

Description	Catch basin inserts are devices installed under a storm-drain grate that provide water quality treatment through filtration, settling, or adsorption. Catch basin inserts are commercially available products and are generally configured to remove one or more of the following contaminants: coarse sediment, oil and grease, and litter and debris. Units should be routinely maintained to achieve maximum removal efficiency. Maintenance frequency will vary depending on the amount and type of pollutant targeted.								
Applications	Studies performed by King County, WA, have found catch basin inserts to be nominally effective at removing fine (silt and clay) sediment and associated pollutants. Inserts were successful in capturing coarse material and debris. Hydrocarbons. Product removal efficiencies for inserts in good condition ranged from 20 to 90% when exposed to oil concentrations near the high end for urban runoff, and performance dropped off rapidly with use. Possible locations for catch-basin insert implementation include parking lots, gas stations, golf courses, streets, driveways, industrial or commercial facilities, and municipal corporation yards.								
Limitations	<table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Drainage area – 5000 square feet</td> <td style="width: 50%;">Max slope – unlimited</td> </tr> <tr> <td>Minimum bedrock depth - N/A</td> <td>Minimum water table – N/A</td> </tr> <tr> <td>NRCS soil type – N/A</td> <td>Freeze/thaw – fair</td> </tr> <tr> <td>Drainage/flood control – no</td> <td></td> </tr> </table> <p>The greatest difficulties facing those implementing catch-basin inserts for stormwater treatment lie in the small space inside the catch basin, the tendency for sediments to clog or blind filter media, and the fluctuating nature of the flow. Catch-basin inserts are very maintenance-intensive. Check with the parties that will be required to maintain these systems prior to design and installation. The problems may be compounded from street sanding and other activities.</p>	Drainage area – 5000 square feet	Max slope – unlimited	Minimum bedrock depth - N/A	Minimum water table – N/A	NRCS soil type – N/A	Freeze/thaw – fair	Drainage/flood control – no	
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Targeted Pollutants	<p>Sediment – 35%</p> <p>Phosphorus – 5%</p> <p>Trace metals</p> <p>Hydrocarbons</p>								
Design Parameters	<p>The catch-basin insert should meet the following criteria:</p> <ul style="list-style-type: none"> ▪ The total maximum tributary area should be 5,000 square feet (+ 5%) per unit for new development projects and 7, 000 feet per unit for redevelopment projects. ▪ A catch-basin insert for a new development project should be designed to fit with a standard grate. If the insert is installed in an existing catch basin, the insert should be demonstrated to fit properly so that there is a positive 								

seal around the grate to prevent low-flow bypass. The maximum height of the grate above the top of the frame, with the insert installed, should not exceed 3/16 inch, and the grate should be non-rocking.

- The bottom of the filter media (oil absorbent/absorbent material) should be above the level of normal low flows. If the media is above the crown of the outlet pipe, it is assumed to be above the normal low flows. An alternative method to demonstrate that the media is above the normal low flow is to show (by backwater analysis method) that the bottom of the media is above the water surface elevation corresponding to the water quality design flow.
- The catch basin insert should be located to be accessible as needed for maintenance and not limited by continuous vehicle parking. This may require elimination of a parking stall for redevelopment projects.
- While no pretreatment is required with a catch-basin insert, the use of source control BMPs on the site will decrease maintenance needs.

