TESTING SUMMARY

Field Monitoring Results
City of Edmonton, Alberta

Summary: The City of Edmonton installed 4 Stormceptor® separators in 1994. Three separators were installed upstream of a stormwater management pond to improve the quality of water entering the pond and a fourth was installed in a commercial parking lot to improve the quality of water discharged downstream. Flow proportional monitoring was only conducted on the Westmount (commercial parking lot) Stormceptor. A total of 4 storms were monitored in 1996 at this site. The average performance of the Westmount Stormceptor for these four events was:

Constituent	1996 Average Removal
Total Suspended Solids (TSS)	52.7%
Lead (Pb)	51.2%
Oil & Grease	43.2%
Copper (Cu)	21.5%
Zinc (Zn)	39.1%
Iron (Fe)	52.7%
Chromium (Cr)	40.7%

A grain size distribution of the sediment that had accumulated over the winter of 1995 and spring of 1996 indicated that 47.5% of the sediment was sand, 27.5% was silt and 25% was clay. Testing of the sediment revealed high concentrations of oil and grease (3576 mg/l) and total organic carbon (1930 mg/l).

The TSS removal rate observed in 1996 (52.7%) was higher than that predicted by the current sizing guidelines (the separator is undersized compared to the 50% TSS Removal criteria).

Methodology: The Phoenix Group was retained by the City of Edmonton to monitor the Stormceptor at Westmount to determine its effectiveness for retrofit water quality applications in the City of Edmonton. The site is a commercial shopping plaza with an impervious drainage area of 9.9 ac (4 ha). Flow proportional sampling was conducted both upstream and downstream of the separator using American Sigma 800SL automatic samplers. Sampling was triggered when the depth of flow in the upstream sewer reached 2" (50 mm). Samples were taken at 5-minute intervals. A minimum criteria of 3 prior consecutive dry days was used to determine event monitoring to allow for the accumulation of stormwater pollution on the parking lot.

A technical paper was presented at the ASCE/CSCE environmental conference by the City of Edmonton in 1997 and is available from Stormceptor.

Project Details: A 105 USgal (400 l) oil spill was discovered in one of the Stormceptor separators pre-treating the stormwater pond on June 2, 1995. Sediment samples from the Stormceptor separators pre-treating the stormwater pond contained high concentrations of heavy metals (161 μg/g lead and234 μg/g zinc).

A comparison of the grain size distributions of the sediment captured by the Stormceptor separators indicated that the percentage of clay and silt removal depends on the amount of storage provided, and the drainage area tributary to the separator. The removal of fines diminishes as the ratio of separator storage to upstream drainage area decreases.