

DAVID BRILEY
MAYOR



METROPOLITAN GOVERNMENT OF NASHVILLE AND DAVIDSON COUNTY

DEPARTMENT OF WATER AND SEWERAGE SERVICES
Engineering Division
1600 Second Avenue North
Nashville, Tennessee 37208-2206

August 30, 2019

Ms. Suzanne Rubini
Acting Director, Enforcement and Compliance Assurance Division
U.S. Environmental Protection Agency, Region 4
61 Forsyth Street
Atlanta, GA 30303-8960

Ms. Jennifer Dodd
Director, Division of Water Resources
Tennessee Department of Environment and Conservation
312 Rosa L. Parks Avenue
Nashville, TN 37243-1102

RE: *Addendum #2 to the CAP/ER*
Consent Decree 3:07-cv-01056
DOJ Case No. 90-5-1-1-09000

Dear Ms. Rubini and Ms. Dodd:

As requested by TDEC on July 15, 2019, we hereby submit the enclosed *Addendum #2 to the Corrective Action Plan / Engineering Report for Sanitary Sewer Overflows (CAP/ER)*. The Addendum summarizes improvements required to achieve compliance for additional sanitary sewer overflow points not identified in the original CAP/ER.

Nashville remains committed to completing the projects as described in the CAP/ER as amended no later than eleven years from approval, or August 10, 2028.

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure ensure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering such information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

If you have any questions or would like to discuss this further, do not hesitate to contact me.

Sincerely,

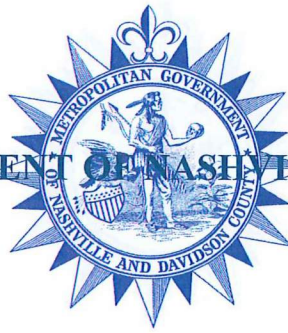
A handwritten signature in blue ink that reads "Ron C. Taylor".

Ron C. Taylor, P.E.
Clean Water Nashville Program Director



If you need assistance or an accommodation, please contact Metro Water Services,
at 615-862-4862, 1600 Second Avenue North, Nashville, Tennessee 37208.

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Engineering Division
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cc: Mr. Dennis Sayre, EPA
cc: Ms. Natalie Beckwith, EPA
cc: Ms. Jessica Murphy
cc: Mr. Michael Murphy

Enclosure: *Addendum #2 to the CAP/ER*



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at 615-862-4862, 1600 Second Avenue North, Nashville, Tennessee 37208.



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Addendum

DATE: August 30, 2019

TO: Ron Taylor, P.E., CWNOAP Director

FROM: Kimberly Martin, P.E., CWNOAP Deputy Manager
Heather Housel, P.E. CDM Smith

RE: Addendum #2 to the *Corrective Action Plan/Engineering Report* for Sanitary Sewer Overflows

cc: Greg Ballard, P.E., CWNOAP Deputy Director
Janelle Rogers, Ph.D., P.E., BCEE, PMP, CWNOAP Manager
Michael Krabacher, P.E., CWNOAP Controls Manager
Paul Stonecipher, P.E., CWNOAP Design Manager

No. of Pages: 19

Attachments: None

1.0 Introduction

On March 12, 2009, the Metropolitan Government of Nashville and Davidson County, Tennessee (Metro) entered into a Consent Decree with the United States of America and the State of Tennessee. Among other items, the Consent Decree required that Metro prepare and submit a *Corrective Action Plan/Engineering Report (CAP/ER)* that addresses the conditions causing sanitary sewer overflows (SSOs) with the goal of eliminating the 27 SSOs listed in the Consent Decree. As part of the CAP/ER development, Metro expanded the list of SSOs that would be addressed to include all model-predicted and field-verified SSOs occurring under the design storm conditions.

In September 2011, CDM Smith and Metro submitted the CAP/ER, fulfilling the intent of Section VII, Part B.1 of the Consent Decree. Approval of the CAP/ER was granted by the Environmental Protection Agency (EPA) on August 10, 2017, with the Tennessee Department of Environment and Conservation (TDEC) copied on the approval. Following approval, the *Addendum to the CAP/ER for Sanitary Sewer Overflows, September 2017 (Addendum #1)* was developed to summarize the updates, modifications, and additions to the projects described in the CAP/ER.

