The proposed emergency vehicle access driveway will provide a second means of emergency ingress / egress if necessary. The proposed emergency vehicle access driveway will be complete with a swing arm gate equipped with a knox key lock.

Stormwater runoff generated by the developed site (~1.73 acres) and an off-site contributing basin (~0.16 acres) to the southeast will be collected and conveyed by a proposed private storm drainage system. Once collected by the proposed storm drainage system, stormwater runoff will then be conveyed to a proposed below ground detention vault prior to discharging to a proposed stormfilter water quality treatment facility. Stormwater runoff will be detained by the proposed detention vault and slowly released to the stormfilter water quality treatment facility prior to discharging to a proposed tightlined conveyance system that will connect to the existing storm drainage system within the adjacent Chestnut Hills apartment complex. The proposed storm drainage system constructed within the Chestnut Hills apartment complex will be constructed within a 20-ft. private storm drainage easement and will allow the sites developed stormwater runoff to maintain the natural drainage characteristics of the site. The new private storm drainage conveyance systems will consist of below ground storm structures and tightlined conveyance systems.

As previously mentioned, to mitigate the water quality treatment requirement, a proposed CONTECH Stormfilter facility will be constructed near the northwest corner of the site and downstream of the proposed detention vault. The CONTECH Stormfilter facility will consist of a 48-in. Stormfilter Manhole. The mitigated 2-year release rate from the proposed detention vault and outlet control structure is 0.02346 cfs. Based on a LowDrop cartridge flow rate of 5 (gpm) 2.11 cartridges are required. Therefore, the 48-in. Stormfilter Manhole will be equipped with 3 stormfilter cartridges in order to treat the stormwater runoff generated by the mitigated 2-year flow rate released by the proposed detention vault.

To mitigate the flow control requirement, a 96-ft. long by 40-ft. wide by 9-ft. high (inside dimensions) below ground detention vault will be constructed near the northwest corner of the site. The proposed detention vault will provide a minimum of 0.5-ft. of sediment storage and 0.5-ft. of freeboard above the top of the design storm water surface elevation. Therefore, the proposed live storage depth will be 8-ft. To be conservative, the proposed detention vault was sized based on the 2012 version of the Western Washington Hydrology Model. To provide flow control for the 1.89 acre developed basin the detention facility would be required to provide 28,026 cu. ft. of storage. The proposed detention vault provides 30,720 cu. ft. of storage. The proposed detention vault will discharge through a proposed 18-in. diameter, 3 orifice outlet control riser located near the southwest corner of the detention vault. The mitigated flow discharging from the proposed detention vault for the 100-year return period is 0.20 cfs. Stormwater runoff discharged from the proposed detention vault will be treated by the previously mention stormfilter facility prior to discharging to a proposed tightline conveyance system that

will connect to the existing storm drainage system within the adjacent Chestnut Hills apartment complex.

The proposed private storm drainage conveyance system will consist of private storm pipes ranging from 6-in. to 12-in. in diameter. All segments of the proposed storm drainage conveyance system will adequately convey stormwater runoff generated by the 100-year fully-developed, peak flow storm event.

Long-term maintenance shall be done in accordance with Attachment "A" and as follows: All conveyance systems shall be inspected for sediment and blockages on yearly basis or after large storm events. Catch basin sumps shall be removed of sediment and debris on a yearly basis or if a blockage occurs. The main contributor of sediment to the storm system is the proposed asphalt pavement surfaces. Therefore, sweeping of the asphalt pavement surfaces through the use of a street sweeper twice a year should help to prevent sediments from entering the storm system. The debris collected shall be disposed of in an approved method. Long-term maintenance of the storm drainage system will be the responsibility of the current property owner, and shall be completed in accordance with Attachment "A" and the guidelines listed above.

The average annual cost for maintenance is approximated to be $1,500.00.

Vegetation Management

Native species affecting the storm drainage system are not applicable for this project. Maintenance checklists on the following pages and instructions listed above address appropriate maintenance requirements.

Auditor's notation to facilitate scanning process

Auditor's notation to facilitate scanning process

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 (preferably in September).
3. After any major storm (use 1-inch in 24-hours as a guideline), items marked "S" only.

Using photocopies of the checklist pages, check off the problems that you looked for each time you did an inspection. Add comments on problems found and actions taken. Keep these "checked" sheets in your files. 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.

Maintenance Checklists

See the following pages for these attachments.

REQUIRED ACTIONS: The following actions shall be taken to ensure that pollution generated on site shall be minimized:

1. Warning signs (e.g., "Dump No Waste-Drains to Stream") shall be painted or embossed on or adjacent to all storm drain inlets. They shall be repainted as needed. Contact the City regarding availability of stenciling supplies.

2. Parking lots shall be swept when necessary to remove debris and, at a minimum, twice a year. Use of newer model high-velocity vacuum sweepers is recommended, as they are more effective in removing the more harmful smaller particles from paved surfaces.

