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ANNUAL
COMPANY
DIRECTORY
PAGE 52

HOW WE DO IT:
Direct inline pumping in Sherman, New York
PAGE 32

SUSTAINABLE OPERATIONS:
Water reuse on Long Island
PAGE 44

Tim Burton
Plant Superintendent
Rocky Mount, Va.

All-Around *Performers*

EXPERIENCE AND CROSS-TRAINING SPELL SUCCESS FOR THE ROCKY MOUNT TEAM

PAGE 34

IN MY WORDS:
Getting more from anaerobic digesters
PAGE 38

ALL-AROUND PERFORMERS

EXPERIENCE AND CROSS-TRAINING MAKE ROCKY MOUNT TEAM MEMBERS HIGHLY SELF-RELIANT IN MAINTAINING AND REBUILDING THEIR WASTEWATER TREATMENT PLANT

STORY: **Jim Force** | PHOTOGRAPHY: **Joe Hermitt**

STAFF MEMBERS AT THE ROCKY MOUNT (VIRGINIA) wastewater treatment plant don't mind getting their hands dirty. In fact, that's a point of pride, according to Tim Burton, plant superintendent.

"We do most of our own maintenance," Burton says. That includes rebuilding everything from seven pump stations to the treatment plant equipment at this 2.0 mgd (design) advanced secondary plant in the Blue Ridge Mountain region of Virginia.

Burton and team members Brian Sink, Jason Jones, Dennis Potter, and Joseph Cerebe have a combined 79 years' experience in wastewater treatment. All are lab-certified and cross-trained and have responsibility for all CCTV inspections of the town's collections system. "They make me look good," Burton says.

Tim Burton and the Rocky Mount plant team rely on a SCADA system powered by Ignition software (Inductive Automation).

STEPPING UP

For many years, Rocky Mount operated an aging trickling filter-chlorination facility. The current plant, online since 1994, was built farther downstream and can meet strict treatment standards designed to protect endangered Roanoke perch in the Pigg River, the plant's receiving stream.

The current plant draws wastewater through seven lift stations equipped with Gorman-Rupp pumps. Preliminary treatment consists of a fine screen with screw compactor, two grit chambers and a grit classifier. The grit chambers are operated on an alternating schedule.

The water then passes through an ultrasonic flow measurement device and a Parshall flume to a three-tiered Envirex Orbal oxidation ditch (Evoqua Water Technologies). Nitrification-denitrification takes places in the outermost ring, with good results. "The two inner ditches have the same capacity as the outer ditch," Burton says. "We control MLSS, pH and DO. It's the heartbeat of our plant."

Treated wastewater settles in two 65-foot-diameter Envirex clarifiers. Two TrojanUV units disinfect the effluent. Post-aeration follows before discharge to the river. Two 200,000-gallon aerobic digesters stabilize and thicken the biosolids, which are stored in the digesters for up to 30 days. A filter press (Alfa Laval) dewaters the material; the 16 percent solids cake is trucked to the Franklin County landfill.

The facility sends about 8 to 10 dry metric tons of solids a month to the landfill. There is no cost for landfilling since the plant in turn processes the landfill's leachate. It's an equitable trade-off. "It's good that the town and the county get along," Burton says. "You don't always see that with localities."

Tim Burton estimates his staff does 95 percent of plant repair and maintenance: "There are very few places that our crew hasn't repaired or rebuilt."

The Virginia Department of Environmental Quality designates Rocky Mount as a benchmark plant for its maintenance practices and performance record.

Town of Rocky Mount (Virginia) Wastewater Treatment Plant

BUILT: | **1992-1994**

POPULATION SERVED: | **5,000**

AREA SERVED: | **Mainly town of Rocky Mount**

FLOWS: | **2 mgd design, 0.75 mgd average**

TREATMENT LEVEL: | **Secondary**

TREATMENT PROCESS: | **Oxidation ditch, clarifiers, UV disinfection, post aeration**

RECEIVING WATER: | **Pigg River**

BIOSOLIDS: | **Landfilled**

ANNUAL BUDGET: | **$500,000 (operations)**

WEBSITE: | **www.rockymountva.org**

GPS COORDINATES: | **Latitude: 36°59'10.46"N; longitude: 79°53'1.63"W**

The Rocky Mount team includes, from left, Dennis Potter, Class I operator; Tim Burton, plant superintendent; and Jason Jones, Class I operator.

Town of Rocky Mount (Virginia) Wastewater Treatment Plant PERMIT AND PERFORMANCE

	INFLUENT (Five year monthly avg.)	EFFLUENT (Five year monthly avg.)	PERMIT
BOD	246 mg/L	2.0 mg/L	17.5 mg/L
TSS	223 mg/L	2.6 mg/L	30 mg/L
Ammonia	Not measured	0.1 mg/L	2.84 mg/L
DO	Not measured	9.3 mg/L	6 mg/L

EQUIPPED TO GROW

The on-site laboratory is a Division of Consolidated Laboratory Services accredited lab, and the plant staff performs all BOD, TSS, pH and *E. coli* testing. "We don't send much out except tests for permit renewals and annual toxicity testing," Burton says.

