



HB Engineering, Inc.
Environmental Engineers
and Consultants

Containment, Collection, and Treatment System for Storm Water Runoff



14,000-gallon underground collection tank



Lift pumps transfer runoff to detention pond



536,000-gallon detention pond



Treatment pumps transfer filtrate to oil-water separator

In response to new Ohio EPA NPDES permit discharge limitations, our client in Minerva, Ohio needed to implement treatment of its storm water runoff. The challenge was to handle the potential volumes of storm water runoff that were being collected in two separate systems. Additionally, the natural grade of the land was toward the plant entrance where there was limited available space.

HB Engineering designed a containment, collection, and treatment system to provide treatment and prevent the discharge of pollutants to the storm water outfall. A detention pond with capacity to collect storm water runoff from the entire site was constructed using an existing biofiltration area in the rear of the property. The existing storm water piping through the plant entrance was intercepted and directed to an underground collection tank. A lift station was constructed to pump storm water to the detention pond. The rear of the property was graded such that runoff flows to the detention pond. The detention pond and collection lift pumps were sized to contain runoff from a 100-year, 24-hour storm event on the property.

With all of the runoff collected in the detention pond, the treatment system units were designed to remove free oil and suspended solids from the storm water runoff. The detention pond allows for settling of solids and has a sand bed bottom with underdrains such that the downward flow through the sand removes additional solids. The wet well collects the flow from the underdrains. Submersible pumps lift the flow to the oil-water separator with gravity flow discharge to the outfall. The maximum design flow through the treatment system is 500 gallons per minute.

Using this treatment system, our client was able to improve the quality of the discharge and meet the new NPDES permit limitations. Benefits of the containment, collection, and treatment system are reducing peak runoff rates, improving discharge quality by reducing pollutant levels, and providing containment for any spills on the property.



6,000-gallon oil-water separator

Runoff area: 7.9 acres
System capacity: 1,100,000 gallons
(100-year, 24-hour storm event)
Treatment rate: 500 gallons per minute

Effluent Quality
Oil & grease: <10 mg/L
Suspended solids: <10 mg/L

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