

**AUTHORITY OF THE BOROUGH OF CHARLEROI
WASHINGTON COUNTY, PENNSYLVANIA**

ACT 537 SEWAGE FACILITIES PLAN UPDATE

PLAN SUMMARY

The Pennsylvania Sewage Facilities Act (Act 537) was enacted by the Pennsylvania Legislature in 1966 and requires every municipality in the Commonwealth of Pennsylvania (Commonwealth) to develop and maintain an up-to-date Act 537 Sewage Facilities Plan. The purpose of the Act 537 planning process is to protect the health, safety and welfare of the citizens living in a municipality, to prevent future sewage disposal problems from occurring, and to provide protection for the groundwater and surface waters of the Commonwealth. An Act 537 Plan should be updated when the existing Plan is out of date, is inconsistent with other municipal planning, does not provide adequate solutions to resolve existing sewage disposal problems, or is needed to provide for planned growth.

This Act 537 Sewage Facilities Plan Update was developed by the Authority of the Borough of Charleroi (Authority or ABC) according to the Pennsylvania Department of Environmental Protection (PADEP) guidelines set forth in the PADEP document entitled, *A Guide for Preparing Act 537 Update Revisions*. The Plan includes all applicable information to provide adequate planning, as outlined on the PADEP document entitled, *Act 537 Plan Content and Environmental Assessment Checklist*, provided herein as Appendix B.

The Authority owns, operates and maintains a 3.0 million gallon per day (MGD) wastewater treatment plant (WWTP) located in the Borough of Charleroi, Washington County, Pennsylvania. The Authority provides for treatment of wastewater flows from Fallowfield Township and the Boroughs of Charleroi, North Charleroi, Dunlevy, Speers and Twilight. Treated effluent is discharged to the Monongahela River.

The Authority also owns and maintains interceptor sewers, eight (8) sewage pumping stations, one (1) ejector station and the sanitary collector sewers serving Fallowfield Township. The Boroughs of Charleroi, North Charleroi, Dunlevy, Speers and Twilight own and maintain their respective collector sewer systems. The sewers serving Fallowfield Township and a small portion of Speers Borough located in the Maple View area are separate sanitary sewers. The remainder of the collection system is a combined sewer system (CSS).

The WWTP is neither hydraulically nor organically overloaded as defined by the Chapter 94 regulations of the Pennsylvania Code. However, the conveyance system is hydraulically overloaded, causing peak flows to exceed the carrying capacity of certain portions of the system resulting in combined sewer overflows (CSOs) and a sanitary sewer overflow (SSO).

The PADEP has required elimination of CSO-009 and CSO-013 given their proximity to the water treatment plant raw water intake. Additionally, elimination of Maple Creek Pump Station SSO-010 is required in accordance with PA Code Chapter 94 Regulations.

This Act 537 Sewage Facilities Plan Update was developed to evaluate alternative sewer system upgrades required to control CSOs and eliminate the SSO under existing and projected future wastewater loadings. It was prepared in conjunction with the Long Term Control Plan (LTCP) as part of the Authority's CSO Program. The Authority utilized the United States Environmental Protection Agency (EPA) CSO Control Policy "presumption" approach criteria ii through the LTCP process. The criteria are as follows:

"The elimination or capture for treatment of no less than 85% by volume of combined sewage collected in the CSS during precipitation events on a system-wide annual average basis."

Based on the requirements established above, the following LTCP objectives were established:

1. Eliminate all Maple Creek Pump Station SSO events at SSO-010 for at least a 2-year, 24-hour storm.
2. Eliminate all CSO events for the typical year at CSO-009 and CSO-013.
3. Meet EPA CSO Control Policy Presumptive Approach by reducing CSO volumes such that 85% of CSS flow (during rainfall dependent time periods) is captured and treated, on an annual average basis.

In order to assess the overflow volumes relative to total CSS conveyance capacity on an annual average basis, the Authority completed a system characterization survey, a comprehensive flow monitoring study, and computer modeling of the conveyance system, including the CSOs and the pump stations, utilizing InfoSWMM. The results of the flow monitoring and hydraulic modeling efforts were utilized to develop the alternatives identified and evaluated herein. The 2-year, 5-year and 10-year storm events were modeled. Design peak flows were selected on the basis of the highest return period that is practically feasible without manhole overflows while maintaining greater than 85% capture of all combined flow during a typical year. Given the proposed system improvements, rainfall dependent CSS flow percent capture, for the typical year rainfall, is 94.77%. The SSO will be eliminated.

The following wet weather flow control facilities, identified herein as Alternative 1, are recommended to control CSOs and eliminate the SSO to meet the LTCP objectives:

Phase 1 – Elimination of CSO-009 and CSO-013

1. Construct new Dunlevy Pump Station with submersible pumps. Pump all flow up to 350% of dry weather flow to Speers Pump Station through existing force main and gravity sewer.

2. Convert existing Speers Pump Station wet well into a submersible pump station. Pump all flow up to 350% of dry weather flow to Maple Creek Pump Station through existing force main and gravity sewer.
3. Dunlevy Pump Station to include CSO pumping capacity in addition to dry weather flow. CSO-013 overflows to be conveyed directly to this pump station and pumped to the on-site WWETCO Bio-FlexFilter CSO treatment facility.
4. Construct a CSO pump station at the Speers Pump Station site. CSO-009 overflows to be conveyed directly to this wet well. Construct a new force main from the Speers CSO Pump Station to the WWETCO Bio-FlexFilter CSO treatment facility at the Dunlevy Pump Station site.
5. Construct a WWETCO Bio-FlexFilter CSO treatment facility at the Dunlevy Pump Station site.
6. CSO treatment facility to include screening and ultraviolet (UV) disinfection.

