

Water System Updates

Treatment System

Current Status: Our treatment system consists of 4 treatment facilities. There is a plant on Henderson Road (WP#3), one on N Chenango (WP#2), one on Jamison Blvd (WP#4), and one on N Downing Road (WP#5). Most of our drinking comes from purchased, treated water from Brazosport Water Authority. Each treatment facility is different in components, capacities, and restrictions. We use minimal well water, as our contract with BWA is a take or pay style contract. There are 3 employees who oversee all the plant operations. They must conduct daily inspections, tests, samples, submit documentation to TCEQ, and perform any maintenance at the facilities. These 3 employees must be licensed to operate the system per TCEQ regulations and be knowledgeable of their rules and regulations.

WP#3 – This treatment facility gets surface water from BWA sent directly to this facility. It is pumped into the 1-million-gallon ground storage tank. There is also an on-site water well (Well #11) that pumps well water into the same ground storage tank after it is treated with gaseous chlorine and liquid ammonia to create chloramines. The water is then pumped out by 3 service pumps with a capacity between 800 GPM and 1,000 GPM capacity each, into the distribution system. This plant also serves as a transfer station to plant #2 via the two pumps that send over the water at a rate of 750 GPM. This is done because there is not a dedicated BWA transfer line directly to the facility on N Chenango. Therefore, the water must be pumped from one facility to the other. This is one of the cons of our water system that must be taken care of to increase the redundancy of our water system. There is also a backup generator with a manual transfer switch for redundancies.

WP#2 – Through a transfer line, this plant can receive both treated water from Plant #3 and raw, untreated groundwater from between 3 and 6 of our water wells, listed below. Under normal operating conditions, this plant receives no untreated water, and as such does not have a treatment system installed that is capable of adequately treating raw water, leaving this plant wholly reliant on Plant #3. For this plant to be self-sufficient, such a system would need to be added. The gas chlorination system on-site is only sufficient to booster-chlorinate the incoming water from Plant #3.

If the connection between the plants is disconnected in any way, Plant #2 will be rendered useless once the 1-million-gallon ground storage tank is depleted. This plant has 3 service pumps rated at 800 GPM each that send water out to the distribution system. There is also a backup generator and ATS for redundancies.

- Per TWDB, Well #6 (1712 N. Velasco) was rated to pump 413 GPM when tested in February of 1959. This well has been inactive for longer than 20 years.
- Per TWDB, Well #7 (1202 N. Velasco) was rated to pump 503 GPM when tested in May of 1960. This well has been inactive for longer than 20 years.
- Well #8 (2516 N. Velasco) is rated to pump 550 GPM. It has been tested to pump 450 GPM when used to meet emergency demand.
- Well #9 (232 Shannon) is rated to pump 750 GPM. It has been tested to pump 700 GPM when used to meet emergency demand.
- Well #10 (Woodway Drive) is rated to pump 800 GPM. It has been tested to pump 720 GPM when used to meet emergency demand.

- Well #11 (Plant #3 on-site) is rated to pump 770 GPM. It routinely pumps 680 GPM when it is used. To allow water from this well to enter the Transfer Line directly, on-site bypass valves must be opened.

WP#4 – This plant is located on Jamison Blvd. This plant received all its water from a BWA connection directly into the 400,000-gallon ground storage tank. This is then pumped into the distribution system via 3 service pumps with a capacity of between 750 GPM and 800 GPM each. There are no wells that pump water to this plant. There is a chlorine treatment system on site for booster chlorination if necessary. There is also a backup generator and ATS for redundancies.

WP#5 – This plant is located at N. Downing near Freedom Park. This treatment facility consists of a water well that pumps through an Arsenic filtration system into a 50,000-gallon GST. The water is then pumped out of this tank into the distribution system via 2 service pumps at a capacity of 750 GPM each. This site utilizes chloramines, made by adding both gaseous chlorine and liquid ammonia to disinfect the raw well water. There is not a BWA connection at this site, though there is a system interconnection to allow the re-treatment and distribution of existing system water. There is also a backup generator and ATS for redundancies.

Recent Improvement Projects

Chenango GST Replacement: This project consisted of replacing the ground storage tank with a new 1MG storage tank, and demolition of the old tank. This project was necessary after the dilapidated state of the tank brought TCEQ to cite the tank for replacement.

Southside Water Tower Replacement: This project consisted of replacing the water tower to an increased size of 750k gallon water tower, and demolition of the old 500k gallon tank. This project came as an emergency when the tower was on the brink of failure.

Freedom Park Arsenic Treatment System: This project consisted of the installation of a new arsenic treatment system at an existing well. Originally this well was drilled with a chemical feed system, storage tank and service pumps. It was intended to be a standalone treatment system; however, the arsenic levels in the raw water were above the EPA-mandated Maximum Contaminant Level. Therefore, if this system had not been installed, the well would have been rendered unusable for drinking water.

