

# Case Study

## VALE INCO – Levack, ON Moving Bed Bio Reactor

### Wastewater Treatment Coleman-McCreddy East Mine



*Before*



*After*

#### OVERVIEW

##### Design Parameters

**Flow:** 58 m<sup>3</sup>/day – Phase 1  
100 m<sup>3</sup>/day – Phase 2

**BOD:** 328 mg/L

**TSS:** 328 mg/L

**Type:** domestic sewage

##### Design Objectives

**BOD:** 15 mg/L

**TSS:** 15 mg/L

##### Solution

A two train MBBR and a clarifier were installed with 25 % media fill for phase 1 and to add another 25% for phase 2. The whole system included screen with flow splitter, blowers, clarifier and chlorine contact tank.

##### Achievement

**BOD:** 3.6 mg/L

**TSS:** 10 mg/L

The project was installed in 2 weeks and started up in July 2008

Vale Inco is a wholly-owned subsidiary of Companhia Vale do Rio Doce (Vale) of Brazil. Companhia Vale do Rio Doce (Vale) and is the second largest mining company in the world.

Coleman-McCreddy East mine forms part of the Sudbury mining operations. The mine is located at about 100 kilometers north from Sudbury town.

In September 2006, H2Flow Equipment Inc. was contracted to design and supply a package treatment system for this mining operation. The new plant is to replace the existing wastewater treatment plant installed in 1971 which has been surpassed in meeting the flow and effluent quality requirement

The following is a technical history of the work H2Flow has performed.

## THE CHALLENGE

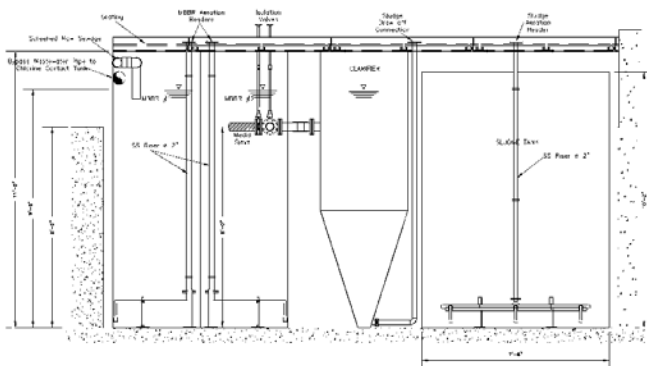
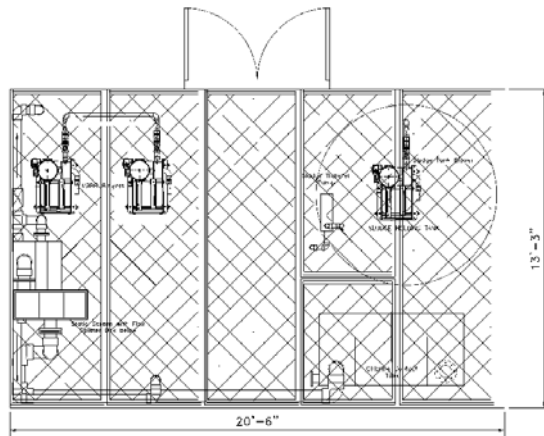
The project had very stringent constraints:

- ↻ Use of existing plant space - a pit with dimensions 20' (L) x 14' (W) x 8' (D)
- ↻ Larger flow handling capacity without compromising the effluent quality
  - Existing Flow: 25 m<sup>3</sup>/day
  - New Flow for Phase 1: 58 m<sup>3</sup>/day
  - Phase 2: 100 m<sup>3</sup>/day – without increasing footprint
- ↻ Delivery on site: 12 weeks
- ↻ Installation time: 2 weeks.

## THE SCOPE

The scope of works included:

- Design and manufacture of preassembled Stainless Steel Tank which can be easily handled and installed
- Pre engineered piping.
- Packaged blowers system
- Design and manufacture of a clarifier to fit into available space and geometry
- Sludge Holding tank with automatic decant
- Chlorine Contact tank
- Design of platform structure and aluminium grating to provide a workable space over the new plant.
- Static screen with a flow splitter.
- Automated control system with programmed sludge wasting.



## RESULT

The plant was put in operation in July 2008 after 2 weeks installation and was seeded with return activated sludge from the town to speed up the biomass build up.

After 5 weeks of operation, the system was delivering an effluent quality well below the design objectives, achieving BOD reduction – 98.5%.

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