

2021 Annual Summary

Water & Wastewater Departments Village of Garrettsville, Ohio

Submitted by

Jeff Sheehan
Utilities Superintendent

January 6, 2022

2021 Summary

2021 may well be considered ‘global health pandemic Act II’ or ‘Covid-19.v2’. Health concerns, quarantines, and travel disruptions still occurred as the world busied itself with ways to return to some level of normalcy while implementing policies and hygiene procedures to try and slow the health issues. Even with the arrival of a vaccine early in the year and a booster dose later to battle the ever-evolving Covid-19 virus, widespread health concerns and operational changes everywhere became part of day-to-day life. For example, the Village of Garrettsville Board of Public Affairs (BPA) monthly public meetings continued to be held online only via Zoom until June.

2021 was a very challenging year for operations at the Garrettsville Water and Wastewater Departments, which are administered by the BPA. All projects and work that had been suspended or delayed in 2020 were reinstated and performed along with work scheduled for 2021. Supply shortages, though not as severe as in 2020, at times made some projects and normal operations considerably more difficult.

Making a busy year more demanding were numerous staffing changes within the Departments. One full-time employee terminated their employment in mid-January, another full-time employee was out for six weeks medical leave in the spring, and in the summer, one new hire was let go three months into their probationary period – i.e., all regular EPA and operational required tasks plus maintenance and project work were completed with only four full-time employees. The Village also replaced the billing clerk in late spring, which had direct impact on the workload within the two Departments.

These staffing issues increased operational challenges at a time when the Departments faced multiple over-lapping and very significant tasks. These included the largest water main replacement project in the Village since the mid-1970’s, a major overhaul of Water Treatment Plant (WTP) instrumentation controls that had been in place since 1990, a key upgrade of the water meter system to address continued issues with outdated meter system technology, EPA-required renovation work on one water tower, rebuilds of the Wastewater Treatment Plant (WWTP) tertiary filters, extensive improvements within the collection system, continued aggressive plant maintenance programs, as well as managing repairs and unexpected operational problems that surfaced during the year.

Coupled with all of the operational efforts were several very challenging weather obstacles. For example, there was a seven-day period in July with 6.83” of precipitation – including a one-hour period where 2” of rain fell – creating area-wide flooding plus operational difficulties at the WWTP, while damaging WTP automated controls which required manual operations of the plant. In early October, 4.17” of precipitation was recorded during a 4-hour period, and mid-December delivered a 1.60” of rain incident. Throughout the year the Departments dealt with seven different commercial power outages – one of which closed the access driveway to the WWTP for almost 48 hours – creating more operational hurdles.

Despite all these challenges, both Departments operated the entire year at levels meeting or exceeding state permit requirements. In fact, the WWTP achieved one of its highest removal efficiencies ever.

Water Treatment Department Highlights

The major improvement for the Water Department in 2021 was the South Street Water Main Replacement Project. After completing design and receiving Phase II funding approval from the Ohio Public Works Commission (OPWC) in January (Phase I was previously approved in 2020), the project generated 13 competitive bids with Woodford Excavating being awarded the contract with a bid of just over \$741,000.

In preparation of the project, the BPA hired a local contractor in April to relocate the water service line to the Mill Run Condominiums on White Street. This work not only shortened a 6" dead-end service main (by abandoning approximately 200 feet of asbestos cement (AC) Pipe) to improve customer service water pressure, but it also simplified the connection of White Street to the proposed new 10" water main on South Street. The Village also hired a trenchless excavation contractor to uncover and locate the high-pressure petroleum lines that the new main had to cross on the south end of the project. For advance public notification of the project work, Water Department staff installed construction notification signage along South Street, posted notices on the Garrettsville Village web site and Facebook page late April, and published an article in the local newspaper, The Villager.

After the Village approved the pre-construction video, Woodford Excavating began the project in late May 2021, by relocating eighteen ¾" water service connections to clear the way for the installation of over 3,100 feet of new 10" ductile iron water main, eleven new fire hydrants, and fourteen new gate valves (twelve 10", one 8", and one 6"). All of the installation project work was completed by early August 2021. After the new main passed disinfection, bacteria, and pressure testing, it was officially put into service allowing Woodford Excavating to then connect the forty-one existing water service laterals to the new main achieving substantial completion of the project by September 10, 2021, and final completion of all restoration, change orders, and punch list items by October 20, 2021.

