



## UniStorm Manhole Maintenance

### UNISTORM –RFV DESCRIPTION

The UNISTORM-RFV is a Precast Concrete manhole consisting of inlet and outlet stages of treatment separated by a Precast concrete baffle wall. The baffle wall is designed to meet site-specific flow requirements and provides three functions:

- (1) Remove floatables and sediment in the inlet stage
- (2) Provide a low head loss flow path between the first and second stages and provide for additional sediment removal in the second stage.
- (3) Support the Environment 21 Flow Control Vanes mounted in the upstream side of the baffle wall.

UNISTORM-RFV manholes are manufactured from standard precast concrete components. These components are designed to reduce the weight that needs to be handled during shipment and installation.

Normal water depth in the UNISTORM-R sump will be 4-5 ft. This shallow sump reduces excavation costs and the depth to be accessed from a pumper truck.

### POLLUTANT STORAGE CAPACITY AND CLEANOUT FREQUENCY

Recommended practice for the UNISTORM-RFV is to plan on semi-annual inspections and annual pumpout based on the following general design guidelines:

- (1) Sediment Sump -- the rate at which sediment is accumulated will depend on land use and other pavement activities (e.g., heavy winter sanding will create extra sediment, while regular sweeping will reduce accumulation). Environment 21 recommends sediment pumpout when the average depth of the sediment pile is 0.50 ft. The UNISTORM-RFV sump is designed to store an average sediment pile depth of 1.0 ft.
- (2) Floatables Chambers -- oil sheen and floating debris will be retained in the inlet stage of the UNISTORM-RFV. Annual accumulation of floatables is estimated at less than 0.50 inches but can vary depending on land use.

During the first year of operation, Environment 21 recommends visual inspections in February, May, and October. This inspection schedule can be modified in subsequent years according to experience and/or to meet specific stormwater permit requirements.



## **SEDIMENT PILE DEPTH MEASUREMENT**

Cast iron manhole frames with vented covers are provided in the UNISTORM-R roof to make the sediment pile readily accessible for measurement and cleaning. Sediment should be removed when the first-stage sediment pile depth is 6"-12". Normal water depth in the UNISTORM-RFV sump will be 4-5 ft.

To detect the surface of the first stage sediment pile, use a measuring rod with 3-6 inch diameter end plate. Lower the rod into the UNISTORM-RFV until a slight resistance to movement occurs when the end plate contacts the top of the sediment pile.

To determine sediment pile depth, twist the measuring rod into the sediment pile and measure the additional depth needed to contact the floor of the UNISTORM-RFV.

Organic debris that has become waterlogged and settled to the floor is expected to be present in relatively small quantities that will be removed during pumpout of the mineral sediment.

## **FLOATABLES OBSERVATION AND MEASUREMENT**

Oil sheen and floating debris can be observed by using a flood light to illuminate the water surface in the inlet stage of the UNISTORM-RFV. Gently stir the floatables to estimate depth. This depth will typically be less than one inch and floatables can be skimmed from the surface prior to pumpout of the sediment.

## **PUMPOUT**

Pumpout of the UNISTORM-RFV is achieved using standard truck-mounted sewer and catch basin cleaners with positive displacement rotary lobe vacuum pumps. Manhole openings provide access to both stages of the UNISTORM-RFV. Site Plans for the project should include a driveway area for pumper truck access to the UNISTORM-RFV.

## **DISPOSAL OF WASTEWATER, SEDIMENT, AND FLOATABLES**

Commercial and retail sites are usually adjacent and tributary to public stormwater systems, and accordingly pumper truck contents should be delivered to an approved waste disposal facility. Facilities used by the local Highway Department may be acceptable. For industrial sites, pumper truck contents should be delivered to a disposal site approved by the owner of the industrial site.