

# **2019 Annual Summary**

## **Water & Wastewater Departments**

**Submitted by**

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# 2019 Summary

In 2017, the Ohio General Assembly passed Senate Bill 2 which required that all public water systems have an asset management program in place by October 1, 2018. The program must include an inventory and evaluation of system assets, operation and maintenance programs, emergency planning, timelines for infrastructure rehabilitation or replacement, capital improvement planning, and a funding strategy to support implementation of the program.

The Garrettsville Water and Wastewater Departments, which are administrated by the Board of Public Affairs (BPA), hired the Ohio Rural Community Assistance Program (RCAP) in 2017 to assist the Village in preparing a written asset management plan documenting and detailing these tasks that the Village was already performing. Hiring RCAP at that time was made easier by the fact that the Village had already contracted with them to prepare a GPS Data Collection and GIS Mapping Analysis. The GPS/GIS work included locating and electronically mapping all the Village utilities including water valves, hydrants, curb boxes, manholes and catch basins, as well as electronically inventorying the blueprints for both departments. After two years of monthly work sessions between RCAP and Water Utilities personnel to collect GPS coordinates for the GIS mapping, and develop the required Asset Management Plan text, Garrettsville Water Utilities Superintendent and RCAP presented the Garrettsville Asset Management Plan to the BPA at their July 2019 meeting. The Plan documents the administrative, operational, and financial data regarding the Village's drinking water assets and identifies future plans and long term financially projections. It also identifies preventative and predictive maintenance costs, as well as capital replacement projection costs for the next ten year period. In addition, the Plan highlights some of the progressive work that was already accomplished by the Village. The following points from the plan are worth calling out:

- The Village has replaced and upgraded approximately 43% of the distribution system in the last 30 years (of the system's 112 year existence).
- Current water rates in the Village are less than 1% of the average Median Household Income (MHI) for Garrettsville water customers, based on 2017 American Community Service (ACS) estimates for a monthly water usage of 4,500 gallons.
- Operating ratio (total expenses/revenue) for the Water Treatment system was 0.78 in 2018. This indicates that operating expenditures are less than revenue, which allows the Board and the Water Department to fund future needed capital improvements. Refer to the Garrettsville Asset Management Plan for potential capital improvements.

In 2019 the BPA continued to stay progressive, tightening up billing collections by amending Rules and Regulations to eliminate payment plans, and shorten payment time periods from 30 to 5 business days. The Board also applied for funding from the Ohio Public Works Commission (OPWC) for the South Street Phase I Water Main Replacement Project and considered performing Phase II concurrently. This key project made it through the local OPWC round as a funded project, but was dropped to an 'alternate' status in mid-November at the District meeting - meaning it may still be possible to secure reduced funding or a low interest loan. The BPA also approved almost \$100,000 for cleaning, video-taping, lining, repairing, and replacing piping in the sanitary sewer collection system. In addition, the Board authorized over \$80,000 for water system updates such as raw well rehabilitation, altitude and control valve replacement, and underground installation of 3-phase electric in the well field.

## Water Treatment Department Highlights

In April the Ohio EPA performed a required triennial sanitary survey of the Village drinking water system which included the raw wells, treatment facility, and water storage units. The Ohio EPA found no violations, but recommended some improvements that the Village already had planned.

The **Water Treatment Plant (WTP)** had many significant improvements completed in 2019, including one that addressed an Ohio EPA recommendation.

- Drained and cleaned the sedimentation basins in preparation for needed repair work. Excavated and exposed the building's original (1907) southwest wall, poured a new footer, installed a 12" replacement block wall with an overflow pad, tuck-pointed and repaired damaged block on the remaining sedimentation building walls. (Ohio EPA recommendation)
- WTP garage west wall, also in need of repair, was excavated and exposed, and the existing block was removed and replaced.
- Installed new guide rails, check valves, discharge connections, and interior piping, as well as added one newly-refurbished grinder pump in the plant waste basin.
- Replaced high-service pump control valve.
- Replaced stationary dehumidifier with a portable unit in the filter room.
- Installed new 6" high-service water meter.
- Replaced batteries in the standby generator.
- WTP automated instrumentation controls, the 'brains' used to run the plant (in place since 1990), are in progress of being completely replaced to bring them up to current technology, and to address long-term operational issues. This year-long design process - which included input from the Board, members of Garrettsville Village Council, the Water Utility Superintendent, and Bentronix Corp - was nearly completed by year end. The physical work to replace the controls is expected to be completed in 2020.

