

Act 537 Plan

Initial Update: September 2022

Presented by Dan Koplish

City of Allentown, Department of Public Works, Office of Compliance

Act 537 Plan History

2007 & 2009 - EPA issued Administrative Orders (AO) due to excessive Inflow and Infiltration (I&I) that resulted in Sanitary Sewer Overflows (SSOs).

EPA will withdraw AO, contingent upon continual focus on Collection System Improvements and related programs.

August 2018 - Regional partners developed the Regional Flow Management Strategy (RFMS) and submitted to EPA .

3/19/2019 - EPA accepts RFMS and designates PaDEP to enforce it.

The City remains financially responsible for the RFMS which includes the Flow Characterization Study (FCS), Modeling, and 537 Planning.

Act 537 Plan History

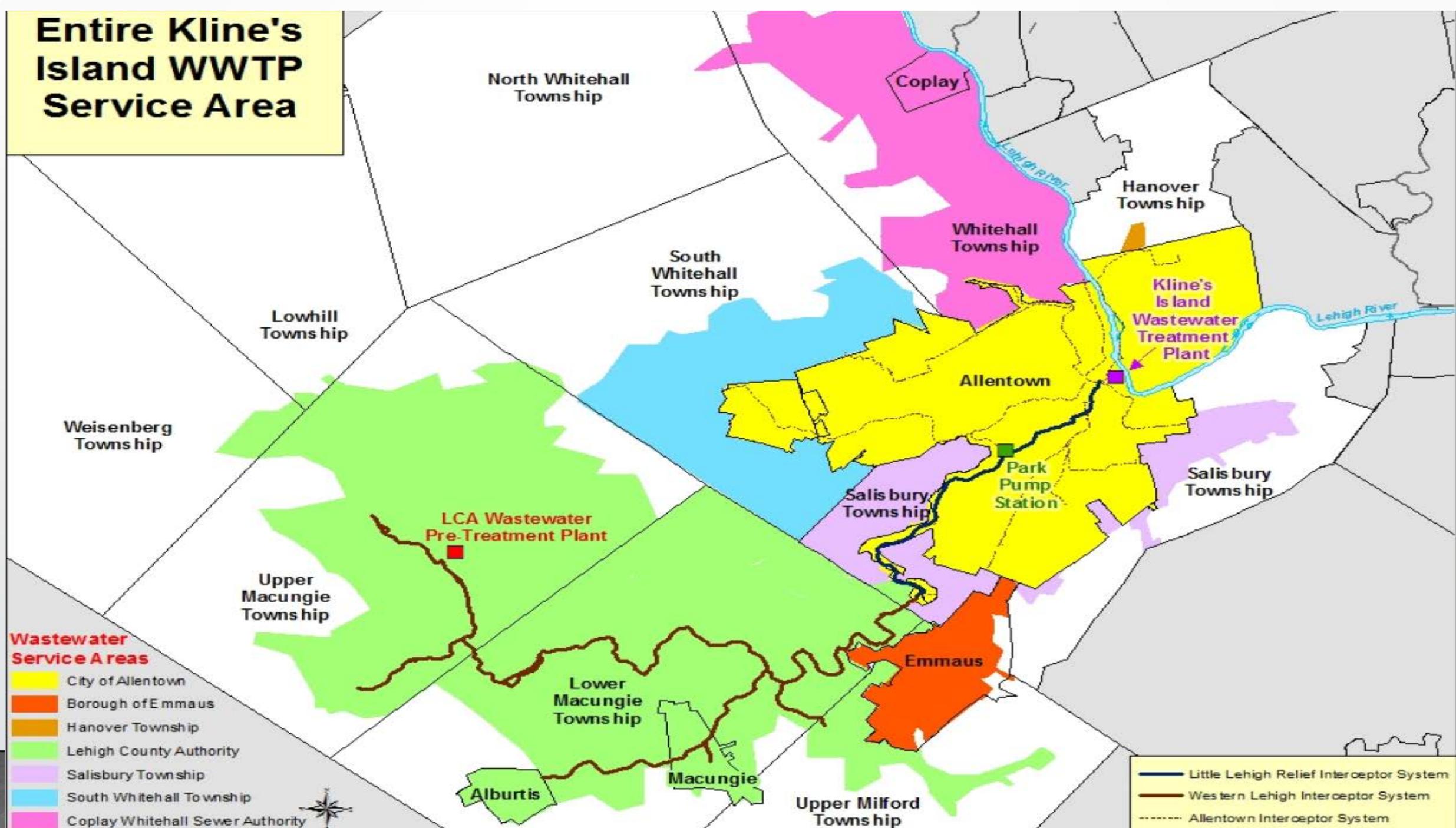
2018-2019 - Record-setting rainfall caused the Kline's Island Wastewater Treatment Plant (KIWWTP) to exceed the Hydraulic Capacity for 3 consecutive months.

Hydraulic exceedances were violations of Chapter 94 regulations which necessitated PaDEP to take enforcement actions.

Negotiations with PaDEP resulted in an agreement for a Corrective Action Plan (CAP) which included a Connection Management Plan (CMP), an Interim 537 Plan, and a Regional 537 Plan.

June 2021 - PaDEP approved the Interim Act 537 Plan which allows development to proceed subject to submittal of quarterly reports documenting approved Sewer Planning Modules and Regional Act 537 Plan progress.

