

2022 Annual Summary

Water & Wastewater Departments Village of Garrettsville, Ohio

Submitted by

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2022 Summary

2022 was a year of everyone trying to return to normal where we finally saw some relief from the effects of the global health pandemic of the previous two years. Health concern issues eased, but supply shortages and labor issues, along with higher than normal inflationary cost increases were some of the effects in the wake of the pandemic. The pandemic also seemed to create a new normal. It became common in 2022 to still see some people wearing face masks or disposable gloves, to still hold virtual meetings, to attend learning/online workshops remotely, and to provide electronic submittals as everyday options.

Regarding 2022 supply issues, throughout the year chlorine gas used as a required disinfectant for the Village drinking water system was very difficult to obtain. In fact, it was late fall before the Village received a full shipment which is just five 150 pound cylinders. Brass used in water fittings and meters was also in short supply. The Village ordered 140 meters in May but only received 105 units in mid-October and had yet to receive the balance by year end. Electronic equipment was also difficult to obtain. Two new control actuators ordered in May were not delivered until December, control upgrades for the Water Treatment Plant (WTP) ordered in late spring and a new departmental work truck ordered in August had not been delivered as the year ended. Wastewater Treatment Plant (WWTP) sludge pump and motor replacements carried a minimum three to four month order time. Staff was still waiting in December 2022 for replacement parts for a waste pump removed in March 2022. Pre-pandemic, all these supplies and parts were in stock or normally delivered within four to six weeks.

Labor issues also made it difficult at times to schedule work with contractors or even just receive quotes. One contractor notified in March was not able to provide a quote until early December for a replacement air diffusion system at the WWTP. The company representative stated that they could supply the material but could not install the new system until 2024 as they were already booked through 2023.

The Village of Garrettsville Board of Public Affairs (BPA), which administrates the Water and Wastewater Departments, also made decisions to return to pre-pandemic conditions. Late fees suspended during the previous two years were reinstated in March 2022, a new employee was hired full time after an internship, and the Source Water Monitoring Program was re-instituted late in the year. The Board also returned to a progressive infrastructure replacement strategy. The BPA authorized expenditures for an additional Cured-In-Place Piping (CIPP) project (which was performed late in the year) and submitted a pre-application to the Ohio Public Works Commission (OPWC) financial aid Round 37 for the Windham Street Water Main Replacement Project, which included the water main from Freedom Street east to Liberty Street. In addition, after reviewing the Water and Wastewater Department budgetary numbers and wanting to ensure the Village could afford the Village portion of the proposed water project, the Board commissioned the Village consulting engineer to prepare a Water Rate study for the Garrettsville Water Utility. The study analyzed revenues, operation and maintenance expenses, capital improvements, and debt service requirements. The study was presented at the September BPA meeting and recommended no rate adjustment above the current 2% annual rate increase that is already in place. Unfortunately, the Village OPWC submittal for the water main project had an overall low ranking, so the Village was not granted financial assistance. The Village opted to reconfigure the grant request and resubmit for OPWC Round 38 financing.

Abnormal weather conditions also challenged operation efforts for plant personnel. Starting with a mid-January snowstorm that delivered over 24” within a seven-day period (starting with 16” in the first 12 hours) that had staff performing snow removal on driveways, sidewalks, and tanks at both facilities as well as lift stations, water storage tanks, plus shoveling snow from fire hydrants all over town. Although yearly rainfall totaled only 40.32” (the lowest precipitation since 2016) the departments dealt with six different commercial power outages, one of which damaged electrical components on one of the WTP high service pumps. Despite these challenges, plus performing daily, monthly, and annual maintenance and monitoring procedures, the staff maintaining the two treatment facilities operated the entire year at levels meeting or exceeding state permit requirements. In fact, the WWTP again achieved one of its highest removal efficiencies ever.

Water Treatment Department Highlights

In August the Ohio EPA performed a required triennial sanitary survey of the Village drinking water system which included the raw wells, treatment facilities, water storage tanks, and required reports and bookkeeping. Two violations were issued, one was a missing chapter of the Village Asset Management Plan (which was quickly completed and submitted) and the second was the lack of air gap separation at the bulk water station. The BPA opted to stop bulk sales as of January 1, 2023 rather than install the required device since the Village had only one bulk customer.

