

2017 Annual Summary

Water & Wastewater Departments

Submitted by

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2017 Summary

In the summer of 2017 the Ohio General Assembly passed Senate Bill 2 which requires 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 the 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) to have a detailed plan prepared by the required timeline, the Village already performs many of the required items as part of normal procedures. The BPA annually reviews asset and projection plans and long term financially projections, and has been active in maintenance and replacement of equipment at both facilities for many years, as can be seen in previous year-end summaries.

In 2017, the most notable example of this type of infrastructure planning and improving occurred on the distribution system with the North Street Phase II Water Main Replacement Project. Even though a grant from the Ohio Public Works Commission fell through, the Village was able to finance the entire project with a low interest loan from the Ohio Water Supply Revolving Loan Account (WSRLA). The Project replaced approximately 1,900 feet of 110-year-old six inch water piping with new eight inch ductile main, as well as updating 23 water service connections, eleven new main line valves, and six new fire hydrants. This work, coupled with the Phase I work performed in 2015, completes the updating of the north side distribution system (inside the Village limits) and represents a financial investment of over \$900,000 for the Village. Interestingly, in June, the Village of Garrettsville Water Treatment Plant (WTP) was chosen as one of the groundwater supply facilities for a training exercise for the Ohio EPA.

Other examples of the BPA's progressive planning in 2017:

- 1) Hiring of RCAP to prepare a GPS Data Collection and GIS Mapping Analysis which locates and electronically maps all the Village utilities including water valves, hydrants, curb boxes, manholes and catch basins, as well as electronically inventorying the blueprints for both departments,
- 2) Updating the Village Rules and Regulations to include revisions in both the Backflow Prevention and Local Industrial User Limitations sections,
- 3) Replacing or rebuilding ten out of the 27 sludge pumps that serve both facilities and the collection system lift stations,
- 4) After carefully reviewing the financial projections, recommending an additional 2% water rate increase for the next two years.

Again in 2017, the BPA, in an effort to protect its drinking water supply, continued to review monthly area hydro-fracking issues, but decided that after five years of bi-annual Tier 3 testing that the Village Source Water Baseline Testing Plan had a solid base, and agreed to only sample on even years and reduce sample well sites from 16 to 12. On the sanitary sewer side, a request by the Village for an NPDES Permit modification with a time extension, which would allow the Village time to verify the plant's ability to operate within the copper limits imposed, was approved by the district Ohio EPA.

General 2017 updates: The two departments sold three new residential water/sewer permits in 2017. "Non-Revenue/Unaccounted Water Use" was only 2% for the year. The Village received 44.60" of precipitation in 2017.

Water Treatment Department Highlights

2017, was unexpectedly an unusually low production year for the Water Plant. The WTP pumped just under 67 million gallons (a daily average of 183,000 gallons per day). This broke the record set in 2016 as the lowest annual water production the Garrettsville water system produced since the data has been tracked in the early 1980's. Unlike the previous year's extensive repair work, the 110-year-old facility had only minor improvements in 2017. Three new exhaust fans were installed, the chlorine regulatory system was rebuilt, #2 rapid sand filter rebuild was completed, a new hot water heater was installed in the chemical building, #1 high service pump was removed and serviced, sections of worn pipe wrapping were replaced and safety tread tape was installed in walking areas through-out the pipe galley. Low water production has steadily decreased since 2009, the year that the Village began installing the new water meter reading system and implemented monthly utility billing.

During the year the Water Department updated the Water Contingency Plan, the Total Coliform Sample Plan, a Non-revenue/Water Loss Report, and a Consumer Confidence Report. The Water Department also prepared and submitted to the District EPA office a required Public Water System Lead Report and map (which was also prepared by RCAP and departmental staff). The department also participated in the 29th 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 Synthetic Organic Compounds (SOC's), TTHM, HAAS5, and nitrate.