Significant improvements completed in 2019 for the **Water Treatment Well Field**:

- Installed underground 3-phase electric, set new 3-phase transformer, and replaced conduit and wiring between the two well houses. This improvement removed above-ground wiring that was severely damaged several times due to storms. Moving the power supply underground addressed a vulnerability in a key component of the treatment process. This work completed the second of three power line sections the Board plans to replace in the well field.
- Removed #20 pump for refurbishing, and cleaned and inspected the well, as normally done every five year as part of the Department's maintenance plan.
- Cleaned, prepped, and painted exteriors of both well structures.
- Installed new 4" water meter in #20 well.
- Excavated and unplugged 6" storm drain in the well field recharge zone which was causing severe flooding along the well drive, making the drive impassable. Replaced blocked 12" storm drain with a 15" pipe in the well field driveway. Installed new catch basin and replaced two sections of the drainage piping.

The **Water Treatment Distribution** had significant improvements completed in 2019, but also required the most departmental person-hours. Maintaining the distribution system is a balancing act between keeping water storage tanks full for optimum fire protection (volume and water pressure) versus water turnover (to ensure good, safe water quality). Ohio's significant seasonal changes create a challenge to that balancing act – e.g. the water in the storage tanks can freeze in the winter or can potentially stagnate in the heat of the summer. To meet these challenges, the levels and quality are monitored daily. When needed, plant controls are manually manipulated to either increase turnover rates (winter), or overflow towers (summer). Another way to increase water quality is to flush water main dead ends. This is done monthly or more often as needed, in addition to the bi-annual system-wide water main flushings. “Non-Revenue/Unaccounted Water Use” was under 10% for the second year in a row. Balancing distribution system levels accounted for approximately 225 staff hours in 2019 - the equivalent of over 10% of one employee's time.

Other Water Treatment distribution work performed:

- In year five of a ten-year maintenance contract with a local painting company, both metal drinking water storage tanks were inspected. Park Avenue tower had a new interior paint coating system applied, had a new balcony-level access door installed and replaced the old cathodic protection system. Park Avenue tower and Brosius Road reservoir had 10” altitude control valves replaced, along with replacing sump pumps and space heaters.
- Replaced 198 malfunctioning meters.
- During the monthly meter reading process, department personnel prepared and delivered 124 water use graphs.
- Located and manually exercised 239 water main valves, and 215 fire hydrant watch valves.
- Replaced three 45-year-old fire hydrants, installed one new hydrant, installed one new 1” curb valve and replaced a 3/4” curb valve, and repaired seven curb boxes.
- Repaired four water main breaks – one 4”, two 6”, and one 10”. Repaired two 1” and two 3/4” Village water service line leaks. Located and inspected three 3/4” water service breaks on homeowner properties.
- Had all nine Village backflow devices tested and oversaw the testing of 112 other backflow prevention devices within the Village distribution system
- Performed 112 distribution chlorine tests.
- During annual Lead and Copper testing, all ten copper test results were below action levels, and all but one of the ten testing sites met lead level limits. One sample exceeded the 15 ug/l lead limit. Ohio EPA notification requirements were met regarding the one sample. The water service line was excavated and found to be copper, site was resampled, and lead levels were below detectible limits.

For the sixth 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 71 million gallons - a daily average of 195,000 gallons per day.

During the year the Water Department updated the Water Contingency Plan, the Total Coliform Sample Plan, a Non-revenue/Water Loss Report, the Ohio Department of Natural Resources (ODNR) Ground Water Withdrawal Report, and a Consumer Confidence Report. The department also

participated in the 31st round of the Ambient Ground Water Testing with the Ohio EPA, performed daily chlorine residuals, weekly iron & manganese and bacterial testing, and performed required sampling of drinking water for disinfection byproducts - Total Trihalomethane (TTHM), Haloacetic acids (HAAS5), nitrate, inorganics, volatile organic chemicals, and radiological gross alpha and radium-228.