3. Sediment removed from detention facilities shall be disposed of in a proper manner. Contact the City for instruction prior to completing this task.

4. No activities shall be conducted onsite that are likely to result in short-term high-concentration discharge of pollution to the stormwater system. Such activities may include, but are not limited to; vehicle washing, vehicle maintenance, and cleaning of equipment used in the periodic maintenance of buildings and paved surfaces.

5. Employees shall receive basic instruction regarding the control of pollution from commercial operations. Contact the City of Puyallup or Department of Ecology for assistance in completing this task.

ATTACHMENT "A"

MAINTAINANCE PROGRAM
COVER SHEET FOR CITY OF PUYALLUP

Inspection Period: _____

Number of Sheets Attached: _____

Date Inspected: _____

Name of Inspector: _____

Inspector's Signature: _____

Auditor's notation to facilitate scanning process

ATTACHMENT "A" (CONTINUED)

Maintenance Checklist for Control Structure/Flow Restrictor
(Structure that controls rate at which water exits facility)

Frequency	Drainage System Feature	√	Problem	Conditions To Check For	Conditions That Should Exist
M	Structure		Trash & debris (includes sediment)	Distance between debris buildup and bottom of orifice plate is less than 1-1/2 feet.	All trash and debris removed
A			Structural damage	Structures are not securely attached to manhole wall and outlet pipe structure should support at least 1,000 pounds of up or down pressure.	Structure securely attached to wall and outlet pipe.
A				Structure is not in upright position (allow up to 10% from plumb)	Structure in correct position.
A				Connections to outlet pipe are not watertight and show signs of rust	Connections to outlet pipe are watertight; structure repaired or replaced and works as designed.
M				Any holes – other than designed holes – in the structure	Structure has no holes other than designed holes
M, S	Cleanout gate		Damaged or missing	Cleanout gate is not watertight or is missing.	Gate is watertight and works as designed
A				One maintenance person cannot move up and down gate	Gate moves up and down easily and is watertight.
M, S				Chain leading to gate is missing or damaged	Chain is in place and works as designed
A				Gate is rusted over 50% of its surface area.	Gate is repaired or replaced to meet design standards.
M, S			Obstructions	Any trash, debris, sediment, or vegetation blocking the plate.	Plate is free of all obstructions and works as designed.
M, S	Overflow pipe		Obstructions	Any trash debris blocking (or having the potential of blocking) the overflow pipe.	Pipe is free of all obstructions and works as designed.

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 Catch Basins and Inlets

Frequency	Drainage System Feature	√	Problem	Conditions To Check For	Conditions That Should Exist
M, S	General		Trash, debris, and sediment in or on basin	Trash or debris in front of the catch basin opening is blocking the capacity by more than 10%.	No trash or debris located immediately in front of the catch basin opening. Grate is kept clean and allows water to enter.
M				Sediment or debris (in the basin) that exceeds 1/3 the depth 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 debris surface to the invert of the lowest pipe.	No sediment or debris in the catch basin. Catch basin is dug out and clean.
M, S				Trash or debris in any inlet or pipe blocking more than 1/3 of its height	Inlet and outlet pipes free of trash or debris.
M			Structural damage to frame and/or top slab	Corner of frame extends more than ¾ inch past curb face into street (if applicable).	Frame is even with curb.
M				Top slab has holes larger than 2 square inches or cracks wider than ¼ inch (intent is to make sure all material is running into catch basin).	Top slab is free of holes and cracks.
M				Frame not sitting flush on the top slab, i e., separation of more than ¾ inch of the frame from the top slab	Frame is sitting flush on top slab.
A			Cracks in basin walls/bottom	Cracks wider than ½ inch and longer than 3 feet, any evidence of soil particles entering the catch basin through cracks, or maintenance person judges that structure is unsound	Basin replaced or repaired to design standards. Contact a professional engineer for evaluation.
A				Cracks wider than ½ inch and longer than 1 foot at the joint of any inlet/outlet pipe or any evidence of soil particles entering the catch basin through cracks.	No cracks more than ¼ inch wide at the joint of inlet/outlet pipe. Contact a professional engineer for evaluation.
A			Settlement/ Misalignment	Basin has settled more than 1 inch or has rotated more than 2 inches out of alignment.	Basin replaced or repaired to design standards. Contact a professional engineer for evaluation.
M, S			Fire hazard or other pollution	Presence of chemicals such as natural gas, oil, and gasoline. Obnoxious color, odor, or sludge noted.	No color, odor, or sludge. Basin is dug out and clean.
M, S			Outlet pipe is clogged with vegetation	Vegetation or roots growing in inlet/outlet pipe joints that are more than 6 inches tall and less than 6 inches apart.	No vegetation or root growth present.

