CITY OF PEORIA

CSO Annual Report for Calendar Year 2024

March 31, 2025

CITY OF PEORIA
3505 N DRIES LN, PEORIA, IL 61604
PHONE: (309) 494-8800 | PUBLICWORKS@PEORIAGOV.ORG

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1.0 Introduction

1.1 Purpose

The City of Peoria (Peoria) and the Greater Peoria Sanitary District (GPSD) are implementing projects to reduce combined sewer overflow (CSO) discharges into the Illinois River (river) to reduce water quality impacts and protect public health.

This annual report was prepared to share information with the public and document information required by Paragraph 77 of Peoria's CSO Consent Decree. This annual report summaries the activities Peoria has undertaken in 2024 to reduce CSO discharges into the river. It includes updates on CSO remedial measure projects, performance testing of installed projects, operations and maintenance (O&M) activities, and other items relating to Peoria's CSO reduction efforts and the Consent Decree.

Additional information is available at PeoriaCSO.com.

1.2 Background

Peoria owns a sewer system comprised of both combined sewers and separate sewers that collect and convey flow to the Riverfront Interceptor (RFI). The RFI sewer runs parallel to the river and transports flow to the wastewater treatment plant (WWTP).

In areas served by separate sewers, sanitary flow and stormwater flow are conveyed through separate pipes. The sanitary flow is conveyed to the WWTP via the RFI, and a separate storm sewer system conveys stormwater runoff to receiving waters. In areas with combined sewers, stormwater runoff combines with the sanitary flow in the sewers, flows to the regulating structures, and then to the WWTP via the RFI.

During rainfall events, the flow in the combined sewers sometimes exceeds the system capacity. When this happens, the regulating structures divert the excess flow to the river via CSO outfalls. Peoria has 16 permitted CSO outfalls that discharge to the river. Twelve of the CSO outfalls are considered "active" while the other four are "emergency" CSO outfalls that rarely, if ever, overflow. Peoria owns the CSO outfalls, combined sewers, and some of the separate sewers. GPSD owns the RFI, WWTP, regulating structures, and some of the separate sewers. Appendix A shows the combined sewer area and outfall locations.

1.3 History of CSO Reduction and Compliance

In May 1986, the Illinois Pollution Control Board (IPCB) issued an opinion granting the City of Peoria an exception to the CSO regulations in Title 35 of the Illinois Administrative Code. Peoria presented a comprehensive plan for reducing CSOs that was subsequently approved by the Illinois Environmental Protection Agency (IEPA), the state governing agency, pending the IPCB order. Final design for the improvements began in May 1988, with construction of the first of the projects

beginning in late 1989. Construction of most improvements was completed by December 1992, with final completion of the projects in July 1994.

In April of 1994, the U.S. EPA's Combined Sewer Overflow Policy (59 Federal register 18688) was enacted at the federal level. This federal policy requires CSO communities to develop a Long Term Control Plan (LTCP) to reduce CSO discharges and comply with the Clean Water Act requirements. Peoria developed its CSO LTCP in December 2008 and submitted a revised CSO LTCP in March 2010. Peoria's goal in completing the CSO LTCP was to develop a plan to achieve compliance with the terms and conditions of its National Pollutant Discharge Elimination System (NPDES) permit and to meet the objectives of the 1994 Combined Sewer Overflow Policy, the Clean Water Act, and the CSO control requirements of the Illinois Administrative Code.

From 2014 through 2020, Peoria and GPSD negotiated a Consent Decree with the U.S. EPA, IEPA, and United States Department of Justice (DOJ). The final Consent Decree has an effective date of March 4, 2021, and an 18-year period to implement CSO reduction projects. Both Peoria and GPSD will complete projects to achieve the CSO reduction goals in the Consent Decree. Peoria's specific compliance requirements are described in Section VI.A of the Consent Decree. GPSD's specific projects to reduce CSO discharges are described in Section VI.B.1 of the Consent Decree.

2.0 CSO Remedial Measures and Performance Testing

Peoria is implementing CSO remedial measures to reduce the frequency and volume of CSO discharges to the Illinois River. The Consent Decree allows Peoria flexibility to utilize adaptive management and construct green and gray infrastructure CSO remedial measures throughout the implementation period.

Green infrastructure (GI) CSO remedial measures, such as permeable pavement, subsurface infiltration, and bioswales, are constructed within Peoria's combined sewer area upstream of existing inlets to capture the stormwater before it enters the combined sewer system. GI is often a cost-effective solution where the native soils have high infiltration capacity. Gray infrastructure projects include more traditional CSO remedial measures, such as in-system storage, offline storage, and other sewer infrastructure, to control wet weather flows.

Most years, Peoria has CSO remedial measures projects in various stages, such as, planning, design, construction, and becoming operational. The below sections provide information on CSO remedial measures that are in progress or have been completed during the calendar year of this report and future projects that will be started in upcoming calendar years. The information provided in each section is summarized below.

- **Section 2.1 Recently Completed CSO Remedial Measures** discusses projects where construction was substantially complete in the calendar year of this report and includes:
    - Project location, description, cost, and photos
    - Pre- and post-construction performance testing results
    - Implementation problems and resolutions
    - Volume of stormwater addressed and basis for performance estimates

- **Section 2.2 In Progress CSO Remedial Measures** discusses projects where construction was in progress during the calendar year for this report and includes:
    - Project location, description, and status update
    - Preliminary estimate of stormwater volume addressed based on the design

- **Section 2.3 Upcoming CSO Remedial Measures** discusses projects where construction will be started in the next calendar year and includes:
    - Project location and description
    - Preliminary estimate of stormwater volume that will be addressed based on the design

- **Section 2.4 Future CSO Remedial Measures** discusses projects in the planning stage during the calendar year for this report and includes preliminary project information.

- **Section 2.5 Previously Completed CSO Remedial Measures** provides updates on previously completed projects, as needed, and tracks the schedule for long-term performance testing.

2.1 Recently Completed CSO Remedial Measures

The section provides information on the CSO remedial measures that became operational within the past calendar year. Projects are considered operational once construction is substantially complete.

Table 1 | CD Requirements from Paragraphs 77.a.i, 77.a.iv, and 77.a.vi

CD PARAGRAPH	DESCRIPTION
77.a.i	Information on each CSO Remedial Measure (including Green Infrastructure, Gray Infrastructure, improvements to existing structures, etc.) that became operational during the preceding calendar year. For each project Peoria shall provide the description, location, Project ID, operational date, a representative picture or pictures of the completed project, amount of stormwater and wastewater captured, infiltrated, or otherwise addressed, the basis for all performance estimates, testing data, and a description of any problems in implementation and how those problems were resolved. Peoria shall provide the total actual capital cost of CSO Remedial measures that became operational during the preceding calendar year.
77.a.iv	Performance testing results for all previously completed GI CSO Remedial Measures.
77.a.vi	A representative picture or pictures of each Green Infrastructure project that became operational during the preceding calendar year taken between June 1st and August 31st.

2.1.1 Year 2 CSO Control Project

The Year 2 CSO Control Project (Year 2 project) utilizes GI to reduce the amount of stormwater entering the combined sewer system in the Cedar sewershed. The project drainage area is within the following border streets: West John H Gwynn Jr Avenue, South MacArthur Highway, West Howett Street, South Western Avenue, West Butler Street, and South Webster Street. The project manages stormwater runoff from a drainage area of approximately 105 acres. The types of GI included in the project are permeable pavers, porous asphalt, and stormwater bump-ins. The project area and location of individual GI facilities are shown in Figure 1 and the project summary is provided in Table 2. The project reduces CSO discharges at the Cedar Street Outfall 016.

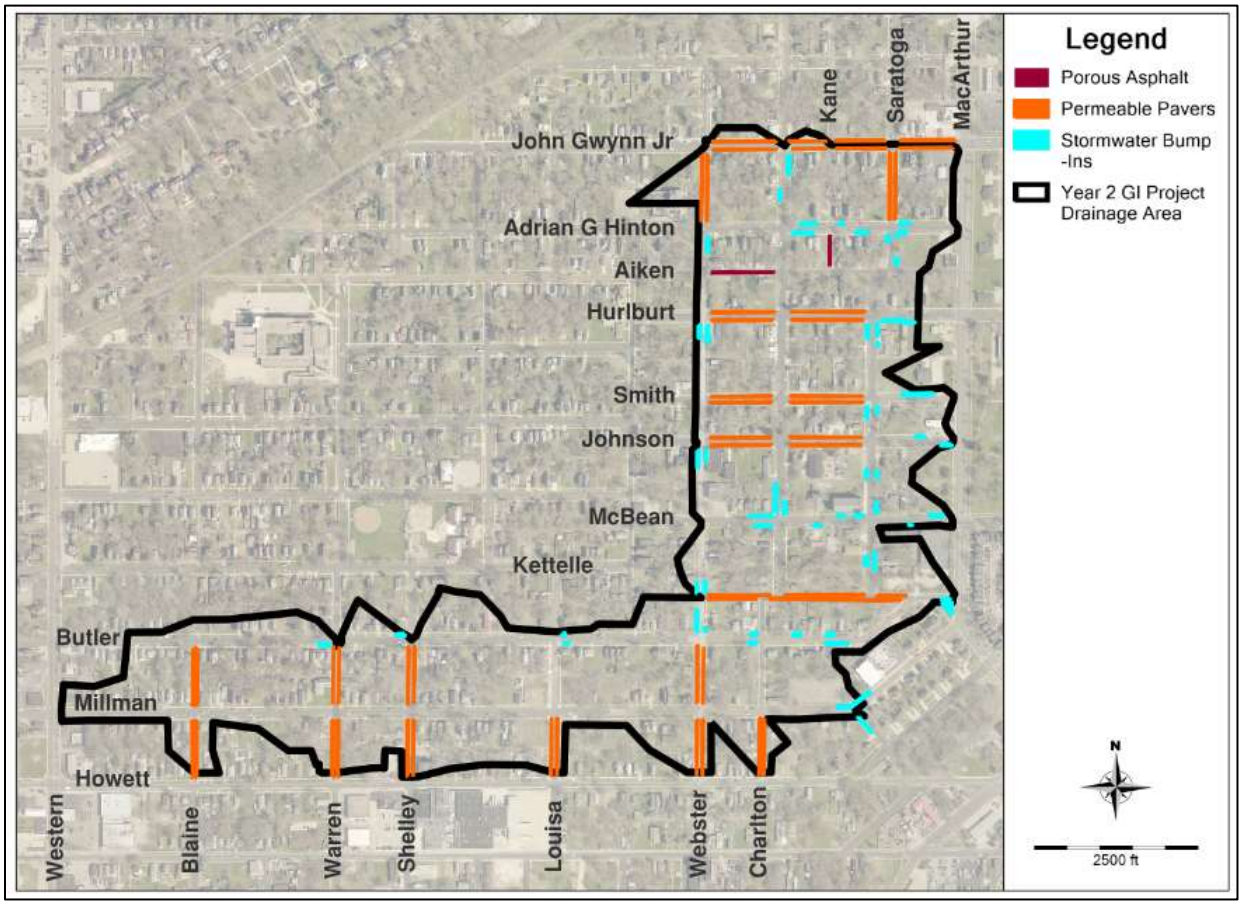


Figure 1 | Year 2 CSO Control Project Area and Locations of Green Infrastructure

Table 2 | Year 2 CSO Control Project Summary

Project ID	Year 2 CSO Control Project
Drainage Area Managed	105 acres
Estimated Total Capital Cost[1]	$10,449,035
Permeable Pavers	25 blocks with permeable paver parking lanes
Porous Asphalt	2 blocks with full width porous asphalt
Stormwater Bump-Ins	53 stormwater bump-ins
Static Storage Volume	0.8 MG

[1] Estimated total capital cost includes the construction bid price. The total actual capital cost will be provided in the next CSO Annual Report, following construction final completion and project close out and will reflect final construction cost.

The permeable pavers are PaveDrain paver blocks. The permeable pavers are located in the parking lane next to the curb and are installed 3 feet wide at the surface. The PaveDrain paver blocks have an open joint space and the blocks are approximately 6 inches thick. The permeable pavers are typically underlain by 3.5 feet of aggregate, resulting in the native soil interface being

approximately 4 feet below ground surface, where high infiltrating soils are generally encountered. At locations where additional storage and infiltration area is not needed for the design storm, the permeable pavers are underlain with 18 inches of aggregate to capture and convey stormwater to the deeper aggregate. The deeper aggregate section is used to achieve the design storage volume and subsurface infiltration area while the shallower aggregate section is used to maintain uniformity at the surface at a reduced construction cost. The width of aggregate below the permeable pavers and at the native soil interface varies from 4 feet to 5.5 feet based on the drainage area managed, stormwater volume to be infiltrated, and native soil infiltration rate. The permeable pavers are installed the full length of the block and on both sides of the street. Where feasible, the subsurface storage below the permeable pavers is interconnected across the street to equalize flow and provide resiliency.

Porous asphalt infiltrates stormwater through the void space in the asphalt. The porous asphalt is constructed full width on two low traffic residential blocks. The porous asphalt is 6 inches thick and underlain by 44 inches of aggregate, resulting in the native soil interface being approximately 4.2 feet below ground surface. A portion of each block is underlain by 20 inches of aggregate to capture and convey stormwater to the deeper aggregate. The shallower aggregate section reduces the construction cost while the deeper aggregate section is used to achieve the design subsurface storage and infiltration area.

The stormwater bump-ins use subsurface aggregate behind the curb to store and infiltrate stormwater. Stormwater enters the bump-in through an inlet and is distributed to the aggregate by a perforated pipe. The stormwater bump-in consist of 18 inches of topsoil underlain by 30 inches of aggregate, resulting in the native soil interface being approximately 4 feet below ground surface. The stormwater bump-in surface is not designed or constructed to infiltrate stormwater.

The Year 2 project includes over 40,000 square feet (SF) of paver surface area on 25 blocks, more than 8,000 SF of porous asphalt surface area on two blocks, and 53 stormwater bump-ins. Co-benefits for the Year 2 project include approximately 1 mile of sidewalks, 41 ADA compliant sidewalk ramps, 48 driveway aprons, 26 alley entrances, and 3.5 miles of concrete curb and gutter.

Key project dates are summarized below.

- Design Work Order Issued: April 2022
- Bid Advertisement: November 2022
- Bid Opening: January 2023
- Construction Notice to Proceed: May 2023
- Construction Substantial Completion and Project Operational: December 2024

Figures 2 through 7 below show representative photos of the Year 2 project taken between June 1st and August 31st of 2024, the year the project became operational.

