

# **2015 Annual Summary**

## **Water & Wastewater Departments**

**Submitted by**

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## 2015 Summary

2015 shared many similarities with the previous year at the Garrettsville Water and Wastewater Departments which are administrated by the Board of Public Affairs. As in 2014, 2015 started with a challenging winter. Temperatures dropped into double-digit negative readings all the way into March, and over 48 inches of snow was recorded at the Wastewater Treatment Plant (WWTP) in January and February. Staff removed snow from over 150 fire hydrants in the first three months, had to again thaw out operational units at both facilities, including manual operation of the Water Treatment Plant (WTP) in order to prevent ice build-up in the above ground storage tanks, to halt severe surcharging of the influent flow at the WWTP when excessive ice formation in one clarifier rendered it unusable. Excessive snow removal duties again taxed the Departmental personnel as snow removal tasks had to be performed fifteen of the twenty-eight days in February, along with nine different frozen water service repairs during February and March.

Another similarity between the two years was almost identical flows at both facilities. In the case of the WTP flows were identical with both years averaging 191,000 gallons per day (gpd). WWTP flows were nearly the same with 2015 flows at 244,000 gpd compared to 240,000 gpd in 2014. Even precipitation amounts in the Village (which are measured at the WWTP) tallied almost identically with 43.54" of rain falling in 2015, compared to 43.38" in 2014. Even the "Unaccounted Water Use" for 2015 was identical to the previous year at 5%.

Along with the similarities came the continuation of work started in previous years. Most notable was the Phase I North Street Water Main Replacement Project. Reduced in size and rebid in January, the project began in late June and was completed in early October. The project replaced approximately 1,200 feet of 6" water main (approximately 108 years old) along North Street from the State Routes 88/82 intersection north to Kar-A-Bru Drive. In its place, new 8" ductile pipe was installed along with ten main valves, sixteen water service connections, five fire hydrants, and then the entire street was resurfaced.

2015 also shared a similarity with 2004. In the spring the Insurance Services Office, Inc. (ISO) performed a Public Protection Classification (PPC) Survey. These surveys are performed every ten years and are used to establish insurance ratings in regards to fire suppression capability. Part of the survey is a review of the entire water supply system and fire hydrant flow testing. Results of the survey reported an improvement in the Village classification which was, in part, due to improvements over the last ten years within the water distribution system.

Again, as in 2014, water rates were raised 7% to help finance these improvements and provide a stable budget. The Board of Public Affairs continued to review monthly area hydro-fracking issues, and for the fourth year in a row financed the bi-annual Tier 3 testing on raw well #20 and 16 area wells, using those test results to update the Village Source Water Baseline Testing Plan.

Also, like the previous two years, efforts were made to deal with challenges regarding elevated copper levels in the collection system. Sampling of a local copper processing plant was increased when the district Ohio EPA informed the Village that their new discharge permit (effective November 1, 2015) includes a discharge limit for copper. The excessively elevated copper levels that the WWTP had previously encountered already cost the Village well over \$25,000 each year for testing and disposal. With a limit imposed, the Village will require a very expensive treatment addition for the Village residents if the issue is left unchecked. The Village worked with the copper processing plant through the year to drastically reduce copper discharge hoping to avoid enforcement actions, but by years end the company was still having difficulty meeting the existing copper limits. The Board also hired the Village consulting engineer to update the Village local metal limitations to reflect the new EPA imposed limits.

In 2015 the Board updated their Rules & Regulations twice - once to graduate pay scale based on licensing and the other to establish a fee schedule and policy regarding meter repair. The Board also adopted an interdepartmental compensation policy, denied a request to provide a permanent water source for the Village of Farmington, and sold six residential water and sewer permits.