Not only was the project completed early (original end date was November 10, 2021) and under budget (original cost projection was \$1.1 million), but it also removed two old water mains (one 114-year-old cast iron line and a 50-year-old AC line), thirteen old fire hydrants, plus increased the size of the service taps from ¾" to 1". The project also corrected two storm sewer issues via change order. The first was the installation of an 8" drainpipe and catch basin crossing South Street at Zupancic Drive to remove water that had been surfacing in the road for years. The second was the replacement of 60 feet of 15" storm sewer located at the entrance to Crestwood Drive where the existing galvanized pipe storm drains had rusted and collapsed.

This project was completely funded by the combination of an OPWC grant and a 30-year 0% interest loan from OPWC, plus a 30-year low interest loan from Division of Environmental and Financial Assistance (DEFA). The grant and loans significantly reduced the financial burden to the Village for the project.

Other improvements completed in 2021 at the **Water Treatment Plant (WTP)**:

During the year a major overhaul of the WTP controls also occurred when the BPA contracted with Bentronix to replace the instrumentation controls that had been in place since 1990. After building and bench-testing the new controls in advance, the company arrived on site one day after a storm had

significantly damaged the existing antiquated controls. While the facility was operated manually around the clock, Bentronix removed the old controls and wiring and installed a new Allen Bradley Compact Logix programmable logic controller (PLC). The unit was installed, field-tested, adjusted allowing the new system to be used to control the WTP within nine days. The storm also damaged a level sensor that controlled the rapid sand filters. The level sensor was replaced by Bentronix during the same installation period.

To address issues related to malfunctions with the automatic meter reading (AMR) system – specifically water meter battery failure that began in 2017 and included 223 (20%) failed devices in 2021 alone – The BPA upgraded the meter system from the existing 3G radio-read version to a new 4G cloud-based reading system. This \$50,000 expenditure included 250 new 4G water meters, a new laptop to collect the data from the meters, a change to the meter reading software, and a two-day training session. By the end of 2021, approximately 210 new 4G meters and about 50 3G warrantied meters had been installed by WTP staff. Due to the battery issues, approximately 771 meters have been replaced since August 2017.

In late August, the Brosius Road reservoir was taken out of service, drained, and cleaned in preparation of EPA-required renovation work. The BPA purchased materials and hired a local contractor to remove and replace the insect screening and venting system along with the aluminum dome roof top, all of which had been installed in 2001. The old failing nylon screening and vent air seal material was replaced with a new stainless-steel system. The reservoir was cleaned, inspected, disinfected, refilled, and put back in service within a ten-day period.

Other improvements completed in 2021 at the WTP included replacing the 35-year-old shingled roof on the storage building with a new metal roof, replacing a failing chlorine gas leak sensor, and chlorine switchover module and installing a new portable dehumidifier in the pump room.

During the year, the Water Department updated the Water Contingency Plan, the Total Coliform Sample Plan, a Non-revenue/Water Loss Report (3.5%), the Ohio Department of Natural Resources (ODNR) Ground Water Withdrawal Report, and a Consumer Confidence Report. The department also performed daily chlorine residuals, weekly iron and manganese and bacterial testing, and performed required sampling of drinking water for disinfection byproducts - Total Trihalomethane (TTHM), Halo acetic acids (HAAS5), nitrate.

Improvements completed in 2021 for the **Water Treatment Well Field:**

As part of normal maintenance practice, as done every five years, in 2020, well #19 was taken out of service and the pump removed for refurbishing. At that time the well was cleaned and inspected. Unfortunately, the intake screen came apart when the well casing was removed and cleaned. The screen was removed separately and reattached to new replacement column piping and rebuilt pump. The well was flushed and returned to service in mid-January 2021.

Both raw wells were again tested in 2021. Well #19 was sampled in early August and had hardness levels at 300 mg/l, iron at 1.929 mg/l, manganese at 0.255 mg/l, E. coli and Total Coliform Negative (safe). Well #20 was sampled in mid-August and had hardness at 264 mg/l, iron at 1.152 mg/l, manganese at 0.189, and E. coli as Negative (safe). Unfortunately, the Total Coliform results came back

Positive (potentially unsafe), so the well was taken out of service, disinfected, flushed then retested in September. E. coli and Total Coliform both came back negative (safe) and well was put back in service.