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 Fencing/Shrubbery Screen/Other Landscaping

Frequency	Maintenance Component	√	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
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 to 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 and 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 1-1/2inches 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 ¼ 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 ¼ inch.
A			Deteriorated paint or protective coating	Part or parts that have 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 Gates

Frequency	Drainage System Feature	√	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 city field staff has a key.
M				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				Gate is out of plumb more than 6 inched and more than 1 foot out of design alignment.	Gate is aligned and vertical.
A				Missing stretcher bands and ties.	Stretcher bar, bands, and ties are in place.

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	Maintenance Component	√	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
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 the 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 in any part of the 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 if non-degradable materials such as glass, plastic, metal, foam, and coated paper	Remove trash and debris and dispose as prescribed by the City.
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 movement 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.
M			Vegetation not growing or overgrown	Grass cover is sparse and seedy or areas are overgrown with woody vegetation.	Aerate soils and reseed and 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 filled in or blocked by shed, woodpile, shrubbery, etc	If possible, speak with homeowner and request that swale area be restored. Contact the City 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 the 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	Maintenance Component	√	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
M	General		Weeds (nonpoisonous)	Weeds growing 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 rifts are seen in landscaped areas.	Causes of erosion are identified and steps taken to slow down/separate out the water Eroded areas are filled, contoured, and seeded.
A	Trees & 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)

ATTACHMENT "A" (CONTINUED)

Maintenance Checklist for Access Roads/Easements

Frequency	Drainage System Feature	√	Problem	Conditions To Check For	Conditions That Should Exist
One Time	General		No access road exists	If ponds or other drainage system features needing maintenance by motorized equipment are present, either an access road or access from public streets is required.	Determine whether an easement to drainage feature exists If yes, obtain City permits and construct gravel (or equal) access road. If not, report lack of easement to the Municipality.
M			Blocked roadway	Debris that could damage vehicle tires (glass or metal).	Roadway free of debris that could damage tires
A				Any obstructions that reduce clearance above road surface to less than 14 feet	Roadway overhead clear to 14 feet high.
A				Any obstructions restricting the access to less than 12 feet in width.	Obstruction removed to allow at least a 12-foot wide access.
A, S	Road Surface		Settlement, potholes, mush spots, ruts	When any surface irregularity exceeds 6 inched in depth and 6 square feet in area. In general, any surface defect that hinders or prevents maintenance access.	Road surface uniformly smooth with no evidence of settlement, potholes, or ruts Occasionally applications of additional gravel or pitrun rock will be needed.
M			Vegetation in road surface	Woody growth that could block vehicular access. Excessive weed cover	Remove woody growth at early stage to prevent vehicular blockage Cut back weeds if they begin to encroach on road surface
M, S	Shoulders and ditches		Erosion damage	Erosion within 1 foot of the roadway more than 8 inches wide and 6 inches deep.	Shoulder free of erosion and matching the surrounding road.

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. 3 – Closed Detention Systems (Tanks/Vaults)

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is Performed
Storage Area	Plugged Air Vents	One-half of the cross section of a vent is blocked at any point or the vent is damaged.	Vents open and functioning.
	Debris and Sediment	Accumulated sediment depth exceeds 10% of the diameter of the storage area for 1/2 length of storage vault or any point depth exceeds 15% of diameter (Example: 72-inch storage tank would require cleaning when sediment reaches depth of 7 inches for more than 1/2 length of tank.)	All sediment and debris removed from storage area.
	Joints Between Tank/Pipe Section	Any openings or voids allowing material to be transported into facility. (Will require engineering analysis to determine structural stability).	All joint between tank/pipe sections are sealed.
	Tank Pipe Bent Out of Shape	Any part of tank/pipe is bent out of shape more than 10% of its design shape. (Review required by engineer to determine structural stability).	Tank/pipe repaired or replaced to design.
	Vault Structure Includes Cracks in Wall, Bottom, Damage to Frame and/or Top Slab	Cracks wider than 1/2-inch and any evidence of soil particles entering the structure through the cracks, or maintenance/inspection personnel determines that the vault is not structurally sound. Cracks wider than 1/2-inch at the joint of any inlet/outlet pipe or any evidence of soil particles entering the vault through the walls.	Vault replaced or repaired to design specifications and is structurally sound. No cracks more than 1/4-inch wide at the joint of the inlet/outlet pipe.
Manhole	Cover Not in Place	Cover is missing or only partially in place. Any open manhole requires maintenance.	Manhole 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 (may not apply to self-locking lids).	Mechanism opens with proper tools.
	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.
	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.
Catch Basins	See "Catch Basins" (No 5)	See "Catch Basins" (No. 5)	See "Catch Basins" (No. 5).