## **Water Treatment Department Highlights**

In 2015 the Village entered into multiple utility easements with three different property owners in order to relocate, upgrade, improve, maintain and/or provide improved water services. The first two easements were temporary ones enabling the Village to figure out a way to provide future water services to the entire fire damaged section of Main Street and to provide temporary service to the one surviving building. In order to accomplish this, throughout the year the Village performed multiple test digs to delineate subsurface materials, removed remaining old abandoned water service connections, and by October, the Water Department personnel excavated and installed a ¾" water line to 8121 Main Street. The third easement was requested by a homeowner who needed to re-locate an 8" water main in order to construct a new home. The relocation costs were bore by the property owner, with the main being re-located by mid-June. The last easement was a carry-over from 2014. This permanent water utility easement was required in order for the Village to provide maintenance, repair, and access rights to a 6" water main and fire hydrant on a private drive off of Brosius Road just north of the WTP. Once the agreement was signed, Village staff replaced a non-functioning fire hydrant and a badly corroded 1 ½" corporation valve, and installed two curb valves on the homes located at the water main's termination.

Another progressive action taken by the Board during the year was entering into a ten-year maintenance contract with a local tank painting contractor for the two Village metal water storage tanks. The agreement not only has bi-annual inspection and upkeep, but will have both tanks completely brought up to current safety standards and repainted inside and out by year ten. The Board also began looking at mixing options for the Industrial Drive standpipe to improve water quality to help offset water loss. During the course of the year the dead end hydrant that is partially fed from the standpipe was flushed approximately twenty times, while the standpipe itself was overflowed ten times to increase water quality.

As previously mentioned, the Water Treatment Plant processed and pumped over 69.7 million gallons of drinking water (a daily average of 191,000 gallons). Again, as in 2014, this low water consumption might be attributed to many factors such as current water rate increases, the increased frequency of the newly adopted monthly billing cycles, or a heightened awareness of water conservation issues coupled with a new more accurate water meter system, which was completely installed during the year. Since March 2009 approximately 990 automatic read water meters were installed these factors are suggested by the number of water use graphs requested by water customers throughout 2015. Water Department staff prepared and presented "use graphs" 185 times compared to 31 the previous year. Extremely high water consumptions are reviewed monthly and provided to customers with information so that they can quickly correct their problem. And again, like 2014, another factor that certainly contributed to the low flow was the decrease in bulk water sales which were 339,200 gallons in 2015.

During the year the Water Department updated & submitted to the District EPA the Water Contingency Plan, the Total Coliform Sample Plan, an Unaccounted Water Report, and a Consumer Confidence Report. The Water Department participated in the 27th 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 TTHM, HAAS5, and nitrate.

Both raw wells were again tested in 2015. Number 20 well was sampled in April and had hardness at 292 mg/l, iron at 1.01 mg/l, manganese at 0.160, E. coli and Total Coliform results as Negative (safe). Well number 19 was sampled in May and had hardness levels at 296 mg/l, iron at 1.837 mg/l, manganese at 0.256 mg/l, E. coli and Total Coliform Negative (safe). Well #19 was taken out of service in August and a contractor hired to remove, chemically clean, disinfect, video tape the well casing, and refurbish both the well motor and pump. During this maintenance work three vertical tears were discovered in the screening which was replaced when the well casing was re-installed. The well was re-sampled in October after being put back in service and results for both bacteria tests came back safe with hardness at 316 mg/l, iron at 1.806 mg/l and manganese at 0.247 mg/l.

At the Water Treatment Plant, after repeated attempts to extend #4 rapid sand filter media life, the filter was drained and inspected and an uneven distribution of the filter media was discovered. Unfortunately, at the same time filter media was found in the discharge line on #1 filter showing underdrain failure. At year-end estimates were being obtained to rebuild these units. The entire water plant main building roof was re-coated, #20 well house was re-shingled, #19 well house roof was replaced and the interior re-insulated. During the course of the year the four sedimentation basins and waste holding basin were drained and cleaned as was the potassium permanganate system. The chlorine room was scraped, primed, and painted, and #2 mixer motor was replaced in the chemical room.

