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Contact: Tara Hernandez, Marketing & Communications Manager
thernandez@grr.org or 616-233-6053

Gerald R. Ford International Airport Unveils Stormwater/Glycol Treatment System



An aerial photo of the Gerald R. Ford International Airport Stormwater/Glycol Treatment System

Grand Rapids, MI – The Gerald R. Ford International Airport (GFIA) has completed a \$20 million Stormwater/Glycol Treatment System, the first of its kind in the state of Michigan. This system will eliminate environmental risks from aircraft deicing operations provided by the airlines that is necessary for safe winter air travel.

GFIA's National Pollutant Discharge Elimination System (NPDES) permit required elimination of the Airport's contribution to existing biofilms, and prevention of deicing runoff. Among the project design elements were re-routing stormwater from the Airport's north detention basin to a new outfall at the Thornapple River, and reconfiguring the Airport's west apron stormwater system to consolidate runoff from all major existing and future aircraft deicing areas.



“The airport is committed to environmental stewardship and continuously improving our operations,” said GFIA Executive Director Brian Ryks. “The centerpiece of our new stormwater management program is a natural treatment system that will significantly strengthen the airport’s environmental performance, protect and improve water quality in the Thornapple River, and help sustain the river system’s water quality, aquatic life and natural beauty.”

The stormwater treatment system enhances the quality of the natural environment with an innovative design for collecting and treating propylene glycol, and managing storm water. The green design uses gravity, vegetated beds, and natural organisms to treat the stormwater with essentially no power consumption or residual waste.

GFIA’s stormwater management will ensure the stormwater reaching the Thornapple River will be well within the State of Michigan’s water quality protection standards, and provide significant improvement in the Thornapple River.

“We commend the airport on their actions to better the quality of storm water discharged from their facility, and completing such a large challenging project on time,” said William Creal, Michigan DEQ Director of Water Resources Division. “This was a difficult situation that Kent County showed quality leadership on, and took action to put a positive solution in place. We look forward to working with the airport and observing the treatment system in action this winter.”

The project is an example of constructing critical infrastructure to service a major international airport as GFIA is the second largest airport in the state, serving over 2.3 million passengers in 2014.

For safety reasons, the FAA requires aircraft and pavement deicing during cold weather months. The airlines at GFIA use propylene glycol, an organic compound that’s commonly used as a food additive and in personal hygiene products. Some of the applied deicing material is carried into the environment by stormwater (snowmelt, rain, and other precipitation) that flows to area waterways. The Clean Water Act requires airports such as GFIA to obtain permits to fully protect the environment from any risks propylene glycol might present.

Propylene glycol is highly biodegradable (does not “linger” in the environment) but presents two challenges: 1) its fast biodegradation competes with some organisms for dissolved oxygen in the water and 2) it provides a rich food source for naturally-occurring algae, fungi, and other aquatic organisms, allowing them to proliferate to nuisance levels under ideal conditions.

Although neither of these problems has ever been reported in the Thornapple River, nuisance levels of attached bacterial and algal “biofilms” have presented a problem in an



unnamed tributary that currently carries stormwater from GFIA to the Thornapple River. The shallow stream provides perfect conditions for nuisance growths and the airport has prioritized steady improvement of its deicing fluid management practices and protocols to minimize the Airport's contribution to that local problem.

GFIA has studied and assessed these stormwater issues and has implemented progressively more sophisticated conservation, collection, and recycling activities, which has enabled the airport to minimize the amount of applied deicing fluids in the Airport's stormwater runoff.

"As a member of the Stakeholder Committee I am happy with the final product that was debated, designed, engineered and built by the team," said Erv Gambee, President of the Thornapple River Watershed Council. "I look forward to seeing positive test results at the confluence of the discard and the Thornapple as well as the restoration of Trout Creek as time moves on."

Airports Council International, North America (ACI-NA) has honored the Gerald R. Ford International Airport for its stormwater/glycol treatment project with an ACI-NA Environmental Achievement Award for 'Outreach, Education and Community Involvement.'

GFIA is owner and operator of the new Stormwater/Glycol Treatment System. Grand Rapids-based Kamminga & Roodvoets was the excavation contractor.

For additional interviews, tours, or photos please contact Tara Hernandez.

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