Construction Guidelines

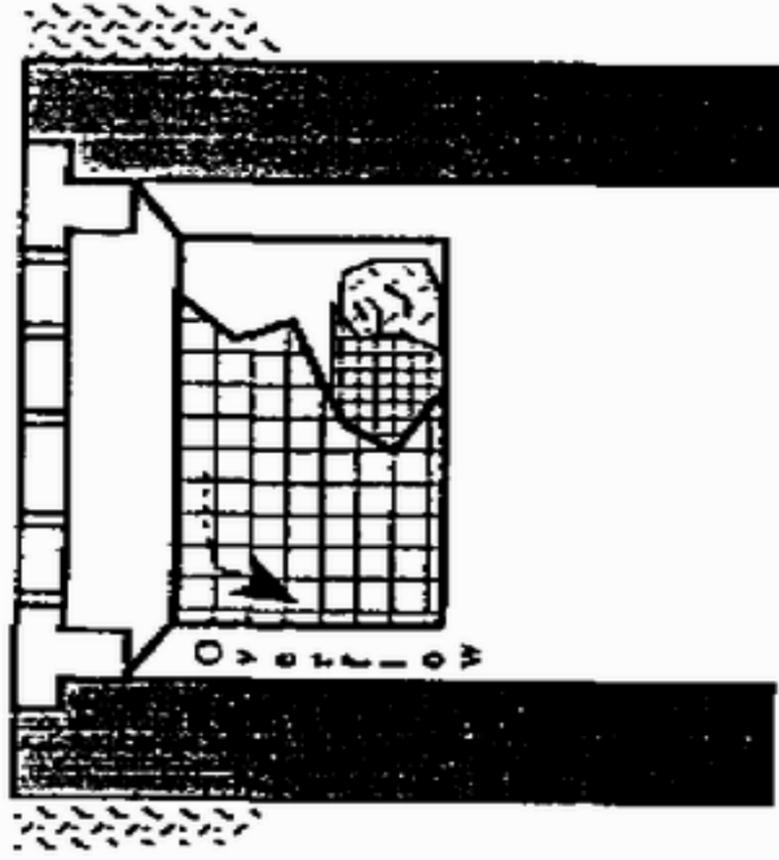
Installation of a catch-basin insert for a new or redevelopment project should follow the manufacturer's recommended procedures. The catch-basin insert should be installed in the catch basin after the site has been paved or stabilized (for new development) or after completion of construction (for a redevelopment site that is already paved).

If the catch-basin insert is used for sediment control during construction, it should be reconfigured in accordance with the manufacturer's recommendations. When used for sediment control, the insert should be inspected at least weekly and maintained if needed.

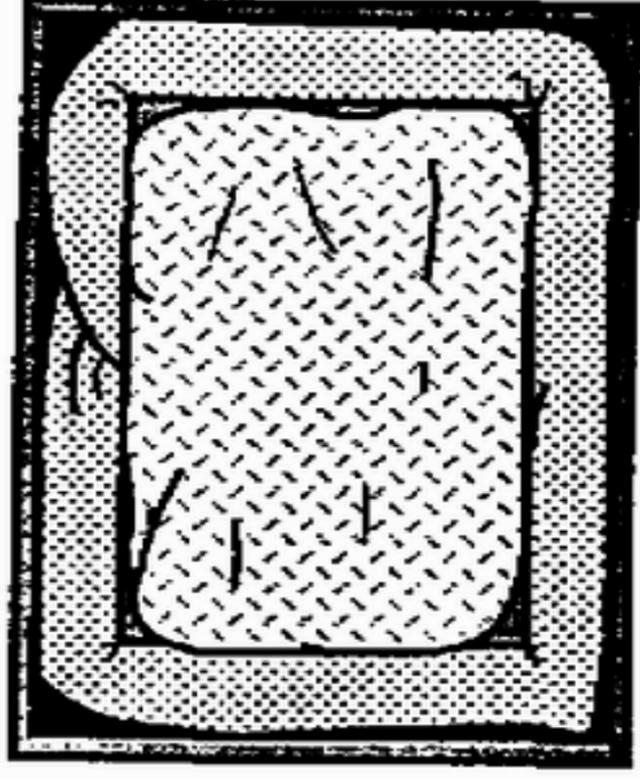
To minimize the generation of solid waste and the consumption of natural resources, systems constructed of or using recycled products are preferred. Reusable filter materials should be refreshed according to the manufacturer's instructions.