No. 4 – Control Structure/Flow Restrictor

Maintenance Component	Defect	Condition When Maintenance is Needed	Results Expected When Maintenance is Performed
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.
	Structural Damage	Structure is not securely attached to manhole wall.	Structure securely attached to wall and outlet pipe.
		Structure is not in upright position (allow up to 10% from plumb).	Structure in correct position.
		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.
		Any holes--other than designed holes--in the structure.	Structure has no holes other than designed holes.
Cleanout Gate	Damaged or Missing	Cleanout gate is not watertight or is missing.	Gate is watertight and works as designed.
		Gate cannot be moved up and down by one maintenance person.	Gate moves up and down easily and is watertight.
		Chain/rod leading to gate is missing or damaged.	Chain is in place and works as designed.
		Gate is rusted over 50% of its surface area.	Gate is repaired or replaced to meet design standards.
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.
	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.
Manhole	See "Closed Detention Systems" (No. 3).	See "Closed Detention Systems" (No. 3).	See "Closed Detention Systems" (No. 3).
Catch Basin	See "Catch Basins" (No. 5).	See "Catch Basins" (No. 5).	See "Catch Basins" (No. 5).

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 regrouted 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.

No. 5 – Catch Basins

Maintenance Component	Defect	Conditions When Maintenance is Needed	Results Expected When Maintenance is performed
	Contamination and Pollution	See "Detention Ponds" (No. 1)	No pollution present.
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 – Stormfilter™ (leaf compost filter)

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	Compost 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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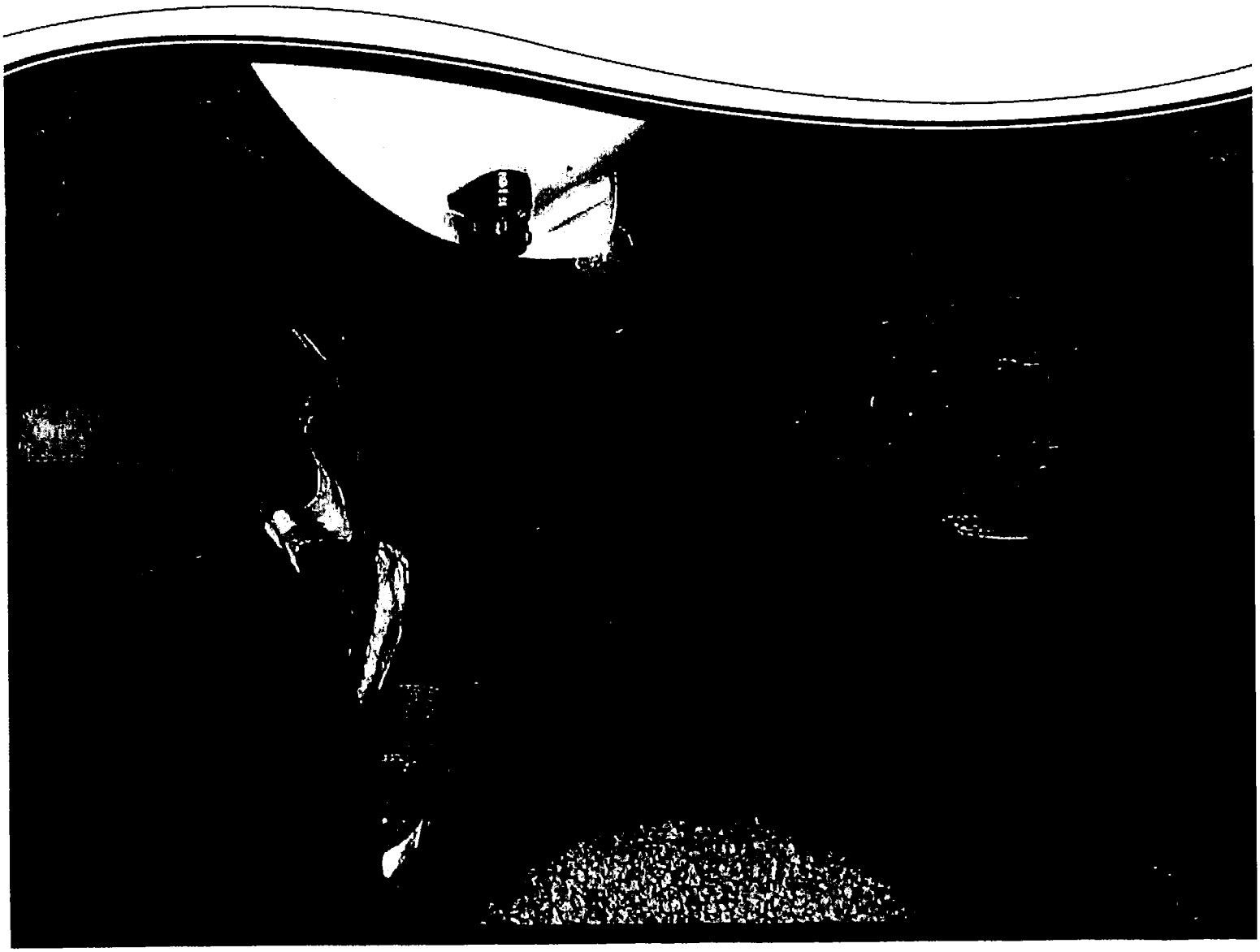
StormFilter Inspection and Maintenance Procedures



The Stormwater Management StormFilter

Maintenance Guidelines

The primary purpose of the Stormwater Management StormFilter® is to filter and prevent pollutants from entering our waterways. Like any effective filtration system, periodically these pollutants must be removed to restore the StormFilter to its full efficiency and effectiveness.