Commercial power outage damage mentioned previously required replacing a faulty overload relay, main control panel contacts, and wiring between the electric panel and the pump motor. In an effort to avoid a similar future issue, new overloads and contacts were installed in the other high service pump. Also, throughout the year, a new heater and thermostat were installed in the instrumentation room, a faulty fire alarm keypad was replaced, the alarm software was updated, and new vapor-proof LED light fixtures were installed in the chlorine and chemical rooms.

One of the challenges in 2022 was the seemingly ever-changing lead service line requirements from the EPA. Implementation and enforcement initially targeting 2022 later evolved to just a mapping survey update by year end and a full sampling/replacement plan in place by 2024. To support the new requirements, between April and October staff worked with Rural Community Assistance Program (RCAP) to update the Village Lead Service Line Map. This updated map was electronically submitted by RCAP on 11/29/22. In order to address sampling and Replacement Plan requirements, Village staff explored two future service line material verification options. During the year the Department began noting the water service material on the Village meter work slips, hired a local contractor to use a hydrovac excavation system for five different underground repairs (two broken curb boxes, repair of a broken 6” water main valve, a faulty 4” plug valve, and a leaking ¾” curb valve. Extra benefits of using a hydrovac system to identify the water service pipe material between the Village line and homeowners service line at the curb valve is to reduce the footprint of the excavation site). Village staff also met virtually with a company to consider lead level field test kits that would eliminate the need to excavate for pipe verification altogether.

During 2022, the Water Department submitted to the Ohio EPA required updates to the Asset Management Plan, Water Contingency Plan, Annual Water Loss Metrics, Consumer Confidence Report, Total Coliform Site Sampling and Disinfection Byproducts Plans, plus the Distribution and Non-Revenue/Water Loss Plans (7% for 2022). The department also submitted an annual Ground Water Withdrawal Report to the Ohio Department of Natural Resources (ODNR), performed daily chlorine residuals, weekly iron and manganese and bacterial testing, and performed required sampling of drinking water for Volatile Organic Compounds (VOC's), Asbestos, Radiologicals Gross Alpha and Radium, Nitrate/Nitrites, Disinfection Byproducts - Total Trihalomethanes (TTHMs) and Halo acetic Acids (HAAS5), and Inorganics - Arsenic, Barium, Beryllium, Cadmium, Chromium, Cyanide, Fluoride, Mercury, Nickel, Selenium, and Thallium. Staff also performed required annual Lead and Copper testing which had nine of the ten sample results being below detectable limits, and the tenth sample tested at 2.4 mg/l, well below the action level of 15.0 mg/l.

Other work performed in 2022 at the **Water Treatment Plant:**

- Performed annual maintenance and calibrations on the chlorine system.
- Replaced faulty modem and router for the WTP computer system.
- Painted damaged drywall areas in the filter room ceiling.
- Rebuilt bulk station water nozzle structure.
- Flushed and cleaned the potassium permanganate system.
- Performed 272 manual backwashes on the sand filters.

Work performed in 2022 for the **Water Treatment Well Field:**

In April after a tree fell on the security fence, tree was removed by staff and the fence was repaired by a local fence contractor. Both raw well structures exteriors were painted, and a new heater was installed in well house #20.

Both raw wells were again tested in November 2022. Well #19 had hardness levels at 304 mg/l, iron at 1.793 mg/l, manganese at 0.253 mg/l, E. coli and Total Coliform Negative (safe). Well #20 had hardness at 288 mg/l, iron at 1.451 mg/l, manganese at 0.218, and also tested Negative (safe) for both E. coli and Total Coliform bacteria.

Work performed in 2022 for the **Water Treatment Distribution:**

Water leaks normally are caused in one of four ways: Being struck by a piece of equipment, material of poor quality, incorrect installation or aging/old material wearing out. In Ohio the last three usually can cause a leak when stressed by ground movement like traffic vibration or frost/thaw conditions. Often leaks surface very close to the failure unless the pipe is located under pavement or some other impervious materials or can find a path of less resistance such as a pipe, cavity, or loose aggregate. What isn't normal is to have leaks of all four varieties occur at the same time, but this happened to the Village water distribution system during a brief period in the fall of 2022. After noticing unusually high flows at the WTP staff manually inspected the entire distribution system and a large section of the storm sewer collection system looking for a leak. Six leaks were found and corrected.

