

**PAXTON CREEK DRAINAGE BASIN  
FOURTH CORRECTIVE ACTION PLAN  
MAY 2023**

**Introduction**

The Second Consent Decree required Lower Paxton Township (LPT) to implement a 5-year mini-basin rehabilitation program with the First Paxton Creek Basin Corrective Action Plan (1<sup>st</sup> CAP) which was attached to the Second Consent Decree as Exhibit J. LPT completed the 1<sup>st</sup> CAP, which included the rehabilitation of six (6) mini-basins in Paxton Creek. LPT went beyond the scope of the Mini-Basin Inflow/Infiltration (I/I) Rehabilitation Program as defined in the Second Consent Decree in one (1) basin, PC-5C, by totally replacing the collection system in that mini-basin. The Second Consent Decree required that LPT propose to PADEP, no later than the 2007 Annual Progress Report, whether they shall continue with the mini-basin rehabilitation program or choose another method to eliminate overflows by June 30, 2012, and reduce the hydraulic overload by June 30, 2017.

In June 2007, LPT proposed and submitted to PADEP a Second Paxton Creek Basin CAP (2<sup>nd</sup> CAP) stating the decision to continue the mini-basin I/I rehabilitation program to eliminate overflows and reduce hydraulic overload. The program was modified to adopt the total replacement approach used in Mini-Basin PC-5C. Under the 2<sup>nd</sup> CAP, total replacement included:

- Replacement of all mainline sewers, service laterals, and manholes in ACP and VCP areas.
- Testing and rehabilitation of non-ACP/VCP areas.
- Inspecting/televising/air testing, and repair or replacement of all building sewers that fail air testing.

The 2<sup>nd</sup> CAP was approved by PADEP on February 11, 2009. Because the 2<sup>nd</sup> CAP included significant additional work not contemplated by the 1<sup>st</sup> CAP or the Second Consent Decree, the Second Consent Decree was amended with the First Amendment to the Second Consent Decree to include a 20-year implementation schedule for the 2<sup>nd</sup> CAP. The First Amendment was approved on November 9<sup>th</sup>, 2009, and required LPT to eliminate the SSOs by June 30, 2022, and reduce the hydraulic overload by June 30, 2027. The First Amendment was incorporated into the Second Amendment to the Second Consent Decree which was approved by the Commonwealth Court on September 18, 2013. The 2<sup>nd</sup> CAP was attached as Exhibit J. The 2<sup>nd</sup> CAP provided the prioritization of the initial 5-year period and the proposed schedule for the next 15 years under Table I - Group I Mini-Basins. This prioritization was required to be re-evaluated as the projects in the first 10-year period were completed, or by June 30, 2017. However, due to favorable bond rates and construction bid results, the 2017-2022 mini-basin projects were advanced. LPT also realized efficiencies when combining future mini-basin projects including: 1) acquiring the necessary DEP Chapter 105 permits for construction; and 2) performing post flow metering for the entire sub-basin rather than metering the smaller mini-basins.

The Third (3<sup>rd</sup>) CAP was submitted to the PADEP on March 5, 2018, and approved by the PADEP on March 20, 2018. The 3<sup>rd</sup> CAP key elements included the decision to continue the mini-basin I/I rehabilitation program and to evaluate the use of storage to reduce the hydraulic overload no later than June 30, 2027. On May 27, 2021, LPT proposed and submitted to the PADEP a revised implementation schedule to incorporate the prioritization of the mini-basins based on current mini-basin metering results. Specifically, the decreased surcharging in the interceptors and elimination of overflows have allowed for more reliable peak flow data to be collected and evaluated. Similar to the original 2<sup>nd</sup> CAP, mini-basins were ranked based on the metered peak excess I/I and the estimated peak hourly I/I removed with the estimated cost (\$/gpd). Essentially, the proposed schedule revision substitutes the PC-3E Mini-Basin for the PC-2E Mini-Basin, with a slightly longer implementation period to incorporate the storm sewer replacements. The PADEP approved the implementation schedule changes by letter date June 8, 2021.

## **Program Evaluation**

As stated in the revised 3<sup>rd</sup> CAP implementation schedule, in the year 2024, LPT is to perform a progress evaluation, including storage requirements.

