



## Clark County 2015 Stormwater Manual Implementation Summary of Procedure

This procedure statement documents discussions and decisions from Environmental Services, Community Development, Public Works and Prosecuting Attorney's office. Implementation of new stormwater regulations require staff to work through specific details of the regulations with applicants. The purpose is to ensure consistent application of county requirements. These procedure statements document decisions for future reference and will be kept on the [ClarkNet web page](#) (Environmental Services).

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**Procedure statement #2015-009** – August 23, 2016, 2016

### **Emerging Technology Approval – BayFilter™ BMP vault for basic treatment**

See attached staff report for approved documentation.

# CLARK COUNTY STAFF REPORT

**DEPARTMENT:** Public Works / Clean Water Division

**DATE:** August 4, 2016

**REQUESTED ACTION:** Approve adding the BayFilter™ best management practice (BMP) to the list of emerging technology stormwater treatment BMPs accepted in Book1, Chapter 3.4.6 of the Clark County Stormwater Manual with the use restrictions listed herein.

\_\_\_ Consent      \_\_\_ Hearing       X  County Manager

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## **PUBLIC WORKS GOALS:**

- Provide safe and efficient transportation systems in Clark County
- Create and maintain a vibrant system of parks, trails and green spaces
- Continue responsible stewardship of public funds
- Promote family-wage job creation and economic development to support a thriving community
- Maintain a healthy, desirable quality of life
- Increase partnerships and foster an engaged, informed community
- Cultivate a nimble, responsive work force
- Make Public Works a great place to work

## **BACKGROUND**

Section 3.4.7.2 of the Clark County Stormwater Manual (Book 1, page 140) allows for the Responsible Official to include the use of emerging technology Best Management Practices (BMPs) in Clark County that are not currently listed in the Clark County Stormwater Manual. The Department of Public Works designed a process to review petitions to include emerging technology BMPs. The process calls for an Emerging Technology BMP review team to evaluate each petitioned emerging technology BMP and make its recommendations to the Responsible Official of Clark County on acceptance and any restrictions on its use.

The Emerging Technology BMP review team includes:

Public Works Clean Water Division:	Rod Swanson, Jeff Schnabel, and Chad Hoxeng
Public Works Road Operations Division:	Scott Wilson and Brandon Pilot
Public Works Design Section:	Ken Lader
Public Works Development Engineering Division:	Ali Safayi

Clark County received a petition from Steve Forseth at Advance Drainage Systems, Inc. for the BayFilter™ emerging technology BMP. The BayFilter system is typically a concrete structure (precast vault, manhole, or cast in place structure) containing one or more BayFilter cartridges. The concrete structure contains the inlet and outlet. The cartridges are connected to a pipe manifold, which is connected to the outlet. An overflow outlet is provided for flows in excess of cartridge capacity.

The BayFilter is a stormwater treatment BMP developed by Baysaver Technologies, LLC and has been evaluated with approved protocols and requirements of the Washington State Department of Ecology (Ecology) Technology Assessment Protocol (TAPE). The BayFilter Ecology General Use Level Designation (GULD) is for Basic Treatment (total suspended solids). The BayFilter has a

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Conditional Use Level Designation (CULD) for Enhanced Treatment (dissolved metals) and a CULD for phosphorus treatment.

The Emerging Technology BMP review team assessed the following Clark County Stormwater Manual approval criteria to determine if the BayFilter should be included as an acceptable emerging technology.

**Equivalence with the most current *Stormwater Management Manual for Western Washington* – Washington State Department of Ecology approval level:**

- Ecology awarded a GULD for basic treatment (total suspended solids) for the BayFilter. The BayFilter has a CULD for enhanced treatment (dissolved metals) and a CULD for phosphorus treatment.

**Cost of maintenance** – *information describing the nature and frequency of maintenance actions and materials costs to predict maintenance costs, knowledge to maintain BMP, and capital costs for maintenance equipment:*

- BayFilter may require higher inspection frequencies than other county accepted BMPs.
- BayFilter cartridges may have a lifespan of 2 to 3 years depending on sediment loads. High sediment loading has been demonstrated to shorten BayFilter cartridge lifespan.
- BayFilter replacement cartridges range from \$450 to \$550 per cartridge depending on the client (private owner, maintenance contractor, etc.) and the number of cartridges purchased per year or per order.
- Small systems with 1 to 5 cartridges should take 2-3 hours to replace. Larger systems may take around 4 hours.
- Capital costs are moderate, and operations and maintenance are low to moderate.
- A maintenance inspection and defects table was provided that can be integrated into the County's Maintenance Management System (MMS) database.
- At the time of replacement, BayFilter cartridges may weigh in excess of 350 lbs.
- Hourly charges for cleaning range from \$200 to \$300 per hour, and some stormwater maintenance companies have a minimum period for servicing a system (i.e., 4 hours). A disposal fee may be assessed and is variable depending on the tipping fees from an area landfill and if the debris is dewatered prior to disposal. Typical tipping fees range from \$40-\$80 per ton.

**Ease of access** – *degree of need for confined space entry. Equipment required to perform maintenance:*

- Confined space entry is required for maintenance of BayFilters.
- Maintenance involves a crew of 2-4 personnel. A vactor truck with a boom to remove existing cartridges is also required.