Both raw wells were again tested in 2019. Well #19 was sampled in May and had hardness levels at 268 mg/l, iron at 1.7689 mg/l, manganese at 0.264 mg/l, E. coli and Total Coliform Negative (safe). Well #20 was sampled in June and had hardness at 240 mg/l, iron at 1.356 mg/l, manganese at 0.223, E. coli and Total Coliform results as Negative (safe).

The mal-functioning AMR water meter battery failure problem that began in August 2017 continued all through 2019. During the course of the year 180 additional meters were discovered malfunctioning. By year-end approximately 425 meters had been replaced since August 2017.

#### Other Work at the Water Department in 2019:

- Replaced 6” backwash valve on #4 rapid sand filter.
- Power-washed exterior walls and the aluminum clearwell roof.
- Painted all exterior block walls.
- Performed 267 manual backwashes on the rapid sand filters.
- Re-keyed all exterior doors for all buildings.
- For the twentieth 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 2020**

- Repair Brosius Road reservoir wall. (Ohio EPA recommendation)
- Review mixer alternatives for the Industrial Drive standpipe.
- Perform rehabilitation/maintenance work on #19 raw well.
- Complete phase III of wellfield electric line burial project.
- Consider meter replacement strategy options.
- Replace #2 high service control valve.
- Notify affected customer of the Ohio EPA recommendation to avoid applying pesticides within 300 feet of the well head.

## Wastewater Treatment Department Highlights

The facility treated just over 82 million gallons of sanitary sewage (a daily average of 226,000 gallons per day), and obtained removal efficiencies of 99.9% BOD (Biochemical Oxygen Demand removals) and suspended solids reductions of 99.8%. For the fourth year in a row, copper levels remained low enough that the Village could land apply 343,000 gallons of biosolids during the summer.

The **Wastewater Treatment Plant (WWTP)** had a quiet year in 2019 compared to prior year operating issues with two exceptions.

The first exception was continued mechanical problems in the clarifiers that were installed in 2012. After multiple failures in the collection mechanisms, staff isolated and dewatered the two clarifiers, and made additional repairs. Manufacturer representatives later performed a maintenance inspection and provided recommendations to resolve the issues. The Board authorized the purchase of recommended replacement items in late 2019, including drive chains, sprockets, and sluice gates. Installation is scheduled to occur in 2020.

The second exception occurred in October when a raw sample collected had a high copper result (3,700 ug/l, normal is < 200ug/l). Staff performed sampling throughout the month, and while raw copper levels quickly dropped back to normal, final samples slowly climbed the entire month and failed to meet the Village's discharge permit limit. After further review it appeared that the elevated copper levels were the result of high pressure cleaning and televising of a segment of sanitary main downstream of the industrial section of town that was performed just prior to the high level raw sample collection. That segment of sanitary main was found to have two significant low spots and substantial sediment build-up. Those sections were excavated and replaced in early December. Copper levels have returned to normal and been in compliance of regulatory requirements.

Significant improvements completed at the WWTP in 2019:

- Manufacture representative performed maintenance inspection of the Andritz Aqua-Screen device that was installed in 2012. No issues were found, and a follow up inspection in two years was recommended.
- Replaced all five floats in the influent pump station. Purchased and installed one new 10-horsepower sludge pump and removed and rebuilt a second pump to be used as a back-up.
- In the #6 blower, replaced faulty thermostatic control unit and a faulty relay.
- Removed and had a local service contractor rebuild #3 Wemco waste pump.

Other Work Performed at WWTP in 2019:

- Cleaned flow equalization basin, grease trap, influent pump station, and influent piping.
- Preventative maintenance was performed on both facility standby generators.
- Re-calibrated flow meters, thermometers, and analytical balance.
- Replaced faulty compressor and temperature sensor in the final sampler.
- Replaced faulty solenoid valve on the seal water system.

The **Collection System** is normally repaired by excavation and replacement or spot interior patches. As an alternative to this time-consuming and relatively expensive repair method, in 2019 the Board hired a contractor to install approximately 1,800' of Cured In Place Pipe (CIPP) along the road edge of Ohio State Routes 82 and 88 to address recently discovered pipe issues. CIPP is an internal epoxy sleeve blown into existing piping between manholes, then steam-cured to correct pipe failures without excavation. This trenchless technology corrects pipe issues and removes possible inflow and infiltration areas.