Phase 2 – Eliminate Maple Creek Pump Station SSO and Achieve 85% Capture

1. Convert existing Maple Creek Pump Station wet well into a submersible pump station.
2. Construct Maple Creek SSO Pump Station at the Western Flour site.
3. Replace approximately 1,400 lineal feet of existing 10-inch Maple Creek Interceptor with 15-inch gravity sewer upstream of new Maple Creek SSO Pump Station.
4. Construct new force main from both pump stations to the existing WWTP.
5. Construct new WWTP influent box with sluice gate. Maple Creek Pump Station force main to connect to the box downstream of the sluice gate, such that throttling of the gate will back up and overflow only CSS flow.
6. Construct a CSO pump station at the WWTP. This pump station will pump CSS flow, backed up due to WWTP acceptance of Maple Creek SSO flow, to a CSO treatment facility.
7. Construct a WWETCO Bio-FlexFilter CSO treatment facility on the existing WWTP site (near CSO-007).
8. CSO treatment facility to include screening and UV disinfection.
9. Convert existing North Charleroi Pump Station wet well into a submersible pump station.
10. North Charleroi Pump Station to include screening.

The proposed project phasing is necessary to allow the Authority to move forward with the Speers and Dunlevy portions of the project in order to utilize a Local Share Account (LSA) grant in the amount of \$500,000.00, which has been acquired by the Authority for a CSO project in those communities. In order to utilize those funds, however, the Speers and Dunlevy projects must be constructed and the contracts closed by June 2019. Therefore, the overall project will be phased in order to allow that deadline to be met. Design of the Phase 1 project is underway. Construction is anticipated to begin in the fall of 2017. Design of the Phase 2 project will begin in the fall of 2017 and construction is anticipated to begin in the spring of 2019. All facilities are anticipated to be constructed by the summer of 2021.

It is the Authority's intent to conduct post construction flow monitoring throughout the system upon completion of construction. The post construction flow monitoring will be conducted after each phase of the project.

The anticipated project cost for construction of the Alternative 1 wet weather flow control facilities is estimated to be \$32.5 Million. The costs will result in a monthly CSO Program user fee charged to all of the Authority's customers. The Authority has elected to phase in the projected user charges by discounting the first six years in order to decrease the initial burden to its rate payers. The Authority intends to refinance the Borough of Charleroi's remaining debt associated with its separation project. The separation project resulted in reduced flows entering the WWTP, and thus has an inherent impact on the CSO Program as a whole.

The estimated monthly CSO Program user rate is approximately \$38.00 per customer for the first six years and approximately \$45.00 per customer for the remainder of the financing term. It is anticipated that bonds will be the primary financing option. However, in order to minimize user rates to the greatest extent possible, the Authority will apply for various federal, state and county level grants. Ultimately, the financing method will be selected based upon eligibility, availability and in the best interest of the Authority and its customers.

It should also be noted that the Authority intends to refinance Fallowfield Township's existing debt services related to the construction of its sanitary sewer system. This will ease the initial burden to the Fallowfield rate payers. The refinancing will reduce the monthly debt service to Fallowfield customers from the current \$26.50 per month through 2022 to approximately \$8.00 per month through 2040. This rate will be paid by Fallowfield customers in addition to the CSO Program user rates described above.

In addition to the above mentioned wet weather flow control infrastructure improvements, the Authority is committed to undergoing the following efforts to reduce flows and maintain the conveyance system, as source reduction is a key component of the LTCP:

- Cleaning and closed circuit television (CCTV) inspection of interceptors. This work is underway and is anticipated to be complete by the end of 2016. The Authority will complete this work every 10 years as required.
- Cleaning and CCTV of the Fallowfield collection system. The Authority will complete this work every 10 years as required.
- Conducting a Flow Isolation Study in the Fallowfield collection system to identify problems areas heavily impacted by wet weather.
- Adoption of a Time of Sale Ordinance requiring dye testing during any real estate transaction to identify and remove illegal downspout connections to the sanitary sewer system. The Authority currently requires this in Fallowfield. Speers and Dunlevy also require dye testing at time of sale. The Authority intends to encourage and assist Charleroi and North Charleroi with implementation of time of sale dye testing.

- Implementation of a Private Lateral Program for residents connected to the Fallowfield collection system which would offer incentives for homeowners to repair/replace aging and leaking sewers laterals.
- Investigate the need for solids/floatable control improvements in existing CSO diversion chambers.

The communities tributary to the Authority of the Borough of Charleroi will also be encouraged to continually monitor and improve their respective systems as well. While a great deal of work remains, the following efforts have already been completed by the communities.

- The Borough of Charleroi completed a storm sewer separation project during which the Borough expended nearly \$8.0 Million to separate storm and sanitary sewers throughout the Borough. These efforts provided a noticeable impact on the flows entering the WWTP.
- The Borough of Dunlevy has completed flow monitoring within its collection system and has performed repairs in identified problem areas.

The anticipated schedule of implementation of the Act 537 Sewage Facilities Plan Update, contingent upon receiving favorable funding, is included in Table 1 in the Implementation Schedule section below.