Hallsdale-Powell Utility District

Capacity, Management, Operation & Maintenance (CMOM) Program

2022 Annual Report

HALLSDALE-POWELL UTILITY DISTRICT

TABLE OF CONTENTS

TABLE OF CONTENTS - APPENDICES

SECTION 1.0 - 2022 CMOM PROGRAM SUMMARY

A. Certification Statement

This 2022 Annual Report is submitted to fulfill the requirements of Hallsdale-Powell Utility District's (HPUD's) Consent Order #WPC-14-0044 as agreed upon in August 2014. This Consent Order is a legal agreement between the Tennessee Department of Environment & Conservation (TDEC) and HPUD. The purpose of the Consent Order is to address sanitary sewer overflows (SSOs) in the HPUD sanitary collection system in an effort to improve water quality throughout HPUD service area. In accordance with the 2014 Consent Order, this report details the results of activities undertaken during the annual reporting period beginning January 1, 2022, and ending December 31, 2022.

In 2022, Hallsdale-Powell Utility District's focus for the collection system was ensuring contractors finished the two sewer line interceptor projects that have been in construction for the last couple years. Both contractors were able to complete the pipeline installation, and the new forty-eight-inch sewer interceptor line was online by the middle of September. In the remaining months of 2022, HPUD saw normal daily flows decrease, as well as a change in the amount of wastewater treated and the response of the collection system during wet weather events. HPUD continues to monitor how the collection system responds to wet weather events and will continue to focus on areas where wet weather impacts the collection system. HPUD like all other utilities and many other industries felt the effect of material delays which resulted in start dates for projects being almost a year after original bid date. HPUD has also been working to secure funds from the Knox County ARPA and TDEC ARP funding to help secure additional assistance to continue improvements to the collection system.

The format of this report will follow the outline presented within the Table of Contents and is presented in response to the information requested in the Consent Order. All pertinent and supplemental data, maps, and background documentation will be retained on file in the main office located at 3745 Cunningham Drive, Knoxville, Tennessee, and are available upon request.

Signature

3-30-2023

Date

B. Purpose and Scope

The Capacity, Management, Operation, & Maintenance Program (CMOM) Annual Report provides a summary of CMOM Program activities (past, present, and planned) and is intended to be a communication tool. The report is designed for District staff, regulatory authorities, customers, and the general public. The report serves four general purposes:

- To provide an annual overview of the activities completed under the CMOM Program.
- To describe and document changes to the CMOM Program on an annual basis, which may include changes to objectives, strategies, and performance measures.
- To describe the activities that are planned or currently being undertaken to support the CMOM Program.
- To continue compliance with the August 2014 Agreement between the District and State of Tennessee, Department of Environment and Conservation (TDEC), which requires that HPUD provide an annual report regarding the implementation and performance of the CMOM program.

C. Overview of HPUD Infrastructure

HPUD's wastewater system serves approximately 24,604 wastewater connections covering an area of roughly 146 square miles. The District runs from North Knox County into Union County and extends into portions of Anderson County.

The District has a total of 489 miles of sewer mains, of which 445 miles are gravity sewer lines. HPUD maintains a 5-million-gallon (MG) sewer storage tank, 22 sewer lift stations, 9,967 manholes, and operates two wastewater treatment plants. The main wastewater treatment plant, Beaver Creek WWTP, is operated and manned twenty-four hours a day and, in 2022, averaged treatment of 9.4 million-gallon-per-day (MGD). The second wastewater plant, Raccoon Valley WWTP, is an unmanned treatment facility that averaged .078 MGD.

HPUD's Wastewater Infrastructure:

No. of Sewer Connections	24,604
Service Area	146 square miles
Wastewater Treatment Plants	2
Decentralized Treatment Plants	2
Rated Treatment Plant Capacity	9.7 million gallons per day
Daily Max WWTP Flow	18 million gallons per day
Treated Wastewater	3.47 billion gallons per year
Sewer Storage Tank	5 MG capacity
Wastewater Lift Stations	22
Sewer Manholes	9,967
Force Main & Gravity Sewer	489 miles

D. Roles and Responsibilities HPUD's CMOM Program

Under the direct supervision of the Utility Supervisor, there is a staff of full-time employees who divide their time between operation and maintenance of the sewer collection and water systems. HPUD's Field Operations Manager also devotes a significant amount of time to the management and oversight of the sewer collection system.

Roles and Responsibilities for the CMOM Program

Title	Role or Responsibility
Board of Commissioners	Develops policy for District
General Manager	Manages all personnel, procurement, budget, operations, and management of HPUD departments and activities
Assistant General Manager	Serves as the assistant to the General Manager and has the authority to conduct the same duties/responsibilities as the General Manager, under his direction and approval.
Chief Operating Officer	Manages the daily operation of all water and wastewater facilities, water distribution, sewer collection and construction activities.

Manager of Field Operations	Manages the HPUD operations/crews for the collection and distribution systems daily.
Utility Supervisor	Works directly with field utility crews giving direction on day-to-day operations, reports how the collection system is performing and provides input on areas of that need attention.
Manager of Safety, Environmental and Field Services	Manages safety procedures, environmental programs, and oversees daily field services.
Safety and Education Coordinator	Oversees education and outreach efforts with schools, residents, and local businesses.

E. CMOM Program Overview

The CMOM Program provides a method for HPUD to summarize the past, current, and planned projects and programs that are in place to help HPUD achieve goals related to the elimination of sanitary sewer overflows, to improve effluent quality, and to ensure adequate system capacity. As part of this effort, HPUD has completed this 2022 annual review of the Program in conjunction with evaluating the performance measures outlined in the Program.