Figure 2 | Representative Photo of Permeable Pavers in Year 2 Project Area. Photo taken August 23, 2024.

Figure 3 | Representative Photo of Permeable Pavers in Year 2 Project Area. Photo taken August 23, 2024.

Figure 4 | Representative Photo of Stormwater Bump-Ins in Year 2 Project Area. Photo taken August 27, 2024.

Figure 5 | Representative Photo of Stormwater Bump-Ins in Year 2 Project Area. Photo taken August 20, 2024.

Figure 6 | Representative Photo of Porous Asphalt in Year 2 Project Area. Photo taken June 26, 2024.

Figure 7 | Representative Photo of Porous Asphalt in Year 2 Project Area. Photo taken June 26, 2024.

2.1.1.1 Performance Testing

Performance testing is implemented throughout the project life including pre-construction, post-construction, and long-term. The pre-construction performance testing is used to identify sites suitable for GI and determine the design native soil infiltration rate for planned projects. The post-construction performance testing is used to evaluate the performance and effectiveness of GI facilities after construction. Long-term performance testing is used to track changes in performance of existing GI facilities. Performance testing is also used to help identify problems in green infrastructure implementation and maintenance needs.

2.1.1.1.1 Pre-Construction Performance Testing

Pre-construction performance testing is completed at or just below the planned GI native soil interface to determine the infiltration capacity for each green infrastructure facility. Pre-construction performance testing was completed for the Year 2 project using either a Guelph Permeameter or Compact Constant Head Permeameter. The Year 2 project pre-construction infiltration test locations are shown in Figure 8 and the detailed test results are included in Appendix B.

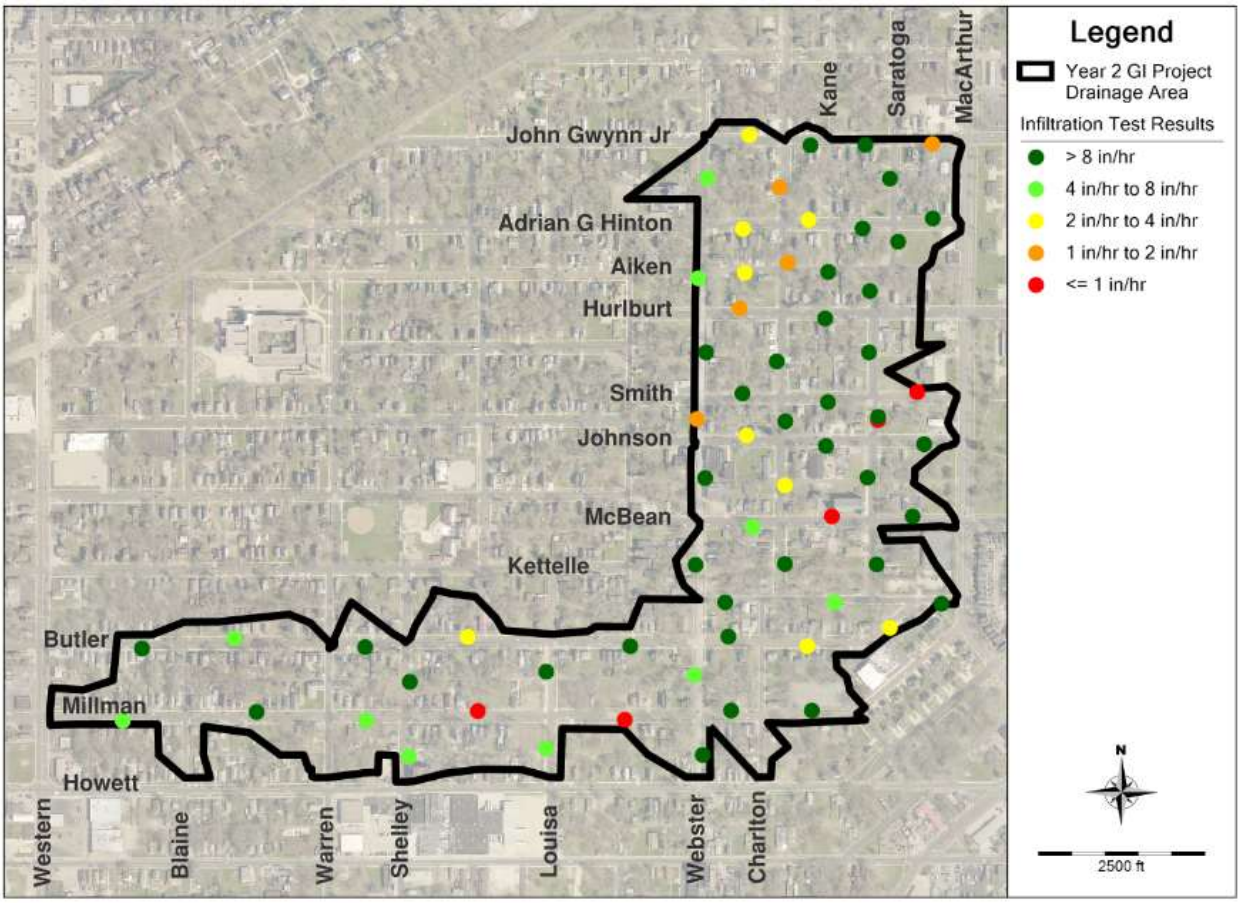


Figure 8 | Year 2 CSO Control Project Pre-Construction Infiltration Tests

2.1.1.1.2 Post-Construction Performance Testing

Post-construction performance testing was completed for the Year 2 project in 2024, in accordance with the Consent Decree and the performance testing program described in the CSO Remedial Measures O&M and GI Performance Testing Plan (O&M and Performance Testing Plan). Table 3 summarizes the required minimum number of performances tests by GI type and infiltration test location.

Permeable paver surface infiltration tests were completed using ASTM C1781 and porous asphalt surface infiltration testing was completed using ASTM C1701; both are standardized single ring infiltration tests. All subsurface infiltration tests were completed using hydrant testing. The surface testing results are shown in Figure 9 and Table 4, the subsurface testing results are shown in Figure 10 and Table 5, with the additional details of the tests and results included in Appendix C.

Table 3 | Required Post-Construction Performance Testing for Year 2 Project

Infiltration Test Location	GI Type	Constructed Area[1] (SF)	Number of Tests Required[2]
Surface	Permeable Pavers	40,098	7
	Porous Asphalt	8,360	2
Subsurface	Permeable Pavers	43,108	8
	Porous Asphalt	3,382	1
	Stormwater Bump-In	25,472	5

[1] Constructed area is calculated based on the infiltration surface area. The infiltration surface area is calculated separately for the surface and subsurface because the GI cross section is not always uniform.

[2] Number of tests required is calculated based on a minimum frequency of 1 test per 6,000 SF of infiltration area.

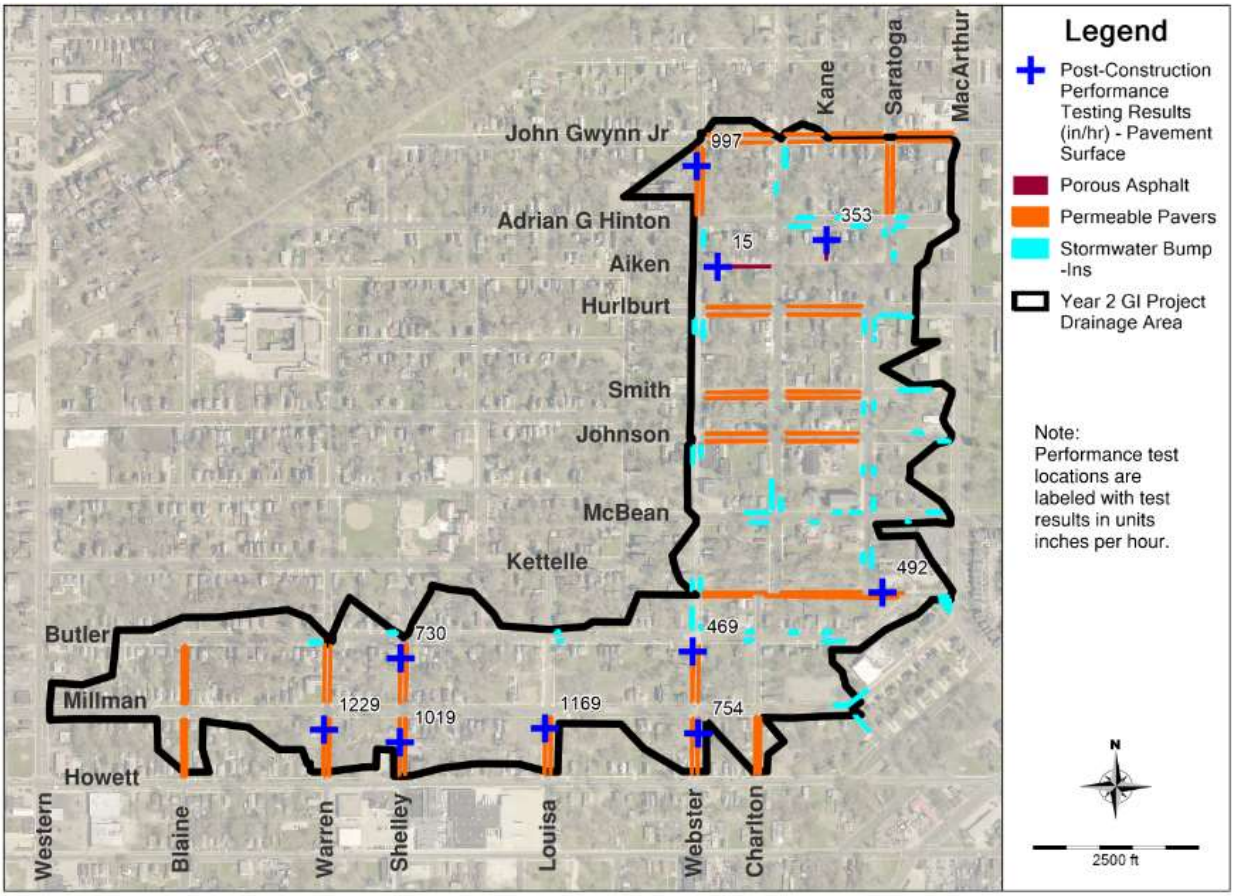


Figure 9 | Post-Construction Surface Infiltration Tests Completed for Permeable Pavers and Porous Asphalt in the Year 2 CSO Control Project

Table 4 | Post-Construction Surface Infiltration Tests Completed for Permeable Pavement in Year 2 CSO Control Project

GI Type	Facility ID	Design Infiltration Rate[1] (in/hr)	Test Date	Test Result (in/hr)	Does Test Result Exceed Design Rate?	Follow-up Actions
Permeable Pavers	Y2_PP-09	25	10/29/2024	997	Yes	Continue following O&M & Performance Testing Plan
	Y2_PP-29	25	9/6/2024	492	Yes	
	Y2_PP-30	25	9/6/2024	469	Yes	
	Y2_PP-32	25	9/5/2024	1,169	Yes	
	Y2_PP-34	25	9/5/2024	1,019	Yes	
	Y2_PP-36	25	9/4/2024	730	Yes	
	Y2_PP-38	25	9/4/2024	1,229	Yes	
	Y2_PP-49	25	9/6/2924	754	Yes	
Porous Asphalt	Y2_PA-01	25	9/5/2024	15	No	Investigate cause of low infiltration rate and consider implications for future use of porous asphalt
	Y2_PA-02	25	10/29/2024	353	Yes	Continue following O&M & Performance Testing Plan

[1] The permeability of new permeable pavement is typically hundreds of inches per hour. The design rate is set conservatively low to account for clogging and regeneration over the lifetime of the permeable pavement. The Final Conditions H&H Model will represent permeable pavement permeability, clogging, and regeneration consistent with the approach described in the GI Design Manual.

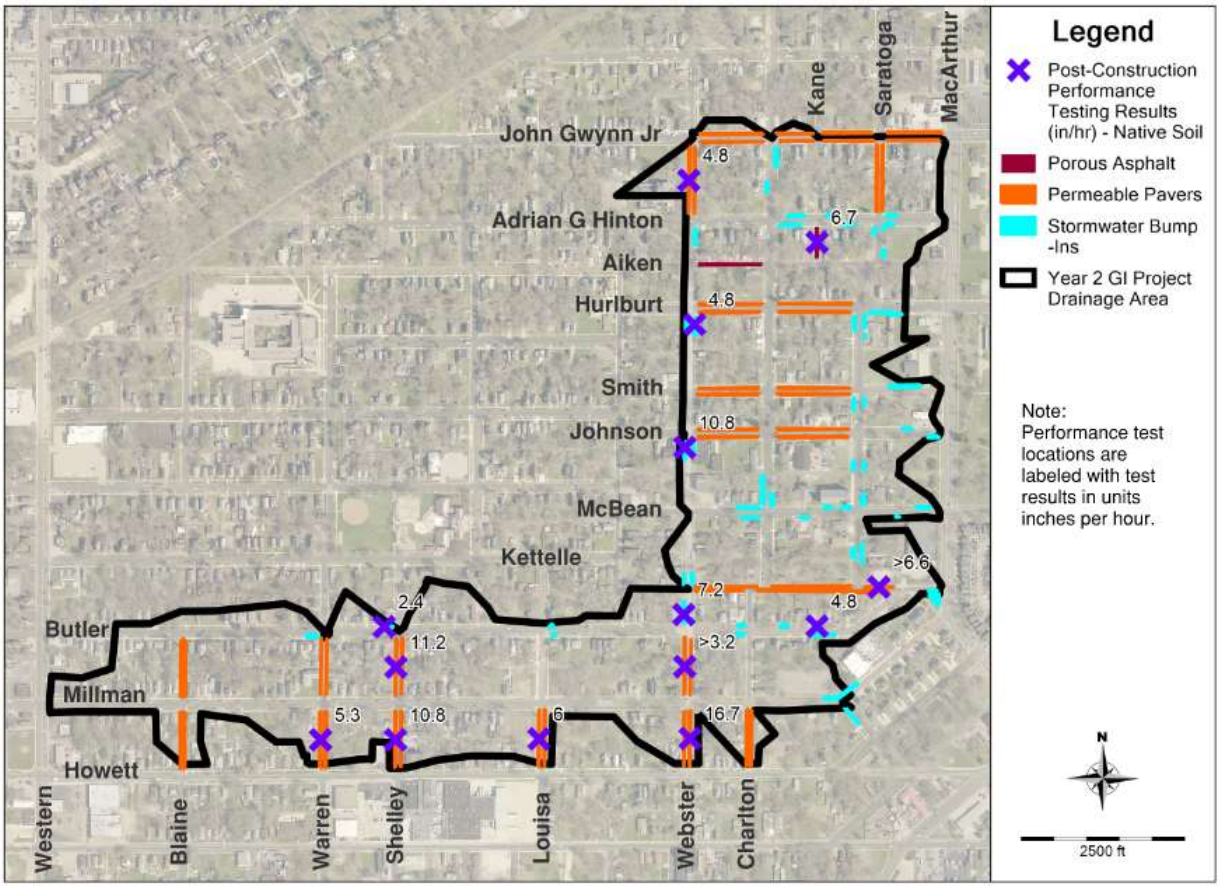


Figure 10 | Post-Construction Subsurface Infiltration Tests Completed for Permeable Pavers, Porous Asphalt, and Stormwater Bump-Ins in the Year 2 CSO Control Project