Maintenance requirements and frequency are dependent on the pollutant load characteristics of each site. Maintenance activities may be required in the event of a chemical spill or due to excessive sediment loading from site erosion or extreme storms. It is a good practice to inspect the system after major storm events.

Maintenance Procedures

Although there are many effective maintenance options, we believe the following procedure to be efficient, using common equipment and existing maintenance protocols. The following two-step procedure is recommended::

1. **Inspection**
   - Inspection of the vault interior to determine the need for maintenance.
2. **Maintenance**
   - Cartridge replacement
   - Sediment removal

Inspection and Maintenance Timing

At least one scheduled inspection should take place per year with maintenance following as warranted.

First, an inspection should be done before the winter season. During the inspection the need for maintenance should be determined and, if disposal during maintenance will be required, samples of the accumulated sediments and media should be obtained.

Second, if warranted, a maintenance (replacement of the filter cartridges and removal of accumulated sediments) should be performed during periods of dry weather.

In addition to these two activities, it is important to check the condition of the StormFilter unit after major storms for potential damage caused by high flows and for high sediment accumulation that may be caused by localized erosion in the drainage area. It may be necessary to adjust the inspection/ maintenance schedule depending on the actual operating conditions encountered by the system. In general, inspection activities can be conducted at any time, and maintenance should occur, if warranted, during dryer months in late summer to early fall.

Maintenance Frequency

The primary factor for determining frequency of maintenance for the StormFilter is sediment loading.

A properly functioning system will remove solids from water by trapping particulates in the porous structure of the filter media inside the cartridges. The flow through the system will naturally decrease as more and more particulates are trapped. Eventually the flow through the cartridges will be low enough to require replacement. It may be possible to extend the usable span of the cartridges by removing sediment from upstream trapping devices on a routine as-needed basis, in order to prevent material from being re-suspended and discharged to the StormFilter treatment system.

The average maintenance lifecycle is approximately 1-5 years. Site conditions greatly influence maintenance requirements. StormFilter units located in areas with erosion or active construction may need to be inspected and maintained more often than those with fully stabilized surface conditions.

Regulatory requirements or a chemical spill can shift maintenance timing as well. The maintenance frequency may be adjusted as additional monitoring information becomes available during the inspection program. Areas that develop known problems should be inspected more frequently than areas that demonstrate no problems, particularly after major storms. Ultimately, inspection and maintenance activities should be scheduled based on the historic records and characteristics of an individual StormFilter system or site. It is recommended that the site owner develop a database to properly manage StormFilter inspection and maintenance programs..

Inspection Procedures

The primary goal of an inspection is to assess the condition of the cartridges relative to the level of visual sediment loading as it relates to decreased treatment capacity. It may be desirable to conduct this inspection during a storm to observe the relative flow through the filter cartridges. If the submerged cartridges are severely plugged, then typically large amounts of sediments will be present and very little flow will be discharged from the drainage pipes. If this is the case, then maintenance is warranted and the cartridges need to be replaced.

Warning: In the case of a spill, the worker should abort inspection activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct an inspection:

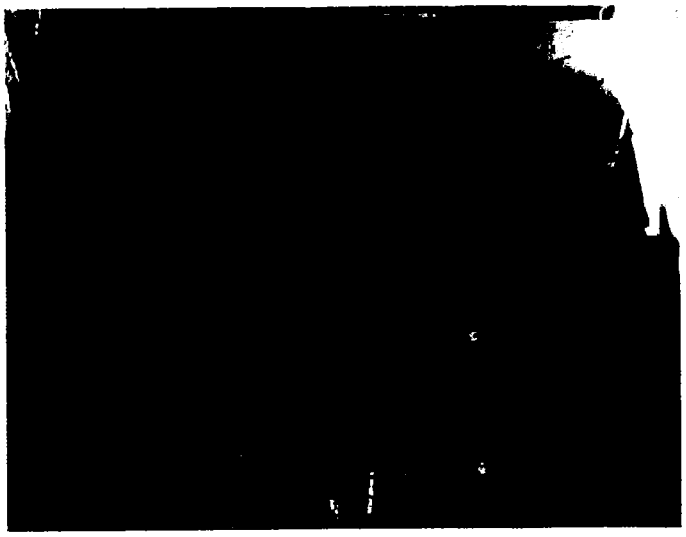
Important: Inspection should be performed by a person who is familiar with the operation and configuration of the StormFilter treatment unit.