1. Management Plan

HPUD's CMOM management plan describes the approach that the District is undertaking to ensure all necessary activities and programs are in place in order to support the CMOM Program. This report is intended for District staff, regulatory authorities, customers, and the general public.

Each year, the annual report details the progress toward meeting the objectives of the Plan. The following is a list of some of the significant accomplishments that have helped move the CMOM Program forward:

- Continued monitoring and implementation of the Preventative Maintenance & Inspection (PMI) Program to problem areas in the collection system in order to identify, pinpoint, and prioritize areas in the collection system that need rehabilitation or replacement.

- Use of the Geographic Information System (GIS) data as the basis for the asset management system for collection system & treatment plant infrastructure.

2. Performance Measures and Management Review

The review of the performance measures is intended to evaluate of the District's status with respect to achieving its CMOM objectives. The purpose of the performance measures is to track District activities over time and gauge the achievement of CMOM program objectives. Some of these performance measures have been selected as critical measures to gauge the overall performance of HPUD in the areas of collection system operations and maintenance and capacity assurance. ***(See Attachment 1: Spreadsheet - Performance Measures and Management).***

3. Data and Asset Management

As in previous years, the District continues to improve asset management processes and data quality and accuracy. The District continues to evaluate and monitor the process of tracking capital project costs at the asset level to verify the accuracy of these assets and costs associated with them.

HPUD utilizes Cityworks and Geographic Information System (GIS) to track and evaluate assets. Cityworks tracks customer issues, service requests, and work orders that HPUD receive daily. HPUD uses GIS to track and locate upgrades and changes to the collection system. HPUD also uses GIS as a tracking and assessment tool for PMI, which helps evaluate assets to develop rehabilitation and construction projects. These rehabilitation and replacement projects are then entered into the Combined Rehab database and are shown in GIS.

4. Capital Improvements Plan

HPUD utilizes a Capital Improvements Plan (CIP) to ensure adequate financial resources are set aside to fund the required components of the sewer capital improvements plan. The activities in the CIP are discussed in more detail in Section 5.0 of this report, and a summary of the plan is included in Appendices**. (See Attachment 2: Spreadsheet - Sewer System Capital Improvements Plan (CIP)).**

5. Sewer Overflow Response Plan

The Sewer Overflow Response Plan (SORP) describes the measures the District has put in place for response, containment, clean up, stream sampling and analysis, public notification, and regulatory reporting of overflows in the collection system. The SORP details the steps to be taken when a potential overflow is identified, categorizing whether it is a wet weather or dry weather SSO, and whether it reaches State Waters.

Historically, the District has collected data about pipe defects, line blockages, mechanical or electrical equipment problems, vandalism, and inflow and infiltration, which are the primary causes of sanitary sewer overflows.

The Field Operations Manager maintains the SSO tracking spreadsheet. Overflow data is also incorporated into the GIS. The following section of this report details specifics about SSO data captured during this reporting period.
(See Attachment 3: Map - 2022 SSO Locations)

a. Summary of SSO Data

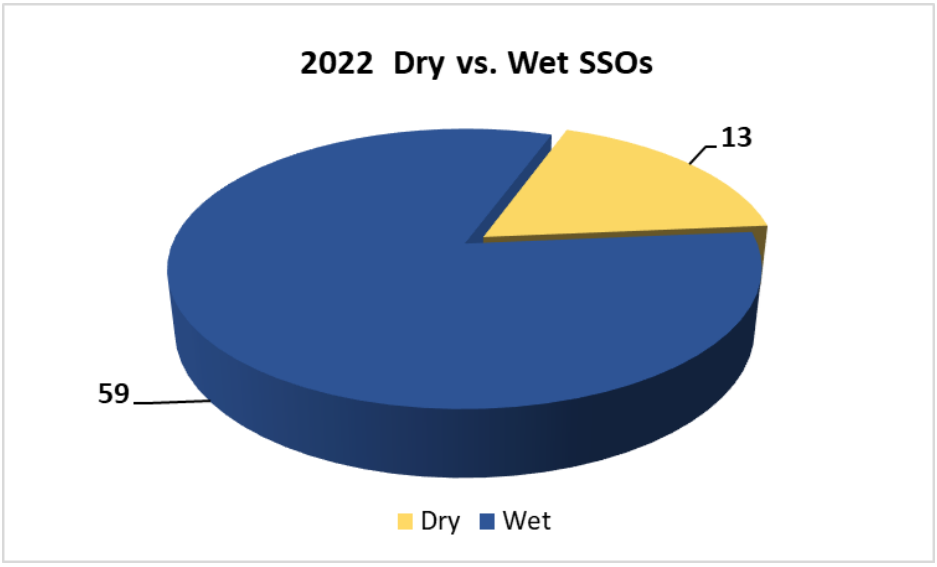
Hallsdale-Powell Utility District's collection system has one main trunk or interceptor sewer main that runs along Beaver Creek the entire length of the collection system, approximately 18 miles. Beaver Creek is known to flood and stay flooded for several days depending on the amount of rain, rain intensity, and ground saturation prior to the rain event. This is directly correlated with the wet weather SSOs HPUD sees each year. Each rain event that results in wet weather SSOs in HPUD's collection system exceeds the standard sanitary sewer design capacity for a rain event.