Both raw wells were again tested in 2017. Well number 19 was sampled in February and had hardness levels at 320 mg/l, iron at 1.785 mg/l, manganese at 0.235 mg/l, E. coli and Total Coliform Negative (safe). Number 20 well was sampled in March and had hardness at 292 mg/l, iron at 1.426 mg/l, manganese at 0.217, E. coli and Total Coliform results as Negative (safe). These levels match previous year levels.

Other Work at the Water Treatment Plant

Personnel completed the following work in 2017:

- Performed 272 manual backwashes on the sand filters,
- Replaced vacuum breaker and ¾" water supply valve in the chemical building,
- Chemically conditioned rapid sand filters #1, 2, and 4,
- Replaced solenoid valves and corroded electrical conduit in both well houses,
- Replaced two faulty electric cut-outs on the wellfield 3 phase power line,
- Cleaned potassium permanganate system,
- For the eighteenth year in a row, a water quality report was prepared and mailed out to all Village water customers.

Water Distribution Work Performed in 2017

The most disappointing event of the year for the department was the ongoing problems with the AMR water meters due to a battery failure issue. Typically, three to four non-functioning meters surface every month, but in September ten different units had to be replaced, in October there were 15, and in November there were 26 dead meters, which cleaned out the Village's spare stock. By year-end 83 meters had been replaced with another 52 waiting on replacement parts. Fortunately, the water meters all appear to have been manufactured in 2008 and were within the ten-year warranty period. Unfortunately, the Village purchased 360 meters in 2009 that could have the same issue.

In year three, of a ten-year maintenance contract with a local painting company, both metal drinking water storage tanks were drained, cleaned, and inspected. The Industrial Drive water standpipe interior coating had its one-year inspection and a new cathodic protection system installed. A new electric heater was installed in the standpipe control panel. In order to remove standing water and to make an easier access to the Park Avenue elevated water tower (which was manually operated all year), a new catch basin, 6" storm piping, and a gravel driveway was installed.

Personnel also performed over 100 system wide distribution chlorine tests. To improve water quality, dead end fire hydrants were flushed until clear and until chlorine residual levels were within minimum levels. This flushing totaled 118.5 hours and used an estimated 2.60 million gallons of water. To increase water turnover all three water storage tanks were allowed to overflow at least three times during the warmer months.

Besides the distribution work highlighted above, the department also replaced two 45-year-old hydrants, rebuilt two hydrants that were struck by automobiles, and completely refurbished three other units. Staff also repaired a 4" and a 6" water main break and one leaking 3/4" water service line, as well as rebuilding one yard hydrant in the Village Park. Departmental personnel also installed "Non-Potable" signage on all yard hydrants located at both plants, in the Village Parks, and in the Village cemetery, had all nine Village backflow devices tested, performed two Village-wide hydrant flushings with the local Fire Department, and updated the water meter reading laptop. In addition, department personnel exercised all 239 water main valves, and located and exercised all 215 fire hydrant watch valves. Water Department staff prepared and presented "water use graphs" 148 times at the request of customers.

Main Goals of the Water Department for 2018

- Rebuild filter media on #3 rapid sand filter.
- Repair Brosius Road Reservoir and sedimentation basin south wall.
- Rebuild flow control valves in both the Park Avenue tower and the Brosius Road reservoir.
- Wash-out and inspect both metal water storage tanks.
- Finish GPS/GIS programming and mapping project.
- Perform rehabilitation/maintenance work on high service pump #2.
- Perform baseline ground water monitoring sampling.
- Complete phase II of wellfield electric line burial project.

Wastewater Treatment Department Highlights

The facility treated just under 80 million gallons of sanitary sewage (a daily average of 219,000 gallons per day), and obtained record high treatment removal efficiencies of 99.95% BOD (Biochemical Oxygen Demand removals) and suspended solids reductions of 99.8%. For the second year in a row copper levels remained low enough that the Village could again land apply 390,000 gallons of biosolids during the summer. Personnel also began testing phosphorous levels throughout the plant in preparation for potential future regulatory removal requirements.