While implementation of the CAP/ER continues, Metro also recognizes the need to continuously review occurrences of overflows, identify their root causes, and address issues before they

become chronic. Through that monitoring process, Metro has identified several overflow locations, outside of those identified in the CAP/ER, that warrant additional field investigations and/or improvements.

As requested by TDEC in a letter dated July 15, 2019, this Addendum describes those overflow locations, summarizes actions taken, and presents Metro's plan for identifying and addressing conditions causing those overflows. Through this *Addendum #2 to the CAP/ER for Sanitary Sewer Overflows* (Addendum #2), Metro is incorporating those areas into the CAP/ER implementation program, known as Clean Water Nashville Overflow Abatement Program.

2.0 SSO Areas of Concern

Although the CAP/ER identified projects to address conditions causing known wet-weather overflows under design storm conditions at the time of its submittal, on-going monitoring of the system has identified several additional SSO areas of concern. Those locations are summarized in **Table 2-1**, and additional information is presented in **Sections 2.1** through **2.13**.

Table 2-1 SSO Areas of Concern

SSO Location	Manhole ID	Service Area
Bordeaux Hills Pump Station	080-12-012	Whites Creek
Bordeaux Hospital Pump Station	080-11-001	Whites Creek
Dry Creek Pump Station	034-11-009	Dry Creek
Fairway Center Pump Station	070-14-003	Central
Farmingham Woods Pump Station	087-09-040	Central
Hillview Pump Station	159-08-004	Central
Long Hunter Chase Pump Station	151-10-038	Central
Mill Creek Pump Station	095-06-004	Central
Rowan Drive/Cravath Drive	059-10-048	Whites Creek
	059-11-027	
	059-11-028	
	059-11-036	
	059-15-017	
South Oak Hill Pump Station	160-02-032	Central
Sunliner Drive Pump Station	090-15-045	Whites Creek
Wallace Lane / Abbott Martin Road	116-12-076	Whites Creek
	116-16-040	

2.1 Bordeaux Hills Pump Station

The Bordeaux Hills Pump Station is located approximately one mile east of the Whites Creek Wastewater Treatment Plant (WWTP) as shown in **Figure 2-1**. After experiencing an increased frequency of overflows in 2018, the operation of the pump station was evaluated, and it was determined that the grinders at the station were potentially causing excessive surcharging during high flow storm events leading to an overflow at the relief pipe located at manhole 080-12-012. In March 2019, the grinders were removed, and the station has not experienced an overflow since that time. Metro continues to monitor the station's performance without the grinders, while commencing evaluation of the upstream gravity sewer system (approximately 44,000 feet) for potential sources of rainfall-derived infiltration and inflow (RDII).



Figure 2-1 Bordeaux Hills Pump Station

2.2 Bordeaux Hospital Pump Station

The Bordeaux Hospital Pump Station is located just southeast of Whites Creek WWTP less than one mile north of the Cumberland River as shown in **Figure 2-2**. The pump station conveys flow from a small area of commercial / institutional developments to the WWTP. To address the wet-weather overflow occurring at the station, the pump impellers were replaced in June 2019, restoring the capacity of the pump station. Although it is believed that this has solved the issue, the station's performance will continue to be monitored. If overflows continue, additional investigations and remedial activities will be conducted.