Table 5 | Post-Construction Subsurface Infiltration Tests Completed for Permeable Pavers, Porous Asphalt, and Stormwater Bump-Ins in Year 2 CSO Control Project

GI Type	Facility ID[1]	Design Rate (in/hr)	Test Date	Test Result (in/hr)	Does Test Result Exceed Design Rate?	Follow-up Actions
Permeable Pavers	Y2_PP-09 / Y2_PP-10	3	10/29/2024	4.8	Yes	Continue following O&M & Performance Testing Plan
	Y2_PP-29	3	9/6/2024	>6.6	Yes	
	Y2_PP-30	3	9/6/2024	>3.2	Yes	
	Y2_PP-32 / Y2-PP-33	3	9/5/2024	6	Yes	
	Y2_PP-34 / Y2_PP-35	3	9/5/2024	10.8	Yes	
	Y2_PP-36 / Y2_PP-37	5	9/4/2024	11.2	Yes	
	Y2_PP-38 / Y2_PP-39	3	9/4/2024	5.3	Yes	
	Y2_PP-48 / Y2_PP-49	3	9/6/2024	16.7	Yes	
Porous Asphalt	Y2_PA-02	5	12/17/24	6.7	Yes	
Bump-in	Y2_BI-16	3	12/18/24	4.8	Yes	
	Y2_BI-21 / Y2_BI-22	3	12/16/24	10.8	Yes	
	Y2_BI-38	5	12/17/24	7.2	Yes	
	Y2_BI-43	3	12/17/24	4.8	Yes	
	Y2_BI-49	5	12/18/24	2.4	No	Update the modeled native soil infiltration rate to represent the measured performance test results. Continue following O&M & Performance Testing Plan

[1] GI facilities listed with two Facility IDs are interconnected. The subsurface infiltration test measures the infiltration rate across both GI facilities.

2.1.1.2 Implementation Problems and Resolutions

In accordance with Consent Decree paragraph 77.a.i, the problems with implementation and resolutions are discussed herein.

- The designed inlet pretreatment is a stainless steel screen, 20 mesh grid installed over the outlet pipe. The screen is subject to clogging and restricts inflows to the subsurface storage and infiltration. An additional four different types of pretreatment devices were installed in the Year 2 project in Fall 2024. Peoria is evaluating the performance of each pretreatment device, including the maintainability of the devices. The five pretreatment devices installed in the Year 2 project include:
    - Stainless steel screen, 20 mesh grid on the outlet pipe
    - BMP Inc, Snout on the outlet pipe
    - Fabco StormRing on the outlet pipe
    - Fabco StormSack inlet filter
    - Fabco ScreenBox inlet filter
- Utility conflicts were identified during construction, and several approaches were taken to minimize the impact to utilities.
    - The footprints of stormwater bump-ins were modified to avoid utilities, maintaining the same surface area and depth, and in some cases, splitting the aggregate area into multiple areas interconnected with piping.
    - The elevation of distribution pipes was adjusted.
- Some small stormwater bump-ins included in design were removed in locations where the stormwater could be managed at nearby GI facilities with excess capacity.
- When poor infiltrating soils were encountered at the planned excavation depth, the contractor over excavated to determine if the soil hydraulic capacity improved with depth. When a small increase in the excavation depth encountered sand, the depth of the GI facility was increased to the depth to sand. If sand was not encountered with the additional excavation depth, then the footprint of the GI facility was increased to provide more storage volume and infiltration area.
- Permeable pavement is subject to clogging and thorough cleaning of the permeable pavement surface is key to maintaining the surface infiltration capacity. Peoria performed maintenance, which restored the permeable paver surface infiltration capacity to like new conditions. Peoria is working to identify an effective method to restore the surface infiltration capacity of the porous asphalt. Peoria continues to monitor the permeable pavement surface infiltration rate via periodic surface infiltration testing and is using the data to inform and optimize maintenance activities.
- The roadway grading around inlets impacts the flow capture capacity. Flow capture capacity increases substantially when inlets are constructed in a sag condition rather than an on-grade condition. Inlets are planned to be installed in a sag condition, where feasible, in future projects.

2.1.1.3 Basis for Performance Estimates

Performance estimates are based on the calibrated hydrologic and hydraulic (H&H) model without GI compared to the H&H model with GI. The Updated Starting Conditions H&H Model Report provides details regarding the model. The GI Design Manual includes details on the procedure for representing GI in the model using LID Controls.

The Year 2 project performance estimated during design is based on the Year 2 design model that uses pre-construction performance testing data and reflects the GI as designed.

Peoria received the Year 2 as-built plans in January 2025. Post-construction flow metering for the Year 2 project is planned in 2025. The as-built plans and flow meter data will to be used to update the model calibration. The calibrated, post-construction model will be used to develop the post-construction performance estimate.

The Year 2 GI performance estimate for Peoria's design storm and Typical Year from the design model is summarized in Table 6. The CSO Annual Report for calendar year 2025 will include the post-construction estimate based on the calibrated, post-construction model.

Table 6 | Performance Estimate for Year 2 CSO Control Project

Performance Estimate	Date of Estimate	Estimated Volume of Stormwater Managed		Notes
		Peoria's Typical Year	Peoria's Six-Month Design Storm	
Design Estimate	November 2022	14.7 MG	1.0 MG	Based on pre-construction performance testing and GI design
Post-Construction Estimate	TBD	TBD	TBD	Estimates will be provided after post-construction flow monitoring is performed

2.2 In Progress CSO Remedial Measures

The section provides information on the CSO remedial measures that were in progress during the calendar year for this report. Projects are considered to be in progress if the construction is occurring, but the project has not yet become operational within the calendar year of this annual report.

Table 7 | CD Requirement from Paragraph 77.a.ii

CD PARAGRAPH	DESCRIPTION
77.a.ii	A status report on all CSO Remedial Measures in process that did not yet become operational in the preceding calendar year.

2.2.1 Year 3 CSO Control Project

The Year 3 CSO Control Project (Year 3 project) utilizes GI to reduce the amount of stormwater entering the combined sewer system in the Cedar sewershed. The project drainage area is within the area bound by the following streets: West Butler Street, South Webster Street, West John H Gwynn Jr Avenue, West Martin Luther King Jr Avenue, and South Western Avenue. The Year 3 project manages stormwater runoff from a drainage area of approximately 84 acres. The types of GI included in the project are permeable pavers, subsurface storage and infiltration below pavement, and stormwater bump-ins. The project area and location of individual GI facilities are shown in Figure 11 and the project summary is provided in Table 8. Once operational the project will reduce CSO discharges at the Cedar Street Outfall 016.

The Year 3 project is currently under construction, with approximately 25% of the project construction complete. Construction is anticipated to be substantially complete in September 2025.

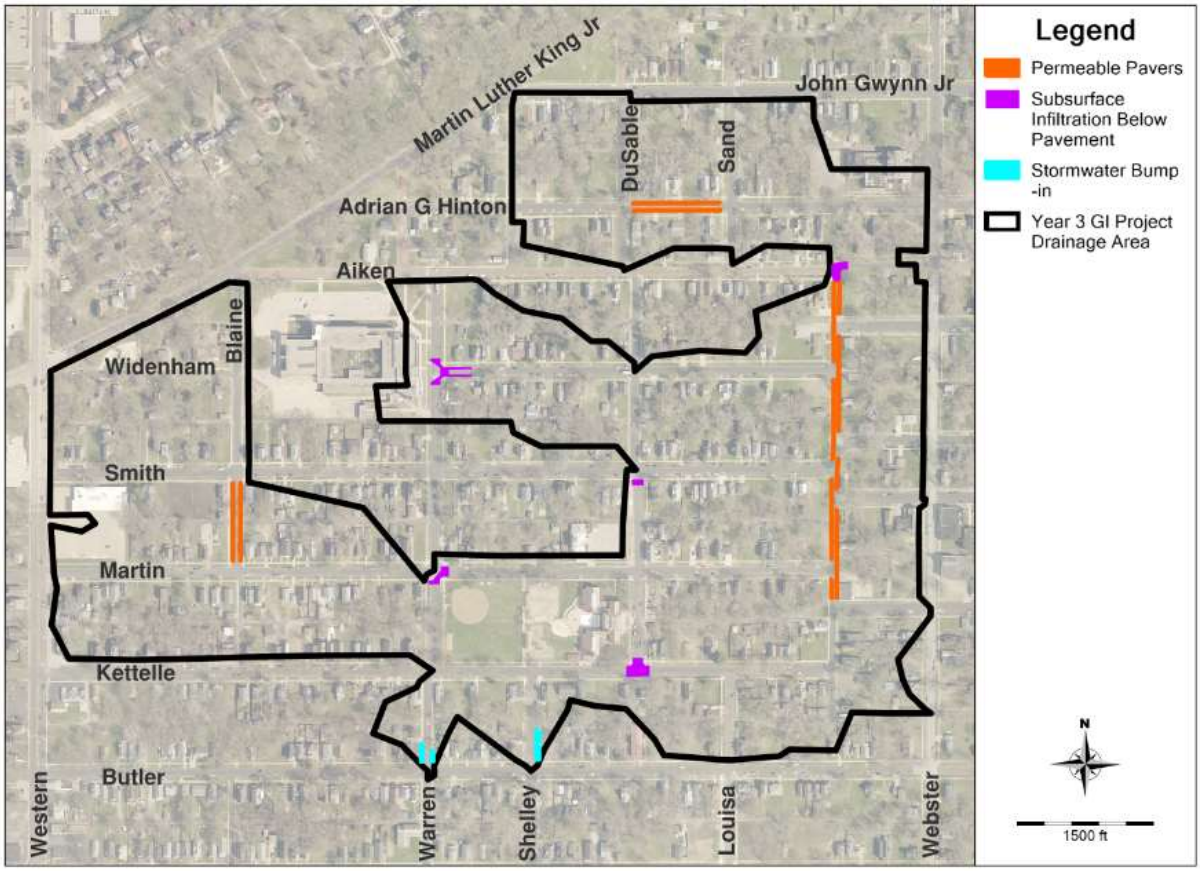


Figure 11 | Year 3 CSO Control Project Area and Locations of Green Infrastructure

Table 8 | Year 3 CSO Control Project Summary

Project ID	Year 3 CSO Control Project
Drainage Area Managed	84 acres
Total Actual Capital Cost	TBD
Permeable Pavers	8 blocks with permeable paver parking lanes
Subsurface Storage and Infiltration Below Pavement	5 subsurface infiltration facilities
Stormwater Bump-Ins	3 stormwater bump-ins
Static Storage Volume	0.3 MG

The permeable pavers in the Year 3 project are PaveDrain paver blocks. The permeable pavers are located in the parking lane next to the curb and are 3 feet wide at the surface. The PaveDrain paver blocks have an open joint space and are approximately 6 inches thick and are underlain by 4.3 to 5.5 feet of aggregate, resulting in the native soil interface being approximately 4.8 to 6 feet below ground surface. The width of aggregate at the native soil interface varies from 4 feet to 15.5 feet based on the drainage area managed, stormwater volume to be infiltrated, and the native soil infiltration rate. The permeable pavers will be installed the full length of the block and on both sides of the street. Where feasible permeable pavers will be interconnected across the street to equalize flow and provide resiliency.

The subsurface infiltration below pavement in the Year 3 project consists of 4.3 to 5.5 feet of aggregate below conventional asphalt, with the depth of each GI facility based on the depth to high infiltrating soils. Stormwater enters the aggregate through an inlet and perforated distribution pipe. Stormwater is stored in the aggregate until it can infiltrate.

The stormwater bump-ins in the Year 3 project use subsurface aggregate behind the curb to store and infiltrate stormwater. Stormwater enters the bump-in through an inlet and is distributed to the aggregate by a perforated pipe. The stormwater bump-in consist of 18 inches of topsoil underlain by 30 inches of aggregate, resulting in the native soil interface being approximately 4 feet below ground surface. The stormwater bump-in surface is not designed or constructed to infiltrate stormwater.

The Year 3 project includes over 8,000 SF of paver surface area on 8 blocks, over 11,000 SF of subsurface infiltration below pavement, and 3 stormwater bump-ins. Co-benefits for the Year 3 project include over 3/4 mile of sidewalks, 56 ADA compliant sidewalk ramps, 18 driveway aprons, and 1 mile of concrete curb and gutter.

Key project dates are summarized below.

- Design Work Order Issued: February 2023
- Bid Advertisement: February 2024
- Bid Opening: March 2024
- Construction Notice to Proceed: July 2024
- Construction Substantial Completion and Project Operational: anticipated September 2025

Based on the Year 3 GI design model, the project is estimated to control approximately 9.1 MG of stormwater for Peoria's Typical Year and 0.7 MG of stormwater for Peoria's Six-Month Design Storm.

2.3 Upcoming CSO Remedial Measures

The section provides required information on the upcoming CSO remedial measures. Projects are considered to be upcoming if the construction is planned to begin in the calendar year following the calendar year of this report.

Table 9 | CD Requirement from Paragraph 77.a.iii

CD PARAGRAPH	DESCRIPTION
77.a.iii	A list of all CSO Remedial Measures expected to be started in the next calendar year, including location, project type, and estimated volume of stormwater/wastewater to be addressed.