### **Other Work at the Water Treatment Plant**

- In an effort to maximize aging filter media removal efficiencies, backwashing of all four rapid sand filters was increased each month, i.e. sand filters were manually backwashed 297 times in 2015.
- Replaced electric space heater in #20 well house.
- For the sixteenth year in a row, a water quality report was prepared and mailed out to all Village water customers.

### **Water Distribution Work Performed**

Besides the distribution work highlighted above, the department removed a leaking 4" water main valve on Crestwood Drive, repaired one 8" water main break and two 3/4" water service line leaks. Also, departmental personnel excavated and repaired twelve curb valve boxes, tested all nine Village backflow devices and repaired one 1/2" device, performed two Village-wide hydrant flushings with the local Fire Department, as well as replaced and updated the water meter reading laptop.

Both metal water storage tanks were cleaned and inspected twice during the year. In the fall, Industrial Drive standpipe also had safety railings, a ladder guard, new ventilation cover, and an overflow cap installed. Both tanks had the cathodic protection system inspected as well.

To remove discoloration and raise chlorine residual levels, dead-end hydrant flushing were performed on distribution ends throughout the Village. The Industrial Drive standpipe was overflowed ten times, the Park Avenue water tower, and the Brosius Road Reservoir were overflowed twice each.

In addition to exercising all 228 water main valves, personnel also located and exercised all 213 fire hydrant watch valves and relocated and marked curb boxes through-out the Village.

### **Main Goals of the Water Department for 2016**

- Rebuild filter media on both #1 and #4 rapid sand filters.
- Repair Brosius Road Reservoir and sedimentation basin south wall.
- Rebuild flow control valve in Brosius Road reservoir.
- Sand blast and re-coat interior of the Industrial Drive standpipe.
- Submit the North Street Phase II Water Main Replacement Project for funding.
- Perform rehabilitation/maintenance work on both high service pumps.
- Continue baseline ground water monitoring.
- Update water contingency plan and mapping.
- Complete phase II of well field electric line burial project.
- Create backup copies of Village water blueprints.

### **Wastewater Treatment Department Highlights**

The WWTP facility treated just over 89 million gallons of sanitary sewage (a daily average plant flow of 244,000 gallons) and obtained treatment removal efficiencies of 99.5% BOD (Biochemical Oxygen Demand removals) and suspended solids reductions of 99.6%.

As in 2014, the biggest operational challenge the facility had to deal with was excessive levels of copper in the plants biosolids. Although levels have decreased they are still above current discharge permit limits. The newly issued discharge permit requires that the Village initiate an evaluation to determine the ability of the WWTP to meet this new limit for copper and submit a status report within 12 months from the date of issuance of the new permit to the Ohio EPA. If it is determined that the Village treatment plant cannot meet the limitation, then the Village has to submit plans for necessary plant improvements within 15 months from the date of issuance of the new permit, and construct such improvements within twenty four months from the date of issuance of the new permit. Cost for this construction is estimated to be \$500,000 to \$1,000,000 and that does not include additional chemical and operational expenses that the Village would have to absorb. Repeated sampling showed that the copper appeared to be coming from the wash basins from a copper processing factory and, due to these elevated copper levels the Village was again forced to press and dispose of 346,000 gallons of sludge to a landfill instead of significantly less costly land application methods of disposal.

Other work performed at the WWTP included the relocation of the main electric 3-phase conduit in the new operations building. Along with new conduit and wiring, a 4" drain was installed to channel water away from the building. New isolation valves and faulty solenoid valves were replaced in the seal water system. The north and south aeration tanks as well as sludge holding basin #4 were drained, cleaned, and inspected.

After a faulty inlet manifold temperature sensor failed during an extremely cold spell in February, the Board entered into a three year preventative maintenance agreement with a local electrical company that also includes that standby generators at both facilities are checked twice a year. During 2015, maintenance testing found a broken coolant filter valve, faulty batteries in four different units, a bad block heater, and a nonfunctioning battery charger. All were replaced.