Figure 2-2 Bordeaux Hospital Pump Station

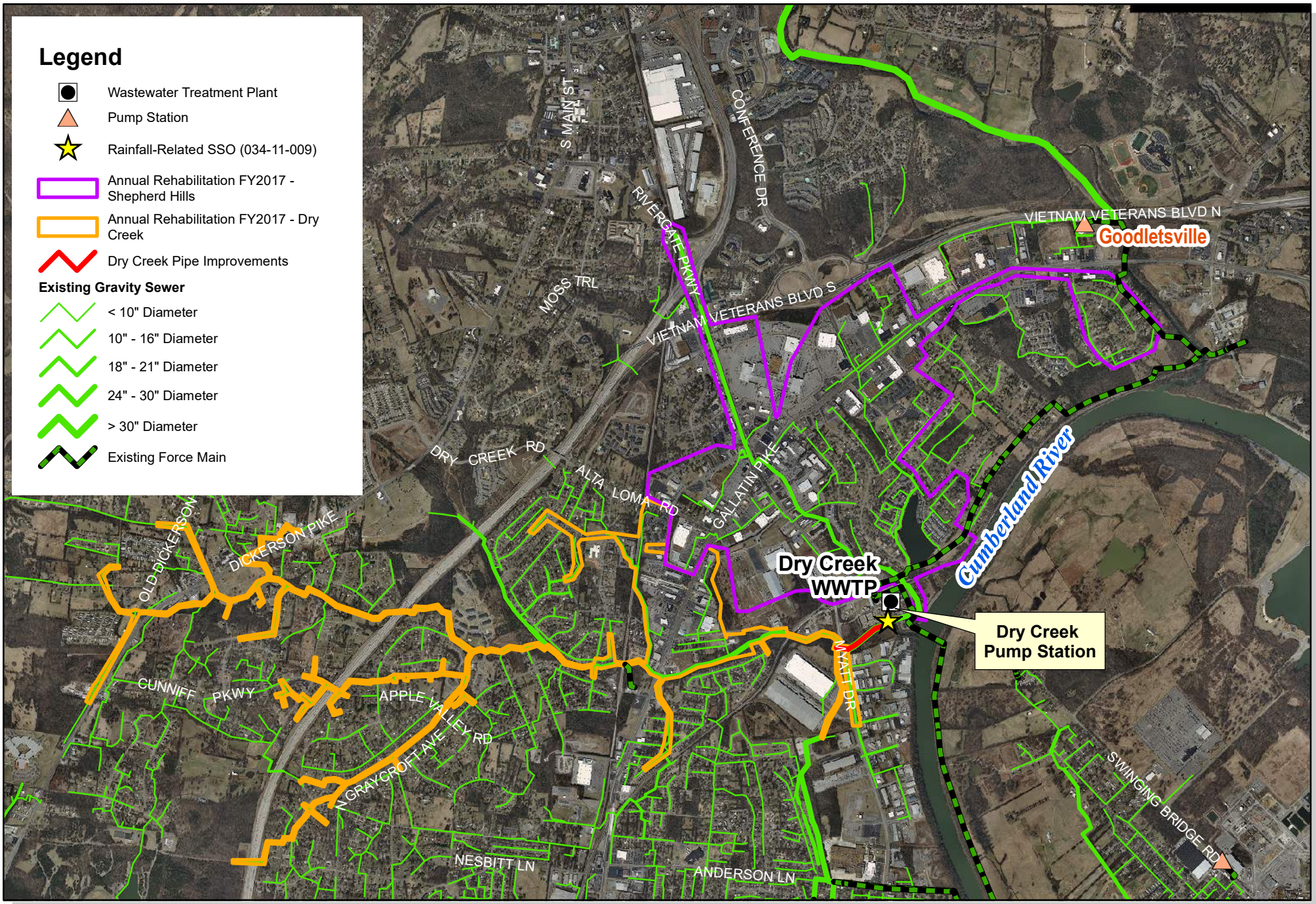
2.3 Dry Creek Pump Station

The Dry Creek Pump Station serves as one of the influent pump stations to the Dry Creek WWTP, and several projects have been identified to address the wet-weather overflow that occurs at the Dry Creek Pump Station. As detailed in the CAP/ER, the Dry Creek Pipe Improvements project is planned, upsizing approximately 1,400 feet of large-diameter gravity sewer immediately upstream of the Dry Creek Pump Station. Two rehabilitation projects, Annual Rehabilitation FY2017 - Shepherd Hills and Annual Rehabilitation FY2017 - Dry Creek, have been designed to reduce RDII along the gravity trunk sewers upstream of the Dry Creek Pump Station. Combined, approximately 118,000 feet of existing gravity sewer and approximately 590 manholes were evaluated for rehabilitation under these projects. These project areas are shown in **Figure 2-3**.

Additionally, Metro has completed rehabilitation projects in several portions of the Dry Creek WWTP service area to further reduce the required peak pumping capacity from smaller pump stations. These include Gibson Creek Rehabilitation – Area 1, Hidden Acres Rehabilitation, Loves Branch Rehabilitation, Neely's Bend Rehabilitation, and Vandiver Rehabilitation.