HPUD reported and responded to seventy-two total SSOs in the collection system. The graph below shows that fifty-nine of the total SSOs were considered wet weather overflows caused by infiltration and inflow during rain events. This is the lowest number of wet weather SSOs HPUD has reported since 2007 when the area was in a drought and only received twenty-seven inches of rain vs. the fifty-eight inches we received in 2022. Of the fifty-nine wet weather overflows, forty-one of the wet weather overflows occurred in February and July. In February, HPUD reported 27 overflows for one event where the area received over three inches of rain in a time of the year where the groundwater table is high, and the ground saturation is at its highest. The other main event that resulted in HPUD seeing multiple SSOs occurred in

July where overnight the area saw over four inches of rain in two to three hours causing flash flooding and resulted in fourteen overflows. These two events were the cause of seventy percent of the wet weather overflows HPUD reported in 2022, further demonstrating how the collection system can be impacted from the amount of rain, rain intensity, and ground saturation prior to the rain event.

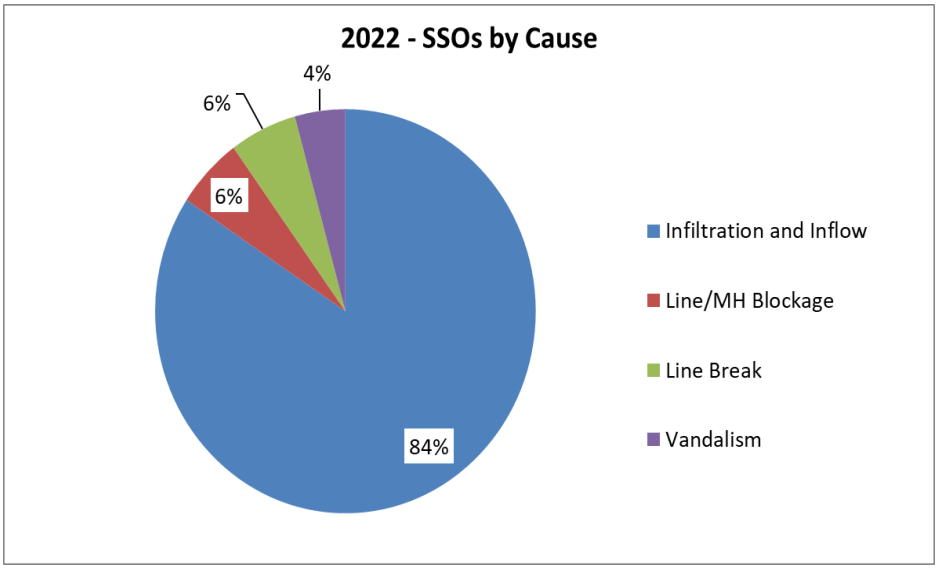
July 2022 Flooding along Beaver Creek – The red line shows HPUD's sewer interceptor alignment that was under construction at the time.

HPUD also reported and responded to 13 dry weather SSO events during the 2022 annual reporting period. The majority of these SSOs were caused by operational issues such as line blockages caused by roots or debris. All SSOs are periodically reviewed to identify if any problems exist that warrant the need for a larger-scale inspection or rehabilitation projects.



b. Summary of SSO Events by Cause

Regardless of the cause, all SSOs are immediately responded to, and the problems are remediated as soon as possible. Parts of the collection system where blockages occur are put on a cleaning program to be inspected and cleaned as needed or placed on a schedule for rehabilitation or replacement. The following chart summarizes SSO events by cause for the 2022 calendar year.



6. Fats, Oil, & Grease Program

As part of the Fats, Oil, & Grease Program (FOG), HPUD has continued outsourcing grease trap inspections. Since late 2009, HPUD has contracted with Robert G. Campbell & Associates (RGC&A) to conduct grease and grit trap inspections. For the calendar year of 2022, RGC&A conducted 514 inspections on 180 businesses. The frequency of the inspections varies as to the type of business and whether follow-up inspections are necessary.

HPUD continued the "Can the Grease" campaign. Customers are encouraged to pick up a grease can lid to cover the grease until it cools and can be disposed of properly. This campaign offers residential customers a solution to grease disposal.

7. System Evaluation and Corrective Action Plan

The Corrective Action Plan & Engineering Report (CAP-ER) was submitted to TDEC on March 17, 2015, and HPUD received approval on May 23, 2015. In response to TDEC's review of HPUD's System Evaluation and CAP-ER, HPUD continues progress toward meeting the following objectives:

- Continue to address HPUD's Infiltration and Inflow (I/I) problem;
- Continue to identify collection system rehabilitation priorities;
- Complete Capital Improvement Projects;
- Continue the Preventative Maintenance Inspection (PMI) program;
- Continue with lift station improvements;
- Continue calibration and monitoring of HPUD's nine (9) permanent flow monitoring stations.

One of the tools utilized to develop the District's CAP-ER is HPUD's collection system hydraulic model. HPUD currently uses the collection system hydraulic model to verify compacity for any new developments prior to approval. As new collection system assets are installed and upgraded, they are added to the hydraulic model.

With the interceptor projects complete, HPUD plans to recalibrate the hydraulic model to help identify which area(s) in the collection system to focus efforts for the future. Currently, HPUD is monitoring and observing how the collection system reacts and operates during dry and wet weather. The updated and calibrated collection system hydraulic model will continue to be used to perform the capacity assessments. The objectives of the capacity assessment included the following objectives:

- Identify locations and causes of hydraulic constraints in the collection system;
- Assess the Beaver Creek WWTP ability to accommodate/treat peak flows,
- Assess how existing sewer system performance will be improved by planned rehabilitation and improvement projects, and
- Assess the performance of planned rehabilitation projects to accommodate future population growth.

8. CMOM Communication Plan

The CMOM communication plan explains the types and frequency of communications that are prepared and distributed regarding the status of the CMOM Program and the CMOM Annual Report. The District maintains communication with the Tennessee Department of Environment and Conservation (TDEC), the Board of Commissioners, HPUD employees, and HPUD customers on a regular basis.