Improvements completed in 2021 for the **Water Treatment Distribution:**

In addition to the South Street Water Main Project, improvements to the meter reading system, plus a significant number of water meter replacements, the Water Treatment Distribution system continued to require many person-hours to maintain service quality in 2021 despite staffing shortages. For example, departmental personnel spent two full weeks performing bi-annual system-wide hydrant flushing. Staff managed all aspects of twelve depressurization events (eleven in support of the South Street Water Main Project) – i.e., hand-delivering depressurization notices to all residents affected, extensive valve-turning, flushing, and bacteria testing. Over 225 hours were spent performing weekly dead-end hydrant flushings and water storage overflow procedures. Staff prepared and delivered approximately 80 water use graphs and hand delivered over 200 past due water notices. Personal notification for depressurization events, required by the EPA, and Village policy requires personal notification for water termination notices.

Other Water Treatment Distribution work performed in 2021:

- Repaired two severe 6” water main breaks on Windham Street.
- Excavated and replaced a leaking ¾” water service line and curb valve on Maple Avenue.
- Responded to thirteen leak and/or low-pressure complaints. No leaks were found for six of the calls, two were found to be homeowner service line leaks, three were water softener or interior plumbing issues, two were wet basements caused by storm water.
- Responded to two water discoloration calls. Staff flushed area fire hydrants until discoloration was removed.
- Assisted Rural Community Assistance Program (RCAP) to locate and record Global Information System (GIS) data coordinates for all of the South Street Water Main Project and for four additional curb boxes. The annual update of the Village GIS database was completed.
- Prepared, primed, and painted fifteen fire hydrants.
- Replaces leaking ½” water supply line on Brosius Road reservoir altitude valve.
- Had nine Village-owned backflow devices tested. Staff oversaw the testing of 111 other customer-owned backflow prevention devices within the Village distribution system.
- Performed approximately 500 distribution chlorine residual tests.
- Completed annual lead and copper testing with all ten test results below regulatory level limits. Note 1: Due to continued low test results, in October 2021, the Superintendent submitted a request to return to triennial testing. Note 2: During the South Street Water Main Project, a lead gooseneck connected to the old 6” cast iron water main was uncovered and replaced. This is the third lead service connection discovered in the Village since 1983.
- Staff responded to a request for mutual aid to locate a water service leak for the Village of Windham, Ohio, Water Department.
- In year seven of a ten-year maintenance contract, a local painting company performed bi-annual interior and exterior inspection of the coating system in both metal drinking water storage tanks.
- Located and manually exercised all 239 water main valves and 215 fire hydrant watch valves.

For the eighth year, Water Plant production has trended low compared to levels prior to the new water meter system and monthly billing being implemented. The WTP pumped just over 66.768

million gallons in 2021 for a daily average of 183,000 gallons per day.

Other Work at the Water Department in 2021:

- Replaced a faulty fire alarm heat sensor in the sedimentation basin building.
- Power washed exterior of garage, sedimentation basin building, and clear well dome.
- Cleaned waste basin and waste pump station.
- Flushed and cleaned potassium permanganate feed system.
- Purchased two replacement chlorine residual test kits to replace 6-year-old units.
- Removed thirteen trees along 3-phase power lines.
- Electronically submitted radio frequency 10-year renewal for the WTP to the Federal Communications Commission (FCC).
- Replaced broken drain valve on filter #3.
- Performed 247 manual backwashes on the rapid sand filters.
- For the twenty-second year in a row, a water quality report was prepared and mailed out to all Village water customers.

Main Goals of the Water Department for 2022

- Develop plan to address issues with Freedom Street 6” cast iron main and water turnover.
- Complete phase III of wellfield electric line burial project.
- Update WTP controls to remote monitoring.
- Replace rate of control and backwash valves on rapid sand filter #3.