The Dry Creek WWTP also receives a significant portion of its flow from satellite users, including Hendersonville Utility District, the City of Goodlettsville, White House Utility District, the City of Millersville, and the City of Ridgetop. Metro's agreement with these satellite users stipulates that, if a defined peak flow rate is exceeded more than six times per year, the satellite user must develop a *Corrective Action Plan* describing how they will address their flow exceedances. To date, three satellite users in the Dry Creek WWTP have developed *Corrective Action Plans*: Millersville (2013), Goodlettsville (2014), and Hendersonville (2019).

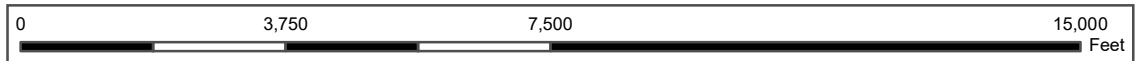
Through the combination of satellite users addressing their peak flows and Metro projects that are planned, Metro anticipates that the overflow at the Dry Creek Pump Station will be addressed. As that work is implemented, however, Metro will continue to monitor the station's performance to assess the need for additional improvements.



Legend

- Wastewater Treatment Plant
- Pump Station
- Rainfall-Related SSO (034-11-009)
- Annual Rehabilitation FY2017 - Shepherd Hills
- Annual Rehabilitation FY2017 - Dry Creek
- Dry Creek Pipe Improvements
- Existing Gravity Sewer**
- < 10" Diameter
- 10" - 16" Diameter
- 18" - 21" Diameter
- 24" - 30" Diameter
- > 30" Diameter
- Existing Force Main

Figure 2-3 Dry Creek Pump Station



2.4 Fairway Center Pump Station

The Fairway Center Pump Station is located in Metro Center in the Central WWTP service area as shown in **Figure 2-4**. Because of recent overflows at the pump station during wet-weather events, Metro has identified the area for additional investigation. This initially includes an evaluation of the pump station’s performance and smoke testing of the gravity sewer system in Fall 2019, but additional investigations, such as closed-circuit television (CCTV) inspection of the gravity sewer, may be conducted if issues persist at the station.



Figure 2-4 Fairway Center Pump Station

2.5 Farmingham Woods Pump Station

The Farmingham Woods Pump Station was located in the northeastern portion of the Central WWTP service area as shown in **Figure 2-5**. The station was removed from service in July 2019, and the area previously served by the station is now conveyed via a new gravity sewer. This improvement will address the wet-weather overflows previously observed at the station.



Figure 2-5 Farmingham Woods Pump Station

2.6 Hillview Pump Station

The Hillview Pump Station is located near the southern boundary of Davidson County in the Central WWTP service area as shown in **Figure 2-6**. Although not historically a location of overflows, numerous wet-weather overflows were observed at the station beginning in late 2017. In response to these overflows, smoke testing was conducted in the upstream gravity sewer in October 2018, and manhole inspections along with CCTV inspections of the gravity sewer were conducted in March 2019. Several repairs to address RDII were identified, and these are scheduled for completion by the end of 2019. Concurrently with the investigations of the gravity sewer, the pump station was evaluated and determined to have a reduced pumping capacity. Work to restore the station's capacity has been completed, and the station will continue to be monitored for capacity issues.



Figure 2-6 Hillview Pump Station

2.7 Hopedale Pump Station

The Hopedale Pump Station is located south of Harding Place between Nolensville Pike and Interstate 24 in the Central WWTP service area as shown in **Figure 2-7**. Although it experienced only one overflow in the decade prior to 2019, there have been three reported overflows at this station through the first half of 2019. Because of the increased frequency of overflows, the station's performance is currently being evaluated, and smoke testing of the gravity sewer upstream of the station is scheduled for this fall. Additional investigations to identify and address sources of RDII, such as CCTV inspection of the gravity sewer, may be conducted if issues persist at the station.

