

top performer:

PLANT

Glendale Heights plant lab technician John Pullia performs a coliform test on effluent. (Photography by Rob Hart)

# Ahead of the Curve

By Jim Force

THE TEAM IN GLENDALE HEIGHTS, ILL., ANTICIPATES REGULATORY CHANGES AND ADOPTS NEWER AND BETTER TECHNOLOGIES TO KEEP DELIVERING QUALITY EFFLUENT

“We try to be proactive. We want to anticipate regulations, take advantage of budgeting opportunities. And most of all, we want to make the jobs around here simpler and safer.”

**CHUCK FONTE**

**TREATMENT PLANTS PRIDE THEMSELVES ON HANDLING** whatever comes down the pipe. At Glendale Heights, Ill., however, it’s not just what’s in the pipe — manager Chuck Fonte and his team are prepared for almost anything the future might hold.

Forward-looking planning and operator-based improvements have put the plant in an enviable position of readiness, especially when it comes to safety. “We try to be proactive,” says Fonte. “We want to anticipate regulations, take advantage of budgeting opportunities. And most of all, we want to make the jobs around here simpler and safer.”

The Glendale Heights Water Pollution Control Facility grew out of an old package plant commissioned in the 1960s, before the spread of suburbia. The existing facility was built in 1988 to serve the 34,000 residents of this community, just west of Chicago. The plant is designed for an average daily flow of 5.2 mgd; actual flow runs about 3.5 mgd. Wet-weather capacity is slightly more than 10 mgd.

**POSITIVE PERFORMANCE**

Moved by five 60 hp Flygt pumps (Xylem), wastewater enters the facility through Aqua-Guard fine screens (Parkson) and moves on to a PISTA grit removal system (Smith & Loveless).

Three primary tanks provide initial settling, and the overflow passes to an extended air, plug-flow aeration system, equipped with Sanitaire fine-bubble diffusers (Xylem). Aeration basin capacity is 3.73 million gallons.

Two 95-foot-diameter, 14-foot side water depth final clarifiers settle the secondary effluent before it is pumped to a gas chlorination step, followed by disc filters (WesTech). Sodium bisulfate is added at the outfall for dechlorination.

Solids withdrawn from primary and secondary clarifiers are pumped to an aerobic digester, actually part of the old package plant. Coarse-bubble diffusers provide the air. Two belt presses (Komline-Sanderson) dewater the digested material to a 17 percent solids cake. Contractor Synagro hauls the cake to farms about 40 miles west and north of the plant.

The disc filters are the most recent technology addition to the plant. The rails on the old traveling bridge filters, dating to 1978, had corroded, and the filters were losing sand, which was being sucked back to the head-works, clogging the grit system.

The village’s engineer chose the filters because they closely fit the existing filter bays and matched the plant’s hydraulic profile. Each of the three new units has 20 rows of 8-foot rotating discs, each holding 10 removable filter cartridges wrapped in 10-micron polyester woven material. Wastewater enters the filter drum, passes through the filter fabric and is discharged.

Fonte reports excellent performance: TSS averaging about 2 mg/L as opposed to 4 mg/L with the traveling bridge units, and a measurable reduction in electricity consumption.



Operator Dale Lukowski does monthly maintenance on the plant’s PISTA grit turntable (Smith & Loveless).

**OPERATOR INNOVATION**

As with other treatment plants, none of the technology works without operator attention and innovation, and this is where the staff comes in. The team includes lead operator Al Fajardo, operators Kevin Kurtz, Dale Lukowski and Bruce Kerill, lab technician John Pullia, and office technician Judy Kupka.

Fajardo in particular has enhanced the plant with creative solutions: “He makes improvements and makes things simpler to operate,” says Fonte. For example, the secondary clarifiers at Glendale Heights are not covered, and algae frequently accumulated in the weirs and then released downstream, clogging the new filter cloths.