The first leak located and repaired was a ¾” worn out brass service line that was located in the middle of a recently paved intersection. This leak surfaced over forty feet from the pipe failure and was the only one of the leaks that was visible from the roadway. The next three leaks all occurred on a private line and were discovered when staff found water flowing from a drainage ditch over 100 yards away. Two of these leaks were 1” plastic water piping, one of which was poor quality material (this was the third time it had ruptured in the last couple of years), and the other appeared to be incorrectly installed. Both lines were completely replaced. The third leak on this line was also 1” plastic and was struck by the contractor while trying to locate one of the leaks. The fifth and sixth leaks were ¾” service lines that were caused by poor quality material. The fifth leak was a ¾” inferior quality plastic line on the homeowners property that had been repaired in previous years, and was completely replaced by the property owner. The sixth leak was a copper line that had been installed within the last twenty years and had a marble sized hole that was located almost directly in the center of a roadway and surfaced behind the neighbors house in a valley. These six leaks over a three month period lost just under an estimated 2 million gallons of water, and showed the vulnerability of a water distribution system. In response, the Water Department and the BPA began reviewing options to update the Village’s leak detection equipment.

After five years, 2022 saw a return to more normal turnover rates in the Village water meter system. The malfunctioning automatic meter reading (AMR) battery failure problem that began in August 2017 slowed down considerably with only 25 units failing during the entire year. Personnel continued replacing the old 3G units with new 4G Allegro meters throughout the year, replacing 107 total meters and bringing the 4G total to 271 of the 1,044 total meters in the Village.

2022 was year eight of a ten year maintenance contract with an area tank painting company that power washed, prepped, primed, and installed a new paint coating system on the Industrial drive standpipe exterior. The company also inspected the interior of the tank as well as the entire Park Avenue elevated tower and found no maintenance issues with either unit.

To improve water quality, departmental personnel spent the equivalent of two full weeks performing bi-annual system-wide hydrant flushing. To increase water turnover the two metal water tanks were allowed to overflow eight times during the warmer months. In addition, staff performed 168 system-wide distribution chlorine tests in addition to the required daily testing. Dead-end fire hydrants and low chlorine residual areas were flushed until clear and chlorine residuals were well above minimum levels. This flushing totaled 160 hours, and along with the 42 hours of the metal storage tanks overflow, used an estimated 4.4 million gallons of water. Staff also prepared and delivered approximately 76 water use graphs and hand delivered approximately 350 past due water notices, shutting off only seven customers for non-payment. Village policy requires these notifications for water termination notices.

Other Water Treatment Distribution work performed in 2022:

- Replaced two leaking water supply lines and installed a new dehumidifier for the altitude valve in the Brosius Road Reservoir.
- Excavated and repaired a leaking 6” fire hydrant watch valve on Wheeler Road.
- Replaced a yard hydrant that had been hit by a snow mobile at the Brosius Road Park.
- Rebuilt leaking ¾” backflow device at the Village Police Department.

- Constructed and installed an insulated weather house to cover and prevent freezing of the Industrial Drive standpipe inlet.
- Repaired one fire hydrant on Main Street that had been hit by snow removal equipment.
- Cleared trees along the northern edge of the Brosius Road Reservoir and had a new security fence installed by a local fencing contractor.
- Had nine Village-owned backflow devices tested. Staff oversaw the testing of 100 other customer-owned backflow prevention devices within the Village distribution system.
- Excavated and repaired a faulty curb valve on High Street.
- Staff responded to two requests for mutual aid to locate four separate water service leaks for the Village of Windham, Ohio, Water Department.
- Located and manually exercised all 239 water main valves and 215 fire hydrant watch valves.

For the ninth year, and with almost two million gallons lost to water leaks, Water Plant production trended low compared to levels prior to implementation of the new water meter system and monthly billing. This reduction not only decreases operating costs, but also increases plant capacity for any future Village development. The WTP pumped 70.811 million gallons in 2022 for an average of 194,000 gallons per day.

Other Work at the Water Department in 2022:

- Cleaned waste basin and waste pump station.
- Flushed and cleaned potassium permanganate feed system.
- For the twenty-third 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 2023

- Apply for grants and low interest loans for the Windham Street Water Main Replacement Project.
- 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 all four rapid sand filters.
- Ensure more employees get water and/or wastewater licenses.