2.3.1 Year 4 CSO Control Project

The Year 4 CSO Control Project (Year 4 project) will utilize GI to reduce the amount of stormwater entering the combined sewer system in the Sanger and South sewersheds. The project is located in the area bound by West Lincoln Avenue to the north, South Westmoreland Avenue to the west, Southwest Adams Street to the south, and South Louisa Street to the east. The Year 4 project manages stormwater runoff from a drainage area of approximately 117 acres. The GI included in the project is subsurface storage and infiltration below pavement. The project summary is provided in Table 10 and the GI drainage area and location of individual GI facilities are shown in Figure 12 below. The project locations were selected to target areas with both a high native soil infiltration rates, based on pre-construction performance testing results, and high estimated volume of stormwater runoff based on the drainage area. Once operational the project will reduce CSO discharges at the Sanger Street Outfall 018 and South Street Outfall 017.

Table 10 | Year 4 CSO Control Project Summary

Project ID	Year 4 CSO Control Project
Drainage Area Managed	117 acres
Total Actual Capital Cost	TBD
Subsurface Storage and Infiltration Below Pavement	71 subsurface infiltration facilities
Static Storage Volume	0.9 MG

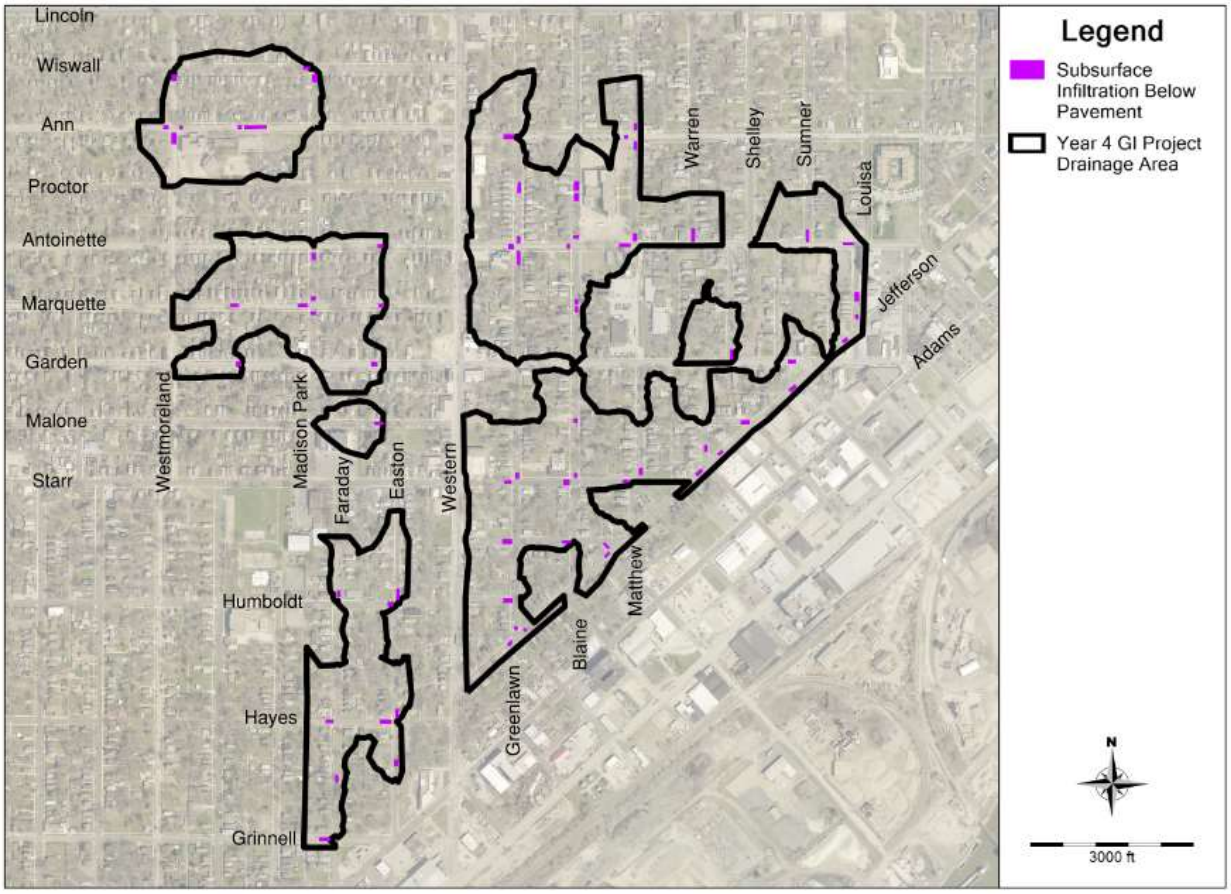


Figure 12 | Year 4 CSO Control Project Area and Locations of Green Infrastructure

The subsurface infiltration below pavement to be constructed in the Year 4 project consists of 5 feet of aggregate below conventional asphalt pavement. Stormwater enters the aggregate through an inlet and perforated distribution pipe. Stormwater is stored in the aggregate until it can infiltrate. Where feasible, subsurface aggregate facilities will be interconnected across the intersection to equalize flow and provide resiliency.

The Year 4 project includes over 55,000 SF of subsurface infiltration below pavement. Co-benefits for the Year 4 project include over 1/3 mile of sidewalks, 155 ADA compliant sidewalk ramps, 15 driveway aprons, and over 1.4 miles of concrete curb and gutter.

Key project dates are summarized below.

- Design Work Order Issued: September 2023
- Bid Advertisement: January 2025
- Bid Opening: February 2025
- Construction Notice to Proceed: upcoming
- Construction Substantial Completion and Project Operational: upcoming

Based on the Year 4 GI design model, the project is estimated to control approximately 17.6 MG of stormwater for Peoria's Typical Year and 1.1 MG of stormwater for Peoria's Six-Month Design Storm.

2.3.2 MacArthur Highway Rehabilitation Project

The MacArthur Highway Rehabilitation Project (MacArthur project) is located in the Cedar sewershed, in the corridor of South MacArthur Highway from West Howett Street to West 4th Street. The portion of the project between West Howett Street and West Hurlburt Street is within the combined sewer area and therefore suitable for GI CSO remedial measures. Although this is primarily a road project, the project is planned to include green infrastructure to reduce the amount of stormwater that enters the combined sewer system for the portion of the project that is located in the combined sewer drainage area. The MacArthur project GI manages stormwater runoff from a drainage area of approximately 9 acres and consists of stormwater bump-ins. The GI drainage area and location of individual GI facilities are shown in Figure 13 and the project summary is provided in Table 11. Once operational the project will reduce CSO discharges to the Cedar Outfall 016.

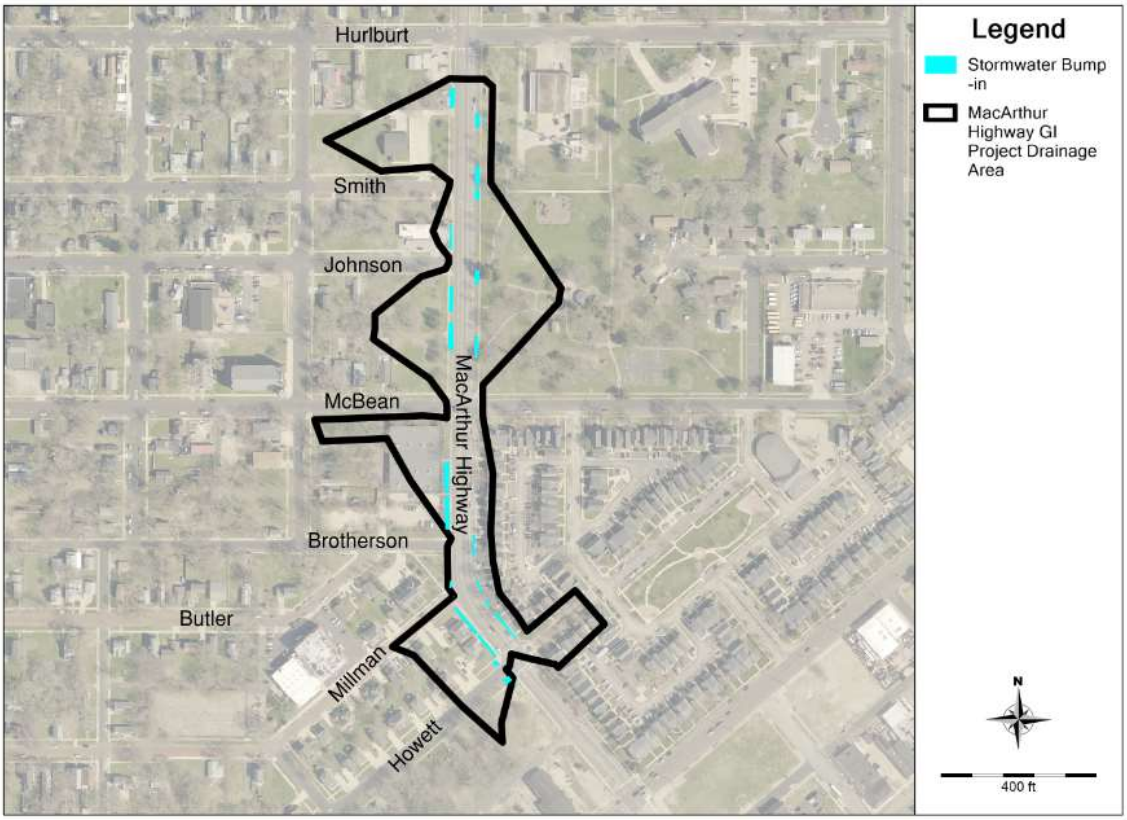


Figure 13 | MacArthur Highway CSO Control Project Area and Locations of Green Infrastructure

Table 11 | MacArthur Highway CSO Control Project Summary

Project ID	MacArthur Highway CSO Control Project
Drainage Area Managed	9 acres
Total Actual Capital Cost	TBD
Stormwater Bump-Ins	21 stormwater bump-ins
Static Storage Volume	0.1 MG

The stormwater bump-ins in the MacArthur project use subsurface aggregate behind the curb to store and infiltrate stormwater. Stormwater enters the bump-in through an inlet and is distributed to the aggregate by a perforated pipe. The stormwater bump-in surface is not designed or constructed to infiltrate stormwater.

The MacArthur project includes 21 stormwater bump-ins. Co-benefits for the MacArthur project include 0.3 miles of full street restoration, sidewalks, and shared use path; 21 ADA compliant sidewalk ramps; 3 driveway aprons; and over 0.6 miles of concrete curb and gutter.

Key project dates are summarized below.

- Design Work Order Issued: August 2023
- Bid Advertisement: anticipated April 2025
- Bid Opening: anticipated May 2025
- Construction Notice to Proceed: upcoming
- Construction Substantial Completion and Project Operational: upcoming

Based on the MacArthur GI design model, the project is estimated to control approximately 1.4 MG of stormwater for Peoria's Typical Year and 0.1 MG of stormwater for Peoria's Six-Month Design Storm.

2.4 Future CSO Remedial Measures

The section provides information on future CSO remedial measures that were in the planning stage during the calendar year for this report.

2.4.1 Spring Street Complete Green Street Project

The Spring Street Complete Green Street Project (Spring Street project) is located in the Spring-Caroline sewershed and will include green infrastructure to reduce the amount of stormwater that enters the combined sewer system. The Spring Street project will manage stormwater runoff in the area bound by Northeast Glen Oak Avenue, Laveille Street, Northeast Adams Street, and Voris Street. The preliminary GI drainage area is shown in Figure 14 below. The preliminary design for the Spring Street project started in 2023 and is anticipated to be completed in 2025. The schedule for final design, bidding, and construction is not yet defined.

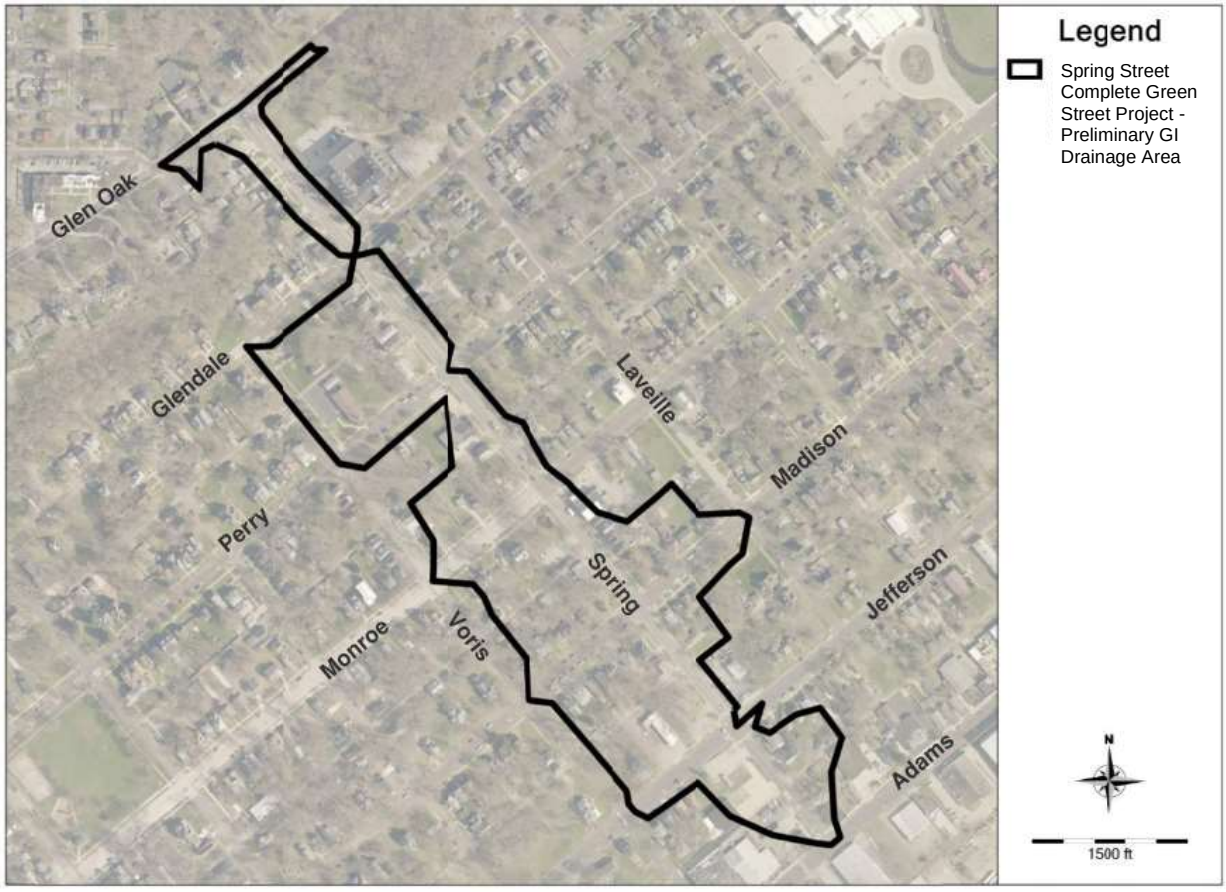


Figure 14 | Preliminary GI Drainage Area for Spring Street Complete Green Street Project

2.4.2 Offline Storage Planning

The offline storage planning project includes evaluating storage near the outfalls for Spring-Caroline (003), Eaton (006), Fayette (007), Cedar (016), South (016), and Sanger (018). The project will include data collection, site research, alternatives analysis, stakeholder coordination, and an opinion of probable cost. Preliminary engineering of offline storage for Spring-Caroline, Eaton, and Fayette will also be included. The general outfall locations that are included in the offline storage planning are shown in Figure 15.