The program evaluation was completed ahead of schedule and consisted of additional flow metering and updated hydraulic modeling. The following was included as part of the analysis: 1) Total peak hourly flow leaving the Paxton Creek Basin compared to the Intermunicipal Agreement (IMA) Limit of 12.34 MGD; 2) Existing and future capacity of the Trunk A Conveyance Line; and 3) Existing and future capacity of the Goose Valley Road Branch of the Paxton Creek Interceptor.

LPT also assessed the program impacts to the Paxton Creek Interceptor in Susquehanna Township to effectively manage the hydraulic overload associated with future growth.

## **Key Results**

Significant I/I reductions have been realized with the implementation of the total sewer replacement concept adopted under the 2<sup>nd</sup> CAP and continued under the 3<sup>rd</sup> CAP. To date, LPT has completed the total replacement program in 16 mini-basins (17 including PC-5C under the 1<sup>st</sup> CAP, see Exhibit I). An estimated 30 MGD of peak flow I/I has been removed from the Paxton Creek Basin. In addition, due to the successful CRW Interceptor cleaning, the safe carry capacity, without threat of overflow, of the Paxton Creek Interceptor was determined to be 20 MGD based on several years of wet weather flow metering and hydraulic modeling. The increase in safe carrying capacity was allocated to LPT at 59 percent and to Susquehanna Township at 41 percent, which increased the LPT limit to 12.34 MGD. The new limit was approved by Susquehanna Township and LPT with the Second Amendment to the Paxton Creek Interceptor IMA on September 1, 2020.

The total I/I removal continues to be measured by the total peak hourly flow leaving the Paxton Creek Basin. The attached Exhibit II displays a reduction of the peak hourly flow and demonstrates a 60% reduction at the comparative peak level and the design storm level. Based on this data, LPT has reduced peak hourly flows below the IMA Limit of 12.34 MGD at the comparative peak level. At the design storm level, the measured peak is approximately 12.6 MGD. The excess I/I projected to be removed from the PC-3E Mini-Basin is 1.3 MGD and is anticipated to reduce the Paxton Creek Basin design storm peak hourly flows below the IMA Limit of 12.34 MGD.

The hydraulic modeling identified two remaining areas with the potential for hydraulic overload and threat of overflow. The two areas are the Goose Valley Road Branch of the Paxton Creek Interceptor, which is projected to be eliminated with the PC-3E Mini-Basin Project, and the upper portion of Trunk A. LPT has been monitoring surcharge levels at MH 2783 along Trunk A during wet weather events (WWEs). Since the completed Trunk A Relocation/Upgrade Project in early 2019, there has only been one WWE, the atypical May 7, 2022 Flood WWE, that potentially surcharged to the threat of an overflow. However, wet weather field investigation indicated no signs of an overflow occurred at the site.

The results of the program evaluation indicate that the PC-1F Mini-Basin may be delayed since it is not required to meet the IMA Limit and there appears to not be a significant risk of overflow downstream of the area. It appears the PC-3E Mini-Basin is the last project required to eliminate the overflows and to reduce the hydraulic overload for future growth in the Paxton Creek Basin by June 30, 2027. With mini-basins projected to meet the overflow and hydraulic overload requirements, storage was not considered as part of the evaluation.

## **Selected Alternative**

Complete the PC-3E Mini-Basin project by the end of 2025. Perform post flow metering in 2026 to confirm projected I/I reductions and re-evaluate the projected EDUs for post-CAP, Chapter 94 improvements.

## General Description of Plan Elements

The elements of this Fourth (4<sup>th</sup>) CAP include the following implementation schedule:

### 2023-2025

- Complete rehabilitation in the PC-3E Mini-Basin. The approach for the rehabilitation of this mini-basin will be the same approach developed for the Paxton Creek Basin 2<sup>nd</sup> and 3<sup>rd</sup> CAPs. The approach is as follows:
  - Replacement, to include lining as appropriate, of effectively all ACP and VCP mainline and associated manholes, service laterals, and building sewers in the mini-basin.
  - Rehabilitation of PVC sewer areas within the mini-basin. Assuming excessive I/I is present in the PVC sewer system, the rehabilitation program shall consist of testing and repair of sewer system mains and private sewers that fail an air test.
  - Elimination of under slab sources, as practical.