Wastewater Treatment Department Highlights

The Village began operating under its new 5-year National Pollutant Discharge Elimination System Permit (NPDES). The Village had one permit violation in 2021 that occurred October 9 when 4.17” of precipitation fell in a 4-hour period. This heavy rainfall created area wide flooding and surcharged the collection system causing a bypass of the plant of approximately 170,000 gallons. This bypass was the 14th since 1990. Despite this one operational setback the facility treated almost 80 million gallons of sanitary sewage (a daily average of 208,000 gallons per day) and obtained one of its highest removal efficiencies of 99.7% for both BOD (Biochemical Oxygen Demand removals) and suspended solids. For the sixth year in a row, copper levels remained low enough that the Village could land apply 343,000 gallons of biosolids during the summer.

Besides the plant bypass, one of the most challenging times at the WWTP occurred in May after a storm-related commercial power outage when two of the three influent structure pumps failed to operate. After removing one of the failed pumps and installing a backup pump, it was discovered that both pumps were newly purchased Flygt Concerter Pumps and that they required surge protection. Both

pumps were repaired under warranty and a surge protector was installed the next month.

The most significant improvement at the WWTP facility was the rebuilding of the two tertiary filters. The filters were taken out of service one at a time, drained, cleaned, pressure-washed, sand blasted, primed, and painted. The filter disk cloths were also removed and replaced, and the interior waffle structure was cleaned. Cloths and 1 ½” vacuum lines were replaced and then were reinstalled all within one month.

Another improvement was the refurbishment of the screening device. Andritz Separation, Inc. was contracted to perform maintenance work which included installing replacement brushes, bearings, spray nozzles, and performing maintenance checks and adjustments.

Other improvement work performed in 2021:

- Removed and refurbished #2 Wemco waste pump.
- Spectrum Charter Communications installed underground cable for the first 500 feet along the WWTP driveway to remove cable from aerial crossing.
- Installed a new LED emergency lighting system in the operations and screening buildings.
- Replaced a faulty ½” solenoid valve on return activated sludge (RAS) #3 pump.
- Replaced faulty ground fault circuit interrupter (GFI) in influent sampler and the influent pump station. Also installed a new GFI at the lab sink.
- Replaced faulty cooling fan capacitor and electric motor on Republic blower #4 and a faulty cube relay in Republic blower #5.

Other Work Performed at WWTP in 2021:

- Power washed and cleaned screening building interior and exterior siding on office and lower blower buildings.
- Performed required annual audit and recalibration of flow meters and lab analytic balance.
- Installed a new circuit board and gas valve on furnace in office building.
- Replaced faulty backup battery in main control panel as well as both AquaDisk tertiary filters in the PLC panels.
- Installed a repair clamp on Waste Holding Basin #2 air header.
- Replaced shear pin in the south clarifier.
- Performed maintenance cleaning of the flow equalization basin, influent pump station, grease traps, scum collector tank, and influent structure screening building.

Significant improvements completed in 2021 for the **Sanitary Sewer Collection System:**

In continued efforts to remove storm water (inflow and infiltration or I&I), the BPA hired two contractors to perform upgrades to the sanitary collection system. One of the projects was performed in late winter/early spring. The contractor excavated and replaced a section of piping between Liberty Street and the WWTP. Approximately 640 feet of 12” north interceptor and three manholes were replaced.

The second project occurred in late November. The contractor installed approximately 1,485 feet of cured-in-place pipe (CIPP) in trouble sections of Maple Avenue and Freedom Street. CIPP is

an internal epoxy sleeve blown into existing piping between manholes, then steam-cured to reline pipe without excavation.

Both projects targeted areas of the collection system that had root obstructions that were previously cleaned annually with a jet vacuum truck.

The Department also had improvements in the lift stations. In February 2021, all five lift stations in the collection system were outfitted with new 4G cellular alarm units that monitor and alert personnel when trouble situations occur. A new transfer switch and stainless-steel enclosure were also installed on the Center Street lift station.

