700 West Liberty Street | Louisville, KY 40203-1911
Phone: 502.540.6000 | LouisvilleMSD.org

September 6, 2018

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
Post Office Box 7611
Washington DC 20044-7611

Jeff Cummins, Director
Division of Enforcement
Department for Environmental Protection
300 Sower Blvd., 2nd Floor
Frankfort, KY 40601

Chief, NPDES Permitting and Enforcement Branch
Water Protection Division
US EPA Region 4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303

Subject: Minor Project Modification
CSO108 Dam Modification

DOJ Case No. 90-5-1-1-08254

Attention Chiefs and Director:

MSD is requesting approval of a proposed minor project modification to each of the following project:

CSO108 Dam Modification (L_SO_MF_108_S_09A_B_A_4)

This request is part of the ongoing adaptive management review of the approved Integrated Overflow Abatement Plan (IOAP) dated May 2014. The proposed modification does not impact the previously committed residual Average Annual Overflow Volume (AAOV) or project sizing. Similarly, the final completion date of December 31, 2020, for the entire suite of Long Term Control Plan projects is not affected by this request. The unique details of this project modification request are discussed below.

CSO 108 Dam Modification

2009 IOAP Project Description

The CSO108 Dam Modification Project was the first IOAP capital project constructed in the combined sewer area. It included the installation of a bending weir at CSO108 to increase the in-line storage capability upstream in the twin 7-foot box culverts.

Certification

The project was constructed as described in the 2009 IOAP and certified complete on December 30, 2010.

2018 Project Modification Request

The description of the project remains the same as the 2009 IOAP description. Based on additional calibration and the completion of a benefit-cost analysis (BCA), the level of control is proposed to change from 4 to 8 overflows per Typical Year.

Modification Drivers and Technical Justification

The CSO108 Dam Modification Project was the first IOAP capital project constructed in the combined sewer area. The project was constructed in 2010, and at the time, MSD had limited flow monitoring data available. A single upstream level meter was available at the time and had only been in service since 2009. Based on the information available at the time, a Level of Control (LOC) of four overflows per Typical Year was estimated in the 2009 IOAP.

As part of a global effort to review system-wide flow monitoring data at each CSO, MSD reviewed the flow monitoring setup at this site in 2017. At this time, there were two meters in place. The first was a level meter upstream of CSO108 that was installed in 2009, and the second was a meter that was installed in 2012 on the solids and floatables unit. However, this CSO discharges directly into Beargrass Creek, and, due to the elevations of the creek with respect to the CSO, the elevation in Beargrass Creek can heavily influence the amount of flow going over the dam. Therefore, in order to refine post-construction overflow monitoring and improve model calibration a third monitor, downstream of the dam, was installed in 2017.

Based on the new, more accurate data, the model calibration has been updated. Additionally, geometry changes in the model reflective of more detailed survey investigations have also been incorporated. Based on this update, a BCA was performed using the approved IOAP benefit-cost methodology for selecting the project LOC. This results in a LOC of 8 overflows per Typical Year. Results of the BCA analysis can be found in Table 1 below.

Table 1 – CSO108 Benefit Cost Analysis

Level of Control	Technology	Benefit Score	Cost (2008 $)	BCA Score
0	Offline Storage/Inline Storage – 1,000,000 gal	200	$3,492,000	57.27
2	Offline Storage/Inline Storage – 675,000 gal	152	$2,851,000	53.31
4	Offline Storage/Inline Storage – 125,000 gal	152	$1,175,000	129.36
8	Inline Storage	138	$195,000	707.69

Consistent with previous modification requests, the impact on overall residual Average Annual Overflow Volume (AAOV) was also reviewed to verify impacts on the overall system. This change does slightly increase the projected residual AAOV from 1.4 MG to 1.6 MG. This increase is easily offset with the significant increase in volume created by the currently proposed extension of the Waterway Protection Tunnel. At the completion of the IOAP, the cumulative suite of Long Term Control Plan (LTCP) projects is still expected to result in a residual AAOV of 340 MG or less (equating to 98% capture and treatment or elimination of wet weather flow from the combined sewer system) during the Typical Year.