### 2026-2027

- In the year 2026, the LPT will evaluate the success of the PC-3E Mini-Basin rehabilitation and evaluate future growth projections. This evaluation will include the verification of all Paxton Creek Sub-Basin flows and updating/comparing the peak hourly flows leaving the Paxton Creek Basin to the Paxton Creek Interceptor IMA limit of 12.34 mgd.

Table 1 Proposed 4<sup>th</sup> Paxton Creek CAP Implementation Schedule

Mini-Basin	2019 EDUs	Estimated Pre-Rehab Comp. Peak (gpd/EDU)	Estimated Comp. Peak Excess I/I (mgd)	Est. Peak Hourly I/I Removed (\$/gpd)	Estimated ACP/VCP Mainline (LF)	Estimated "Other" Mainline (LF)	Proposed Completion Date
TENTATIVE PRIORITY FOR 2023 - 2027							
PC-3E	428	4,000	1.28	\$7.30	19,759	8,982	2025
Program Evaluation							2026 / 2027

## Post-CAP/Chapter 94 Requirements

In accordance with the Second Amendment to the Second Consent Decree, LPT will continue to implement Section 13.c and will begin to implement Section 13.d once the hydraulic overload has been reduced.

- 13.c – *“After the overflows are eliminated in the Spring, Paxton, and Beaver Creek Basins, Lower Paxton shall physically monitor for surcharging to ensure there are no threats of backups/overflows until the hydraulic overload is reduced. The physical monitoring shall be accomplished through the installation of monitoring equipment and/or field measurements to determine the level of wastewater elevation in manholes during precipitation events. Records of surcharging shall be maintained by Lower Paxton and be available for inspection by the Department and shall be included in the Annual Progress Report to the Department.”*
- 13.d – *“After the overload is reduced, Lower Paxton shall select the most critical control sections for continued monitoring and reporting in the annual Chapter 94 reports. Lower Paxton shall submit the list of control section for the Department’s approval.”*

Since March 2019, LPT has been conducting long-term monitoring along Trunk A and the Paxton Creek Interceptor and providing the results in the Annual Progress Reports. Table 2 outlines the limiting manhole locations and surcharging monitoring locations.

*Table 2            Surcharge Monitoring Locations*

<b>Conveyance Section</b>	<b>Mini-Basin</b>	<b>Limiting Section Manhole</b>	<b>Surcharge Monitoring Location</b>
Paxton Creek Interceptor	PC-3A	MH 667	MH 669
Trunk A	PC-1I	MH 2783	MH 2783
Trunk A	PC-6A	MH 64.01	MH 69
Paxton Creek Interceptor	PC-6A	MH 631.1	MH 69

**Permits and Connections**

As long as the PADEP determines that LPT is in compliance with the terms and conditions of the 4<sup>th</sup> Paxton Creek CAP, LPT will receive approval from the PADEP for 93 connections annually through June 30, 2027, with an increase of 10 connections per year for each completion of a mini-basin rehabilitation/replacement project.



# EXHIBIT I

## COMPLETED MINI-BASIN PROJECTS LOWER PAXTON TOWNSHIP MUNICIPAL AUTHORITY Paxton Creek Basin

Mini-Basin	Year Completed	Annual Progress Report
PC-5C	2005	2004 - 2005
PC-6C	2010	2010 - 2011
PC-1A	2011	2010 - 2011
PC-4B	2012	2011 - 2012
PC-1C	2012	2011 - 2012
PC-2C	2013	2012 - 2013
PC-2D	2014	2013 - 2014
PC-1G	2014	2014 - 2015
PC-1H	2014	2014 - 2015
PC-1GDA	2015	2014 - 2015
PC-1GDB	2015	2014 - 2015
PC-5D	2015	2014 - 2015
PC-5E	2015	2014 - 2015
PC-4A	2017	2016 - 2017
PC-4C	2017	2017 - 2018
PC-4E	2017	2017 - 2018
PC-2A	2019	2019 - 2020

### Total Number of Completed Mini-Basins

17

### Additional Connections from Completed Mini-Basins

170

