

## ***Wet scrubber improves odour control at Vancouver Island wastewater treatment plant***

**T**he French Creek Pollution Control Centre treats wastewater from the City of Parksville and the Town of Qualicum Beach on Vancouver Island in British Columbia. Originally, the plant used the extended aeration process with aerobic sludge digestion for wastewater treatment. From 1995 to 1997, the facility underwent a major upgrade to accommodate the increasing population in the area. At the same time, the facility was converted to the more robust trickling filter/solids contact (TF/SC) process for treating the liquid stream and autoheated thermophilic aerobic sludge digestion (ATAD) for treating the biosolids.

The 18 million litre per day plant achieved a very high quality effluent using the TF/SC process; however, odours became a problem. At a peak, the Regional District of Nanaimo, which operates the plant, received up to 40 complaints in a month. The District started adding iron (ferrous) chloride to the wastewater collection system in an effort to control odours, but odours and complaints persisted.

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In 1998, the District retained Associated Engineering as their wastewater treatment consultant. One of their first assignments was to investigate the odour problems at the French Creek plant. Led by Dr. Dave Forgie, from Associated Engineering's Burnaby office, the team identified the main sources of odour as the air flow from the trickling filter building and the airstream from the digestion process and septage receiving tanks. Other sources of odour originated in the dewatered biosolids loading bay.

The main components of the odour consisted of hydrogen sulphide (rotten egg odour), methyl mercaptan (a skunky smell), dimethyl sulphide (rotten cabbage odour), and dimethyl disulphide (rotten vegetables odour). "Of these, the most difficult component to control is dimethyl disulphide, which was mainly coming from the digestion/septage tanks," reports Dave Forgie.

Improvements to plant housekeeping and better control over air flow resolved some of the odour problems. "The solution to odours emanating from the dewatered biosolids loading bay and grit hopper room was simply keeping the doors to those areas closed and allowing the air management system to collect the odorous air," he said. "Other odour sources required more complex and costly solutions, such as biofilters and/or wet chemical scrubbers."

The airstream from the ATAD/septage tanks was already being treated by biological, odour-scrubbing towers. While these two towers effectively removed ammonia and hydrogen sulphide, they did not remove dimethyl sulphide and dimethyl disulphide. Since this

airstream was smaller and, therefore, less costly to treat than the much larger trickling filter airstream, the team recommended treating the ATAD/septage tank airstream with a wet chemical scrubber system.

The Regional District of Nanaimo accepted the recommended odour control system, stipulating a four-month schedule for implementation. To achieve this schedule, Associated Engineering arranged an equipment prepurchased tendering process, and fast-tracked the design of the remaining infrastructure around the selected equipment. A dualpass, sodium hydroxide/sodium hypochlorite wet scrubber was selected. Infrastructure needs included a sodium hypochlorite storage system, sodium hydroxide storage system, piping, air ducts, and electrical supply and controls.

"Since implementing the odour control works, odours from the plant have diminished substantially and the number of monthly odour complaints has dropped to almost zero," Dave Forgie reported.

The situation is being monitored, and air samples from the wet scrubber and the trickling filter are analyzed weekly. Further action, if any, will involve reducing any residual odours from the trickling filter building.

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