### **Other Work Performed at Wastewater Treatment Plant**

- Cleaned flow equalization basin, grease trap, influent pump station & influent piping.
- Replaced three faulty time relays in influent pump station.
- Performed preventative maintenance work on the Andritz screening equipment.
- Replaced faulty coolant system in raw sampler.
- Re-calibrated flow meters and analytical balance.
- Purchased a new fecal bath for the laboratory.
- Updated Wastewater Treatment Laboratory Manual, and Biosolids Generator Plan.
- Replaced faulty cellular connector in fire alarm system and motor on ventilation system blower in lower blower building.

### **Collection System Work Performed**

During the course of the year approximately 7,500 feet of Village sanitary sewer was cleaned and televised. Eight different areas of pipe failure that were located during the televising were repaired with interior liners later in the year. All five lift stations were cleaned twice, as well as trouble areas within the collection system which include all of Maple Avenue, Park Avenue, sections of State Street, Freedom Street, Liberty Street, Windham Street, Center Street, High Street, and the north main interceptor between Liberty Street and the Wastewater Treatment Plant.

The Village also contracted a fencing company to replace damaged security fencing on the sanitary interceptor river crossing between Windham and Water Street.

Late in the year a local contractor was hired to replace manhole N-20 and to re-align above ground sanitary sewer piping (installing restraint clamps to ensure the pipe won't separate in the future) between manhole N-20 and N-112 along a utility easement on the north collection system.

For the second year in a row a contractor was hired to perform annual preventative maintenance testing on all Village sludge pumps located in the lift stations, waste basin, and flow equalization basin. The company also removed and rebuilt one of the sludge pumps in the Center Street lift station.

After the third time during the year that the power company had to replace a blown 3-phase cut-out at the Davis Street lift station, they installed new transformers and electrical disconnects.

Wastewater staff responded to nine requests for assistance related to backed-up laterals. They also were called for an odor complaint on Park Avenue, which after inspection was smoked and was discovered to have two open floor drains and an obstructed vent pipe. Additionally, an illegal downspout connection into the sanitary sewer was discovered and removed.

Staff also performed metals testing on industrial, commercial and residential sections of the Village collection system during June, July and October.

## **Main Goals for the Wastewater Treatment Department for 2015**

- Continue to monitor and reduce copper levels in the biosolids to concentrations that allow a return to less costly land application disposal practices.
- Remove and repair #1 HSI centrifugal blower.
- Hire contractor to reconfigure operations control panel to automatically operate waste pumps during low flow periods.
- Re-smoke and dye test violation areas within collection system.
- Complete sanitary sewer contingency mapping update.
- Create backup copies of Village sanitary sewer blueprints.

### **WTP and WWTP Combined Efforts**

In addition to normal monthly meter reading and water termination processing, staff load tested standby generators on all five lift stations as well as the WTP and well field monthly. The staff also responded to over 184 different utility location-markings including all of Foxwood Hollow Circle five times, all along the North Street Water Main Project site countless times, Windham Street, Liberty Street, and Center Street from Brosius Road to distribution termination three times. Significant personnel time was spent during the North Street Water Main Project to hand out notifications, perform daily line flushing on the temporary water service, collect dozens of additional bacteria samples and chlorine residual tests, provide material and tools and inspect and exercise every valve and hydrant.

In the area of plant personnel, employees attended six workshops or classes as a requirement for licensing renewal. In November the Board hired a permanent part-time employee. Personnel also gave three different tours, one to 20 Hiram College students, one to a former area resident, and one to a college student for a senior project on water resource management.

The intention of this report is to briefly outline and record significant events that occurred at the Garrettsville Water and Wastewater Treatment Facilities in 2015. For more detailed information and/or any questions related to this report, please contact Jeff Sheehan, Utilities Superintendent.