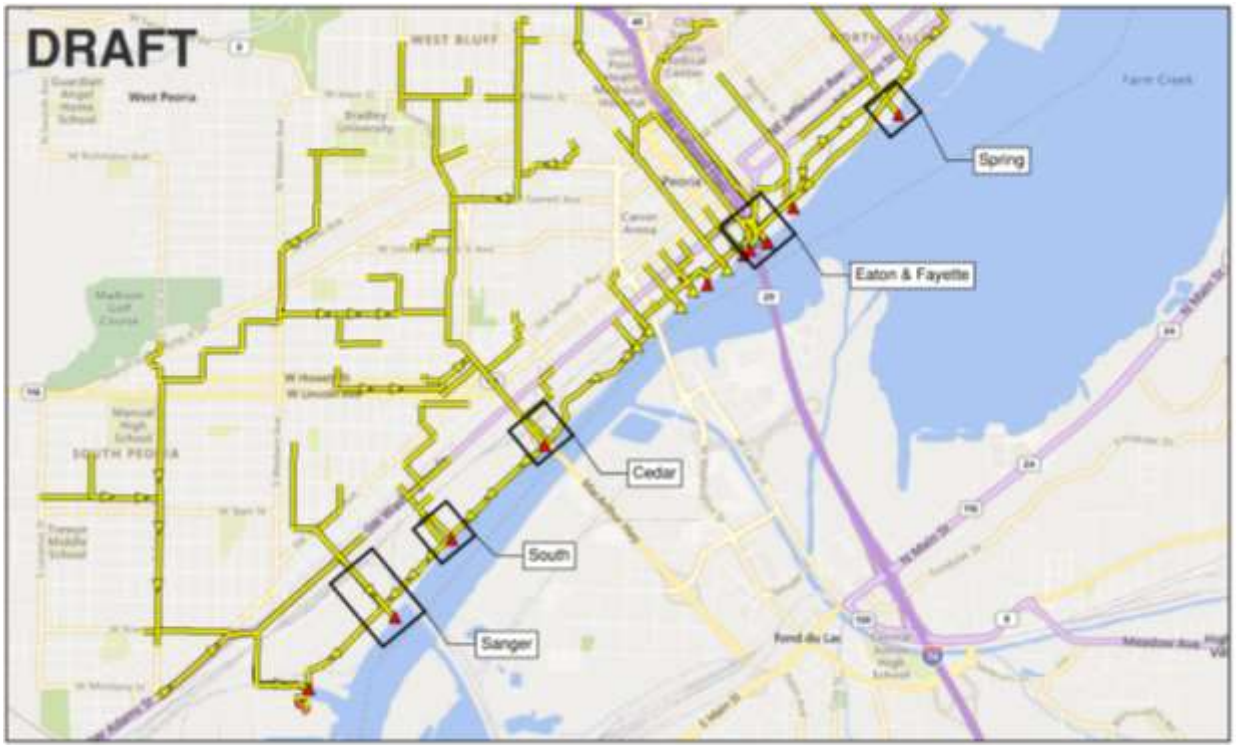


Figure 15 | Offline Storage Planning Locations

2.4.3 In-System Storage Planning

The in-system storage planning project includes evaluating in-system storage at up to ten locations in the existing combined sewer system. The project will include data collection, targeted site surveys, conceptual drawings, H&H modeling, and an opinion of probable cost. The locations where in-system storage may be evaluated are shown in Figure 16.

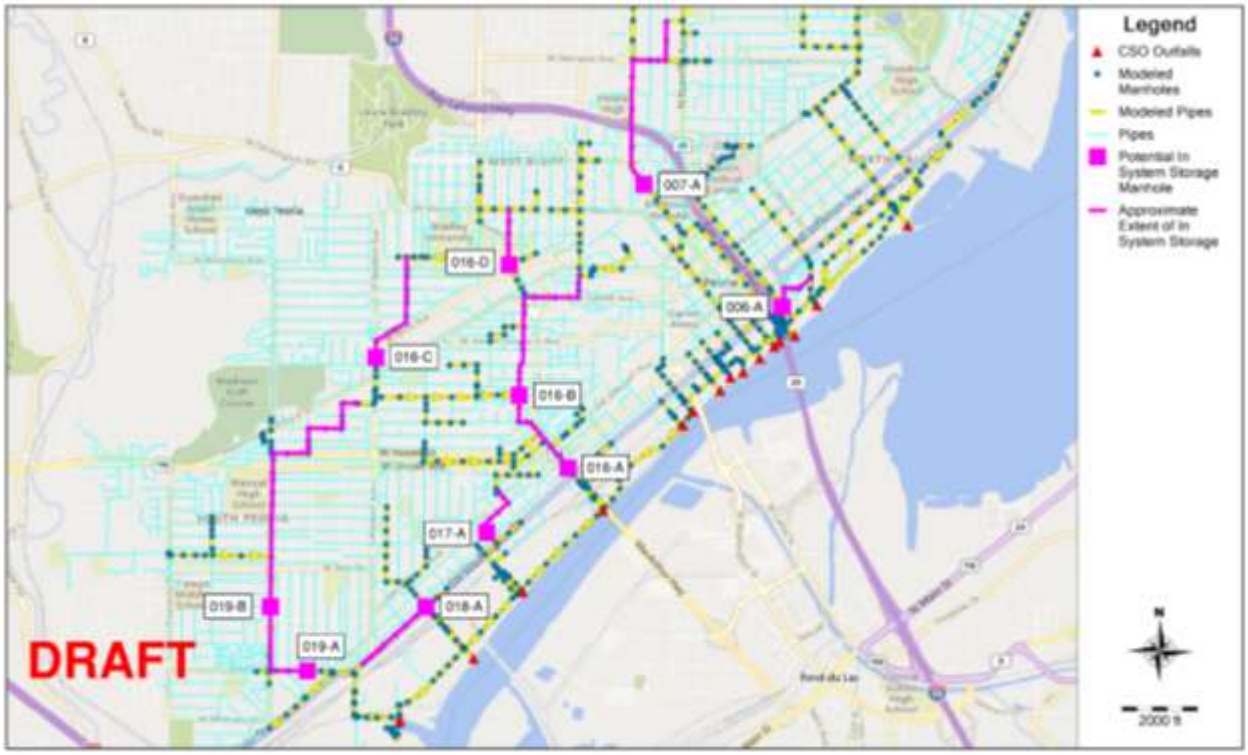


Figure 16 | In-System Storage Planning Locations

2.5 Previously Completed CSO Remedial Measures

2.5.1 Follow-Up from CSO Annual Report for Calendar Year 2023

The Year 1 CSO Control Project post-construction performance testing described in the CSO Annual Report for Calendar Year 2023 identified a flow restriction between the stormwater bump-out and the subsurface aggregate below the permeable pavers and noted that corrective action is planned.

During 2024, Peoria completed multiple rounds of cleaning, televising, and performance testing of the StormTech chambers to evaluate the flow restriction. The televising showed sediment, debris, and standing water in the StormTech chambers. After several rounds of cleaning, the hydrant testing indicated no improvement in storm chamber performance. Further investigation revealed the ADS StormTech SC-160LP chambers were designed and installed with a layer of ADS Plus 125 woven geotextile fabric between the chambers and underlying aggregate. The long-term design capacity of the ADS Plus 125 fabric was stated to be 1.85 GPM/ft^2 (0.06 cfs per chamber) per ADS. The storm chambers do not have perforations, so all stormwater must flow through the geotextile fabric to reach the storage aggregate. The storm chambers were determined to be significantly undersized due to the presence of the fabric.

The following corrective action steps are planned to remediate the storm chamber design.

1. Provide sufficient pretreatment upstream of storm chambers. Five different pretreatment devices were installed in the Year 2 project in Fall 2024. The City is evaluating the performance of each pretreatment device, including the ability of the device to be maintained.

2. Replace the mulch from the stormwater bump-outs with sod, stone, native plantings, or other cover to prevent erosion.
3. Remove the ADS Plus 125 fabric from below the storm chambers.
4. Complete performance testing after the GI is remediated.

2.5.2 Long-Term Performance Testing

Long-term performance testing will be conducted at a minimum frequency of once every three years, in accordance with the CSO Remedial Measures Operation and Maintenance and GI Performance Testing Plan. Table 12 summarizes when upcoming long-term performance testing is planned for the green infrastructure CSO remedial measures.

Table 12 | Green Infrastructure Long-Term Performance Test Tracking

Previously Completed GI Project ID	Project Operational	Calendar Year of Last Performance Test	Calendar Year of Next Performance Test
Year 1 CSO Control Project	June 2023	2023	2026
Year 2 CSO Control Project	December 2024	2024	2027

3.0 O&M Description

The section provides information on inspection and operation and maintenance (O&M) activities performed for completed CSO remedial measures during the calendar year of this report, in accordance with paragraph 77.a.v of the Consent Decree.

Table 13 | CD Requirement from Paragraph 77.a.v

CD PARAGRAPH	DESCRIPTION
77.a.v	A description of the O&M performed on previously-completed CSO Remedial Measures, including when routine inspections were conducted and a brief summary of each routine inspection, and any necessary corrective actions for previously-completed CSO Remedial Measures.

During 2024, Peoria performed GI inspection and maintenance activities for the following GI projects in the combined sewer area: Year 2, Year 1, Western Avenue, Folkers Avenue, and SW Adams Street. Some portions of the Year 2 CSO Control Project were turned over to Peoria in January 2024, with the remaining portions of the project turned over in November 2024.

The inspections and maintenance were completed in accordance with the CSO Remedial Measures Operation and Maintenance and GI Performance Testing Plan. This includes inspections and maintenance, if needed, at least four times per year from March through November, with one inspection occurring in November, and within 48 hours (excluding weekends and holidays) after each rain event with more than 1-inch of rainfall. Rainfall events with more than 1-inch of rainfall are determined using Peoria's rain gauges. Each GI facility is associated with a specific rain gauge based on proximity using Theissen polygons. Due to variability of rainfall throughout the combined sewer area, rainfall measurements differ from location to location. Therefore, all GI facilities may not require inspection for the same rainfall event.

Inspection and maintenance activities were documented using the GI inspection and maintenance forms in the GI GIS tracking system. The appropriate forms are integrated with each GI facility and completed digitally using the Field Maps GIS mobile collection platform. Inspections are performed to identify items that may impact GI performance such as sediment or debris accumulation, erosion, obstruction of connecting piping, need for vegetation maintenance, evidence of standing water, and structural issues. Post-inspection maintenance activities are performed to address items identified during the inspections and ensure proper functioning of the GI facilities. Maintenance typically includes removal of trash, debris, sediment, invasive species, and landscaping.

Table 14 below summarizes when and where inspections were conducted and provides a brief summary of the inspection and maintenance activities. The corrective actions for previously completed CSO remedial measures are discussed in Section 2.5.1.

Table 14 | GI Inspection and Maintenance Summary

Inspection Overview	Summary of Inspection and Maintenance Activities
Inspection #1 **Dates**: 1/9/2024 – 1/10/2024 **Reason**: Inspect and Maintain GI Inlets and Drywells after Snowstorm **Rain Gauges with >1" Rainfall**: • NA **Projects Inspected**: • Year 1 Project • Western Avenue • Folkers Avenue • SW Adams Street	• 74 GI inlets inspected ○ Maintenance: grates cleaned • 30 dry wells inspected ○ Maintenance: grates and sumps cleaned
Inspection #2 **Dates**: 1/31/2024 – 2/1/2024 **Reason**: Inspect and Maintain GI before Snow Melt **Rain Gauges with >1" Rainfall**: • NA **Projects Inspected**: • Year 1 Project • Year 2 Project • Western Avenue • Folkers Avenue • SW Adams Street	• 74 GI inlets inspected ○ Maintenance: grates cleaned and sediment/debris removed from sumps • 20 cleanouts inspected ○ Maintenance: debris removed from cleanout and connecting piping • 76 permeable paver sections inspected ○ Maintenance: vacuumed • 20 stormwater bump-outs inspected ○ Maintenance: debris and sediment removed • 27 bioswales inspected ○ Maintenance: sediment and debris removed • 20 overflow inlets inspected ○ Maintenance: none needed • 30 dry wells inspected ○ Maintenance: grates and sumps cleaned
Inspection #3 **Dates**: 3/15/2024 – 3/19/2024 **Reason**: >1" Rainfall **Rain Gauges with >1" Rainfall**: • Glen Oak **Projects Inspected**: • Year 1 Project	• 44 GI inlets inspected ○ Maintenance: grates cleaned and sediment/debris removed from sumps • 20 cleanouts inspected ○ Maintenance: debris removed from cleanout and connecting piping • 28 permeable paver sections inspected ○ Maintenance: vacuumed • 20 stormwater bump-outs inspected ○ Maintenance: debris and sediment removed

Inspection Overview	Summary of Inspection and Maintenance Activities

Inspection #4
Dates: 3/27/2024 – 3/29/2024
Reason: >1" Rainfall
Rain Gauges with >1" Rainfall:
• RG018
• RG019
Projects Inspected:
• Year 2 Project
• Western Avenue
• Folkers Avenue
	• 30 GI inlets inspected
	  ○ Maintenance: grates cleaned and sediment/debris removed from sumps
	• 33 permeable paver sections inspected
	  ○ Maintenance: vacuumed
	• 28 dry wells inspected
	  ○ Maintenance: grates and sumps cleaned