It should be noted that the residual AAOV results for the Combined Sewer System (CSS) are based on a ‘baseline’ condition. This ‘baseline’ condition assumes that all upstream Sanitary Sewer Discharge Plan (SSDP) projects in the Separate Sanitary System (SSS) are completed. The SSS empties into the CSS at

multiple locations. One of those locations is along the Beargrass Interceptor (BGI) just upstream of the location where the CSO108 sewershed discharges into the BGI. The closure of the BGI gate on the Southeast Diversion, which was completed in 2014, significantly reduced flows to the BGI. However, the Upper Middle Fork Lift Station (UMFLS) Project, which is not required to be completed until December 31, 2023, also diverts water from the BGI in the 'baseline' condition. Therefore, based on modeling results, CSO108 will still operate at a LOC of 6 overflows during the Typical Year with a residual AAOV of 2.1 MG until the UMFLS project is completed. CSO108 is one of several LTCP projects whose post-construction compliance results are dependent on the completion of upstream SSDP projects between 2020 and 2024.

MSD investigated a spectrum of mitigation alternatives to reach LOC 4 at this CSO. Some of these potential alternatives had a dual purpose of offering stormwater drainage benefits in this area. The alternatives assessed included dry wells, distributed system storage, and a partial separation to offload some stormwater. The dry well alternative was proven ineffective following geotechnical investigation (including drilling pilot wells) because the rock at shallow depths did not have infiltration capacity. The remaining solution alternatives were more costly than the traditional gray storage solution utilized in the BCA (Table 1 above), and the construction of a new storm sewer in this area would be highly intrusive to the neighborhood. The marginal increase in overall benefit is greatly outweighed by the increase in cost and disruption to the neighborhood. MSD intends to incorporate the evaluation performed for potential stormwater separation projects in this area into its future stormwater master planning efforts with holistic review and prioritization against other service areas. By using this methodology, MSD will also maximize benefits and minimize disruptions and construction disturbance to the neighborhood.

For your reference, copies of project fact sheets and maps are provided. The project fact sheet and map from the original approved IOAP, dated September 2009, is included in Attachment A. The certification letter from 2010 is included in Attachment B. A new project fact sheet and map addressing the revisions to this project consistent with this new project modification request have been provided in Attachment C.

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 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 questions or need additional information, please contact me at (502) 540-6136.

Sincerely,

Angela Akridge, P.E.
Chief Engineer

cc: J. Parrot P. Purifoy

sbl. X:\Data\IOAP\2014 IOAP\2014 Modification\Mod Letters\August 2018 Minor Mod Letters

Attachments

2018 Minor Modification Request

Attachment A

CSO Project Fact Sheet

2012 IOAP Project Modification

Project Name: CSO108 Dam Modification

Project Number: L_SO_MF_108_S_09A_B_A_4

Project Type: In-Line Storage

Rec Stream: South Fork Beargrass Creek

Project Description: This project includes the installation of a bending weir at CSO108 to increase the in-line storage capability at the twin 7 foot box culvert, located at Trevilian Way.

Design Assumption: The height of the bending weir is designed to reduce the number of overflows at CSO108 to 4 overflows / year.

Capital Cost: $150,000

Capital Benefit/Cost:

Present Worth Benefit Cost:

		Existing May 2012[1]		Baseline May 2012[2]	
CSO	CSO Name	Avg. Annual Overflow Volume	Avg. Annual Frequency	Avg. Annual Overflow Volume	Avg. Annual Frequency
CSO108	REG N0 1 - NEWBURG	43.86	33	15.13	34

1. Existing May 2012 conditions reflect existing system operating conditions as of that date.

2. Baseline May 2012 assumes all SSDP projects are complete and critical combined sewer facilities (e.g. Morris Forman WQTC Southwestern Pump Station, Starkey Pump Station) are operating at optimal, sustainable levels.