Enter Fajardo with a self-designed screen that now catches the algae before it gets to the filters. The screens are easily cleaned periodi-

**profile** **Glendale Heights (Ill.)**  
**Water Pollution Control Facility**

<b>BUILT:</b>	<b>1988</b>
<b>POPULATION SERVED:</b>	<b>34,000</b>
<b>FLOWS:</b>	<b>5.2 mgd design, 3.5 mgd average</b>
<b>TREATMENT LEVEL:</b>	<b>Tertiary</b>
<b>TREATMENT PROCESS:</b>	<b>Activated sludge, disc filters</b>
<b>RECEIVING WATER:</b>	<b>East Branch, DuPage River</b>
<b>BIOSOLIDS:</b>	<b>Aerobic digestion, dewatering, land-application</b>
<b>ANNUAL BUDGET:</b>	<b>\$1.3 million (operations)</b>
<b>WEBSITE:</b>	<b>www.glendaleheights.org</b>
<b>GPS COORDINATES:</b>	<b>Latitude: 41°54'36.89" N; Longitude: 88°03'11.46" W</b>





Chuck Fonte, manager of the Glendale Heights Water Pollution Control Facility, at the secondary clarifier.

**Glendale Heights Water Pollution Control Facility  
PERMIT AND PERFORMANCE**

	<b>INFLUENT</b>	<b>EFFLUENT</b>	<b>PERMIT</b>
<b>BOD</b>	224.7 mg/L	3.61 mg/L	20 mg/L
<b>TSS</b>	208.6 mg/L	1.2 mg/L	24 mg/L
<b>Ammonia</b>	24.1 mg/L	0.0379 mg/L	3.0 mg/L
<b>Fecal coliform</b>	N/A	6 cfu/100 mL	400 cfu/100 mL

cally, a much simpler and less expensive process than having to disassemble the filter discs and clean the media. It's just the latest in a series of improvements Fajardo has made around the plant.

The secondary clarifier algae issue had generated another problem because operators were dragging firehoses out to the units and jetting the algae off surfaces with high-pressure water. To avoid the tangle and make the operation simpler and easier, Fajardo designed a 2-inch galvanized pipe arrangement that surrounds the clarifier.

The pipe has several connections so that an operator can run a single hose from the non-portable hydrant to the mechanism, then connect a second hose to one of the valves. Now hoses don't have to be dragged around, catching in the grating.

"It was a three-person job," says Fonte. "Someone had to climb down the stairway each time and turn the water on and off. But now one operator can use one length of hose and bring it to each different valve connection and turn the water on." The same arrangement is now being used around the excess flow and primary tanks.

Also modified was the plant's coarse-bubble aerobic digester, an artifact of the old package plant. The decanters had become badly rusted and wouldn't

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lower anymore. To solve the problem, Fajardo designed a pump system that decants the digester. A 240-volt explosion-proof pump is slowly lowered into the basin to pump out the decant. Ultimately, the plant team plans to upgrade to an automatic decant system.

The most recent Fajardo invention is helping in the solids handling area. A shuttle used to convey the dewatered cake to roll-off boxes that emptied into the trucks hauling the biosolids to fields. The trouble was that the shuttle dumped everything in the middle of the boxes. Fajardo came up with a small screw conveyor that spreads the cake evenly in the boxes. Operators no longer have to distribute the cake manually. "It's much less labor intensive," says Fonte.

**AHEAD OF THE CURVE**

While seemingly small steps, these improvements make an impact when taken together, and they exemplify the plant's philosophy of anticipating issues. "Regulations are continually being renewed and updated," says Fonte.

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The Glendale Heights team includes, from left, operator Dale Lukowski, plant manager Chuck Fonte, operator Bruce Kerill, office technician Judy Kupka, lab technician John Pullia, lead operator Alfonso Fajardo, and operator Kevin Kurtz.

“That’s one of the things that has sparked us: We want to stay up with or ahead of current legislation. We need to be out in front of changes at both the federal and state EPA, not behind. We want to be prepared. We’re also constantly looking at budgeting for new technologies.”

The recession has lowered prices: “The disc filters came in at about half what we budgeted, so we were able to use the savings to upgrade our digester and SCADA system.”