Inspection #5
Dates: 4/19/2024 – 4/23/2024
Reason: >1" Rainfall
Rain Gauges with >1" Rainfall:
• RG018
• RG019
Projects Inspected:
• Year 2 Project
• Western Avenue
• Folkers Avenue
	• 30 GI inlets inspected
	  ○ Maintenance: grates cleaned and sediment/debris removed from sumps
	• 33 permeable paver sections inspected
	  ○ Maintenance: vacuumed
	• 28 dry wells inspected
	  ○ Maintenance: grates and sumps cleaned

Inspection #6
Dates: 4/29/2024 – 5/1/2024
Reason: >1" Rainfall
Rain Gauges with >1" Rainfall:
• RG018
• RG019
• TRG1
• Glen Oak
Projects Inspected:
• Year 1 Project
• Year 2 Project
• Western Avenue
• Folkers Avenue
• SW Adams Street
	• 74 GI inlets inspected
	  ○ Maintenance: grates cleaned and sediment/debris removed from sumps
	• 20 cleanouts inspected
	  ○ Maintenance: debris removed from cleanout and connecting piping
	• 76 permeable paver sections inspected
	  ○ Maintenance: vacuumed
	• 20 stormwater bump-outs inspected
	  ○ Maintenance: none needed
	• 27 bioswales inspected
	  ○ Maintenance: none needed
	• 20 overflow inlets inspected
	  ○ Maintenance: none needed
	• 30 dry wells inspected
	  ○ Maintenance: grates and sumps cleaned

Inspection Overview	Summary of Inspection and Maintenance Activities

Inspection #7
 	
Dates: 6/26/2024 – 6/28/2024
 	
Reason: >1" Rainfall
 	
Rain Gauges with >1" Rainfall:
• RG018
• RG019
• TRG1
• Glen Oak
 	
Projects Inspected:
• Year 1 Project
• Year 2 Project
• Western Avenue
• Folkers Avenue
• SW Adams Street
	• 74 GI inlets inspected
	  ○ Maintenance: grates cleaned and sediment/debris removed from sumps
	• 20 cleanouts inspected
	  ○ Maintenance: debris removed from cleanout and connecting piping
	• 76 permeable paver sections inspected
	  ○ Maintenance: vacuumed
	• 20 stormwater bump-outs inspected
	  ○ Maintenance: debris, sediment, and invasive species removed
	• 27 bioswales inspected
	  ○ Maintenance: invasive species and debris removed
	• 20 overflow inlets inspected
	  ○ Maintenance: debris removed
	• 30 dry wells inspected
	  ○ Maintenance: grates and sumps cleaned

Inspection #8
 	
Dates: 7/11/2024 – 7/13/2024
 	
Reason: >1" Rainfall
 	
Rain Gauges with >1" Rainfall:
• RG018
• RG019
• TRG1
• Glen Oak
 	
Projects Inspected:
• Year 1 Project
• Year 2 Project
• Western Avenue
• Folkers Avenue
• SW Adams Street
	• 74 GI inlets inspected
	  ○ Maintenance: grates cleaned and sediment/debris removed from sumps
	• 20 cleanouts inspected
	  ○ Maintenance: debris removed from cleanout and connecting piping
	• 76 permeable paver sections inspected
	  ○ Maintenance: vacuumed
	• 20 stormwater bump-outs inspected
	  ○ Maintenance: debris, sediment, and invasive species removed
	• 27 bioswales inspected
	  ○ Maintenance: invasive species, debris, and sediment removed
	• 20 overflow inlets inspected
	  ○ Maintenance: none needed
	• 30 dry wells inspected
	  ○ Maintenance: grates and sumps cleaned

Inspection Overview	Summary of Inspection and Maintenance Activities

Inspection #9
 	
Dates: 7/16/2024 – 7/18/2024
 	
Reason: >1" Rainfall
 	
Rain Gauges with >1" Rainfall:
• RG018
• RG019
• TRG1
• Glen Oak
 	
Projects Inspected:
• Year 1 Project
• Year 2 Project
• Western Avenue
• Folkers Avenue
• SW Adams Street
	• 74 GI inlets inspected
	  ○ Maintenance: grates cleaned and sediment/debris removed from sumps
	• 20 cleanouts inspected
	  ○ Maintenance: debris removed from cleanout and connecting piping
	• 76 permeable paver sections inspected
	  ○ Maintenance: vacuumed
	• 20 stormwater bump-outs inspected
	  ○ Maintenance: debris, sediment, and invasive species removed
	• 27 bioswales inspected
	  ○ Maintenance: invasive species, debris, and sediment removed
	• 20 overflow inlets inspected
	  ○ Maintenance: none needed
	• 30 dry wells inspected
	  ○ Maintenance: grates and sumps cleaned

Inspection #10
 	
Dates: 8/2/2024 – 8/6/2024
 	
Reason: >1" Rainfall
 	
Rain Gauges with >1" Rainfall:
• RG018
• RG019
• TRG1
• Glen Oak
 	
Projects Inspected:
• Year 1 Project
• Year 2 Project
• Western Avenue
• Folkers Avenue
• SW Adams Street
	• 74 GI inlets inspected
	  ○ Maintenance: none needed
	• 20 cleanouts inspected
	  ○ Maintenance: debris removed from cleanout and connecting piping
	• 76 permeable paver sections inspected
	  ○ Maintenance: vacuumed
	• 20 stormwater bump-outs inspected
	  ○ Maintenance: debris and sediment species removed
	• 27 bioswales inspected
	  ○ Maintenance: none needed
	• 20 overflow inlets inspected
	  ○ Maintenance: debris removed
	• 30 dry wells inspected
	  ○ Maintenance: grates and sumps cleaned

Inspection Overview	Summary of Inspection and Maintenance Activities

Inspection #11
 	
Dates: 8/16/2024 – 8/20/2024
 	
Reason: >1" Rainfall
 	
Rain Gauges with >1" Rainfall:
• RG018
• RG019
• TRG1
• Glen Oak
 	
Projects Inspected:
• Year 1 Project
• Year 2 Project
• Western Avenue
• Folkers Avenue
• SW Adams Street
	• 74 GI inlets inspected
	  ○ Maintenance: none needed
	• 20 cleanouts inspected
	  ○ Maintenance: debris removed from cleanout and connecting piping
	• 76 permeable paver sections inspected
	  ○ Maintenance: vacuumed
	• 20 stormwater bump-outs inspected
	  ○ Maintenance: invasive species removed
	• 27 bioswales inspected
	  ○ Maintenance: invasive species, debris, and sediment removed
	• 20 overflow inlets inspected
	  ○ Maintenance: none needed
	• 30 dry wells inspected
	  ○ Maintenance: grates and sumps cleaned

Inspection #12
 	
Dates: 11/6/2024 – 11/8/2024
 	
Reason: >1" Rainfall
 	
Rain Gauges with >1" Rainfall:
• RG018
• RG019
• TRG1
• Glen Oak
• Bradley
 	
Projects Inspected:
• Year 1 Project
• Year 2 Project
• Western Avenue
• Folkers Avenue
• SW Adams Street
	• 227 GI inlets inspected
	  ○ Maintenance: grates cleaned and sediment/debris removed from sumps
	• 20 cleanouts inspected
	  ○ Maintenance: debris removed from cleanout and connecting piping
	• 100 permeable paver sections inspected
	  ○ Maintenance: vacuumed
	• 20 stormwater bump-outs inspected
	  ○ Maintenance: invasive species, debris, and sediment removed
	• 27 bioswales inspected
	  ○ Maintenance: invasive species, debris, and sediment removed
	• 20 overflow inlets inspected
	  ○ Maintenance: none needed
	• 30 dry wells inspected
	  ○ Maintenance: grates and sumps cleaned

4.0 CSO Reduction

The section provides information regarding the estimated reduction in CSO discharge events and volumes for the calendar year of this report, in accordance with paragraph 77.a.vii of the Consent Decree.

Table 15 | CD Requirement from Paragraph 77.a.vii

CD PARAGRAPH	DESCRIPTION
77.a.vii	The percentage of CSO Individual Event and CSO Evaluation Volume reductions from the preceding calendar year compared to the Starting Conditions H&H Model with detailed calculations as set forth in Paragraphs 33.d and 34.d.

The CSO Individual Event and CSO Evaluation Volume reduction calculations were completed in accordance with Paragraphs 33 and 34 of the Consent Decree, using the Starting Conditions H&H Model and CSO flow meter data as described in the Flow Monitoring Implementation Plan, with the updates discussed in Section 5.1.

In 2024, the CSO Individual Event Reduction was 16% and the CSO Evaluation Volume Reduction was 41%. There were 61 precipitation events meeting the Interim Event Criteria, of which 51 resulted CSO discharges at one or more CSO outfalls.

5.0 Additional Information

This section provides additional information that may not be applicable every year and other supplemental information, as appropriate.

5.1 Level Flow Relationship Updates for Swirl Concentrators

Included with this report is a March 2025 update to the Flow Monitoring Implementation Plan. The updated plan reflects the revised level-flow relationships for the Fayette and Eaton swirl concentrators upstream of CSO outfalls A07 and A06/B06. The updated relationships are used for the CSO reduction calculations in Section 4 and will be used going forward. The changes are summarized in the bullets below. The following paragraphs provide a detailed explanation of why these changes were made.

- Updated flow calculation for primary and secondary weirs to transition from weir flow to orifice flow above appropriate depths.
- Updated flow calculation for secondary weir to use a sideflow weir equation instead of transverse weir.

The Flow Monitoring Implementation Plan describes the monitoring approaches for determining CSO discharge flows. One approach uses a level meter in the regulating structure and a level-flow rate relationship to calculate the flow rate based on the metered depth. Review of recent flow meter data from the level meters in the Fayette and Eaton swirl concentrators and the AV meters in the pipes influent to the swirl concentrators (regulator inflow meters) showed the original level-flow relationships result in calculated CSO discharge flows higher than metered regulator inflows above a certain metered depths within the swirl concentrators. The CSO discharge flows should be lower than the flow entering the structure indicating a need for an updated level-flow relationship. To address this issue an updated level-flow relationship was developed using the flow meter data and structure geometry for both the Fayette and Eaton swirl concentrators.

The original level-flow relationships for both swirl concentrators used transverse weir equations, for both the primary and secondary weirs. However, analysis of the regulator inflow meter data and swirl concentrator level data indicates at higher depths within the structure, both weirs transition from weir flow to orifice flow. The swirl concentrator geometry supports using an orifice flow equation for higher flow depths at both the primary and secondary weirs and using a sideflow instead of transverse weir equation for lower depths at the secondary weir.

The primary weir for the swirl concentrator is circular, and the flow path is from the outer portion of the structure, over the primary weir onto a flat, shallow area of the structure. The flow then exits through a 6-foot diameter circular orifice near the center of the structure. Photos of the swirl concentrator structures are provided below. Figure 17 shows the swirl concentrator during dry weather flow and Figure 18 show the swirl concentrator during CSO discharge.

The secondary weir in the swirl concentrators consists of multiple 1-foot high rectangular openings along the outer wall of the structure. Two observations were made relating to the geometry of the

secondary weir, indicating the original level-flow relationship should be updated. First, the secondary weir will function as a sideflow weir, not a transverse weir, as the flow travels in a circular motion around the wall. Second, when the rectangular openings are fully submerged, they function as side orifices. Based on these observations, the level-flow relationship for the secondary weir was updated from a transverse weir equation to a sideflow weir equation, transitioning to orifice flow when the openings are submerged.

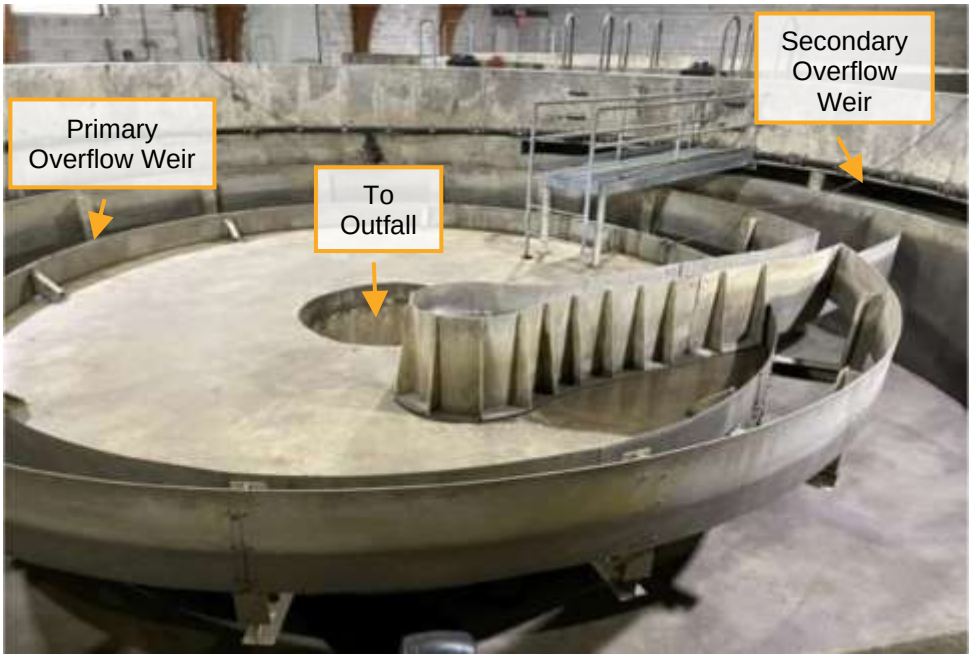


Figure 17 | Swirl Concentrator During Dry Weather Flow

Figure 18 | Swirl Concentrator During Active CSO Event

Figure 19 and Figure 20, below, show the original and updated level-flow relationships and the metered regulator inflow data for the Fayette and Eaton swirl concentrators. The graphed level-flow relationships use the metered depth in the structure. The flows are graphed versus the metered depth above the primary weir, where CSO discharges begin.

The transition from transverse weir flow to orifice flow for the primary weirs in the Fayette and Eaton swirl concentrators occurs at the depth where the CSO discharge flow, calculated using original level-flow relationship, starts consistently exceeding the metered regulator inflow. The transition depth is indicated by the dotted lines on Figure 19 and Figure 20 below.

The CSO discharge flow rates are less than the regulator inflow rates because some flow exits the structure through the throttle pipe to the RFI. The CSO discharge flow rates calculated using the updated level-flow relationships are lower than the metered regulator inflow rates by the approximate capacity of the throttle pipe.