Maintenance

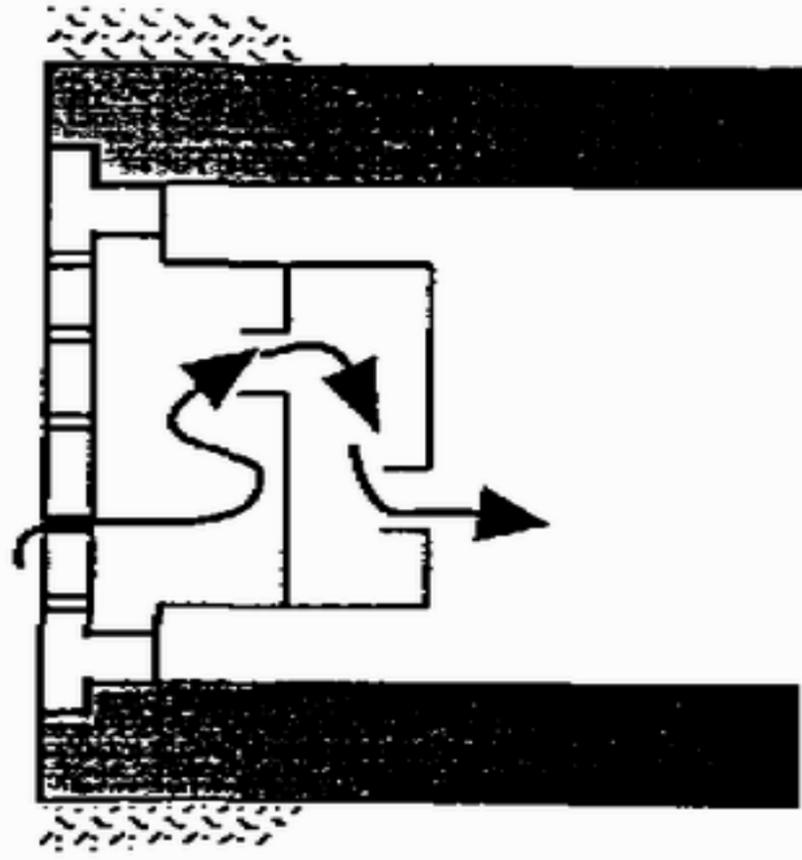
The catch-basin insert should be fitted with oil-absorbent/absorbent filter media, which should be inspected monthly and changed whenever the filter media surface is covered with sediment. Inspections are especially important during the wet season. Acceptable filter media include absorbent W, whole fibrous moss (not necessarily sphagnum moss), Petrolok, and general purpose absorbent (i.e., wood fiber).



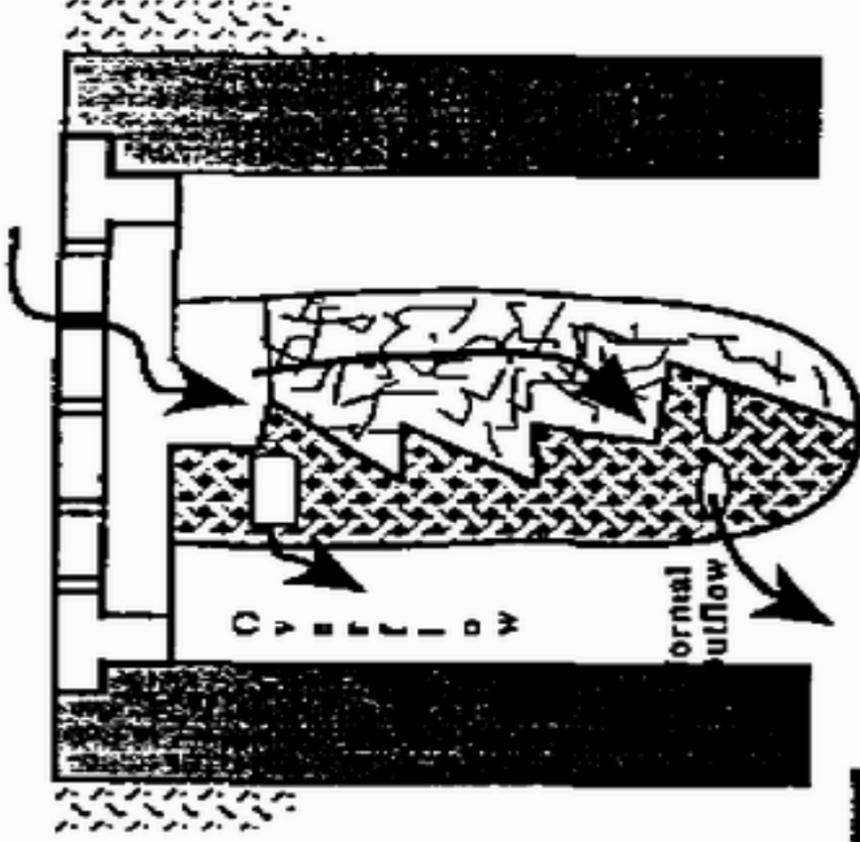
a. Aqua-net Gullywasher Model 10001
Side view with cut-outs to show interior