The Board of Commissioners meets monthly to determine policy issues related to finance, personnel, operations, water and collection system improvements, and other HPUD business.

HPUD utilizes its quarterly customer newsletter, “WaterWorks”, the CMOM Annual Report, and a dedicated website, **www.hpudactnow.org**, to inform customers about the sewer collection system projects. The CMOM update was given in a presentation during the board meeting on July 12, 2021 to the Board of Commissioners and the public who attended the meeting. In 2022, HPUD’s primary communication tools continue to be social media, Twitter (@hpudknox) and Facebook, to keep customers informed of projects and emergencies.

SECTION 2.0 - COMPLETED, ONGOING AND PLANNED PROJECTS

A. Completed, Ongoing, and Planned Collection System Projects

Hallsdale-Powell Utility District continues its focus on the replacement and rehabilitation of the collection system in critical areas that need attention due to SSOs, pipe material, pipe age, and defects that could cause issues in the future. The sections below will help provide details of HPUD's collection system work and direction for the future.

1. Preventative Maintenance & Inspection Program

In 2006, HPUD established a Preventative Maintenance & Inspection (PMI) Program to target problematic areas in the collection system to help prevent sanitary sewer overflows (SSOs). The Preventative Maintenance & Inspection activities include techniques such as manhole inspections, smoke testing, closed-circuit television (CCTV) inspection, pre-conditioning, and pipeline cleaning.

Results of these investigations have been captured digitally and integrated into HPUD's Geographic Information System (GIS). This has allowed HPUD to prioritize defects by various parameters to make sewer rehabilitation and replacement projects more efficient, limiting the impact on customers as much as possible and ensuring the repairs capture as many defects as possible while being financially responsible.

As collection system projects are completed, these particular areas will be evaluated during rain events to see how the system responds to the upgrades. HPUD has also used its SCADA system to see areas where infiltration may be present. Once a problem area is identified, HPUD crews use the techniques mentioned above to isolate defects and infiltration and inflow.

2. Flow Monitoring

One of the key tools for enabling Hallsdale-Powell Utility District to analyze the performance of the sewer collection system is flow monitoring. Since 2004, HPUD has maintained continuous Flow Monitoring Units throughout the collection system. These flow monitoring devices have been installed within selected manholes at locations which are able to provide the best

information to HPUD about how the collection system is performing on dry days and wet weather days.

In 2022, the Hallsdale-Powell Utility District continued long-term flow monitoring at nine locations, along with rainfall monitoring at three sites. In 2022, the average flow observed was 8.9 million gallons per day (mgd). HPUD saw a peak flow of 33.9 mgd and a low flow of 3.8 mgd. HPUD saw the peak flow during the rain event in July due to issues from the sewer interceptor project. After the event, it was determined contractors had left manhole lids off the old thirty-six-inch interceptor line that were connected to the new forty-eight-inch line downstream allowing the flooded creek to enter HPUD's collection system. They also had a plug that failed allowing water to enter the abandoned line to enter the collection system. The flow monitoring data also showed the low flow being the lowest that HPUD has seen in over five years demostrating the effectiveness of the CMOM projects over the last several years. ***(See Attachment 4: Map - Long-Term Flow Monitoring Locations)***

3. Beaver Creek Interceptor Replacement Projects

Phase 1: The Beaver Creek Interceptor Improvement Project consists of replacing the existing 36-inch diameter interceptor beginning at the Beaver Creek WWTP and continuing for approximately 10,900 linear feet into the HPUD collection system near Powell Presbyterian Church in Powell.

The existing interceptor will be replaced with a new 48-inch diameter interceptor, accompanying manholes and other structures, 300 linear feet of sewer line near West Emory Road and Clinton Highway, and 2,200 linear feet of sewer line replacement.

Jacobs Engineering rebid this project in October 2019, and the project was awarded to Garney Construction. Garney Construction began work at the end of February 2020. The pipeline work was completed around the middle of September of 2022. This included the installation of the new 48-inch trunk sewer line and the abandonment of the existing 36-inch trunk sewer line. Currently, Garney has a portion of the project to clean up for site restoration. This is scheduled for this spring and early summer.

Phase 2: The Beaver Creek Interceptor Improvement Project Phase 2 is the continuation of replacing the existing 36-inch diameter with a new 48-inch diameter interceptor from where Phase 1 stopped approximately 13,740 linear feet to Morton View Lane. The project also includes the replacement of approximately 3,300 linear feet of gravity sewer line ranging from 12-inch to 8-inch in diameter.

Jacobs Engineering bid this project on January 7, 2020, and the project was awarded to Cleary Construction. The Notice to Proceed was given on April 27, 2020. Cleary Construction completed their portion of the 48-inch sewer at the end of June. All other smaller diameter work and manhole work was completed by the middle of September. Currently, the only outstanding work on the project is punchlist items that are mainly focused on site restoration and can only be completed during dry weather.

(See Attachment 5: Map – Beaver Creek Interceptor Replacement Projects)

4. <u>Completed Collection System Projects:</u>

The projects listed below are the major collection system construction projects that have been completed since HPUD's CMOM program began.