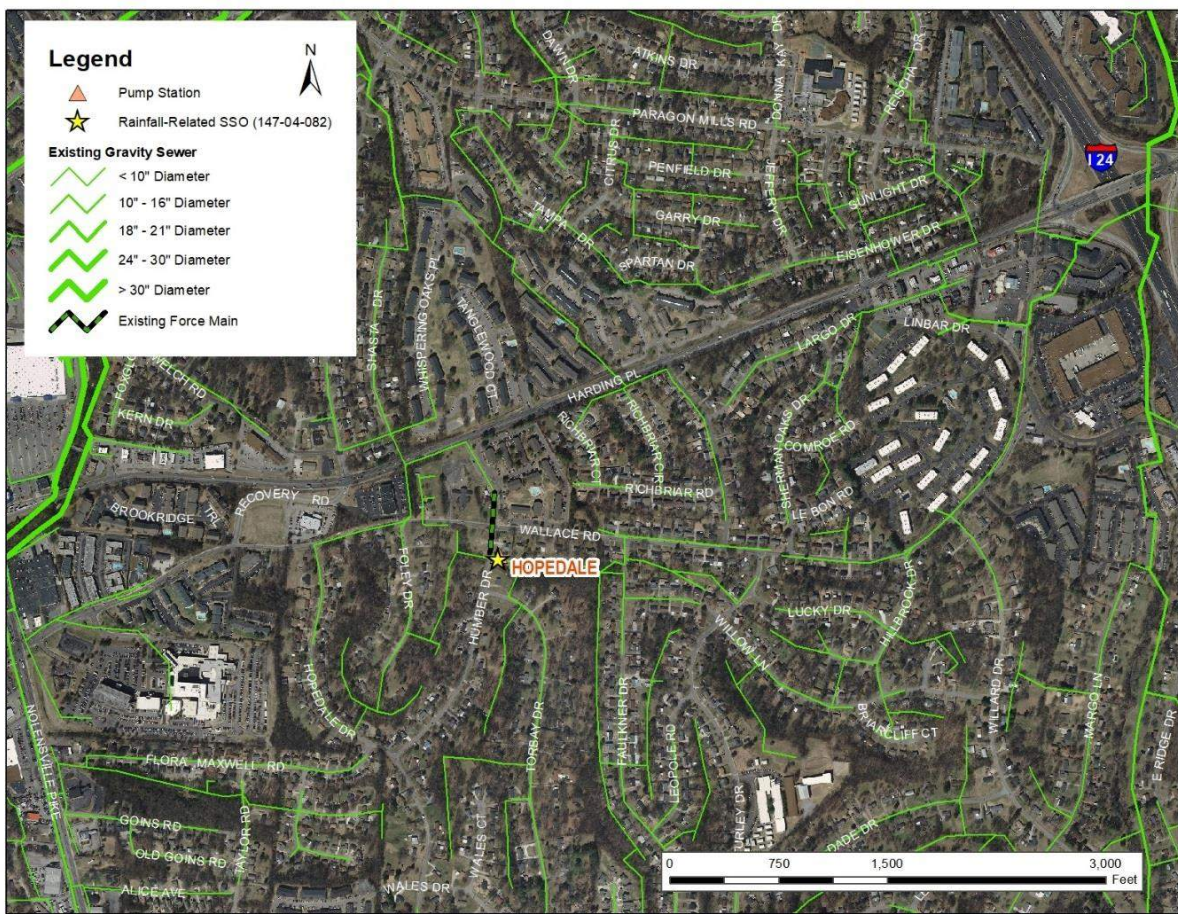


Figure 2-7 Hopedale Pump Station

2.8 Long Hunter Chase Pump Station

The Long Hunter Chase Pump Station is located near Percy Priest Lake and is part of the Central WWTP service area as shown in **Figure 2-8**. Following an increase in the frequency of wet-weather overflows associated with the Long Hunter Chase Pump Station in 2018, smoke testing was conducted in the upstream gravity sewer in October 2018. Smoke testing revealed that many cleanouts in the area were broken, allowing inflow to enter the system during rainfall events. Those cleanouts are scheduled to be repaired in 2020.



Figure 2-8 Long Hunter Chase Pump Station

2.9 Mill Creek Pump Station

The Mill Creek Pump Station is located approximately one mile upstream of the confluence of Mill Creek and the Cumberland River as shown in **Figure 2-9**. Because of the increased frequency of overflows in 2018 at this station, smoke testing of the gravity sewer upstream of the station is scheduled for Fall 2019. This will include an area of the gravity sewer that has recently undergone redevelopment. Defects identified through smoke testing will be repaired, as needed. Additional investigations, such as CCTV inspection of the gravity sewer or further pump station evaluations, may be conducted if issues persist at the station.