Additional preventive work to reduce inflow and infiltration included the Village contracting a company to clean and video sanitary sewer mains for all of Freedom Street, the main North interceptor between Liberty Street and the WWTP, and a section of South Street. During this work, three severely damaged sections were discovered – one on South Street, two on Freedom Street. A contractor was hired to excavate and repair these failure sites. Staff also performed four smoke tests at specific sites – mainly to support home construction or repair work.

Other Work Performed in the Collection System in 2019:

- Installed a new control panel on the Shawnee Trail lift station.
- Contracted a company to clean all five lift stations and trouble areas including all of Maple and State Streets, plus sections of Center and South Streets to remove root and grease build-up.
- Staff continued bi-weekly cleaning of all probes in the four lift stations that utilize them.
- For the sixth 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.
- Davis Street lift station had a faulty power supply and battery replaced.
- Assisted the Village Street Department to repair their 6” lateral.
- Performed yearly residential, commercial, and industrial metal sampling.

**Main Goals for the Wastewater Treatment Department for 2020**

- Continue CIPP installation program for sanitary sewer trouble areas.
- Install replacement chains, sprockets, sluice gates for the WWTP clarifiers.
- Purchase and install replacement control panel for the Industrial Drive lift station.
- Upgrade controls for two Aqua-Aerobic System tertiary filters.
- Purchase and install replacement safety lid and guide rail brackets for the Davis Street lift station.
- Purchase and install new influent lift station pump.
- Finish 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 May, Department Operator, Howard Moore, began training on the 11-year-old Village water utility meter reading system and billing software, and assisting with daily billing collections to temporarily replace the departing Assistant Clerk. Operator Moore continued to assist the Village clerical staff, providing approximately 30-40 hours per month through the end of the year. Due to limited capabilities, difficulty to use nature, and lack of newer versions of the existing water utility billing software, Village staff began researching other software and outsourcing options. At year end, three new software options had been considered and the Board is expected to review and decide on the appropriate solution in 2020.

Other work performed for the combined departments in 2019:

- In addition to normal monthly meter reading and newly-adopted water termination processing, staff load-tested standby generators at all five lift stations as well as the WTP, wellfield, and WWTP monthly.
- Staff responded to one low pressure complaint (interior plumbing problem), two bacteria complaints (both taps were sampled and found negative or safe), three discoloration complaints (related to water main repairs), a hardness complaint, and a wet yard concern (staff used leak detection equipment but found no leak). Personnel also checked on eleven backed-up sanitary sewer calls (all of which were homeowner lateral), and approximately 200 different utility location-markings including all of Zupancic Drive, Liberty Street between Center Street and Water Street for repaving work, sections of Center Street for sidewalk installation, and multiple sections of the Fox Hollow Subdivision in preparation of utility repair work.
- Staff assisted the Windham Village Water Department in locating a 3/4" water service leak.
- Area contractor performed preventive maintenance on standby generation units for the lift stations and at both WTP and WWTP facilities.
- Performed annual maintenance testing on the fire alarm system devices at both plants.
- During the course of the year, departments purchased a new work truck, a new sludge pump, and rebuilt two existing sludge pumps.

In the area of plant personnel:

- Employees attended six workshops or classes as a requirement for licensing renewal, and five different training sessions with RCAP regarding data collection and mapping analysis.
- Personnel gave seven different tours to approximately 160 different students, educators, residents, and adults. Included in these tours was personnel from the City of Alliance, the local 5<sup>th</sup> graders, and a local YMCA group. The Superintendent also gave a presentation of both facilities to a small group of adult students from the local vocational school.
- The WWTP again hosted a Hiram College environmental class who performed macroinvertebrate sampling of Eagle Creek River as part of a class project.
- In November, the Board promoted summer laborer, Brandon Nutter, to full-time employee status.



Even though the Village only performs bi-annual Tier 3 testing 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 water/sewer permits and one new commercial water permit. Two computers were installed to allow for more efficient daily data collection – one in the WWTP lab and one in the WTP pump room. The Village received 45.88” of precipitation in 2019.

The intention of this report is to briefly outline and record significant events that occurred at the Garrettsville Water and Wastewater Treatment Facilities in 2019. For more detailed information and/or any questions related to this report, please contact Jeff Sheehan, Utilities Superintendent.