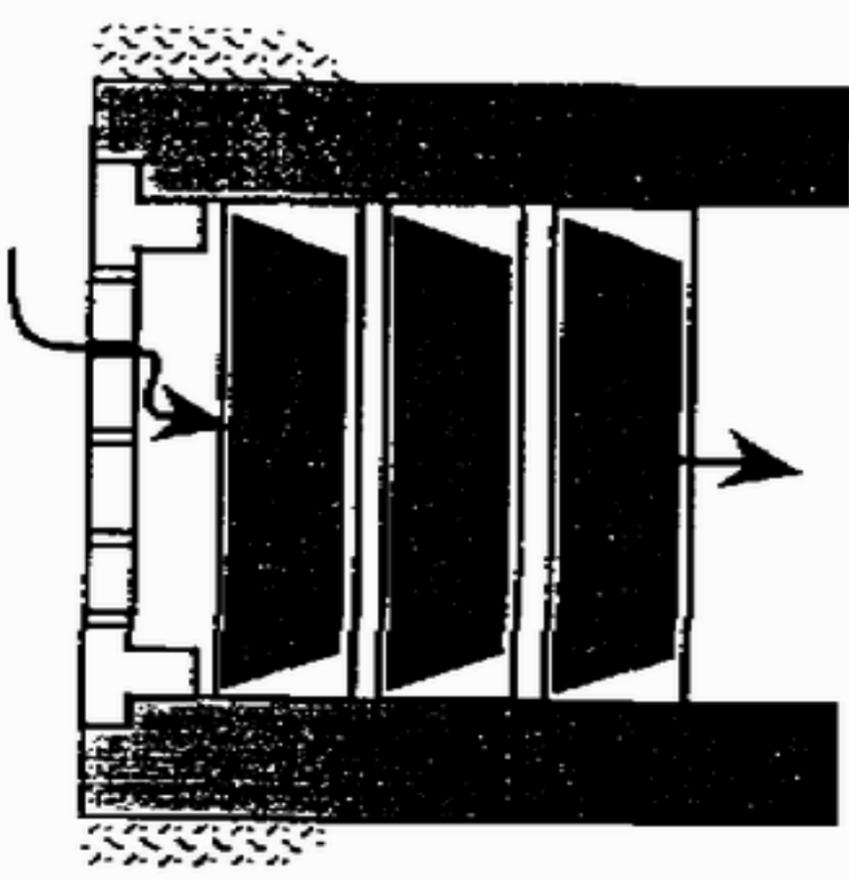
b. Aqua-net Gullywasher Model 10003
Top view shows revised containment system