1. If applicable, set up safety equipment to protect and notify surrounding vehicle and pedestrian traffic.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the access portals to the vault and allow the system vent.
4. Without entering the vault, visually inspect the inside of the unit, and note accumulations of liquids and solids.
5. Be sure to record the level of sediment build-up on the floor of the vault, in the forebay, and on top of the cartridges. If flow is occurring, note the flow of water per drainage pipe. Record all observations. Digital pictures are valuable for historical documentation.
6. Close and fasten the access portals.
7. Remove safety equipment.
8. If appropriate, make notes about the local drainage area relative to ongoing construction, erosion problems, or high loading of other materials to the system.
9. Discuss conditions that suggest maintenance and make decision as to weather or not maintenance is needed.

Maintenance Decision Tree

The need for maintenance is typically based on results of the inspection. The following Maintenance Decision Tree should be used as a general guide. (Other factors, such as Regulatory Requirements, may need to be considered)

1. Sediment loading on the vault floor.
   a. If >4" of accumulated sediment, maintenance is required.
2. Sediment loading on top of the cartridge.
   a. If >1/4" of accumulation, maintenance is required.
3. Submerged cartridges.
   a. If >4" of static water above cartridge bottom for more than 24 hours after end of rain event, maintenance is required. (Catch basins have standing water in the cartridge bay.)
4. Plugged media.
   a. If pore space between media granules is absent, maintenance is required.
5. Bypass condition.
   a. If inspection is conducted during an average rain fall event and StormFilter remains in bypass condition (water over the internal outlet baffle wall or submerged cartridges), maintenance is required.
6. Hazardous material release.
   a. If hazardous material release (automotive fluids or other) is reported, maintenance is required.
7. Pronounced scum line.
   a. If pronounced scum line (say ≥ 1/4" thick) is present above top cap, maintenance is required.



Maintenance

Depending on the configuration of the particular system, maintenance personnel will be required to enter the vault to perform the maintenance.

> **Important**: If vault entry is required, OSHA rules for confined space entry must be followed.

Filter cartridge replacement should occur during dry weather. It may be necessary to plug the filter inlet pipe if base flows is occurring.

Replacement cartridges can be delivered to the site or customers facility. Information concerning how to obtain the replacement cartridges is available from Contech Engineered Solutions.

> **Warning**: In the case of a spill, the maintenance personnel should abort maintenance activities until the proper guidance is obtained. Notify the local hazard control agency and Contech Engineered Solutions immediately.

To conduct cartridge replacement and sediment removal maintenance:

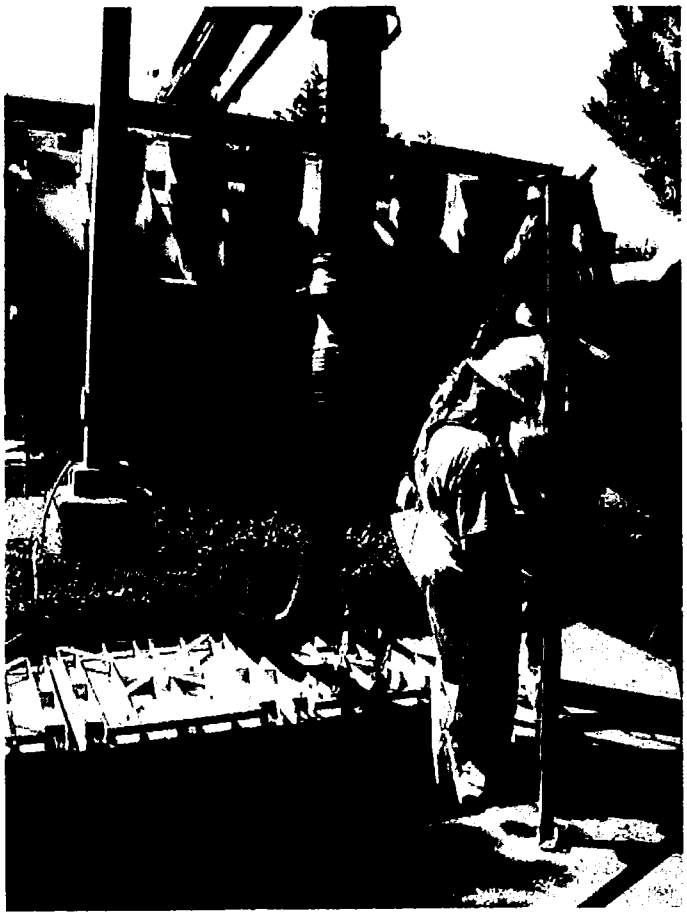
1. If applicable, set up safety equipment to protect maintenance personnel and pedestrians from site hazards.
2. Visually inspect the external condition of the unit and take notes concerning defects/problems.
3. Open the doors (access portals) to the vault and allow the system to vent.
4. Without entering the vault, give the inside of the unit, including components, a general condition inspection.
5. Make notes about the external and internal condition of the vault. Give particular attention to recording the level of sediment build-up on the floor of the vault, in the forebay, and on top of the internal components.
6. Using appropriate equipment offload the replacement cartridges (up to 150 lbs. each) and set aside.
7. Remove used cartridges from the vault using one of the following methods:

Method 1:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

   Using appropriate hoisting equipment, attach a cable from the boom, crane, or tripod to the loose cartridge. Contact Contech Engineered Solutions for suggested attachment devices.

