

TESTING SUMMARY



Como Park, Minnesota

Field Monitoring Results — Update

Summary: Monitoring was conducted on a Stormceptor® model STC 1800 during eight storm events from August, 1998 to September, 1999. The results from this test indicated a high level of removal of total suspended solids during this period.

TSS Removal TKN Removal TP Removal: 76 % 65 % 32 %

All removal rates are based on mass reduction over the eight event period. The removal efficiency was based on load reduction since the concentrations of pollutants varied with each storm. Estimates of pollutant removal based on concentrations would be misleading during storms when the pollutant concentrations are low or near the laboratory detection limits.

Methodology: Service Environmental and Engineering (Service E&E) of St. Paul, Minnesota was retained to perform independent field monitoring on a STC 1800 Stormceptor®. Service E&E installed two ISCO Model 3700 automatic samplers upstream and downstream of the unit. An area velocity flow meter was installed in the Stormceptor® unit itself. A tipping bucket rain gauge was mounted on a pole near the Stormceptor® with data cables connected to activate the samplers.

The sampler collected samples on a time proportional data. The flow data was used to composite the quality samples for laboratory analysis in seven of the eight events. In the other event the rain data was used in conjunction with the 24 individual bottle samples to create a flow proportional composite sample for laboratory analysis due to equipment problems with the flow meter during this storm (Aug. 3)

No significant results were observed for metals and petroleum hydrocarbons (effluent < 2 ppm) from the newly constructed parking lot. Detailed results for each storm are provided on the back of this page.

Two sludge samples were taken from the Stormceptor® at the end of the monitoring period. Both samples indicated a large percentage of the sludge was fine in nature (70% to 80% silt and clay) with approximately 45% of the material by weight less than 25 μ m in size.

Project Details: The monitoring site is a newly paved 1.03 acre parking lot in the middle of Como Park, St. Paul, Minnesota. Como Park is heavily utilized in the summer and is considered a tourist attraction in the Twin Cities area. The parking lot, which is designed for a maximum of 120 cars, drains to a STC 1800 Stormceptor® which then outlets to a drywell and pond.

Como Park - Minnesota								
STC 1800 (1800 US Gallon storage capacity)								
Pollutant EMC in mg/l	8/3/98	8/7/98	8/27/98	9/19/98	9/23/98	9/7/99	9/11/99	9/19/99
TSS in	64.00	318.00	196.00	26.00	33.00	22.70	48.00	13.30
TSS out	16.00	59.00	58.00	31.00	41.00	19.30	7.60	3.30
P in	0.15	0.43	0.10	0.16	0.23	0.37	0.46	0.19
P out	0.35	0.27	0.17	0.11	0.11	0.23	0.25	0.14
TKN in	2.27	2.33	1.55	2.80	0.54	1.20	1.60	0.65
TKN out	1.33	0.92	1.82	1.20	0.51	0.09	0.29	0.88
Flow US gallon	N/A	16173	1823	14455	5750	2896	80297	2501
Rain (in)	0.77	0.40	0.12	0.53	0.19	0.11	1.96	0.11
Storm Duration (hr)	6	7.5	1	1.5	2.5	2.5	2.5	1

TSS Removals (8 events)			TKN Removals (8 events)			TP Removals (8 events)		
All events (load)			All events (load)			All events (load)		
Total in	43.14	kg	Total in	1.01	kg	Total in	0.20	kg
Total out	10.46	kg	Total out	0.35	kg	Total out	0.14	kg
% removal	76%		% removal	65%		% removal	32%	

Sludge Particle Size Distribution		
Particle Size (um)	Sample 1	Sample 2
	% finer	% finer
500	94.9	85.3
250	92.4	82.6
150	88.1	77.5
106	84.0	73.6
75	80.7	69.9
53	73.6	64.3
38	69.6	57.0
25	46.0	44.9

Removal rates are mass reduction based on flow composite quality samples