Plant designers installed piping in the ground to handle future expansion. "The lab building is oversized," Burton says. "We could easily double treatment capacity here by adding another oxidation ditch, clarifiers, and digester, although that is some distance off in the future. But if the town grows, we can grow with it."

LIGHTS THE WAY

Tim Burton not only swears by his UV disinfection system, he has figured out how to save money and assure a near-100 percent pathogen kill rate.

"Our old plant used chlorine, but we switched to UV disinfection in the new facility to meet the endangered species requirement in the receiving stream," says Burton, superintendent of the town of Rocky Mount (Virginia) Wastewater Treatment Plant.

Two TrojanUV 3000 UV units were installed when the plant went online in 1994. Each channel had a capacity of 3.0 mgd, designed for alternating use. Since then, Burton and his staff have upgraded one of the channels, using a newer TrojanUV 3000Plus unit. That has yielded significant operating cost savings.

"The older units have 192 bulbs and a capacity to treat 3.0 mgd, whereas the 3000Plus channel has two units with 24 bulbs each, and each unit is capable of disinfecting 3.0 mgd," Burton says. "Even though the bulbs cost more, our electrical costs are much lower."

The new units also have wipers, which save time and money by reducing maintenance and cleaning. Burton says staff members were concerned about color in the effluent and were worried about maintenance costs and cleaning of the UV units. "There is no color," he says. "Maintenance costs are less than with chlorine, and physical cleaning of the units is only twice a year. Plus, we have a backup unit and are assured of a kill rate of nearly 100 percent. That gives us peace of mind.

"When we started, we didn't know anything about UV disinfection. We were familiar with chlorine. But now, as far as we're concerned, UV disinfection is the only way to go."

The plant is monitored by a SCADA system powered by Ignition software (Inductive Automation) that was installed by American Mine Research, or AMR. "We love it," Burton says. "It has unlimited tags, which means we don't have to go back to the company and buy more each time we add to it." The system is integrated into the town communications system, and the pump stations feed information back to the plant. Plant staff is on hand eight hours a day and can be alerted to emergencies through an alarm system that triggers phone calls to operators.

Plant performance is exemplary. Monthly averages for BOD, TSS, ammonia and other parameters come in well below requirements. Rocky Mount is designated as a "benchmark" plant by the Virginia Department of Environmental Quality, meaning it was one of the first in the state to use some of the specific processes, and its maintenance practices and performance record are pace-setting.

VERSATILE TEAM

Maybe because Rocky Mount was a trailblazer in the state in the use of a three-tiered oxidation ditch paired with UV or maybe because of the experience the staff has racked up at the treatment plant and with the town — whatever the case, Burton and his team are a study in self-reliance. They've learned to operate the system effectively and maintain and rebuild it as needed, with minimum outside assistance and cost.

"When we started, we didn't know anything about operating an oxidation ditch or UV disinfection," Burton recalls. The staff took advantage of training supplied by equipment manufacturers and then became cross-trained in every aspect of plant and lab procedures.

> “There are very few places around the plant that our crew hasn’t repaired or rebuilt. One thing about building a new plant is that everything seems to start wearing out at the same time.”
> **TIM BURTON**

“Unless it’s a major electrical project or it requires specialty equipment, we do all the rebuilding of equipment ourselves,” Burton says. “Pumps, the UV units, lift stations, light electrical. With our SCADA system, we installed all of the equipment, ran all of the wiring and took care of everything except connecting the wires and programming. It brought our costs down.”

OLD-SCHOOL MAINTENANCE

Recently, the Rocky Mount team changed out the compactor behind the fine screen and made it ready for the electricians. “We took care of everything from bidding the equipment to installing it and made it ready to operate,” Burton says. Outside the plant, the staff serves as the early-warning system for the town’s sanitary and storm sewer lines, using a Vivax-Metrotech vCam-5 push camera and a R.S. Technical Services Inc. (RST) TrakSTAR camera and tractor.

“We operate our own cameras, handle flow measuring and conduct infiltration studies,” Burton says. “We have a lot of 6-inch lines, so we use the heck out of our push camera. If we find a problem, we turn it over to our Public Works department.”

Rocky Mount follows a regularly scheduled maintenance program. “We rotate out of the lab weekly,” Burton says. “One operator is in the lab, and the others are on maintenance or camera work. We do maintenance on a weekly, monthly and every-six-months schedule. We use our own designed system. Most of it is old-school, using notebooks and log sheets.”

Burton estimates his staff does 95 percent of the repair and maintenance around the plant: “There are very few places around the plant that our crew hasn’t repaired or rebuilt. One thing about building a new plant is that everything seems to start wearing out at the same time.”

NEW CHALLENGES

That’s one of Burton’s and Rocky Mount’s biggest challenges: budgeting and trying to predict capital expenses based on necessary future improvements. “Nothing’s cheap,” Burton says. “We’re trying to stay ahead of the curve.” He and his staff tend to take a piecemeal approach to replacements so the town budget doesn’t get hit all at one time.

Other challenges include enforcing a new fats, oil and grease policy that Burton had a major part in writing and updating the town’s sewer use ordinance. Beyond that, the town plans to begin using an iamGIS software in the next couple of months. The treatment plant staff will take over the mapping of all sewer lines and manholes.

Considering the experience and “can-do” attitude of the Rocky Mount team, the mapping project should be in good hands. **tpo**

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