- Sanitary Sewer Rehabilitation Phase 1 (2009)
  Rehabilitated 38,165 LF, manholes, sewer services, & 18 point repairs

- Hines Branch Interceptor Replacement (2009)
  Replaced/Upsized - 10,750 LF, manholes, & appurtenances

- North Fork Interceptor Improvements (2010)
  Replaced/Upsized – 8,150 LF, manholes, & appurtenances

- Willow Fork Interceptor Replacement (2011)
  Replaced/Upsized – 5,570 LF, manholes, & appurtenances

- Sanitary Sewer Rehabilitation Phase 2 (2012)
  Rehabilitated 52,917 LF, 4 manholes, 383 sewer services, & 28 point repairs

- Sanitary Sewer Rehabilitation Phase 2B (2012)
  Rehabilitated 52,400 LF, 723 manholes, 337 sewer services, & 228 point repairs

- Sanitary Sewer Rehabilitation Phase 3 (2015)
  Rehabilitated 29,115 LF, 409 manholes, 214 sewer services, & 150 point repairs

- Beaver Creek Interceptor Replacement Phase 3 (2019)
  Replaced/Upsized – 5,977 LF, manholes, & appurtenances

- Sanitary Sewer Rehabilitation Phase 4 (2019)
  Rehabilitated 42,774 LF, 328 manholes, 283 sewer services, & 163 point repairs

- Brown Gap Interceptor Replacement (2021)
  Replaced/Upsized – 14,398 LF, manholes, & appurtenances

- Downtown Powell Sewer Rehabilitation (2021)
  Rehabilitated 16,000 LF, 37 manholes, 145 sewer services

- Temple Acres Sewer Rehabilitation (2021)
  Rehabilitated 12,621 LF, 60 manholes, 79 sewer services

- North Fork Interceptor Improvements Phase 2 (2021)
  Replaced/Upsized – 2,550 LF, manholes, & appurtenances

- Bishop Road Sewer Relocation (2021)
  Replaced/Upsized – 2,550 LF, manholes, & appurtenances

- Beaver Creek Interceptor Phase 1 (2022)
  Replaced/Upsized – 13,775 LF, 46 manholes, & appurtenances

- Beaver Creek Interceptor Phase 2 (2022)
  Replaced/Upsized – 14,947 LF, 57 manholes, & appurtenances

5. Future Mynatt/Rifle Range and Northfield Sewer Rehab Project:

Hallsdale-Powell Utility District is working with WK Dickson and Robert Campbell & Associates on a sewer rehabilitation project that will address issues in the Mynatt/Rifle Range Road area in Halls and the Northfield area in Powell. The Mynatt/Rifle Range Rd area is located in basin HP06 in HPUD's collection system which has shown to have the most I/I per flow monitoring data. The Northfield subdivision has had issues during wet weather events that have resulted in a chronic overflow due to old clay lines and poor connections.

The project will consist of open cut replacement, pipe bursting, cured in place pipe (CIPP), and the rehabilitation of the manholes and sewer services. Funding for this project will be associated with the Knox County ARPA money that HPUD is scheduled to receive. The project is scheduled to go to bid late Spring 2023.

B. Completed, Ongoing and Planned Wastewater Treatment Plant Projects

Hallsdale-Powell has continued to make improvements to the wastewater plants since the initial upgrades at Beaver Creek Wastewater Plant in 2009 and Raccoon Valley in 2013. In 2017, HPUD completed the Beaver Creek Solids Handling Project that renovated the digesters with jet aeration, new decanting centrifuges, and other improvements. The most recent project, as shown below, continues to show HPUD's commitment to making sure the treatment process is up to date and efficient to maximize treatment capacity, minimize maintenance costs, and meet the growing demands in the district.

1. Beaver Creek Clarifier and Hydraulic Capacity Improvements Project

Hallsdale-Powell Utility District worked with Fox PE and in construction on a project that consisted of improvements to maximize capacity from clarifiers for peak loading. The project included the demolition of the existing chlorine contact tank and installing ultraviolet disinfection equipment at the Beaver Creek WWTP.

Fox PE awarded the contract to Southern Constructor Inc. in the spring of 2020. The UV system is online and providing daily disinfection to the effluent water. A new lift station has also been installed to help with clean water discharge. The contractor has completed the rehabilitation of all three clarifiers, and they were back online in July 2022. The rehabilitation of the clarifiers helped extend the life of each clarifier and increased treatment capacity if needed.

C. Completed, Ongoing and Planned Lift Station Projects

Hallsdale-Powell Utility District currently has twenty-two lift stations that are inspected regularly to make sure maintenance and repairs are up to date. Over the last ten-plus years, HPUD has added two new lift stations and rebuilt multiple other lift stations; see below.

1. Completed Lift Station Projects

- Schaad Park lift station (2009)
  Upgraded
- Mynatt Road lift station (2010)
  Upgraded
- Mountain Shadow lift station (2012)
  Upgraded
- Campbell's Point lift station (2016)
  Upgraded
- Yellowbrick lift station (2016)
  Upgraded
- Dry Gap Pike storage tank & lift station (2016)
  New Construction

- Bright Lane lift station (2020)
  Upgraded

- Temple Baptist lift station (2020)
  Upgraded

(Dry Gap Pike storage tank & lift station)

2. Future Lift Station projects: Red Hawk & Brushy Valley Lift Stations

Hallsdale-Powell Utility District is working with WK Dickson to upgrade the Red Hawk and Brushy Valley lift stations. The project was bid on June 14, 2022, and was awarded to Design and Construction Services, Inc. Due to material delays this project has been delayed and is set to begin construction in April 2023. These projects will repair aging parts, update system controls, and make the stations more efficient in the future.

Lift station reliability continues to be a focus of the HPUD collection system improvement efforts. The District's Capital Improvements Plan (CIP) has provisions for continued upgrades and rehabilitation of existing pump stations. HPUD personnel will continue to monitor the

pump station's performance within the collection system to determine if any sites will require significant rehabilitation in future years.