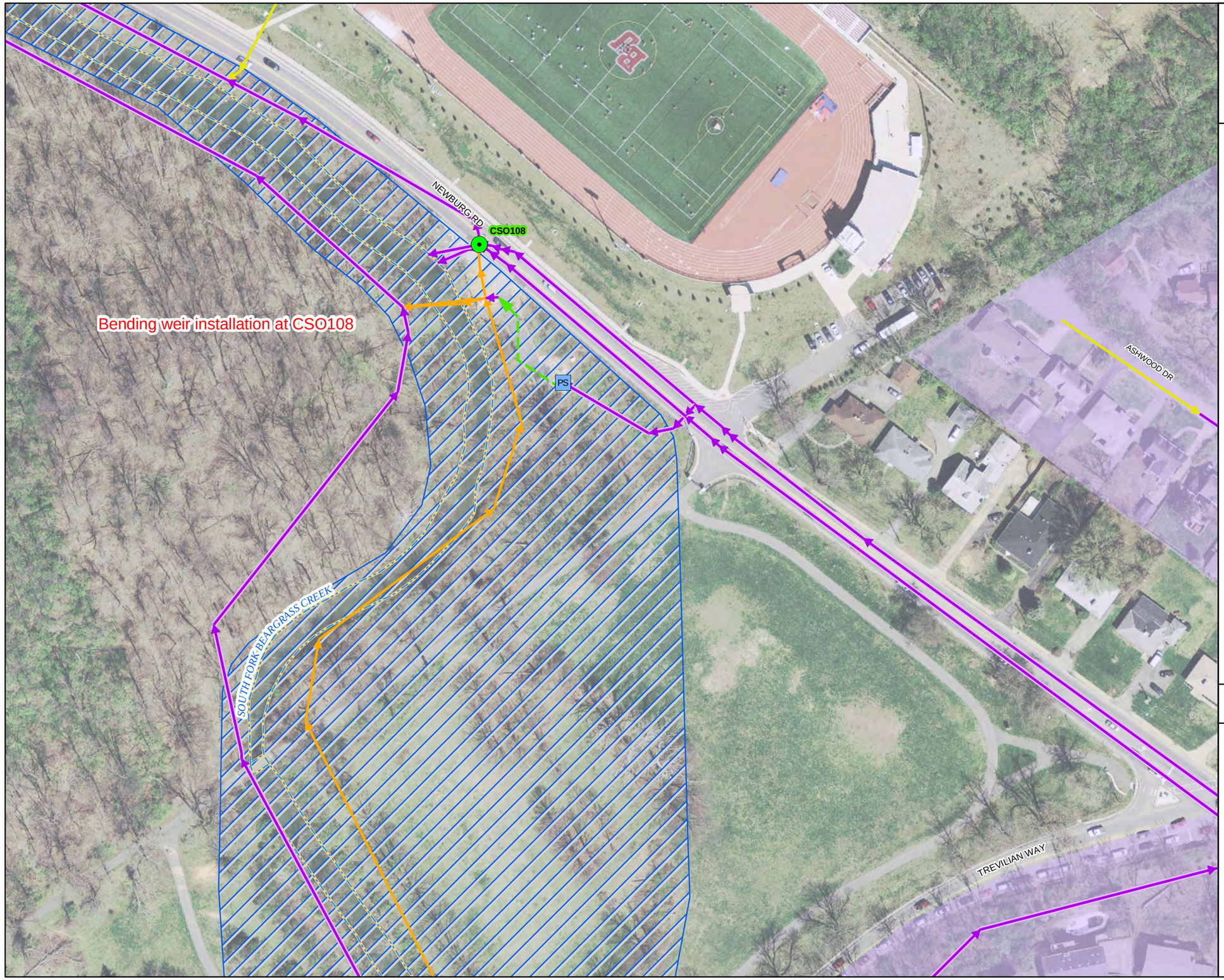
Integrated Overflow Abatement Plan

Vol. 2 - Final CSO Long Term Control Plan

South Fork Beargrass Creek

CSO108 Dam Modification

Preliminary - For Budget Development Only

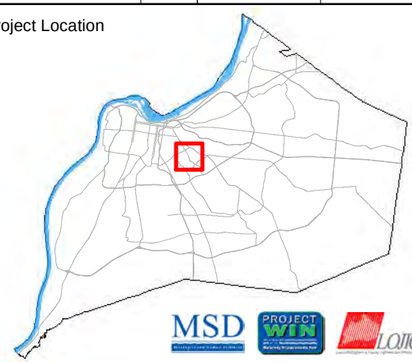


- Active CSO
- Eliminated CSO
- Haulop Locations
- Pump Stations
- MSD
- Combined Sewer Pipe
- Force Main
- Collector < 12"
- Interceptor >= 12"
- Streams
- Floodway
- Jefferson County Boundary

General representation of overflow abatement solutions are for preliminary planning purposes. Alignments and locations may be altered during design.

