

Case Study

City of Coquitlam - Lougheed Highway Mid-stripe Bioswale

BACKGROUND

In 2009, the City of Coquitlam, British Columbia, Canada released the Lougheed Highway Improvements Project which includes rehabilitation and safety improvements and features approximately 600 m of vegetated bioswale. Located within the Fraser River floodplain, this section of Lougheed Highway is one of the most frequently flooded roadways within Coquitlam.



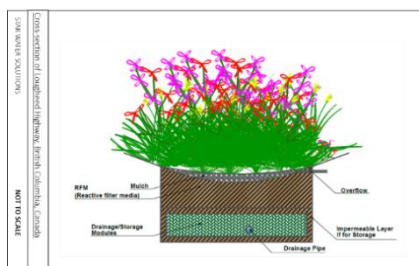
(Photos of the Bioswale on Lougheed Highway, BC, Canada)

THE PROJECT

The aim of the project was to provide sustainable stormwater solutions to accommodate Coquitlam's typical slow and constant rainfall as well as providing capacity for potentially large storm events.

To deal with stormwater generated in the transportation corridor, the project includes a 600 m vegetated bioswale within the highway median. Furthermore, the bioswale is designed to remove soluble pollutants in the stormwater runoff to eliminate the negative effects on the nearby aquaculture (salmon-bearing streams).

The Centre for Organic Research & Education (CORE)



developed a specific Advanced Biofiltration Media to be used in the bioswale, supporting efficient infiltration and removing hydrocarbons, metals, chemicals, bacteria and excess nutrients. The Biofiltration Media also sustained a designed landscape scheme incorporating with trees, high profile shrubs, and perennials, which added aesthetic interest to the highway and assist in stormwater filtration and absorption.

TEST DATA

Compared to a normal planter mix previously used for bioswales, CORE's Advanced Biofiltration Media (ABM) supports good vegetation integrity of the bioswale but treated more pollutants in the stormwater runoff (Table 1).

Table 1 ABM vs Planter mix (effluent test)

	pH	EC ($\mu\text{S}/\text{cm}$)	BOD (mg/L)	TKN (mg/L)	TN (mg/L)	TSS (mg/L)
ABM	7.5	347	19	12	13	460
Planter mix	7.4	5005	68	215	433	480

Advanced Biofiltration Media also performed superior on metal removals, which were elucidated on Table 2.

Table 2 Pollutant removal by ABM

	Influent	Effluent	Removal
	$\mu\text{g}/\text{L}$		%
Aluminum (Al)	12500	179	98.6
Arsenic (As)	26.5	16.9	36.2
Chromium (Cr)	27	2	92.6
Copper (Cu)	130	25.3	80.5
Iron (Fe)	14000	248	98.2
Lead (Pb)	73.5	1.5	97.9
Manganese (Mn)	349	6	98.2
Selenium (Se)	0.6	0.1	83.3
Zinc (Zn)	257	40	84.4