**Worker safety** – *the BMP's typical location (e.g. street, tract, etc.), weights of components or materials to be lifted and confined space concerns:*

- While the location of a BayFilter vault is subject to the civil engineer's discretion, BaySaver recommends it be within a stormwater easement and have access of no greater than 15 feet from a paved location that a vactor truck can readily access. Generally, the materials that a worker would have to lift are less than 25 pounds. For larger systems, the use of the trolley system and/or vactor boom will be employed to remove and replace BayFilter cartridges. No heavy lifting is required by the actual workers.

**Long-term serviceability** – *demonstrated track record of the manufacturer. Ramifications if the manufacturer goes out of business. The use of the BMP regionally or nationally:*

- BaySaver LLC is a joint venture entity that involves Advanced Drainage Systems, Inc. (ADS) and BaySaver Technologies Inc. BaySaver Technologies has been in business since 1996 and ADS since 1966. ADS is an international company and has over 30 manufacturing locations across the continental United States. While it cannot be guaranteed that ADS and BaySaver LLC will always be in business in their present form, it is likely that other businesses will create methods to service or “retrofit” existing BayFilter systems in the future should ADS and BaySaver not be in existence.
- ADS has recently become a publicly traded company and is listed under the Water Management Solutions or the “WMS” symbol on the NYSE. ADS’s involvement with the creation of BaySaver LLC is for the primary benefit of providing water quality solutions to clients over the foreseeable future in the civil construction development sector.

**Sole source availability – *replacement parts and media are available from more than one source:***

- Bayfilter cartridges are shipped from ADS facilities in Washougal and Olympia, WA. Used cartridges can be delivered to these plants for disposal and recycling.
- BaySaver LLC sells replacement cartridges to various maintenance providers across the United States, as well as private owners. BaySaver LLC does not contract with or give sole access to BaySaver LLC products in any one geographic area. BaySaver LLC offers to inspect and make recommendations on BaySaver LLC systems upon request and free of charge to owners of BaySaver LLC stormwater systems.

**COUNCIL POLICY IMPLICATIONS**

This action does not propose change in policy, a refinement of existing policy, confirmation or renewal of existing policy, or new policy. This action does not require a change to county code, levy a tax, change a budget, establish compensation, involve a comprehensive or development plan, set collective bargaining parameters, or involve a committee appointment.

**ADMINISTRATIVE POLICY IMPLICATIONS**

The Emerging Technology BMP review team recommends approval of adding the BayFilter stormwater treatment BMP to the list of emerging technology stormwater treatment BMPs accepted in Book1, Chapter 3.4.6 of the Clark County Stormwater Manual, for use in Clark County with the following restrictions:

- Only BayFilter cartridge types approved by the DOE GULD for basic treatment that meet the GULD maximum flow rate per square footage of treatment area are allowed.
- BayFilters are only allowed where the site developer is the owner of the BayFilter BMP and is responsible for any maintenance activities.
- BayFilters are not allowed in residential subdivision applications.
- All BayFilter stormwater facilities are required to be privately owned and operated.
- All BayFilter systems are required to have an internal drain down module to prevent standing water between storm events.
- Manhole lid types are not allowed. All below-ground Bayfilter manholes and vaults must have hatches for inspection and maintenance accessibility.

**COMMUNITY OUTREACH**

None.

**BUDGET IMPLICATIONS**

YES	NO	
X		Action falls within existing budget capacity.
	X	Action falls within existing budget capacity but requires a change of purpose within existing appropriation
	X	Additional budget capacity is necessary and will be requested at the next supplemental. If YES, please complete the budget impact statement. If YES, this action will be referred to the county council with a recommendation from the county manager.

**BUDGET DETAILS**

Local Fund Dollar Amount	n/a
Grant Fund Dollar Amount	n/a
Account	n/a
Company Name	n/a

**DISTRIBUTION:**

County staff will post all Emerging Technology BMP review staff reports to Clean Water Division Stormwater Code and Manual webpage under "Acceptable Emerging Technology Best Management Practices (BMPs)." <https://www.clark.wa.gov/public-works/stormwater-code-and-manual>



Dean Boening  
Clean Water Division Manager



Heath H. Henderson, PE  
Public Works Director/County Engineer

**APPROVED:** \_\_\_\_\_  
**CLARK COUNTY, WASHINGTON**  
**BOARD OF COUNTY COUNCILORS**

DATE: \_\_\_\_\_

SR# \_\_\_\_\_

**APPROVED:**   
Mark McCauley, County Manager

DATE: 8/16/16

**Exhibit A – Submittal Attachments:**

1. **BayFilter Design Manual (10951) 07-14 (3).pdf**  
This document describes the design of the BayFilter, functionality, and schematics of multiple cartridge types.
2. **Drain Down DDM-V Detail**  
This document describes the design of the internal drain down module that prevents standing water between storm events in the BayFilter system.
3. **BayFilter Installation Manual.pdf**  
This document describes the installation of the BayFilter vault, description of the drainage manifold, and tools required for installation needs.
4. **BayFilter GULD General Use Basic Treatment.pdf**  
GULD approval from Ecology dated January 2016.
5. **BayFilter maintenance table.pdf**
6. **BayFilter Maintenance Providers.pdf**  
This document lists certified maintenance providers in both Oregon and southwest Washington.
7. **BayFilter Inspection and Maintenance Guidelines (3).pdf**