This level of foresight often results in Glendale Heights being the first or among the first to install new types of equipment. The disc filters were the first of their kind in the Midwest, and the plant continues to host visitors and operator groups who want to see the technology.

Glendale Heights was also one of the first plants to install new turbo blowers (APG-Neuros) supplied by distributor Drydon Equipment, placing them in both the aeration tanks and the aerobic digester basin. “We had lots of trouble with our old positive displacement blowers,” says Fonte. “They were constantly breaking down and used a lot of electricity. We could run them only on high or low. Even though we installed a SCADA system, we could never properly ramp them up or down and keep a steady dissolved oxygen. Plus, belts were burning up.

“Now, no more oil or greasing. We change filters every two months — it’s

## SAFETY EVERYWHERE

Rachael Kaplan, Glendale Heights public works director for the last two-and-a-half years, was raised and educated in Britain, where the emphasis on safety is strong. That’s one reason she and her division stress the safety and well-being of village employees in the departments she manages: the treatment plant, water and sewer systems, fleet and streets. “It’s vitally important that we adopt and implement comprehensive safety policies and procedures,” she says. The confined-space program is a good example.

At the treatment plant, some 26 confined spaces have been identified and analyzed for safety. The review begins with photos and layouts of the spaces, followed by corrective action and extensive training, which involves the facility staff along with the two fire departments that serve the community. “Our training program is conducted by an outside professional and ensures that the fire departments are trained on our equipment at our facilities,” Kaplan says. “That way, if there’s an emergency, they are familiar with what we have at the site.”

Confined-space safety is also a concern within the other departments. In the water and sewer group, the centrifugal pumps at lift stations are to be replaced with submersible pumps, some with grinders, that can be raised out of the well for maintenance. Controls are at ground level, eliminating the need for workers to go down into the well spaces.

Another safety program involves “hot works,” which include grinding and welding — any activity that involves a risk of fire or sparks. “The safety and well-being of our public employees is of utmost importance,” concludes Kaplan.

like changing your furnace filter. We have two blowers for aeration and can usually get by with one. We have another for the digester and may add one more in the near future as a backup.”

The blowers are controlled and monitored by a new iFIX SCADA system (GE Intelligent Platforms) that makes plant operation much easier. “I can monitor everything from home,” says Fonte. “We have setpoints on all major pieces of equipment, with alarms to our cellphones.” The lab data merges with the SCADA system, giving the staff up-to-the-minute calculations and helping to maintain operations with no excursions or odor issues.

## BETTER DIGESTERS

Fonte’s team is just beginning to make upgrades and improvements to its digester operation, mostly for safety. “We’ve been working with our fire department and have identified 26 confined spaces where we’ve installed high-visibility signage,” Fonte says.

“We made sure those areas are adequately lighted at night, we changed stairways to eliminate steep inclines, and we added new vent systems. An automated decant level sensor has eliminated the need to go into the digester and record the levels.”

To further improve safety, the plant plans to move away from gaseous chlorine to liquid chlorine. “We anticipate having to remove phosphorus next,” Fonte forecasts.

The Glendale Heights staff performs all maintenance, but with the improvements, maintenance chores have been reduced and simplified. As a result, the plant has been able to use minimal workforce. “We’re constantly looking at our budget for new things to make the job easier,” Fonte says. “Currently we have two 100 gpm sludge pumps on our belt press. We’re bud-



Lead operator Alfonso Fajardo checks the tertiary filter (WesTech). The plant was the first in the United States to use the system, which can process 7 mgd.

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**CHUCK FONTE**

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Recently, Glendale Heights was recognized with The Conservation Foundation's Clean Water Award by the DuPage River Salt Creek Workgroup. The award went to the village and one other community for excellence in sanitary water treatment (based on 2011 effluent data).

Twice, the Glendale Heights facility has been nominated for Illinois Plant of the Year by the IEPA and the Illinois Water Environment Association. It hasn't won yet, but it's a safe bet that it's only a matter of time. **tpo**

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