Wastewater Treatment Department Highlights

The WWTP facility treated just under 77 million gallons of sanitary sewage (a daily average of 211,000 gallons per day), and again obtained extremely high efficiencies of 99.6% for BOD (Biochemical Oxygen Demand) removals and suspended solids reductions of 99.7%.

The only abnormal issue at the facility was an increase in the copper levels. Village WWTP copper permit limits with the Environmental Protection Agency (EPA) are not to exceed 25 ug/L and from September 2016 to January 2022, the WWTP ran without a single copper non-compliance. However, in both March and June, 2022, the WWTP discharged levels above permit limits creating discharge violations. In an effort to address this issue, meetings were held with the local manufacturer that processes copper wire to discuss housekeeping and discharge measures. Efforts to correct the situation on the Village side included a return to monthly sampling and, starting in July, 2022, the Village hired a local contractor to perform cleaning and jet vacuuming of the wire company's sanitary lateral, sampling manhole, and the Industrial Drive lift station every other month. As a result, copper levels that were averaging 29 ug/L (parts per billion) through June dropped to 18 ug/L for the last six months of 2022. Because the elevated copper levels were so minor, the Village was still able to land apply approximately 341,500 gallons of biosolids in the fall.

2022 precipitation was lower than normal area weather, but it still had an impact early in the year. Excessive snowfall in January followed by extreme cold conditions in February caused maintenance issues (snow removal, thawing out and repairing frozen collector drives, waste lines, and air lines) plus created an ice build up that damaged and disabled the north clarifier collector system. Damage required repairs to two broken flight boards, nine of fifteen cracked attachment links, main drive chain links, and then re-alignment and reattachment of the collector chain to the drive sprockets and drive gears. Repairs were not fully completed until April, 2022. A preventive maintenance inspection by the collection system manufacturer representative was performed on both clarifiers in mid-July. Acting under their recommendation, staff removed two 6" chain links from the south tank and two 3" chain links from the north unit to tighten the collector chains. Personnel also repaired and reinstalled the north clarifier main drive chain that broke in mid-December, 2022, which was possibly residual damage from the February cold spell.

Another abnormal operational issue surfaced in early April. One of the three Republic positive displacement blowers failed multiple times. A local electrician replaced a faulty circuit breaker and cooling fan motor, but the unit continued to fail. The motor and blower were then removed and sent for inspection at a local repair shop that found a bad bearing and worn windings in the motor and the entire blower in need of a rebuild. Once this work was completed and the repaired blower and motor reinstalled, and since all three blower units at the WWTP were installed at the same time over ten years ago, it was decided that the remaining two units be removed (one at a time) and rebuilt as preventive maintenance.

Similarly, repairs and related preventive maintenance occurred in August, 2022, when three backwash actuators were replaced on tertiary filter #2 after one of the units failed; and again in November, 2022, when a damaged pontoon float and the electric motor in the south side aerator/mixer in the equalization (EQ) basin was replaced, the remaining four pontoons were then also replaced.

As previously mentioned, the Department had a difficult time getting a contractor quote for a replacement air diffusion system, so staff had to install a 4” repair clamp on one of the damaged air headers in waste basin #1, plus replace all ten 4” flexible air drops in both basins #1 and #2. Waste basin #2 pump was removed for preventive maintenance in December, 2022.

It would be unfair not to mention the one time in 2022 that supply and labor issues fell in line with pre-pandemic normal. In mid-May, the influent bypass flow actuator valve failed. There is only one of these devices at the WWTP and, due to the expense, a spare unit is not kept in stock. Fortunately, the local valve representative was available and found a replacement unit by mid-July.

The most significant improvement at the WWTP was the installation of new interior emergency LED light packs and new LED light fixtures for the entire facility including over mixed liquor tanks/clarifiers, outfall, EQ basin, plus pole lights covering waste basins. In addition, new security lights were installed at the influent structure and main operations building entrances.

Other Work Performed at WWTP in 2022:

- Submitted required annual Sludge and Sanitary Sewer Overflow Reports to the EPA.
- Rebuilt #2 WEMCO waste pump.
- Replaced faulty methane sensor in screening building.
- Replaced EQ basin ultraviolet (UV) light bulb electric cords that had been damaged by groundhogs.
- Performed EPA-required annual audit and recalibration of flow meters and lab analytic balance.
- Replaced a faulty timer on HSI centrifugal blower #2.
- Replaced leaking radiator hose in 250 kW standby generator.
- Replaced shear pins in August and October in the south clarifier.
- Replaced faulty selector switch on screening building booster pump.
- Replaced faulty ¾” water seal solenoid and water level float.
- Cleaned influent pump station, grease traps, scum collectors, influent structure, and screening building.