SECTION 3.0 - EDUCATION AND OUTREACH ACTIVITIES

A. Supplemental Environmental Project / Educational Classroom Visits

Hallsdale-Powell Utility District participates in several education/outreach events during a typical year. One of HPUD's main education/outreach goals is to provide students and its customers with information about the processes involving water treatment and the wastewater process and how it impacts their daily life. HPUD's Outreach Program was able to participate in a few events. The following are some of the events that HPUD participated in during 2022:

- Water on Wheels trailer and classroom experience
- Powell Business and Professional Association Easter Egg Hunt and July 4th picnic and parade.
- Water Quality Forum's WaterFest at Ijams Nature Center.
- Adrian Burnett field day celebration providing water filing station.
- Ride-to-Decide job fair and program.
- National Fire Prevention Week maintaining fire hydrants throughout the District.

B. <u>Utility Tours - HPUD Wastewater Treatment Plant</u>

One of the most significant educational outreach efforts that HPUD supports is to provide tours of the Beaver Creek Wastewater Treatment Plant. The water and wastewater industries have become more technologically advanced over time, so it is vital to attract young people into careers within the industry. Much like the education and outreach as businesses return to normal, we hope to be able to provide more on-site tours of our facilities.


Plant Tour with TAPHCC Jan. 2022

C. Professional Memberships

In addition to these activities, HPUD participates in the following local organizations:

- Beaver Creek Watershed Education Committee
- Water Quality Forum
- Halls and Powell Business and Professional Associations
- Knox County and Union County Emergency Planning Committees

SECTION 4.0 - CHANGES TO CMOM AND CORRECTIVE ACTION PLAN

A. Engineering Support and Management

The District relies on engineering support, management, and good sound financial management to fund collection system improvements. HPUD relies on support from various consultants to assist in the implementation of a comprehensive Corrective Action Plan and Engineering Report (CAP-ER). The CAP-ER established short and long-term actions to address hydraulic deficiencies including prioritization, alternative analysis, and a schedule for completion of these steps.

The District utilizes several consultants to assist HPUD with implementing the components of the 2006 Wastewater Master Plan, as well as the long-term CAP-ER for improvements to the collection system. HPUD will continue to evaluate the collection system with the Preventative Maintenance and Inspection (PMI) Program and develop a list of priority repairs to the collection system. This work is essential in assisting HPUD to manage assets and the collection system.

B. Financial Management

HPUD continues to develop a solid capital improvement and financial plan to fund the improvements required due to this Consent Order. The Budget for Fiscal Year 2024 (April 1, 2023 - March 31, 2024) was presented for consideration at the February Board Meeting and approved by the Board of Commissioners at the March Board Meeting on March 20, 2023.

HPUD remains committed to ensuring rates support the Capital Improvement Projects outlined in our Capital Improvements Plan (CIP) through FY 2027. There is a continued communication effort by the District using the HPUD website, newsletters, mailers and pamphlets, and newspaper articles to ensure that customers understand the importance of these rate changes.

SECTION 5.0 - OVERVIEW OF THE CAPITAL IMPROVEMENTS PLAN

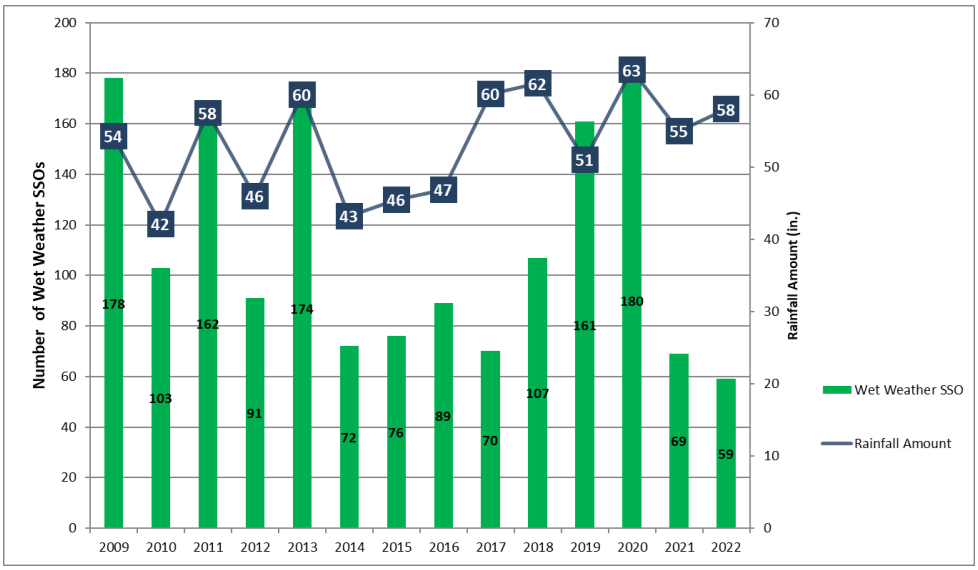
As previously mentioned, the Capital Improvements Plan (CIP) is included in the Appendices. The strategy of formulating a Capital Improvements Plan for future years requires continuing data analysis, prioritization of system defects, and possible revision of implementation schedules from year to year.