1 inch = 100 feet	N	Aerial Date: 2009	Map Revision: April 9, 2012

Project Location



2018 Minor Modification Request

Attachment B

MSD
Metropolitan Sewer District

Louisville and Jefferson County Metropolitan Sewer District
700 West Liberty Street
Louisville Kentucky 40203-1911
502-540-6000
www.msdlouky.org

January 18, 2011

Jeffrey A. Cummins, Acting Director
Division of Enforcement
Department for Environmental Protection
300 Fair Oaks Lane
Frankfort, KY 40601

Chief, Water Programs Enforcement Branch
Water Management Program
U. S. EPA Region 4
Atlanta Federal Center
61 Forsyth Street SW
Atlanta, GA 30303

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U. S. Department of Justice
Post Office Box 7611
Washington, DC 20044-7611

Subject: Capital Project Construction Certification
Consent Decree Projects: MSD Budget ID H09128
DOJ Case No. 90-5-1-1-08254

Attention Director and Chiefs:

The following project was completed in accordance with the Consent Decree as entered in United States District Court, Western Division of Kentucky, Louisville Division.

CSO 108 Dam Modification was completed on December 30, 2010.

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 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 questions or need additional information, please contact me via phone at (502) 649-3850.

Sincerely,

W. Brian Bingham
Regulatory Services Director

cc: Paula Purifoy
Larry Zielke
File

2018 Minor Modification Request

Attachment C

CSO Project Fact Sheet

2018 IOAP Project Modification

Project Name: CSO108 Dam Modification

Project Number: L_SO_MF_108_S_09A_B_A_4

Project Type: In-Line Storage

Rec Stream: South Fork Beargrass Creek

Project Description: This project includes the installation of a bending weir at CSO108 to increase the in-line storage capability at the twin 7 foot box culvert, located at Trevilian Way.

Design Assumption: The height of the bending weir is designed to reduce the number of overflows at CSO108 to 8 overflows / year.

Capital Cost: $195,000

Capital Benefit/Cost: 707.69

Present Worth Benefit Cost:

		Existing May 2012[1]		Baseline May 2012[2]	
CSO	CSO Name	Avg. Annual Overflow Volume	Avg. Annual Frequency	Avg. Annual Overflow Volume	Avg. Annual Frequency
CSO108	REG N0 1 - NEWBURG	43.86	33	15.13	34

1. Existing May 2012 conditions reflect existing system operating conditions as of that date.

2. Baseline May 2012 assumes all SSDP projects are complete and critical combined sewer facilities (e.g. Morris Forman WQTC Southwestern Pump Station, Starkey Pump Station) are operating at optimal, sustainable levels.

