WILLINGBORO MUNICIPAL UTILITIES AUTHORITY
ENGINEER'S STATUS REPORT
JUNE 19, 2019

M-260-309 **WPCP GRIT AND SCREENING REMOVAL EQUIPMENT (NJEIT)**

This project includes the installation of a mechanical bar screen and grit removal equipment. The mechanical bar screen which will be installed in the raw wet well will replace the comminutor and manual back-up bar screen. The mechanical bar screen collects rags, plastic and other large debris which cannot be biological degraded and prevents damage and clogging of downstream equipment. The mechanical bar screen is typically the first process installed at a wastewater treatment plant. A mechanical bar screen automatically rakes the debris collected to the surface where it is dewatered and ultimately deposited into a dumpster for disposal off-site. The mechanical bar screen will replace the existing comminutor and manual bar screen.

Grit includes sand, gravel, cinders other heavy inorganic and organic wastes. Removal of grit prevents unnecessary wear of mechanical equipment, grit deposition in pipelines and accumulation of grit in the anaerobic digesters. The grit removal equipment will be installed between the raw sewage pumps and the primary settling tanks to prevent deposition of grit in the primary settling tanks with the primary sludge. The grit removal equipment proposed to be installed are sealed vessels which remove the grit by cyclonic force. Grit is forced to the perimeter of the vessels where it falls by gravity to the bottom of the vessel. After collection the grit is washed, dewatered and processed for processed for off-site disposal.

Due the increased head losses associated with the grit removal equipment it has been determined that the raw sewage pumps will have to be replaced or upgraded to accommodate the additional head and enable the raw wastewater to be pumped through the new grit removal units to the primary settling tanks. When the raw sewage pumps are upgraded or replaced the pump motors should be replaced with high efficiency motors and variable frequency drives. This will allow the raw sewage pumps to vary their speed to match the incoming wastewater flow, which will in turn reduce the energy consumed.

Yard piping and mechanical plans and sections were reviewed with Willingboro MUA (Manny and Pat). Per the review meeting, the Authority requested we replace the existing raw sewage pumps with dry pit submersible pumps with VFD control. Likewise, the MUA requested the Secondary Stage Sewage pumps be upgraded with VFDs. Structural evaluatation and plans of the modified wet well configuration are currently in progress. Architectural plans of the canopy over the wet well is currently in progress. Civil plans including grading and site plan modifications are currently in progress. Since we are modifying the existing process by installing grit and screenings removal equipment, we are required to obtain a Treatment Works Approval (TWA) Permit. WMUA indicated issues with the raw sewage control valve will need to be addressed.

Mixer upgrade on the digester removed from scope of work of the project and will be part of the ESIP program.

The TWA permit application has been received by NJDEP and is administratively complete. The TWA application is currently under technical review. The current estimated construction cost is $4.15M. The total estimated project cost, including design, contingency, permitting, bid, and construction administration costs is $5.198M. The increase in construction cost is primarily due to the installation of two new raw sewage pumps, associated controls, two new eighteen inch (18") gate valves and two new fourteen inch (14") check valves.

M-260-312 **WELL NO. 6 WTP UPGRADE (NJEIT)**

No change is status.

Plans and specifications were previously forwarded to NJDEP for approval.

The Burlington County Engineer's Office comments on the subdivision plan have been addressed and the plan has been approved. The County's standard deed of easement for a culvert access and maintenance easement was reviewed by Victory Church's attorney and returned with numerous comments. These comments were forwarded to the County's engineer and solicitor for review.

The Authority is working through issues and can complete any remaining transactions with the church. The Authority has acquired the title for the neighboring property 24 Medallion Lane.

The Yard Piping plan has been updated to show the proposed new location of the chemical building along with additional yard piping. Since the location of Well 6 is fixed, a new building will have to be built to house Well 6. Civil Plans will need to be updated to show the new location of the chemical building along with site improvements associated with the newly acquired property (24 Medallion Lane). Architectural, structural, and electrical plans will also need to be updated to reflect the new Well No. 8 building and the modification/relocation of the chemical building. In the near future, the plans will have to be resubmitted to DEP, reflecting changes to the approved design and process. The Authority will be responsible for the demolition of the house located on 24 Medallion Lane.

M-260-319 **ADMINISTRATION BUILDING ADDITION**

No change in status.
A number of conceptual plans and a preliminary cost estimate for the building, which includes a second floor and partial basement have been provided to the Authority for review. A brief presentation describing the project and property required to construct the addition was given to the Township Council at their October 16 meeting.

M-260-321 **HIGH SERVICE PUMP NO. 1 REPLACEMENT**

No change in status.
High service pump No. 1 at the Main WTP is one of the original pumps installed when the plant was constructed in 1959. The Authority intends to replace this pump with one of similar design so that the existing motor which is newer can be reused. The project schedule is to advertise, receive bids, award and issue notice to proceed in the fall so that the work can take place during the winter when water demands are lower.

We have met with Authority personnel to review the scope of work and have contacted pump manufacturers to obtain design information and specifications for replacement pumps.

M-260-322 **WTP BACKWASH LAGOON CROSS CONNECTION PIPING REPLACEMENT**

Backwash lagoon at water treatment plant has a drain cross connection with a sanitary sewer that must be reconfigured. The lagoon bypass also drains into the same sanitary sewer.

Alaimo Group performed a site visit with WMUA and updated plans. The updated plans include the construction of air gaps between the lagoon drain and San. MH and lagoon bypass piping and San. MH, modification of san. MH, and construction of headwall. Since the required modifications are in a wetlands area, a construction permit may be required. A separate pump will need to be installed to remove the iron deposits.

Reviewed proposed plans with WMUA. Contacted Steve Matthis of NJDEP-Southern Bureau of Water Compliance and Enforcement who recommended we review plans with NJDEP Division of Water Quality.

The NJDEP, Division of Water Quality, reviewed plans to isolate the backwash lagoon. They determined the modifications did not require a TWA permit and that recycling of the backwash water can resume once the modifications to isolate the backwash lagoon are complete. A six inch (6") gap is still required between the lagoon bypass and sanitary manhole. Since the manhole is in a delineated area, a permit would be required to modify the manhole and install the proposed headwall.

M-260-XXX **MAGNESIUM HYDROXIDE CHEMICAL FEED SYSTEM**

No change is status.

The MUA would like to replace the existing sodium hydroxide chemical feed system at the WPCP with Magnesium Hydroxide for alkalinity adjustment. Magnesium Hydroxide has a neutralization value that's 37% greater than sodium Hydroxide.

We have met with Authority personnel to review the proposed location of the system, which would be located behind the filter building at the WPC plant. The existing abandoned chemical feed containment can be modified to store the proposed magnesium hydroxide storage tanks. The existing containment would need to be modified to meet NJ DEP requirements.

Engineer assigned. Design kickoff meeting expected to be week of May 20, 2019.

M-260-XXX **CLARIFIER REPAIRS**

No change is status.

The slide gate mounted on Primary Filter 1 at the WPC plant is defective. The MUA would like to replace or repair this in the near future. In addition, the 20" buried gate valve between the two secondary filters is lose and may need replacement.

LMG/das