Several projects have been prioritized and placed into the CIP as grant funding, SRF loans, and revenue bonds are available for financing the projects**. *(Refer to Attachment 2:* Spreadsheet – Sewer System Capital Improvements Plan**

SECTION 6.0 - SUMMARY OF CMOM PROGRAM IMPLEMENTATION

As previously mentioned, Hallsdale-Powell Utility District completed the remaining two large interceptor projects that have been under construction for the past two to three years. HPUD has already seen normal daily flows decrease as a result of these projects. HPUD will continue to monitor and learn how the collection system reacts and responds during wet weather events. At this time, SSOs have decreased during the few wet weather events that have occurred since the new interceptor lines have been on-line. In 2022, HPUD saw the fewest wet weather SSOs since 2007 and a continued reduction of the chronic SSOs. Hallsdale-Powell Utility District continues to prioritize and evaluate the sewer collection system upgrades and rehabilitation. As each project is completed, HPUD evaluates the effectiveness of the project and the surrounding area to see if additional improvements are needed to address issues in the collection system. Assessing the effectiveness of each project allows HPUD to be more financially responsible for its customers and make sure the money for these projects is spent in critical areas that improve the collection system and eliminate SSOs.

The completed, current, and planned collection system projects continue to be focused on reducing I & I, eliminating SSOs, and creating capacity for future development. In 2022, HPUD had three chronic SSOs. The SSO total from 2022 and treated flow reduction at the wastewater plant demonstrate that HPUD's current plan has been successful in reducing I/I in the collection system. As mentioned throughout this report, HPUD continues to look at future projects to help address any SSOs and reduce I/I throughout the collection system. ***(See Attachment 6:*** **Map – 2021 Collection System Projects/Chronic SSOs)**



HALLSDALE-POWELL UTILITY DISTRICT

Program/Performance Measures	2018	2019	2020	2021	2022
Infrastructure From GIS					
# Gravity Lines (feet)	2,298,089	2,309,227	2,323,200	2,333,421	2,350,131
# Forcemain (feet)	215,721	215,893	216,480	222,752	232,687
# Connections	24,420	25,946	24,022	24,617	24,604
Sanitary Sewer System Overflow Response					
# Overflows	122	177	207	88	72
# Estimated Gallons of Overflows	733,500	9,834,000	2,307,000	443,500	834,500
# Overflows Reaching Waters	111	164	189	75	61
# Estimated Gallons of Overflows Reaching Waters	450,000	9,592,000	1,993,000	277,500	564,000
95	0 BCWWTP 0 RVWWTP	1 BCWWTP 0 RVWWTP	0 BCWWTP 2 RVWWTP	0 BCWWTP 0 RVWWTP	1 BCWWTP 1 RVWWTP
# Dry Weather Overflows	15	16	27	19	13
# Wet Weather Overflow Events per NPDES Permit Language					
# Wet Weather Overflow Individual Releases	107	161	180	69	59
# Overflows Cleaned Up	108	158	176	75	67
# Overflows Reported on Electronic DMR					
# Overflows Initial Report Notification to TDEC	122	177	207	88	72
# Overflows Follow-up Report Sent to TDEC within 5 Days	122	177	207	88	72
# Building Backups Due to Public System Failure during Dry Weather	11	15	20	15	18
# Building Backups Due to Public System Failure during Wet Weather	0	0	5	0	10
Customer Complaint Tracking					
# Complaints Received	324	296	327	294	326
# Complaints Investigated	322	296	327	294	326
# Complaints Resolved	304	280	306	288	306
# Complaints determined to be Customer Private Line Issues	73	69	66	88	103
Assessment and Prioritization - Corrosion					
# Locations Subject to Corrosion	None Identified to Date	None Identified to Date	None Identified to Date	None Identified to Date	None Identified to Date
# Corrosion Inspections Conducted	N/A	N/A	N/A	N/A	N/A
# Corrosion Defects Identified	N/A	N/A	N/A	N/A	N/A
Manhole Inspection/ROW					
# Manholes in System	9,591	9,656	9,743	9,882	9,967
# Manholes Inspected during the Calendar Year	0	1,375	452	188	309
# Manholes Inspected since Program Began	9,771	11,146	11,598	11,786	12,095
# Manholes with Defects	0	76	0	Not documented electronically	Not documented electronically
Flow Measurement (ADS)					
Year of Most Recent Flow Monitoring	2018	2019	2020	2021	2022
Peak Flow Observed During Monitoring Period(gpd)	20,552,200	25,140,000	23,440,000	20,420,000	33,960,000
Instantaneous Peak Flow Observed(gpd)	23,100,000	27,650,000	25,670,000	23,100,000	36,260,000
Average Flow Observed during Monitoring Period(gpd)	7,310,000	8,153,000	8,882,000	9,310,000	8,990,000
Low Flow Observed during Monitoring Period(gpd)	4,370,00	4,032,000	4,836,000	6,469,000	3,842,000
List Basins that Contribute Flow to this Basin	See System Map	See System Map	See System Map	See System Map	See System Map
CCTV Inspection (Contractor & Internal)					
# Feet Inspected by CCTV this Calendar Year	76,946	41,003	160,206	34,479	64,319
# Feet Inspected since Program Began	2,739,748	2,780,751	2,940,957	2,975,436	3,039,755
# Feet Cleaned for Inspection	0.0	0.0	6,908.0	Not documented	Not documented
# Feet Cleaned for Routine or Scheduled Maintenance	53,117	53,114	0	13,670	2,036
# Defects Identified by CCTV Inspection	0	0	795	0	0
# Defects Catalogued or Recorded into Database	0	0	795	0	0
Smoke Testing (Contractor & Internal)					
# Feet Smoke Tested this Year	0	0	0	0	0
# Leaks Identified on Public System	0	0	0	0	0
# Public System Leaks Repaired	0	0	0	0	0
# Public System Leaks Not Repaired This Year	0	0	0	0	0
# Leaks Identified on Private Service Connections	0	0	0	0	0
Gravity Line Rehabilitation (Contractor & Internal)					
# Feet Gravity Lines Rehabilitated	32,234	7,242	28,430	12,773	8,645
# Feet Rehabilitated Since Program Began	272,697	279,939	308,369	321,142	329,787
# Feet Replaced	2818	7,242	11,029	12,663	8,645
# Feet Replaced Since Program Began	28,639	35,881	46,910	59,573	68,218
# Feet Sliplined	0	0	0	110	0
# Feet Sliplined Since Program Began	0	0	0	110	110
# Feet Cured in Place	29,416	0	17,401	0	0
# Feet Cured in Place Since Program Began	250,717	250,717	268,118	268,118	268,118
# Manholes Rehabilitated	246	29	34	40	
# Manholes Rehabilitated Since Program Began	1,874	1,903	1,937	1,977	1,977
# Manholes Replaced	0	18	33	54	40
# Manholes Replaced Since Program Began	113	131	164	218	258
# Feet of Gravity Line Rehabilitation Inspected	32,234	7,242	28,430	12,773	8,645
# Feet Of Gravity Line Rehabilitation Tested	0	0	11,029	12,663	8,645
Grease Program					
# Facilities Identified for Inclusion in Grease Program	160	175	175	172	180
# Facilities with Installed Grease Devices	160	175	175	175	180
# Grease Installation Inspections Conducted and Documented	1	9	1	6	5
# Routine Grease Inspections	487	526	317	516	514
Other Inspections					
# Construction Inspections	4	8	8	15	10
# Pump Station Inspections	314	282	145	156	697
# Documented Pump Station Inspections	314	282	145	156	697
# Customer Owned Service Line (lateral) inspections	209	275	379	344	336
(1) Note this number may not be quantifiable in wet weather					
(2) Final data numbers were not available as of the date this report was prepared					