Figure 2-9 Mill Creek Pump Station

2.10 Rowan Drive/Cravath Drive

The Rowan Drive / Cravath Drive area is located in the northern portion of the Whites Creek WWTP service area as shown in **Figure 2-10**. Multiple rainfall-related overflows have been reported at five manholes (059-10-048, 059-11-027, 059-11-028, 059-11-036, and 059-15-017) in the gravity sewer system serving this area. Flow monitoring conducted in 2018 indicated that surcharging in the Rowan / Cravath area is not caused by surcharging in the trunk sewer along Whites Creek. Instead the overflows appear to be caused by either a capacity issue within the local gravity sewer or an excessive amount of RDII entering the system. Metro has installed a level sensor in the area to assess the frequency and extent of surcharging. CCTV inspection of the 10-inch gravity sewer was completed in Summer 2019 and is being reviewed to confirm that the sewer is free of blockages, structural defects, and sources of infiltration. Following that effort, additional analyses utilizing the hydraulic model will be conducted to confirm that the available capacity is adequate to convey the predicted peak flows in this area and to assess whether the area should be targeted for rehabilitation.

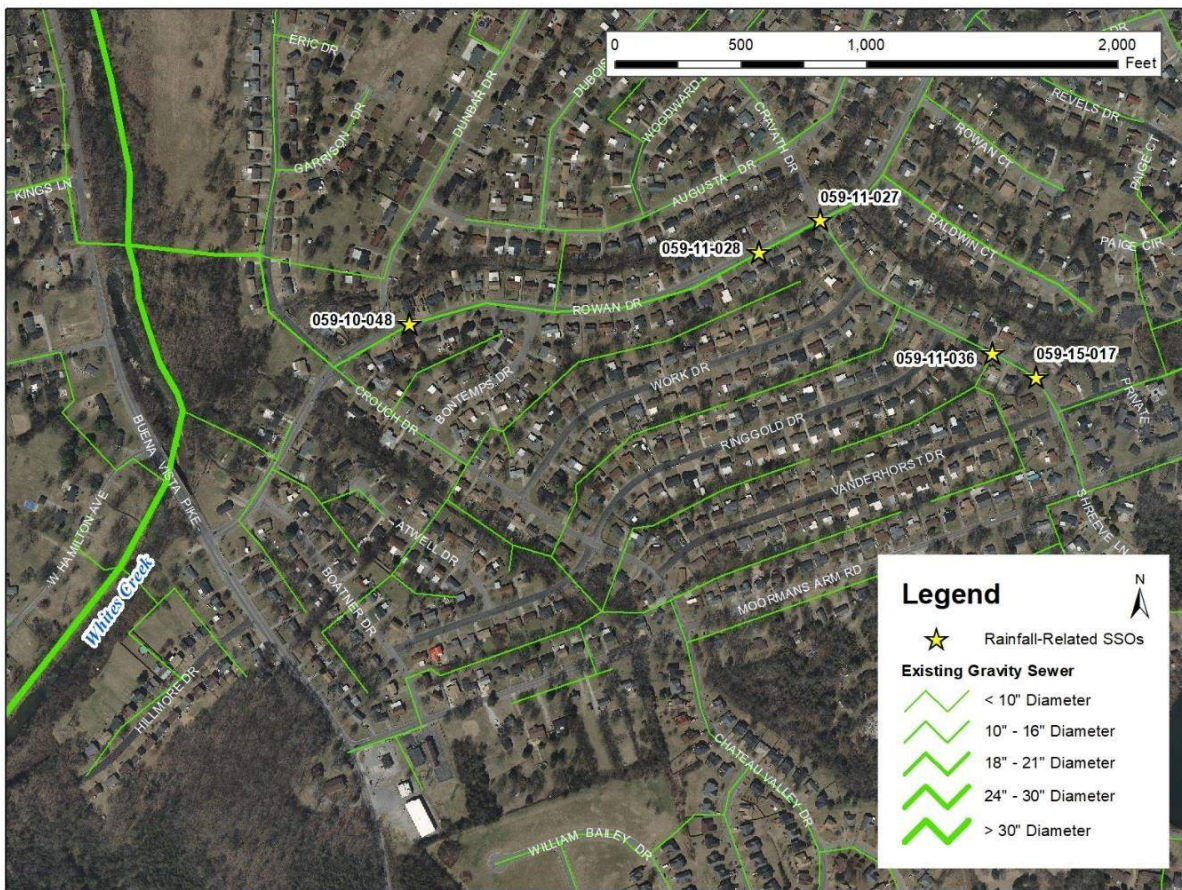


Figure 2-10 Rowan Drive/Cravath Drive

2.11 South Oak Hill Pump Station

The South Oak Hill Pump Station is located near the southern boundary of Davidson County in the Central WWTP service area as shown in **Figure 2-11**. Because of the increased frequency of overflows at the pump station during wet-weather events, Metro has identified the area for additional investigation. This includes an evaluation of the pump station’s performance and smoke testing of the gravity sewer system in Fall 2019. Defects identified through those investigations will be repaired, as needed. Additional investigations to identify and address sources of RDII, such as CCTV inspection of the gravity sewer, may be conducted if issues persist at the station.



Figure 2-11 South Oak Hill Pump Station

2.12 Sunliner Drive Pump Station

The Sunliner Pump Station is located between the Cumberland River and Interstate 40 in the Whites Creek WWTP service area as shown in **Figure 2-12**. Because of the increased frequency of overflows at the pump station during wet-weather events, Metro has identified the area for additional investigation. This includes an evaluation of the pump station’s performance and smoke testing of the gravity sewer system in Fall 2019. Defects identified through those investigations will be repaired, as needed. Additional investigations, such as CCTV inspection of the gravity sewer, to identify and address sources of RDII may be conducted if issues persist at the station.



Figure 2-12 Sunliner Drive Pump Station

2.13 Wallace Lane / Abbott Martin Road