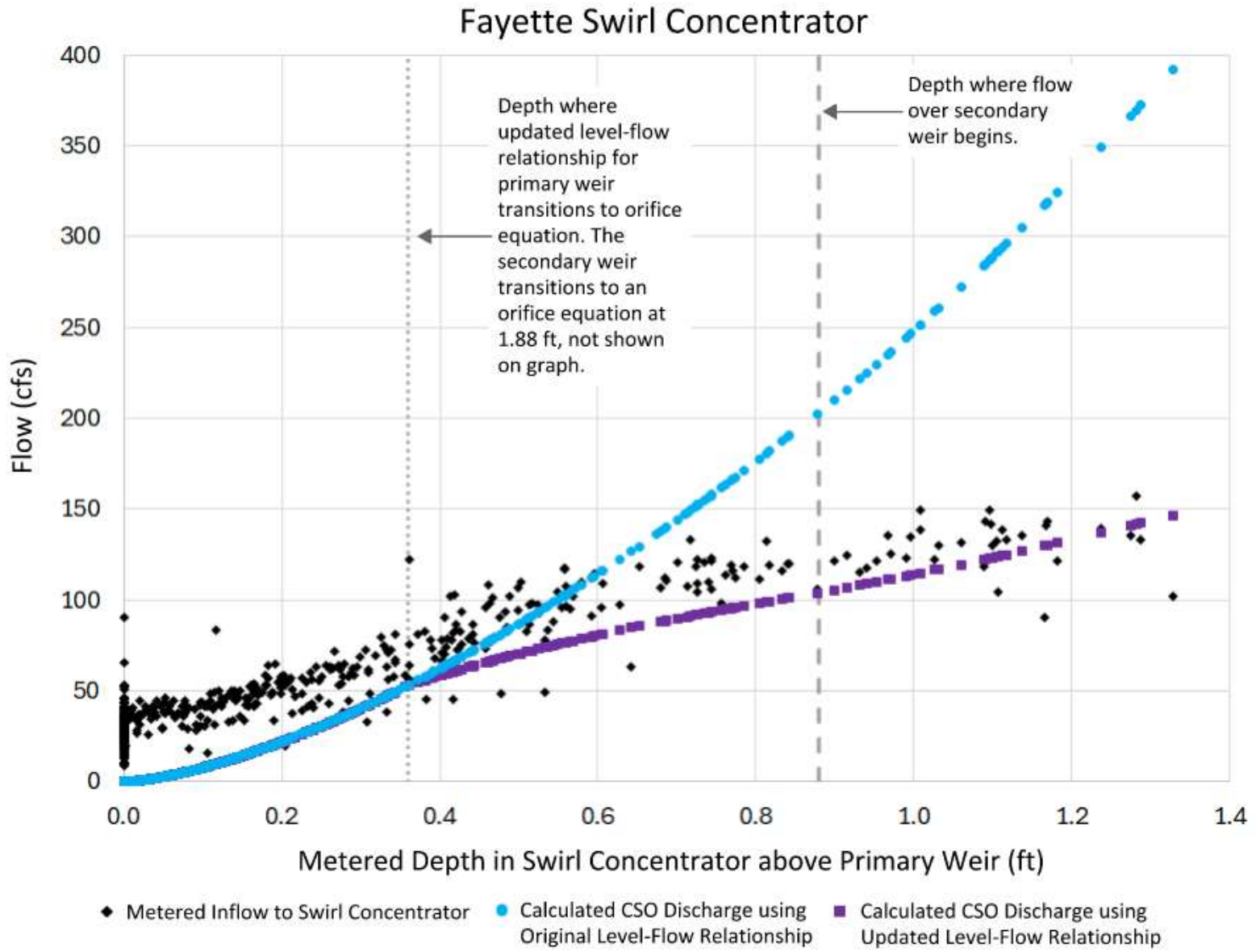


Figure 19 | Graph showing Fayette Swirl Concentrator Original and Updated Level-Flow Relationships and 2023-2024 Meter Data

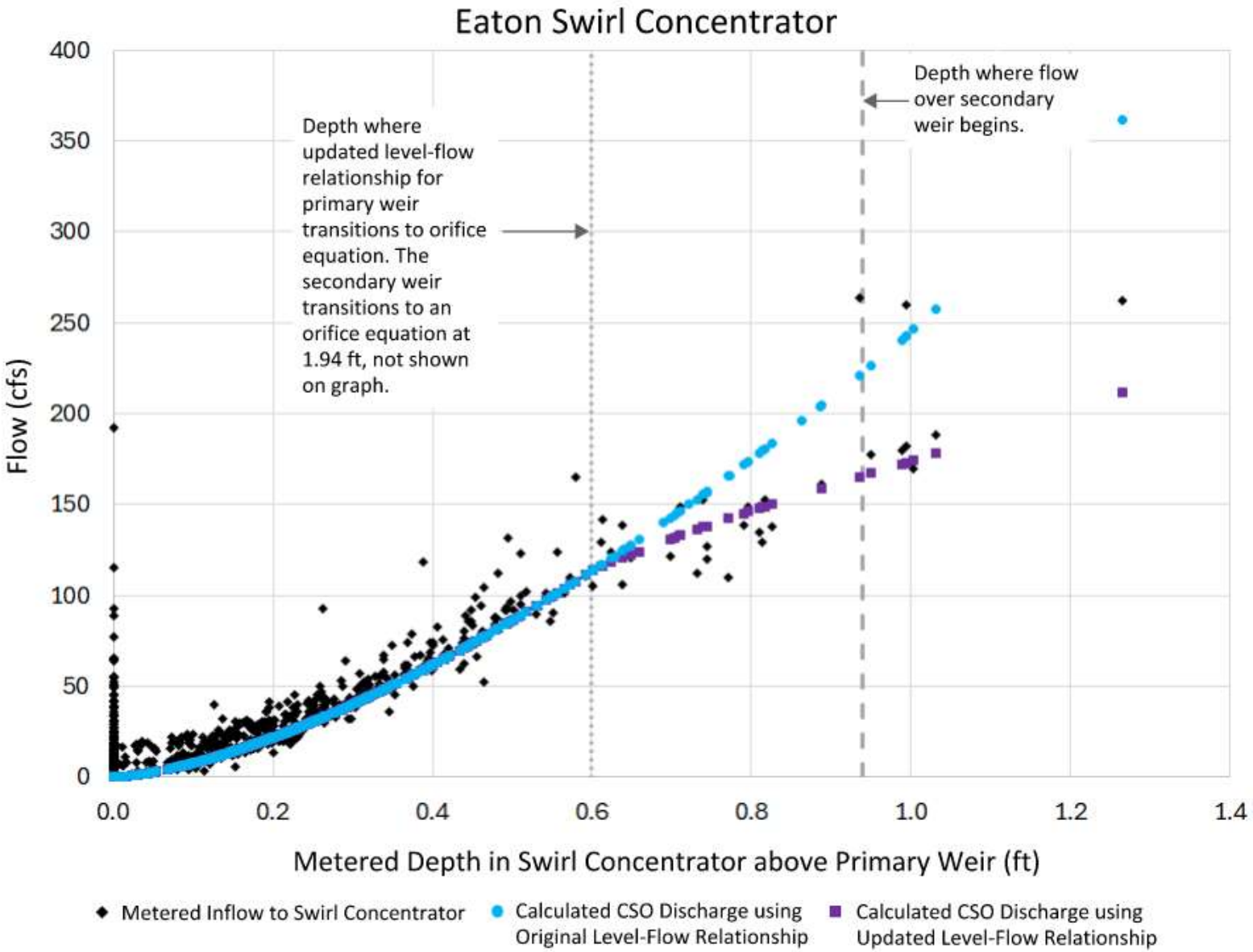


Figure 20 | Graph showing Eaton Swirl Concentrator Original and Updated Level-Flow Relationships and 2023-2024 Meter Data

APPENDIX A

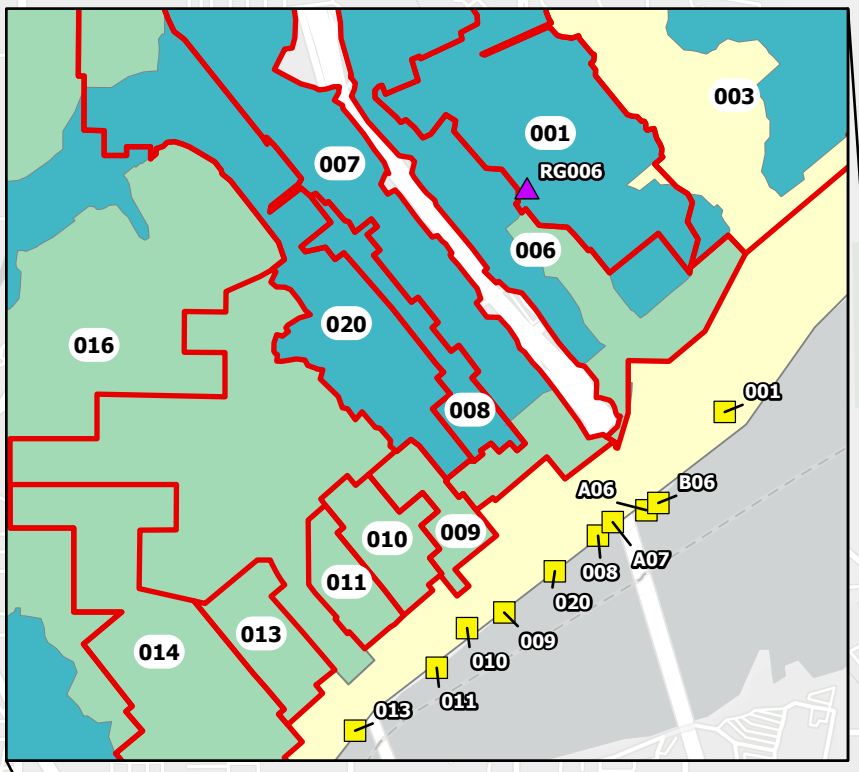
CSO Outfall, Rain Gauge, and Sewershed Locations

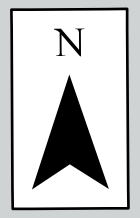
SEWERSHEDS

- 019 Darst Street: Outfall 019
- 018 Sanger Street: Outfall 018
- 017 South Street: Outfall 017
- 016 Cedar Street: Outfall 016
- 014 State Street: Outfall 014
- 013 Walnut Street: Outfall 013
- 011 Harrison Street: Outfall 011
- 010 Liberty Street: Outfall 010
- 009 Fulton Street: Outfall 009
- 020 Main Street[1]: Outfalls 020 & A07
- 008 Hamilton Street[1]: Outfalls 008 & A07
- 007 Fayette Street: Outfall A07
- 006 Eaton Street: Outfalls A06 & B06
- 001 Green Street[2]: Outfalls 001, A06 & B06
- 003 Spring Caroline: Outfall 003

[1]Sewershed is tributary to the Fayette Swirl Concentrator and will typically overflow via Outfall A07. The other outfall listed is a secondary discharge point that may overflow during large events.

[2]Sewershed is tributary to the Eaton Swirl Concentrator and will typically overflow via Outfalls A06 & B06. The other outfall listed is a secondary discharge point that may overflow during large events.





Sankoty
Long Shore Park
Peoria Heights
PROSPECT
HARDEES
ottstown
007
GLEN OAK
003
West Peoria
006
BRADLEY
016
016
003
Peoria Lake
Peoria
Peoria Lake
TRG1
014
019
RG018
017
016
018
17
RG019
Illinois River
018
Illinois River
Iowa Junction
019
East Peoria

0 0.5 1 Miles

County of Peoria, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, County of Peoria, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA

Legend

- Outfalls
- Rain Gauges
- Sewersheds

Type of Stormwater Drainage Area

- Combined Through Storm Sewers
- Combined
- Separated (Historically Combined)
- Originally Separate

SYMBIONT
6737 West Washington Street
Suite 3440
West Allis, Wisconsin 53214
414.291.8840
FAX 414.291.8841

DSGN:		CHK:	KKD
DR:	AS	APVD:	KKD
PATH:	L:\Projects\Peoria, City Of\PeoriaGPS42123.aprx		

City of Peoria
CSO Remedial
Measures Program

CSO Outfall,
Rain Gauge, and
Sewershed Locations

SCALE	1 inch = 1 mile
DWG	1
DATE	4/21/2023
PROJ NO.	21PS35839

APPENDIX B

Year 2 CSO Control Project Pre-Construction Infiltration Test Results

ID	Test Date	Location	Soil Type	Depth of Test (ft)	Infiltration Rate (in/hr)	Test Method	Notes
I-36	4/14/2022	1816 & 1818 Millman between Wester & Blaine	Medium sand	4.7	4.8	Guelph Permeameter or Compact Constant Head Permeameter	
I-37	4/5/2022	1617 Millman between Blaine & Warren	Medium/coarse sand	4.6	10	Guelph Permeameter or Compact Constant Head Permeameter	
I-38	4/19/2022	1532 W Millman vacant lot E of 1536 Millman St	Medium sand	4.6	4.7	Guelph Permeameter or Compact Constant Head Permeameter	Medium sand
I-39	4/19/2022	1417 W Millman St between Shelly & Louisa	Loamy sand	4.6	0.61	Guelph Permeameter or Compact Constant Head Permeameter	Infiltration lower than expected
I-40	5/6/2022	1218 W Millman between Louisa & Webster	Silt loam soil	5.3	0.02	Guelph Permeameter or Compact Constant Head Permeameter	low permeability
I-41	5/4/2022	1109 W Millman between Webster & Charlton	Loamy sand	4.1	12	Guelph Permeameter or Compact Constant Head Permeameter	
I-42	5/6/2022	between Charlton & Linden	Loamy Sand	4.8	13	Guelph Permeameter or Compact Constant Head Permeameter	
I-45	4/19/2022	1814 W Butler between Western & Blaine	Coarse sand with some silt	4.7	11.5	Guelph Permeameter or Compact Constant Head Permeameter	
I-46	4/13/2022	1707 W Butler between Blaine & Warren	Sandy silt	4.8	4.2	Guelph Permeameter or Compact Constant Head Permeameter	
I-47	4/21/2022	1536 W Butler St between Warren & Shelley	Loamy medium Sand	4.5	12.4	Guelph Permeameter or Compact Constant Head Permeameter	
I-48	4/21/2022	1503 W Butler St between Shelley and Louisa	Loamy sand	5	2.8	Guelph Permeameter or Compact Constant Head Permeameter	
I-49	5/4/2022	1224 W Butler St between Louisa & Webster	Loamy sand	4.5	8.6	Guelph Permeameter or Compact Constant Head Permeameter	
I-50	5/4/2022	1114 W Brotherson between Webster & Charlton	Loamy sand	5	12.1	Guelph Permeameter or Compact Constant Head Permeameter	
I-51	5/10/2022	1016 W Butler St between Charlton & Linden	Sandy Loam	4.5	3.7	Guelph Permeameter or Compact Constant Head Permeameter	
I-52	5/4/2022	Webster & Brotherson	Loamy sand	5	3.7	Guelph Permeameter or Compact Constant Head Permeameter	
I-58	5/9/2022	1114 W Brotherson between Webster & Charlton	Loamy sand/sand	4.8	19	Guelph Permeameter or Compact Constant Head Permeameter	
I-59	5/10/2022	1009 W Butler between Charlton & Saratoga	Sandy Loam	4.3	7	Guelph Permeameter or Compact Constant Head Permeameter	
I-60	5/10/2022	between Brotherson & McArthur	Sandy loam w/ trace of gravel	3.2	10.6	Guelph Permeameter or Compact Constant Head Permeameter	
I-62	5/10/2022	301 S Charlton St between Charlton & Webster	Sandy Loam	5	7.9	Guelph Permeameter or Compact Constant Head Permeameter	
I-63	5/11/2022	McBean between Charlton & Saratoga near 231 Saratoga St	N/A	N/A	N/A	N/A	Refusal at 4 locations on McBean insufficient room due to gas line
I-64	5/11/2022	917 W McBean between Saratoga & McArthur	Loamy Sand	5	9.3	Guelph Permeameter or Compact Constant Head Permeameter	