The biggest operational disappointment for the Wastewater Treatment Plant (WWTP) happened in mid-January when 2.2" of precipitation fell within an eight hour period creating area wide flooding which hydraulically overloaded the facility causing a bypass of 300,000 gallons. It was only the tenth time the WWTP has bypassed since 1990.

As mentioned previously, multiple sludge pumps were either purchased or rebuilt including two new units in the WWTP flow equalization basin, one new unit in the influent structure, three new units for the Brosius Road lift station as well as rebuilt pumps for both the Industrial Drive and Center Street lift stations. Also during the year #1 H.S.I. and #3 Roots blowers, and #1 and #3 Wemco pumps were removed and rebuilt. Other upgrades at the facility included new exterior light fixtures, a new lab faucet, a new torsion spring on the 1988 blower building garage door, new office furniture, and a new interior paint for the main office, bathroom, and hallway.

Other Work Performed at Wastewater Treatment Plant in 2017

- Drained, inspected, and repaired air diffusers in aerobic digesters #1 and #2.
- Cleaned drying beds #2 and #3.
- Replaced a faulty breaker in #4 Republic Blower panel.
- Cleaned flow equalization basin, grease trap, influent pump station and influent piping.
- Replaced six solenoid valves on both the Andritz screening machine as well as the waste pump and seal water system.
- Re-calibrated flow meters and analytical balance.
- Preventative maintenance was performed on both facility standby generators.

Collection System Work Performed

During the course of the year all five lift stations were cleaned. Additional cleaning was performed for trouble areas within the collection system which included all of Maple Avenue, Park Avenue, sections of State Street, South Street, Liberty Street, Windham Street, Center Street, and the north main interceptor between Liberty Street and the Wastewater Treatment Plant. The Village also replaced the heater in the Center Street lift station control panel, a faulty electrical coil on #1 pump in the Shawnee Trail station, 1 ¼" discharge piping in the WTP waste basin, and had new stainless steel brackets and guard rails installed in both the Center Street and Industrial Drive stations.

After two evening high level alarm calls that were caused by grease build up on the submersible level probes, staff began bi-weekly cleaning of all probes in the four lift stations that utilize them. For the fourth 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.

Personnel inspected two sewer smoking violation repairs, helped two home owners locate sanitary lateral failures by smoking the main line that served their properties, responded to three requests for assistance related to backed-up laterals, and performed metals testing on industrial, commercial and residential sections of the Village collection system during in June.

Main Goals for the Wastewater Treatment Department for 2018

- 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.
- Finish smoking the balance of the Village collection system.
- Replace and refurbish one sludge pump from each of the pump stations located at Davis Street, and at the WWTP influent pump station.
- Drain, clean, and inspect the north and south aeration tanks.

WTP and WWTP Combined Efforts

In addition to normal monthly meter reading and water termination processing, staff load-tested standby generators at all five lift stations as well as the WTP, wellfield, and WWTP monthly. Personnel operated both the lift stations and WTP on standby power eight times during commercial power outages. The staff responded to four low water pressure calls (all of which were caused by interior plumbing issues) and 180 different utility location-markings including North Street water main project sites weekly during construction, Center Street between Brosius Road and the east end of the distribution system for a road widening and electric pole replacement project, and the Foxwood Hollow subdivision twice. The staff also helped the local school district locate and repair a 4" service break, and assisted Mill Run condominiums repair a 1" water service rupture.

In the area of plant personnel, employees attended five workshops or classes as a requirement for licensing renewal. Personnel gave five different tours - two at the WWTP for personnel from Burton and Youngstown who have plant expansion design projects in progress, one was a presentation at the elementary school for 45 students, one at the WTP to the Ohio EPA, and the last was at the WWTP to Hiram College students who sampled Eagle Creek River as part of a class project.

The intention of this report is to briefly outline and record significant events that occurred at the Garrettsville Water and Wastewater Treatment Facilities in 2017. For more detailed information and/or any questions related to this report, please contact Jeff Sheehan, Utilities Superintendent.