

PC-39 ON-LINE STORAGE IN STORM DRAIN NETWORK (VAULTS)

Reference: King County Washington, Department of Natural Resources and Parks, Stormwater Pollution Control Manual.

Photograph to come.

- | BMP Objectives | |
|-------------------------------------|------------------------------|
| <input type="checkbox"/> | Perimeter Control |
| <input type="checkbox"/> | Slope Protection |
| <input type="checkbox"/> | Borrow and Stockpiles |
| <input checked="" type="checkbox"/> | Drainage Areas |
| <input checked="" type="checkbox"/> | Sediment Trapping |
| <input type="checkbox"/> | Stream Protection |
| <input type="checkbox"/> | Temporary Stabilizing |
| <input type="checkbox"/> | Permanent Stabilizing |

Definition and Purpose

On-line storage in storm drain network (vaults) is designed to capture and treat runoff. This structure generally consists of an underground box culvert that treats flows at or near the end of a storm sewer system. Called a Wet Vault or Sedimentation Vault, the structure has more volume for treatment than a grit chamber and removes debris, trash, and sediment from storm flows.

Appropriate Applications

- Structure provides temporary water quality storage for a specified storm event.
- Wet vaults have a permanent pool which dissipates energy and improves the settling of particulates.
- Sedimentation vaults use a weir to block flows and allow for particulate settlement. Flows are drained through a gravel/pipe riser structure behind the weir.
- Vaults are typically used for commercial, industrial, or roadway projects in areas where space limitations preclude the use of other BMPs.
- Stormwater flows into and out of the vault through a storm sewer pipe.
- The primary pollutant removal mechanism is sedimentation.
- Sediment removal schedule is less frequent than other water quality BMPs.
- Vaults should be constructed in the early phases of a development project.

Limitations

- Vaults are considerably more expensive than other BMPs.
- Because the structure is underground, biological activity cannot be used for treatment in these structures.

Design Parameters

- Wet vault volume should be maximized to increase efficiency of particulate removal.

- For design, water quality volume is assumed to flow into vault all at once, rather than over the course of several hours or days.
- Structure length to width from the inlet to the outlet should be a minimum of 3:1.
- Outlet pipe can be covered with a trash rack or screen to keep suspended pollutants out of downstream discharges.
- Gravel filter and vertical pipe riser in sedimentation vault should be designed for a retention time of 40 hours.

Maintenance and Inspection

- Conduct inspections as required by the NPDES permit or contract specifications during construction.
- Periodic inspection and maintenance will be required based on post-construction site conditions.
- Make any repairs necessary to ensure the measure is operating properly.
- Maintenance requires special equipment although easily accessed for maintenance.