B. Remove the used cartridges (up to 250 lbs. each) from the vault.



Important: Care must be used to avoid damaging the cartridges during removal and installation. The cost of repairing components damaged during maintenance will be the responsibility of the owner.

C. Set the used cartridge aside or load onto the hauling truck.

D. Continue steps a through c until all cartridges have been removed.

Method 2:

A. This activity will require that maintenance personnel enter the vault to remove the cartridges from the under drain manifold and place them under the vault opening for lifting (removal). Disconnect each filter cartridge from the underdrain connector by rotating counterclockwise 1/4 of a turn. Roll the loose cartridge, on edge, to a convenient spot beneath the vault access.

B. Unscrew the cartridge cap.

C. Remove the cartridge hood and float.

D. At location under structure access, tip the cartridge on its side.

E. Empty the cartridge onto the vault floor. Reassemble the empty cartridge.

F. Set the empty, used cartridge aside or load onto the hauling truck.

G. Continue steps a through e until all cartridges have been removed.

8. Remove accumulated sediment from the floor of the vault and from the forebay. This can most effectively be accomplished by use of a vacuum truck.
9. Once the sediments are removed, assess the condition of the vault and the condition of the connectors.
10. Using the vacuum truck boom, crane, or tripod, lower and install the new cartridges. Once again, take care not to damage connections.
11. Close and fasten the door.
12. Remove safety equipment.
13. Finally, dispose of the accumulated materials in accordance with applicable regulations. Make arrangements to return the used **empty** cartridges to Contech Engineered Solutions.

Material Disposal

The accumulated sediment found in stormwater treatment and conveyance systems must be handled and disposed of in accordance with regulatory protocols. It is possible for sediments to contain measurable concentrations of heavy metals and organic chemicals (such as pesticides and petroleum products). Areas with the greatest potential for high pollutant loading include industrial areas and heavily traveled roads.

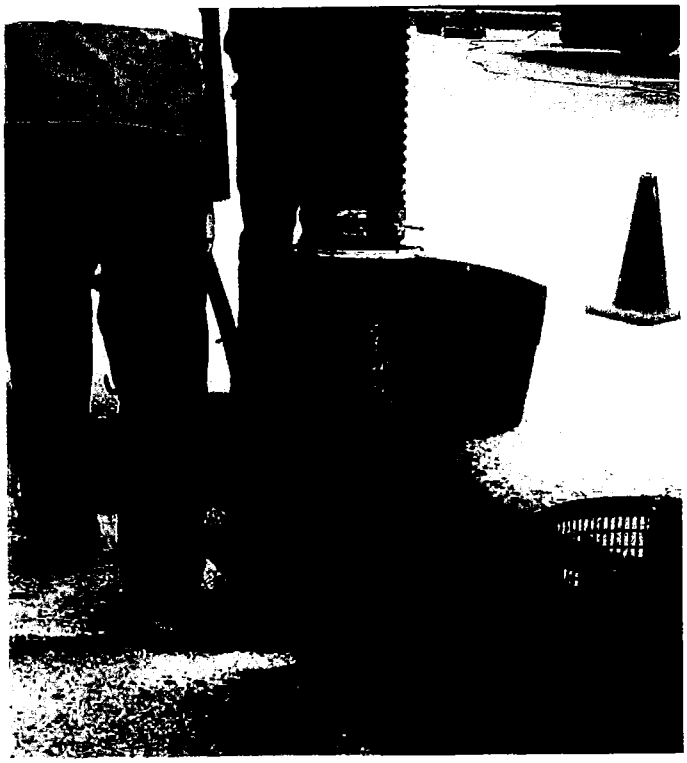
Sediments and water must be disposed of in accordance with all applicable waste disposal regulations. When scheduling maintenance, consideration must be made for the disposal of solid and liquid wastes. This typically requires coordination with a local landfill for solid waste disposal. For liquid waste disposal a number of options are available including a municipal vacuum truck decant facility, local waste water treatment plant or on-site treatment and discharge.

Related Maintenance Activities - Performed on an as-needed basis

StormFilter units are often just one of many structures in a more comprehensive stormwater drainage and treatment system.

In order for maintenance of the StormFilter to be successful, it is imperative that all other components be properly maintained. The maintenance/repair of upstream facilities should be carried out prior to StormFilter maintenance activities.

In addition to considering upstream facilities, it is also important to correct any problems identified in the drainage area. Drainage area concerns may include: erosion problems, heavy oil loading, and discharges of inappropriate materials.