Sanitary Sewer Collection System:

In continued efforts to remove storm water (inflow and infiltration or I&I) from the sanitary sewer collection system (and thereby reduce WWTP processing costs), the BPA authorized funding for internal pipe repair. In May, 2022, a contractor cleaned and televised trouble sections for the Village collection system. After staff reviewed the resulting video, three sections were selected for repair. In November, 2022, the contractor installed approximately 1,315 feet of cured-in-place pipe (CIPP) in trouble sections of Forest and Elm Streets and along an easement between South Street and the South Park subdivision.

To evaluate the effectiveness of the Village’s I&I removal work, WWTP flows can be compared to annual precipitation totals between 2012 and 2022. In 2012, a year that had 41.53” of precipitation, wastewater flows totaled 90.370 million gallons or 0.247 gallons per day. 2022 precipitation totals were slightly lower at 40.32”, yet wastewater flows totaled significantly less at 76.990 million gallons or 0.211 gallons per day. Another comparison to show effectiveness of the Village’s I&I program can be

made between 2016 and 2022 where precipitation totals were very close – 39.90” in 2016 and 40.32” in 2022 – but flow totals differed by over five million gallons – 82,500 gallons in 2016 and 76,990 gallons in 2022.

Other Work Performed in the **Collection System** in 2022:

- After repeated cell phone communication issues with the Shawnee Trail lift station alarm service, a new 3½ foot antenna was installed.
- Replaced a faulty relay on the Davis Street lift station.
- Replaced a broken guide rail, cleaned and rebuilt all three lift pumps and a level probe in the Industrial Drive lift station.
- Contracted a company to clean all five lift stations and jet vacuumed trouble areas along Maple Avenue, Park Avenue, Center Street, State Street, North Street, Harris Drive, Liberty 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, and performed weekly pump and alarm checks, plus monthly load testing using standby generators at all five Village-owned lift stations.
- Performed yearly metal sampling of the industrial, commercial, and residential areas of the Village.
- For the ninth year in a row a contractor was hired to perform annual preventative maintenance testing on all 17 lift station pumps, the WTP waste basin, the WWTP influent pump station, and the flow equalization basin.
- Rebuilt one of the two Brosius Road lift station pumps.
- Staff checked on eight backed up sanitary sewer calls. All but two were homeowner lateral issues.

Main Goals for the Wastewater Treatment Department for 2023

- Continue CIPP installation program for sanitary sewer trouble areas.
- Replace air headers and pumps in Waste Holding Basins #1 and #2.
- Replace all three backwash actuator valves in tertiary filter #1.
- Replace motor controls and skid wear strips in both clarifiers.

Additional combined WTP and WWTP maintenance performed in 2022

During the year the departments continued a regular program of preventive maintenance for Village equipment. Staff tested pumps, greased motors and blowers, did repairs on lawn care equipment, calibrated chlorine residual test kits, performed sanitary sewer and water installation and repair inspections. This included the repair in late December 2022, of a manhole in the Fox Hollow subdivision which completed the deficiencies list requirements for that subdivision.

The departments also had preventive maintenance work performed on all four work trucks, standby generators, fire extinguishers, and fire alarm systems by area business contractors.

Plant personnel:

In May 2022, Operator, Howard Moore passed the Ohio Wastewater I Operators License exam and in June 2022, the BPA promoted Intern, Anthony Augaitis to full time employee status. Employees attended seven continuing education sessions (five virtual workshops, one in-person workshop, and one virtual class) to fulfill EPA licensing renewal requirements. Personnel responded to 237 utility location marking requests and performed monthly water meter reading.

The two departments sold seven new residential water/sewer permits, gave two tours of the WWTP, and one tour of the WTP to seven interested non-residents.

The intention of this report is to briefly outline and record significant events that occurred at the Garrettsville Water and Wastewater Treatment Facilities in 2022. For more detailed information and/or any questions related to this report, please contact Jeff Sheehan, Utilities Superintendent.