

SPECIFICATION FOR REMOVING SUSPENDED SOLIDS FROM CONSTRUCTION-SITE WATER USING WATERMATRIX™ TREATMENT SYSTEM

PART 1 – GENERAL

- 1.1 Description - A WaterMatrix™ treatment system shall be used to remove suspended solids from construction-site water before it is discharged from the site. The device is a portable tank system that uses anionic polyacrylamide polymers to flocculate suspended solids in construction-site water. It is a continuous flow treatment system capable of treating, under various configurations, 50 to 1200 gallons per minute (gpm). Typically, the system is used to treat water with less than 1% suspended solids (10,000 parts per million) with removal efficiency greater than 95 percent. WaterMatrix™ systems are available from Interfaceh2o LLC (IH2O) as rental units or to purchase.
- 1.2 Manufacturer - WaterMatrix™ systems are manufactured by IH2O. IH2O's address is 10694 Chicago Drive, Zeeland, MI 49464. Their contact information is the following:
- | | |
|---------------|----------------|
| James Smits | 1-616-836-3535 |
| Dennis Gebben | 1-616-510-1046 |
- www.interfaceh2o.com

PART 2 – COMPONENTS

2.1 IH2O-Provided Components

- 2.1.1 FlocHogs™: In-line polymer introduction devices are installed in the pressure line from the influent pump to the WaterMatrix™. The device holds four polymer gel logs, which dissolve as water is pumped through it. The flow capacity of a FlocHog is 500 gpm. Two to three FlocHogs are used in series to achieve the desired polymer dosage. For flows greater than 500 gpm, FlocHogs are added in parallel.
- 2.1.2 Hogger Logs: Floc logs are manufactured by Applied Polymer Systems (APS) that are sized to fit in a FlocHog. Each FlocHog contains 4 Hogger Logs and together will treat 500,000 to 2,000,000 gallon depending on influent characteristics. Hogger Logs are available from IH2O or other distributors of APS products.
- 2.1.3 Mix Tank: Receives the discharge from the pressure line at which point water flows by gravity through the WaterMatrix™ system. The mix tank provides the turbulence and residence time for floc to form from the reaction of the polymer with the suspended solids. The mix tank mounts above the base tank and comes in two sizes:
- 50 to 400 gpm capacity

- 400 to 1200 gpm capacity

2.1.4 Base Tank: This component also has two sizes. The larger size accommodates flows from 400 to 1200 gpm; has dimensions of 38'L, 8'5"W, 6'6"H; weighs (empty) 12,000 lbs; has a capacity of 14,800 gallons; and is transported to the job site on a Landoll tilt trailer. The smaller size will accommodate flows from 50 to 400 gpm; has dimensions of 24'L, 8'5"W, 5'1"H; weighs (empty) 10,000 lbs; has a capacity of 8,500 gallons; and is transported to the job site on a roll-off hook-truck. Both size tanks are skid mounted and, when empty, can be dragged around the job site.

Base tanks have two treatment chambers:

2.1.4.1 Settling Chamber: At design flows most of the floc to settle out in this chamber.

2.1.4.2 Tertiary Chamber: Final treatment is completed by flow through a series of jute curtains in this chamber. In the large tank the jute curtains are attached to vertical gates that must be removed and installed with hoisting equipment. In the small tank the jute curtains are threaded through a series of rollers at the top and bottom of the tank and the jute can be automatically replaced by electrical activation of feed and recovery spools that feed fresh jute through the rollers.

2.1.5 Jute Curtains: Jute fabric in 250' rolls, 4 feet wide is used in the Tertiary Chamber. This material can be obtained from IH2O or suppliers of erosion control fabrics.

2.2 Contractor-Provided Components

2.2.1 Influent Pump(s) to pump the construction-site water to the WaterMatrix™ shall be provided by the contractor.

2.2.2 Inlet Pressure Hose/Pipe from the pump(s) to the mix tank shall be provided by the contractor. The in-line FloCHogs have 4-inch Cam-Lock fittings and the mix tanks have 4 and 6-inch male Cam-Lock fittings for the small and large tanks, respectively.

2.2.3 Rigid Outlet Hose/Pipe from the WaterMatrix™ unit to the point of discharge shall be provided by the contractor. There are three 4-inch discharge ports, each with Cam-Lock fittings, on the base tanks.

PART 3 – PERFORMANCE

- 3.1 Function – The WaterMatrix™ system has no moving parts and all energy to the system is supplied by the influent water pump. The system functions by gravity flow from the mix tank to the final discharge point.
- 3.2 Pollutants - The treatment system is design to remove fine sand, silt, and clay size suspended solids (ranging in size from 250 to 1 micron) with influent concentrations of less than 1 percent. Although treatment efficiencies are dependent on water temperature and hardness; pumping rate; concentration, size, and mineralogy of the suspended solids; and polymer dosing rate; suspended solids removal efficiencies of greater than 95 percent are routinely achieved. Coincidentally, heavy metals and nutrients, which are often bound to soil particles, are also removed.

PART 4 – EXECUTION

- 4.1 Setup - IH2O will assist in the setup of the system and provide startup and operational training of the contractor's designated operator(s). This can usually be complete in one day. The contractor must provide a level, stable surface on which to place the base tank. This can be well-drained granular material, wood matting, or other stable base material. Contractor must also provide equipment and labor to move and setup system components once it is delivered to the job site.
- 4.2 Cleanup – The contractor is responsible for cleaning out the accumulated sediment in the both the mix and base tanks. This can be done by decanting the clear water from the top of the tanks and then with a vac-truck remove the remaining sediment from the bottom of the tanks.