Inspection Report

Date: Personnel:

Location: System Size:

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other ☐

Sediment Thickness in Forebay: Date:

Sediment Depth on Vault Floor:

Structural Damage:

Estimated Flow from Drainage Pipes (if available):

Cartridges Submerged: Yes ☐ No ☐ Depth of Standing Water:

StormFilter Maintenance Activities (check off if done and give description)

☐ Trash and Debris Removal:

☐ Minor Structural Repairs:

☐ Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source:

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source:

Erosion of Landscaped Areas: Yes ☐ No ☐ Source:

Items Needing Further Work:

Owners should contact the local public works department and inquire about how the department disposes of their street waste residuals.

Other Comments:

Review the condition reports from the previous inspection visits.

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StormFilter Maintenance Report

Date: _____ Personnel: _____

Location: _____ System Size: _____

System Type: Vault ☐ Cast-In-Place ☐ Linear Catch Basin ☐ Manhole ☐ Other ☐

List Safety Procedures and Equipment Used: _____

_____

_____

System Observations

Months in Service:

Oil in Forebay (if present): Yes ☐ No ☐

Sediment Depth in Forebay (if present): _____

Sediment Depth on Vault Floor: _____

Structural Damage: _____

Drainage Area Report

Excessive Oil Loading: Yes ☐ No ☐ Source: _____

Sediment Accumulation on Pavement: Yes ☐ No ☐ Source: _____

Erosion of Landscaped Areas: Yes ☐ No ☐ Source: _____

StormFilter Cartridge Replacement Maintenance Activities

Remove Trash and Debris: Yes ☐ No ☐ Details: _____

Replace Cartridges: Yes ☐ No ☐ Details: _____

Sediment Removed: Yes ☐ No ☐ Details: _____

Quantity of Sediment Removed (estimate?):

Minor Structural Repairs: Yes ☐ No ☐ Details: _____

Residuals (debris, sediment) Disposal Methods: _____

Notes:

_____

_____

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Support

- **Drawings and specifications are available at www.conteches.com.**
- **Site-specific design support is available from our engineers.**

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Exhibit B

(Annual Inspection Report Form)

Auditor's notation to facilitate scanning process

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

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

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

RANGE	TOWNSHIP	SECTION	QUARTER		
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Exhibit C

Auditor's notation to facilitate scanning process

Auditor's notation to facilitate scanning process

RANGE	TOWNSHIP	SECTION	QUARTER		
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LEGAL DESCRIPTION

PARCEL "1" OF CITY OF PUYALLUP BOUNDARY LINE REVISION NO. P-16-0112 RECORDED UNDER AFN 201708165003, SITUATE IN THE EAST HALF OF THE SOUTHEAST QUARTER OF SECTION 33, TOWNSHIP 20 NORTH, RANGE 4 EAST, WM, PIERCE COUNTY, WASHINGTON;

TOGETHER WITH;
THE NORTH 90.14 FEET OF THE EAST 150 FEET OF THE FOLLOWING: BEGINNING AT A POINT 765.8 FEET NORTH AND 30 FEET WEST OF THE SOUTHEAST CORNER OF SECTION 33, TOWNSHIP 20 NORTH, RANGE 4 EAST OF THE WILLAMETTE MERIDIAN; THENCE NORTH 280.28 FEET; THENCE WEST 307.45 FEET, MORE OR LESS, TO THE PREMISES CONVEYED TO CHESTER SNOW BY DEED RECORDED MARCH 28, 1924, UNDER RECORDING NO. 704621; THENCE SOUTH 280.28 FEET, MORE OR LESS, TO THE NORTH BOUNDARY OF 21ST AVE. S.W.; THENCE EAST 311.3 FEET, MORE OR LESS, TO THE PLACE OF BEGINNING, IN PUYALLUP, PIERCE COUNTY, WASHINGTON;

TOGETHER WITH;
BEGINNING AT A POINT 1046.63 FEET NORTH AND 30 FEET WEST OF THE SOUTHEAST CORNER OF SECTION 33, TOWNSHIP 20 NORTH, RANGE 4 EAST, W.M.; RUN THENCE NORTH 39.18 FEET; THENCE WEST 307.6 FEET; THENCE SOUTH 39.18 FEET; THENCE EAST 307.6 FEET, MORE OR LESS, TO THE POINT OF BEGINNING. ALSO, BEGINNING AT A POINT 1085.81 FEET NORTH AND 30 FEET WEST OF THE SOUTHEAST CORNER OF SECTION 33, TOWNSHIP 20 NORTH, RANGE 4 EAST, W.M.; RUN THENCE NORTH 101.79 FEET; THENCE WEST 307.6 FEET; THENCE SOUTH 101.79 FEET; THENCE EAST 307.5 FEET, MORE OR LESS, TO THE POINT OF BEGINNING. SITUATE IN THE CITY OF PUYALLUP, COUNTY OF PIERCE, STATE OF WASHINGTON.

EXCEPT ROADS;

SITUATE IN THE COUNTY OF PIERCE, STATE OF WASHINGTON.

05138 HUNTINGTON
10/18/2019