Improvements to the Treatment Systems

- **Transfer Line for BWA to Plant #2:** This improvement will give plant #2 operational independence from plant #3. It would allow this plant to receive treated water directly from BWA. This also leaves the existing transfer line open for use as a raw well water collection line, leading to both plant #2 and plant #3 for treatment. However, this improvement must be coupled with the next item for it to work properly. This was included in our PIF that was submitted to TWDB for funding. **\$2,100,000.00** is the cost of this project.
- **New Chemical Building/Pump House:** This improvement will allow the addition of both chlorine and ammonia to treat the raw well water entering Water Plant #2 and increase our available supply capacity. Because we currently lack the necessary treatment

infrastructure, if we run the wells in an emergency, we will have to go under a boil water notice until conditions return to normal due to low disinfectant residuals. This was included in our PIF that was submitted to TWDB for funding. **\$1,600,000.00** is the cost of this project.

- **Water Tower:** A new tower will be necessary to allow new connections in the city. We are at the point where we cannot allow anymore connections unless we build this tower. TCEQ requirements state that we must have a total amount of water stored per connection. Once this is exceeded, we will be forced to build one, or simply not allow anymore connections in the city. **\$5,125,000.00** is the cost given for this project.
- **WP #4 GST Rehabilitation:** This would consist of the replacement of the coatings on the exterior, and interior of the tank. These coatings have begun to fail. If continued the coating will completely fail and begin causing damage to the tank itself. This project is estimated at **\$500,000.00**.
- **Northside Water Tower Rehabilitation:** Complete rehabilitation of the coating on the inside and outside of the tank. Also, reconfiguration of piping so that there is a drain and a fill line. This is much more efficient and better for system operation. This project is estimated between **\$750,000.00 to \$1,000,000.00**.
- **SCADA @WP#5:** This treatment facility was not in service when the original SCADA project was created. This must be added for this treatment facility to work in tandem with the rest of the system. This project is estimated at **\$50,000.00**.
- **SCADA @ Well Sites:** If brought into normal use, this would allow automatic control of the off-site wells feeding Plants 2 and 3. This is estimated at **\$75,000.00**.
- **Transfer Switches:** There are sites that have generators but not an Automatic Transfer switch. This means that an employee must be present to turn the power over from normal to the emergency source (generator). Installing these will ensure that during a power loss event, the generator would be promptly initiated, greatly reducing the downtime without power.
- **Well Site Generators:** If brought into normal use, only Well #10 has a permanently installed generator on-site to allow the site to act as emergency source-water.
- **Well Rehabilitations:** There are several wells around town that have been out of service for many years. We are going to perform a camera survey on these wells to determine if they have been plugged. If they have not been plugged, then these wells can be rehabilitated if desired. This would be a good option as it will increase our capacity and lessen our reliance on surface water, hence increasing our resiliency. This would come at a fraction of the cost of drilling new wells, which has been a topic of discussion for our water system. This would yield us an increase of 916 GPM, and the equivalent of 2,775 connections.

Distribution System

Current Status: Our distribution system consists of 144 miles of water lines of various sizes and materials. There are approximately 830 hydrants, and 2,050 water valves. There were 944

water related work orders received in 2024, of these 746 were completed. There are 7 full-time employees that are responsible for the maintenance and repairs of all these components in the system. This includes the repair of water lines, hydrants, valves, and meter issues. We currently have a hydrant maintenance program in place that since inception has decreased the number of out of service hydrants by approximately 50%. There are currently 11,362 connections in the City of Angleton. This includes current connections, and any developments that have agreements in place and expected to build out. This leaves the city with 338 connections before we will be forced by TCEQ mandate to begin increasing capacities.

Improvements to the Distribution System

Water Line Replacement Program: This program would be to cyclically replace water lines on the most needed basis across the city. It will give us the flexibility to adapt from year to year as conditions change with the infrastructure. The City of Angleton recently increased utility rates to begin replacing infrastructure. However, since generating this extra revenue it has been utilized as contingency to fund emergency repairs/replacements. Based on current patterns more revenue would need to be generated to begin being proactive and not reactive to infrastructure replacements. **\$58,000,000** is the total costs given on replacements of lines across the city.

Valve Maintenance Program: There are approximately 2,050 valves within the distribution system. The primary function of these valves is to isolate lines for leaks, repairs, replacements, and flushing strategies. Like hydrants 3 years ago, there is no maintenance program on these valves. These valves should be exercised periodically to improve the functionality and determine if the valves need repair/replacement. Our current operations do not allow us to perform any preventative maintenance on these valves. We won't know a valve is not working properly until we attempt to utilize the valve, which is the least opportune time. This was a cost presented during the budget and will be placed on continuing years at **\$102,544.00**.

Lead Service Line: The EPA has mandated that all public water systems complete the process of inventorying of all their lead and copper lines in the system. Once this is completed replacement will be expected in the next decade. We have submitted the inventory and will now be responsible for replacement of everything in the next decade. There are funding opportunities that will help us select the best approach to begin the next steps. There will be more to follow when we initiate the next phase of this process. We have been working with KSA on this project and will continue to go through their contract as phase 2.