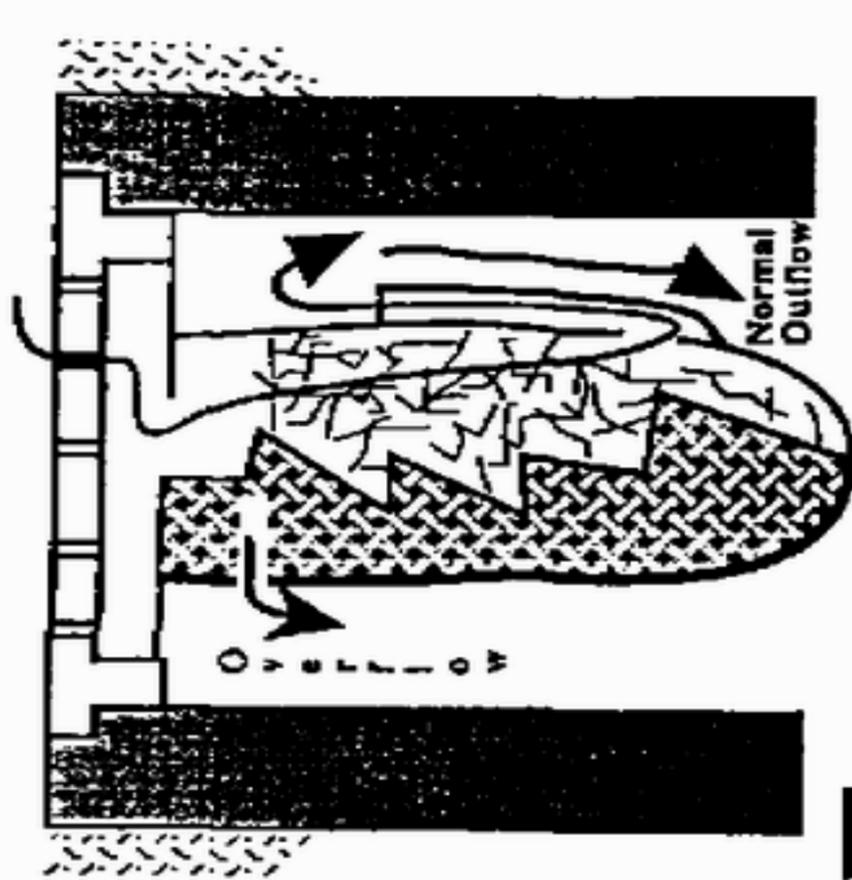
d. Stormwater Services type I
Cross section



e. Stormwater Services Type II
Side view with cut-outs to show absorbent



c. Enviro-drain
Side view



f. StreamGuard (replaced e)
Side view with cut-outs to show absorbent

Figure Detail Notes

- a) Aqua-Net Gullywasher Model 10001: A wire mesh outer basket fitted with an inner basket made of fine stainless-steel screen. The inner basket contains an "onion sack" filled with an absorbant made from a wood by-product. The primary outlet is through the bottom of the sack, while high-flow relief is through the sides of the upper part of the wire mesh basket.
- b) Aqua-Net Gullywasher Model 10003: A more advanced version of the "Gullywasher" described above. In this version, the stainless steel inner basket has been replaced with a second wire mesh basket. A long sock filled with oil-absorbing material is coiled between the inner and outer basket. As with the above product, an "onion sack" filled with absorbant is inserted in the bottom of the basket. The primary outlet is through the absorbant in the bottom and sides. High-flow relief is through the upper part of the basket.
- c) Enviro-Drain: A system of up to three trays, each with solid sides and mesh bottoms. The trays may be filled with an absorbant, activated carbon, or used simply as a debris-catching screen. The screens may be changed to meet specific site conditions. The system is typically installed with the top tray in a screen-only configuration, and the second two trays filled with an absorbant. All components are stainless steel.
- d) Stormwater Services Type I: A set of two interlocking trays that create standing water in which solids are allowed to settle. The overflow from the upper tray discharges to the second tray. The trays are molded in a standard size from recycled plastic. A variety of steel adapters allow the unit to be used in larger drain inlets.
- e) Stormwater Services Type II: A filter fabric sack filled with a polypropylene absorbent. Primary discharge is through the small holes near the bottom of the sack. A secondary outlet is near the top of the device. This model was discontinued during the study.
- f) StreamGuard: This product replaced the Stormwater Services Type II-O, with the principle difference being that the primary outlet has been routed through a pocket on the outside of the sack. A secondary outlet is still provided near the top of the device.