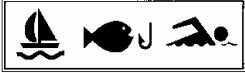




THE ROUGE RIVER PROJECT
A WORLD CLASS EFFORT



BRINGING OUR RIVER BACK TO LIFE

MULTI-CHAMBERED TREATMENT TRAIN (MCTT)

Milwaukee, Wisconsin

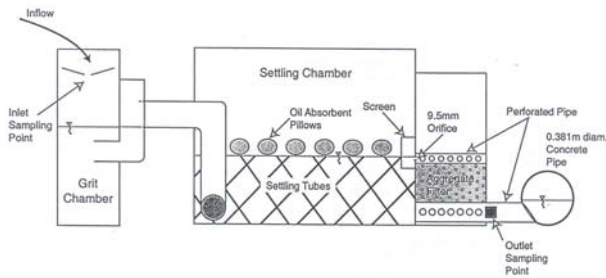
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Information Date: May 2003

Objective

The objective of the Multi-Chambered Treatment Train (MCTT) was to evaluate the water quality benefits of a stormwater treatment system for stormwater runoff from a municipal maintenance yard.

The MCTT was not funded as part of the Rouge River National Wet Weather Demonstration Project. This project profile summarizes work completed by others and is provided for information to Rouge River watershed communities and others.



Schematic of Milwaukee MCTT

Owner

City of Milwaukee, Wisconsin

Location

Milwaukee, Wisconsin municipal maintenance garage and parking facility.

Total Cost

Not Provided

Dates

The project study took place between April 1996 and September 1997.

Demonstration Aspects

The use of a MCTT demonstrated that treatment of stormwater could be accomplished in an area with little open space by constructing the MCTT underground.

Project Highlights

The MCTT treated all the stormwater from 15 storms. High reduction efficiencies were achieved for total suspended solids, total phosphorous, total zinc, dissolved phosphorous, and dissolved zinc.

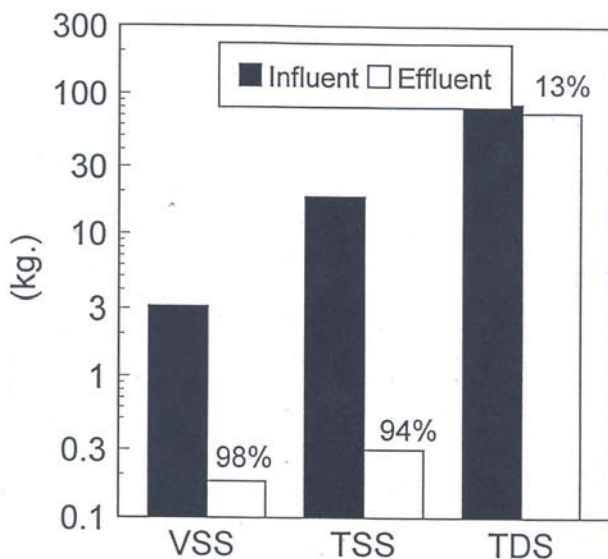
Major Elements

- The MCTT consists of a grit chamber, settling chamber and a filter bed. The grit chamber also has a mesh bag of column packing balls that aid in aeration. The settling chamber has absorbent pads to remove hydrocarbons. The filter is a mixed media filter consisting of sand, peat and activated carbon.
- The MCTT is designed to treat the first half-inch of rain from an area of 0.164 acres. The designed detention time is 72 hours.

- The runoff being treated is from a parking lot for municipal vehicles like garbage trucks, dump trucks, and backhoes.
- Influent and effluent samples were collected from 15 storm events. Samples were tested for 68 constituents.

Project Results

- 15 storms were monitored between April 1996 and September 1997.
- Influent samples had detectable concentrations of most of the constituents sampled for. In the effluent samples all of the dissolved constituents sampled for were below detection limits. In addition suspended solids, volatile suspended solids, lead, and zinc were generally below detection.
- Influent BOD ranged from 8.8-51 mg/l while a majority of the effluent BOD was below the detection limit.
- A high reduction in total suspended solids (98%), total phosphorous (88%), total zinc (91%) was achieved with the MCTT. High removal rates were also achieved for dissolved phosphorous (78%) and dissolved zinc (68%).



Additional Information

The MCTT project is described in the paper by Seven R. Greb, Seven R. Corsi, and Roger Bannerman, titled "Evaluation of the Multi-Chambered Treatment Train, a Retrofit Water Quality Management Practice". This paper is available in on the USGS website at <http://www.usgs.gov/http://www.usgs.gov/>.

Another project that evaluated a MCTT was in Birmingham Alabama. This study reported preliminary results that the treatment unit was providing substantial reductions in stormwater toxicants, organics, and suspended solids. The author's conclusions are that "The MCTT is seen to be capable of reducing a broad range or stormwater pollutants that have been shown to cause substantial receiving water problems (Pitt 1994b)." This study is summarized in the paper titled, "A Multi-chambered Stormwater Treatment Train", by Brian Robertson, Robert Pitt, Ali Ayyoubi and Richard Field. This paper is available in the *Stormwater NPDES Related Monitoring Needs*, which consists of papers presented at the Engineering Foundation Conference held in Colorado, August 7-12, 1994.

To obtain further information on the Rouge Project, including documents, maps and general information, visit us at:

<http://www.rougeriver.com>

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