The Wallace Lane / Abbott Martin Road area is located in Green Hills and is part of the Whites Creek WWTP service area as shown in **Figure 2-13**. In early 2019, a customer notified Metro of a potential issue in this area, and Metro has since confirmed that overflows occur at two manholes (116-12-076 and 116-16-040) during wet-weather events. Since notification of the issue, Metro has verified that the sewers in the immediate area are structurally sound and free of blockages that may reduce the sewer’s capacity during high flow events. Metro currently has level sensors installed in the area to assess the frequency and extent of surcharging. This data will also confirm the feasibility of redirecting additional flow from the 8-inch diameter sewer (where the overflows occur) to the parallel 10-inch diameter sewer running along Wallace Lane. If that is not feasible, or does not fully address the overflow, additional field investigation and rehabilitation to address the sources of RDI in the area upstream of the overflows will be conducted.



Figure 2-13 Wallace Lane/Abbott Martin Road

3.0 Requested Update on CAP/ER Project Areas

In their July 15, 2019, letter, TDEC also identified the Madison Heights Pump Station and the Joelton Pump Station as chronic SSO locations. Although both of those pump stations were identified and included in the CAP/ER submitted in 2011, Metro acknowledges that work beyond the identified projects is necessary to fully address overflows. An update on both project areas, including work completed and work planned, is included below.

3.1 Joelton Pump Station

As defined in the CAP/ER, the Joelton Rehabilitation project was developed to reduce RDII and address overflows at the Joelton Pump Station. That project primarily focused on repairing the pipe to manhole connection, which was identified as a major source of infiltration during the project's design. Although the Joelton Rehabilitation project was completed in 2014, the Joelton Pump Station continued to experience overflows during wet-weather events. Smoke testing was conducted in September 2016 to identify sources of RDII. Additional field investigations, including CCTV inspections of the gravity sewer, was completed in April 2019, with several repairs identified. Those are anticipated to be completed by early 2020. The Joelton Pump Station is located in the northwest portion of the Whites Creek WWTP service area as shown in **Figure 3-1**.



Figure 3-1 Joelton Pump Station

3.2 Madison Heights Pump Station

As defined in the CAP/ER, the Madison Heights/Rainbow Terrace Rehabilitation project was developed to reduce RDII and address overflows at the Madison Heights Pump Station. Although the Madison Heights/Rainbow Terrace Rehabilitation project was completed in 2018, the Madison Heights Pump Station continued to experience overflows during wet-weather events. Smoke testing was conducted in October 2018 to identify any sources of RDII that were not addressed as part of the rehabilitation project. Since that only resulted in a few minor repairs, the performance of the pump station was further evaluated and determined to have a reduced pumping capacity. Work to restore the station's firm capacity has been completed. A flow monitor is being installed at the station to better monitor changes in the station's capacity. The Madison Heights Pump Station is located in the Dry Creek WWTP service area as shown in **Figure 3-2**.

