



# AEROBIC LANDFILL TECHNOLOGIES

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## Site Experience: Old Fort McMurray Landfill, RWMB, Alberta

### Site Description

A full scale aerobic landfill bioreactor was built on a 15HA (37 acre) landfill with 1.3 million tonnes of stored waste. This site was unlined and was experiencing some leachate ponding on the landfill bottom, likely to result in the eventual release of leachate. Based on initial biological methane potential testing, this site would be capable of avoiding over 1.3 million tonnes of carbon dioxide equivalent in the form of methane emissions.

### Technology Application

The aerobic system consisted of both air injection and gas extraction, each designed to move 8000 scfm of air through the landfill. The 15HA site had 2000 wells installed using sonic drilling technology in two offset grids, one for air injection and one for gas extraction. Headers and moisture collection systems were installed over the entire landfill surface and an electrical system was installed for gas temperature monitoring.



### Initial Testing Results

The gas extraction system was operated from September until May to evaluate the background conditions at the landfill and destroy the existing and produced methane in the landfill gas flare. This system was operated in the coldest months, which demonstrated changes to the operation of the technology that needed to be applied as the technology moved from warmer to colder climates.

The gas extraction system collected the expected concentration of methane from the landfill cell and as the system operation continued, it began to overdraw; the collection of gas resulted in air entrainment from the surface and methane concentrations started declining. This was the first step to achieving full startup.

### Wildfire

Prior to complete system startup the Fort McMurray Wildfire occurred and the system enclosure and the majority of the surface infrastructure of the site was burned. To date the system has not been rebuilt.

This project demonstrated the ability for ALT personnel to build a full scale aerobic landfill bioreactor. It also provided changes to the operating and design philosophies of the system to ensure proper operation during cold climates.