Other Work Performed in the **Collection System** in 2021:

- Replaced damaged level probe in the Davis Street lift station.
- Contracted companies to clean all five lift stations and jet vacuum Village trouble areas along all of Maple Avenue, Park Avenue, State Street, Liberty Street plus sections of Center Street, Freedom Street, Water Street, Windham Street, and South Street to remove root and grease buildup.
- Staff continued bi-weekly cleaning of all probes in the four lift stations that utilize them.
- For the eighth year in a row a contractor was hired to perform annual preventative maintenance testing on all Village sludge pumps located in the lift stations, the WTP waste basin, the WWTP influent pump station, and the flow equalization basin.
- Performed yearly metal sampling of the industrial, commercial, and residential areas of the Village.
- After responding to five separate trouble alarms at the Industrial Drive lift station, it was determined that the failures were related to the level probe. A replacement unit has been ordered and is scheduled to be installed in January 2022.
- Staff checked on six backed up sanitary sewer calls. All but one were homeowner lateral issue.
- Staff inspected five different sanitary sewer lateral repairs/replacements.

Main Goals for the Wastewater Treatment Department for 2021

- Continue CIPP (Cured in Place Pipe) installation program for sanitary sewer trouble areas.
- Replace air headers in Waste Holding Basins #1 and #2.
- Rebuild #1 Wemco waste pump.
- Rebuild south aerator/mixer in the flow equalization basin.
- Complete smoking the balance of the Village collection system.
- Continue to monitor and reduce copper levels to ensure that the WWTP can meet discharge permit limits and that the Village can continue land application disposal practices.

WTP and WWTP Combined Efforts in 2021

- During 2021, seven separate commercial power outages occurred that affected plant operations. These events ranged from localized outages that only affected various lift stations or individual treatment facilities, to ones that caused system-wide prolonged outages, requiring *manual* operations of the two plants and constant monitoring of the flow levels in the lift stations.
- Purchased a new SCAG zero-turn lawn mower.
- Had a local mechanic perform preventive maintenance work on all four departmental vehicles.
- Area contractor performed biannual preventive maintenance work on standby generation units for the lift stations at both the WTP and WWTP facilities.
- Staff load-tested standby generators at all five lift stations as well as the WTP, wellfield, and WWTP monthly.
- Annual maintenance testing on departmental fire extinguishers.
- Local Fire Department performed fire safety inspections on both facilities. Two violations were found and corrected.
- Staff performed 195 separate utility location marking requests, including the entire Riverview Drive subdivision, all of State Route 82 within Village limits, sections of Garfield Drive, Wolff Drive, High Street, and Park Avenue for paving work plus weekly locates for South Street during the Water Main Replacement Project.
- Staff performed monthly water meter readings.

In the area of plant personnel:

- Employees attended five workshops (three virtual workshops, two in-class) as a requirement for licensing renewal.
- Due to the pandemic, personnel gave only one tour of the two plants to an Ohio State University graduate student.
- Superintendent participated in a mock fire drill with the local Fire Department at the WWTP.

Even though the Village suspended bi-annual Tier 3 testing in 2020 on area resident-owned wells and the Village water source, the BPA, in an effort to protect its drinking water supply, continued to review monthly area hydro-fracking and source water pollution issues.

The two departments sold ten new residential permits (one water only) and one new industrial water/sewer permit.

The Village received 45.87” of precipitation in 2021.

Financial items in 2021 for the combined Departments:

The BPA continued to suspend all late fees for water and sewer charges throughout 2021 due to the pandemic, postal delivery and billing issues. The BPA voted to no longer accept payment plans in January 2021, and reinstated non-sufficient fund (NSF) fees in April 2021.

The annual budgetary review requested by the BPA by Village Consulting Engineer, Said Abou-Abdallah, was presented at the July 2021 BPA meeting, noting that both departmental accounts were in

good shape. No additional rate increases were needed or recommended at that time.

BPA Membership Changes in 2021:

One additional noteworthy item is the retirement of both Stevie Byrne, BPA president since 2006 and a 20-year member of the Board, and Fran Teresi, a 13-year member of the Board. The support and dedication of these two fine Board members over the last two decades has helped make the two Departments what they are today. They leave a substantial legacy of improvements and innovation for the Village Water Utilities. The Water and Wastewater Departments extend a very large thank you to them both for all of their effort and support.

The intention of this report is to briefly outline and record significant events that occurred at the Garrettsville Water and Wastewater Treatment Facilities in 2021. For more detailed information and/or any questions related to this report, please contact Jeff Sheehan, Utilities Superintendent.