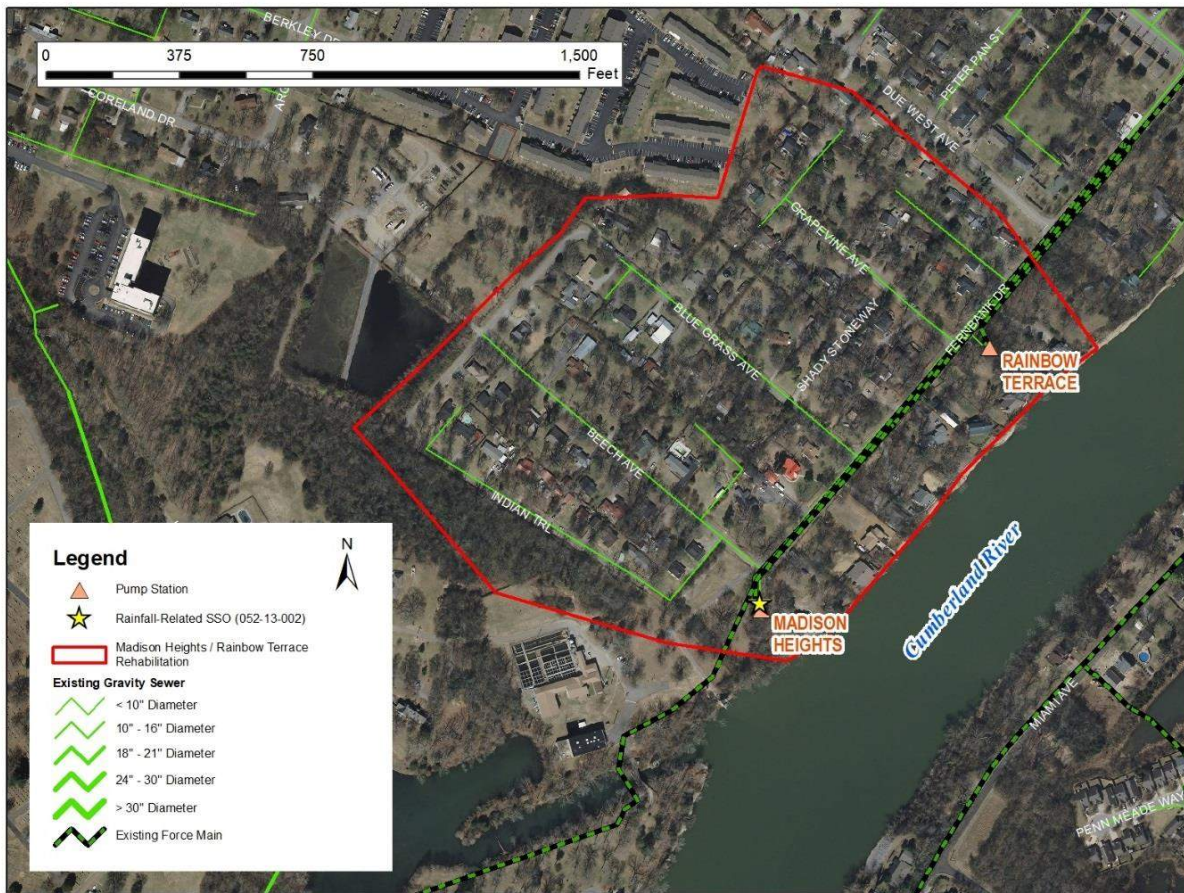


Figure 3-2 Madison Heights Pump Station

4.0 Conclusion

Metro remains committed to continuously reviewing and assessing the sewer system to identify locations of SSOs and address the conditions causing SSOs before they become chronic. Although in several cases, the improvements or repairs to address the overflow have already been conducted or are underway, Metro intends to complete any work associated with SSO locations included in this Addendum within the eleven-year timeframe provided by the Consent Decree, with a target completion date of August 10, 2028.