Hallsdale-Powell Utility District - Capital Improvements Plan

Sewer Capital Improvements	FY 2024	FY 2025	FY 2026	FY 2027
Beaver Creek Interceptor Replacement Phase 2 RUS and 2019 Bonds				
Beaver Creek Interceptor Replacement Phase 1 2019 Bonds				
Beaver Creek Interceptor Imp Engineering, ROW, Inspection, Construction Admin	110,797			
Beaver Creek Interceptor Replacement Dixon Spring to Titanium		7,300,000		
Engineering, R-O-W, Permitting, and Inspection for Beaver Creek Interceptor Improvements	774,034			
Intercaeptor Replacement - Beaver Creek along Knob Creek up Central Ave				8,000,000
Mynatt Rd/Rifle Range Area Sewer Rehab	1,603,814			
North Field Subdivision Powell crossing Emory Road	1,177,616			
Sewer Rehab Phase 7		2,000,000		
Sewer Rehab Phase 8			4,000,000	
Sewer Rehab Phase 9			5,000,000	
Sewer Rehab Phase 10				5,000,000
Sharps Chapel Sewer System			250,000	
Beaver Creek WWTP Upgrades to add ACTIFLO wet weather system				7,500,000
Beaver Creek WWTP Clarifiers and UV Improvements				
Red Hawk/Brushy Valley Sewer Station Improvements	700,000			
Miscellaneous Sewer Line Extensions	300,000	300,000	300,000	300,000
Wastewater Pump Station Improvements	350,000	300,000		
Breaver Creek WWTP Membrane Replacement	592,603	592,603	592,603	592,603
Beaver Creek WWTP 3rd Influent coarse screen & ox ditch RAS		690,000		
Sewer Equalization Storage about halfway between Brickey and the WWTP			7,500,000	7,500,000
Sewer Investigation	500,000	500,000	500,000	500,000
Subtotal: Sewer Capital Improvements	**$ 6,108,864**	**$ 11,682,603**	**$ 18,142,603**	**$ 29,392,603**

2022 Sanitary Sewer Overflows (SSO)

HALLSDALE-POWELL UTILITY DISTRICT

Dry Weather SSOs
13

Wet Weather SSOs
59

Legend

SSO (72)

- Dry Weather (13)
- Wet Weather (59)
- fema_floodway_poly
- fema_100yr_poly
- Interstate
- State Highway; U.S. Highway
- Regional Streams
- STP Sewer Treatment Plants
- HPUD Service Area

0 0.5 1 2 3 Miles

N W E S

Bullrun Creek

STP

61 71 33 331 170 75 131 25W 9 640 275 62

Long-Term Flow Monitor Locations

Legend

Flow Monitors

- Permanent
- Rain Gauge

Collection System

- STP — Sewer Treatment Plants
- HPUD Gravity Main
- HPUD Interceptor
- HPUD Service Area

HP01
HP02
HP04
HP05
HP06
HP07
HP08
HP09

PS
STP

75
441
71
170
33
131
331
275
640
25W
9
40
70
11e
11W
1
168

Bullrun Creek
Holston River

N
W
E
S

0 0.75 1.5 3 Miles

HPUD Interceptor Replacement Projects

Legend

Gravity Main Replaced Project

- Interceptor Phase 1
- Interceptor Phase 2
- Interceptor Phase 3

Sanitary Sewer

- STP — Sewer Treatment Plants
- Gravity Sewer
- Interceptor Sewer
- Sewer Pressurized Main

PS

STP

N
W E
S

0 0.25 0.5 1 Miles

2022 Collection System Projects/Chronic SSOs

Clinch River

Bullrun Creek

Holston River

STP

WTP

61
71
33
331
170
75
131
640
9
25W
40
70
11e
1
11W
168
62
275

N
W
E
S

0 0.5 1 2 3 4 Miles

HALLSDALE-POWELL UTILITY DISTRICT