Integrated Overflow Abatement Plan

Vol. 2 - Final CSO Long Term Control Plan

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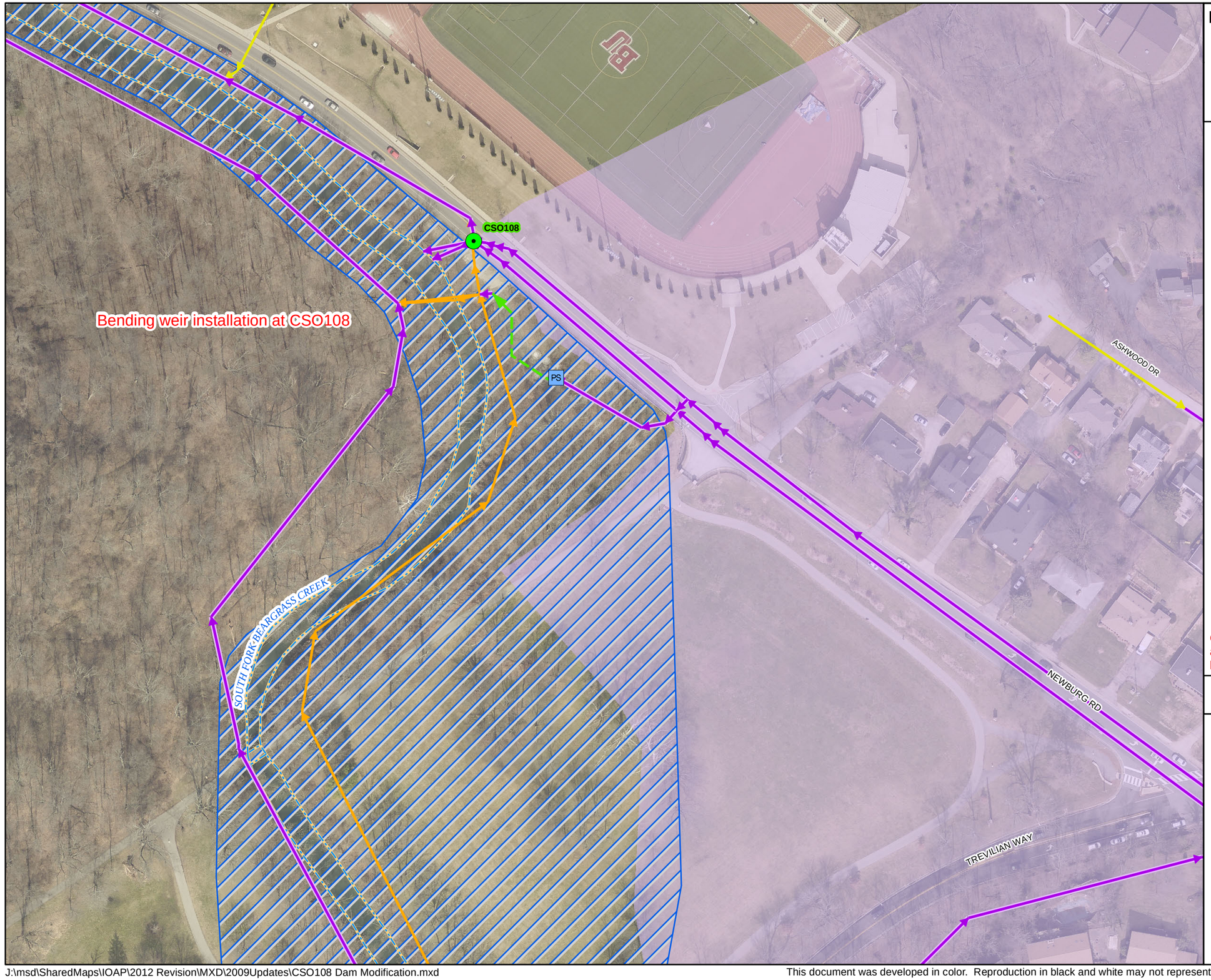
CSO108 Dam Modification

Preliminary - For Budget Development Only

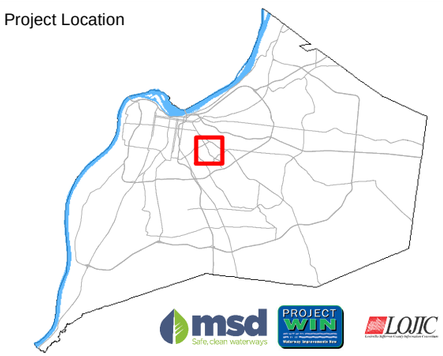


- Active CSO
- Eliminated CSO
- Haulop Locations
- Pump Stations
- MSD
- Combined Sewer Pipe
- Force Main
- Collector < 12"
- Interceptor >= 12"
- Streams
- Floodway
- Jefferson County Boundary

General representation of overflow abatement solutions are for preliminary planning purposes. Alignments and locations may be altered during design.

1 inch = 100 feet	N	Aerial Date: 2016	Map Revision: August 16,2018

Project Location



J:\msd\SharedMaps\IOAP\2012 Revision\MXD\2009Updates\CSO108 Dam Modification.mxd

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