ID	Test Date	Location	Soil Type	Depth of Test (ft)	Infiltration Rate (in/hr)	Test Method	Notes
I-70	5/16/2022	1109 W Johnson between Webster & Charlton	Fine/medium sand moist brown sand	5	3.5	Guelph Permeameter or Compact Constant Head Permeameter	
I-71	5/16/2022	1010 W Johnson between Charlton & Saratoga	Fine/medium sand moist brown sand	5	29	Guelph Permeameter or Compact Constant Head Permeameter	
I-72	5/16/2022	908 W Johnson between Saratoga & MacArthur	Fine/medium sand moist brown sand	5	34	Guelph Permeameter or Compact Constant Head Permeameter	
I-79	5/16/2022	1111 W Smith St between Webster & Charlton	Fine/medium sand moist brown sand	5	28	Guelph Permeameter or Compact Constant Head Permeameter	
I-80	5/16/2022	1014 W Smith St between Charlton & Saratoga	Fine/medium sand moist brown sand	5	23	Guelph Permeameter or Compact Constant Head Permeameter	
I-81	5/16/2022	911 W Smith St between Saratoga & MacArthur	Silty loam	5	0.3	Guelph Permeameter or Compact Constant Head Permeameter	
I-86	5/17/2022	1111 W Hurlburt St between Webster & Charlton	Silty sand	5	1.6	Guelph Permeameter or Compact Constant Head Permeameter	
I-87	5/17/2022	1012 W Hurlburt St between Charlton & Saratoga	Silty sand	5	12	Guelph Permeameter or Compact Constant Head Permeameter	
I-94	5/9/2022	1111 W Hurlburt between Charlton & Webster	Loamy sand	4.8	2.5	Guelph Permeameter or Compact Constant Head Permeameter	
I-95	5/9/2022	1013 W Hurlburt St between Kane & Charlton	Loamy sand	4.4	18	Guelph Permeameter or Compact Constant Head Permeameter	
I-100	5/17/2022	1108 W Adrian G Hinton between Aiken & Charlton	Silty sand	5	3.8	Guelph Permeameter or Compact Constant Head Permeameter	
I-101	5/17/2022	1021 W Adrian G Hinton between Charlton & Kane	Fine/medium sand moist brown sand	5	3.9	Guelph Permeameter or Compact Constant Head Permeameter	
I-102	5/16/2022	1008 W Adrian G Hinton between Kane & Saratoga	Loamy sand	4.8	10	Guelph Permeameter or Compact Constant Head Permeameter	
I-103	5/17/2022	907 & 909 W Adrian G Hinton between Saratoga & MacArthur	Fine/medium sand moist brown sand	5	17	Guelph Permeameter or Compact Constant Head Permeameter	
I-107	5/12/2022	across from 1108 John Gwynn (vacant lot)	Loamy sand	5	3.8	Guelph Permeameter or Compact Constant Head Permeameter	
I-108	5/12/2022	1022 W John Gwynn	Loamy sand	5	15	Guelph Permeameter or Compact Constant Head Permeameter	
I-109	5/12/2022	1006 W John Gwynn	Loamy sand	5	17	Guelph Permeameter or Compact Constant Head Permeameter	
I-110	5/12/2022	904 W John Gwynn	Loamy sand	5	1.5	Guelph Permeameter or Compact Constant Head Permeameter	
I-120	4/29/2022	1517 W Howett St between Millman & Howett	Sandy loam	5.4	5.9	Guelph Permeameter or Compact Constant Head Permeameter	
I-121	4/29/2022	400 block Shelley between Butler & Millman	Loamy sand	4.5	11.4	Guelph Permeameter or Compact Constant Head Permeameter	
I-131	5/2/2022	1402 W Millman between Howett & Millman	Loamy sand	4.7	6.5	Guelph Permeameter or Compact Constant Head Permeameter	
I-132	5/2/2022	1400 W Butler between Millman & Butler	Loamy sand	4.6	23	Guelph Permeameter or Compact Constant Head Permeameter	

ID	Test Date	Location	Soil Type	Depth of Test (ft)	Infiltration Rate (in/hr)	Test Method	Notes
I-137	5/11/2022	1115 W Howett between Howett & Millman	Loamy sand	5	13	Guelph Permeameter or Compact Constant Head Permeameter	
I-138	5/11/2022	421 S Webster between Butler & Millman	Loamy sand	5.1	5.1	Guelph Permeameter or Compact Constant Head Permeameter	
I-139	5/11/2022	309 S Webster between Butler & Brotherson	Loamy sand	5	19	Guelph Permeameter or Compact Constant Head Permeameter	
I-140	5/11/2022	220 S Webster between Johnson & McBean	Loamy sand	5	17	Guelph Permeameter or Compact Constant Head Permeameter	
I-141	5/11/2022	205 Webster between Johnson & Smith	Loamy sand	4.1	1.8	Guelph Permeameter or Compact Constant Head Permeameter	
I-142	5/12/2022	1118 W Hurlburt between Hurlburt & Johnson	Loamy sand	4.8	11	Guelph Permeameter or Compact Constant Head Permeameter	
I-143	4/28/2022	Webster W between Hurlburt & Aiken	Loamy sand	4.5	6.6	Guelph Permeameter or Compact Constant Head Permeameter	
I-144	5/3/2022	John Gwynn & Adrian G Hinton	Loamy sand	4.7	5.9	Guelph Permeameter or Compact Constant Head Permeameter	
I-146	5/16/2022	310 S Charlton between McBean & Brotherson	Loamy sand	4.8	11	Guelph Permeameter or Compact Constant Head Permeameter	
I-147	5/12/2022	vacant lot behind 1023 W McBean St	Loamy sand	4.9	3.4	Guelph Permeameter or Compact Constant Head Permeameter	
I-148	5/16/2022	vacant lot behind 1020 W Smith St	Loamy sand	4.6	38	Guelph Permeameter or Compact Constant Head Permeameter	
I-149	5/16/2022	vacant lot across from 128 S Charlton	Loamy sand	4.3	34	Guelph Permeameter or Compact Constant Head Permeameter	
I-150	5/12/2022	NE corner of Charlton & Aiken	Sandy loam/loamy sand	5	1.3	Guelph Permeameter or Compact Constant Head Permeameter	
I-151	5/12/2022	123 s Charlton St	Loamy sand	5	1.3	Guelph Permeameter or Compact Constant Head Permeameter	lower than expected based on soil texture
I-153	5/13/2022	310 S Saratoga between Brotherson & McBean	Loamy sand	4.6	15	Guelph Permeameter or Compact Constant Head Permeameter	
I-154	5/17/2022	217 S Saratoga between Johnson & McBean	Loamy coarse sand	5.1	26	Guelph Permeameter or Compact Constant Head Permeameter	
I-155	5/11/2022	vacant lot between Johnson & Smith	Sandy loam w/ silts & clays	5	0.05	Guelph Permeameter or Compact Constant Head Permeameter	lower permeability than expected - test repeated 14 ft north
I-155b	5/16/2022	vacant lot between Johnson & Smith	Loamy medium sand	4.7	9.2	Guelph Permeameter or Compact Constant Head Permeameter	14 ft north of previous test
I-156	5/16/2022	123 S Saratoga between Hurlburt & Smith	Loamy sand	4.4	16	Guelph Permeameter or Compact Constant Head Permeameter	
I-157	5/17/2022	1001 W Hurlburt St between Hurlburt & Aiken	Sandy loam/loamy sand	5.2	17	Guelph Permeameter or Compact Constant Head Permeameter	
I-158	5/16/2022	916 W Adrian G Hinton between Adrian G Hinton & Aiken	Loamy Sand	4	11	Guelph Permeameter or Compact Constant Head Permeameter	
I-159	5/17/2022	127 S Saratoga near 1018 W John Gwynn Jr Ave	Loamy sand	5.8	12	Guelph Permeameter or Compact Constant Head Permeameter	

APPENDIX C

Year 2 CSO Control Project Post-Construction Infiltration Tests Results

Asset ID	Asset Type	GI Project	Design Native Soil Infiltration Rate (in/hr)	Design Surface Infiltration Rate (in/hr)	Completed By	Test Date	Test Reason	Test Method	Test Layer	Test Type	Test Units	Test Rate	Rate Comparison	Exceeding Design Rate?	Follow Up
Y2_PP-9	Paver Blocks	Year 2	3	25	EJC	10/29/2024	Post-Construction	ASTM C1781 for Permeable Pavers	Surface	infiltration	in/hr	997	39.89	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-29	Paver Blocks	Year 2	3	25	EJC	9/6/2024	Post-Construction	ASTM C1781 for Permeable Pavers	Surface	infiltration	in/hr	492	19.66	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-30	Paver Blocks	Year 2	3	25	EJC	9/6/2024	Post-Construction	ASTM C1781 for Permeable Pavers	Surface	infiltration	in/hr	469	18.77	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-32	Paver Blocks	Year 2	3	25	EJC	9/5/2024	Post-Construction	ASTM C1781 for Permeable Pavers	Surface	infiltration	in/hr	1169	46.77	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-34	Paver Blocks	Year 2	3	25	EJC	9/5/2024	Post-Construction	ASTM C1781 for Permeable Pavers	Surface	infiltration	in/hr	1019	40.74	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-36	Paver Blocks	Year 2	5	25	EJC	9/4/2024	Post-Construction	ASTM C1781 for Permeable Pavers	Surface	infiltration	in/hr	730	29.22	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-38	Paver Blocks	Year 2	3	25	EJC	9/4/2024	Post-Construction	ASTM C1781 for Permeable Pavers	Surface	infiltration	in/hr	1229	49.17	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-49	Paver Blocks	Year 2	3	25	EJC	9/6/2024	Post-Construction	ASTM C1781 for Permeable Pavers	Surface	infiltration	in/hr	754	30.17	Yes	Continue following O&M and Performance Testing Plan
Y2_PA-01	Porous Asphalt	Year 2	1.5	25	EJC	9/5/2024	Post-Construction	ASTM C1701 for Pervious Concrete	Surface	infiltration	in/hr	15	0.61	No	Investigate cause of low infiltration rate and consider implications for future use of porous asphalt
Y2_PA-02	Porous Asphalt	Year 2	5	25	EJC	10/29/2024	Post-Construction	ASTM C1701 for Pervious Concrete	Surface	infiltration	in/hr	353	14.12	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-9 / Y2-PP10	Paver Blocks	Year 2	3	25	EJC	10/29/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	4.8	1.6	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-29	Paver Blocks	Year 2	3	25	EJC	9/6/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	>6.6	>2.2	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-30	Paver Blocks	Year 2	3	25	EJC	9/6/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	>3.2	>1.07	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-32 / Y2_PP-33	Paver Blocks	Year 2	3	25	EJC	9/5/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	6	2	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-34 / Y2_PP-35	Paver Blocks	Year 2	3	25	EJC	9/5/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	10.8	3.6	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-36 / Y2_PP-37	Paver Blocks	Year 2	5	25	EJC	9/4/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	11.2	2.23	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-38 / Y2_PP-39	Paver Blocks	Year 2	3	25	EJC	9/4/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	5.3	1.78	Yes	Continue following O&M and Performance Testing Plan
Y2_PP-48 / Y2_PP-49	Paver Blocks	Year 2	3	25	EJC	9/6/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	16.7	5.57	Yes	Continue following O&M and Performance Testing Plan

Asset ID	Asset Type	GI Project	Design Native Soil Infiltration Rate (in/hr)	Design Surface Infiltration Rate (in/hr)	Completed By	Test Date	Test Reason	Test Method	Test Layer	Test Type	Test Units	Test Rate	Rate Comparison	Exceeding Design Rate?	Follow Up
Y2_PA-02	Porous Asphalt	Year 2	5	25	EJC	12/17/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	6.7	1.33	Yes	Continue following O&M and Performance Testing Plan
Y2_BI-16	Stormwater Bump-in	Year 2	3	N/A	EJC	12/18/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	4.8	1.6	Yes	Continue following O&M and Performance Testing Plan
Y2_BI-21 / Y2_BI-22	Stormwater Bump-in	Year 2	3	N/A	EJC	12/16/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	10.8	3.6	Yes	Continue following O&M and Performance Testing Plan
Y2_BI-38	Stormwater Bump-in	Year 2	5	N/A	EJC	12/17/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	7.2	1.44	Yes	Continue following O&M and Performance Testing Plan
Y2_BI-43	Stormwater Bump-in	Year 2	3	N/A	EJC	12/17/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	4.8	1.6	Yes	Continue following O&M and Performance Testing Plan
Y2_BI-49	Stormwater Bump-in	Year 2	5	N/A	EJC	12/18/2024	Post-Construction	Hydrant Test	Native Soil Interface	infiltration	in/hr	2.4	0.48	No	Update the modeled native soil infiltration rate to represent the measured performance test results. Continue following O&M & Performance Testing Plan