Entire Kline's Island WWTP Service Area



REGIONAL SYSTEM

Kline's Island Sewer System (KISS):

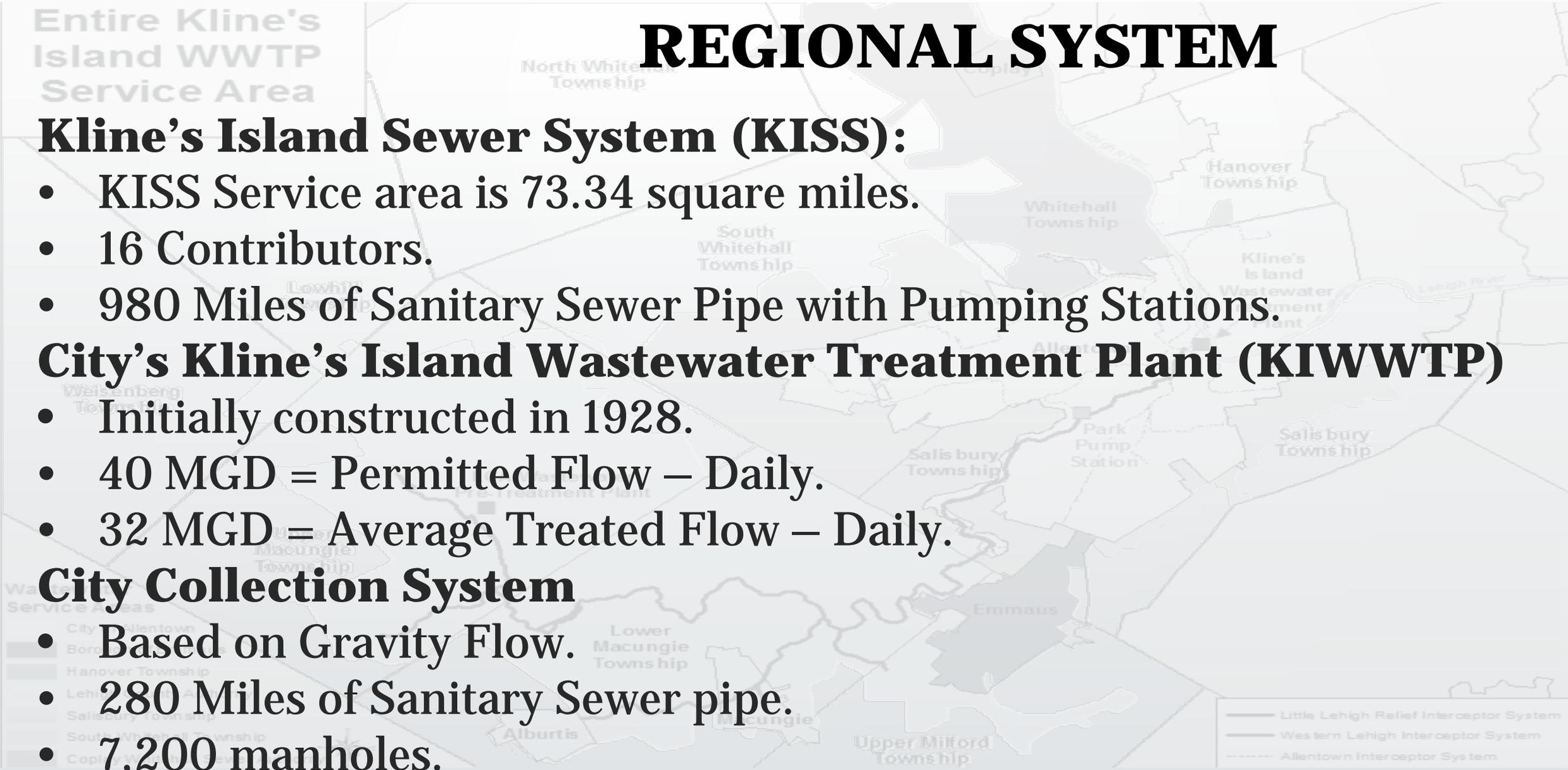
- KISS Service area is 73.34 square miles.
- 16 Contributors.
- 980 Miles of Sanitary Sewer Pipe with Pumping Stations.

City's Kline's Island Wastewater Treatment Plant (KIWWTP)

- Initially constructed in 1928.
- 40 MGD = Permitted Flow – Daily.
- 32 MGD = Average Treated Flow – Daily.

City Collection System

- Based on Gravity Flow.
- 280 Miles of Sanitary Sewer pipe.
- 7,200 manholes.



SEWAGE NEEDS:

Municipality/Authority	Projected Flows (gallons)	
	2021-2030	2021-2050
Allentown	1,642,294	1,937,309
Upper Macungie	482,628	1,056,259
CWSA	533,891	1,167,257
South Whitehall	454,028	866,578
LCA	251,640	850,395
Lower Macungie	616,177	666,567
Industrial Allocated but Unused in 2021	300,000	300,000
Salisbury	184,964	184,964
Emmaus	95,746	162,106
Hanover	69,671	69,671
Upper Milford	22,950	45,560
Macungie	31,110	34,510
Alburtis	2,550	5,780
Weisenburg	2,550	4,250
Lowhill	2,550	4,250
Total	4,692,748	7,355,456

2021 - 2030

4.69 MGD System-wide

1.64 MGD City only

2021 - 2050

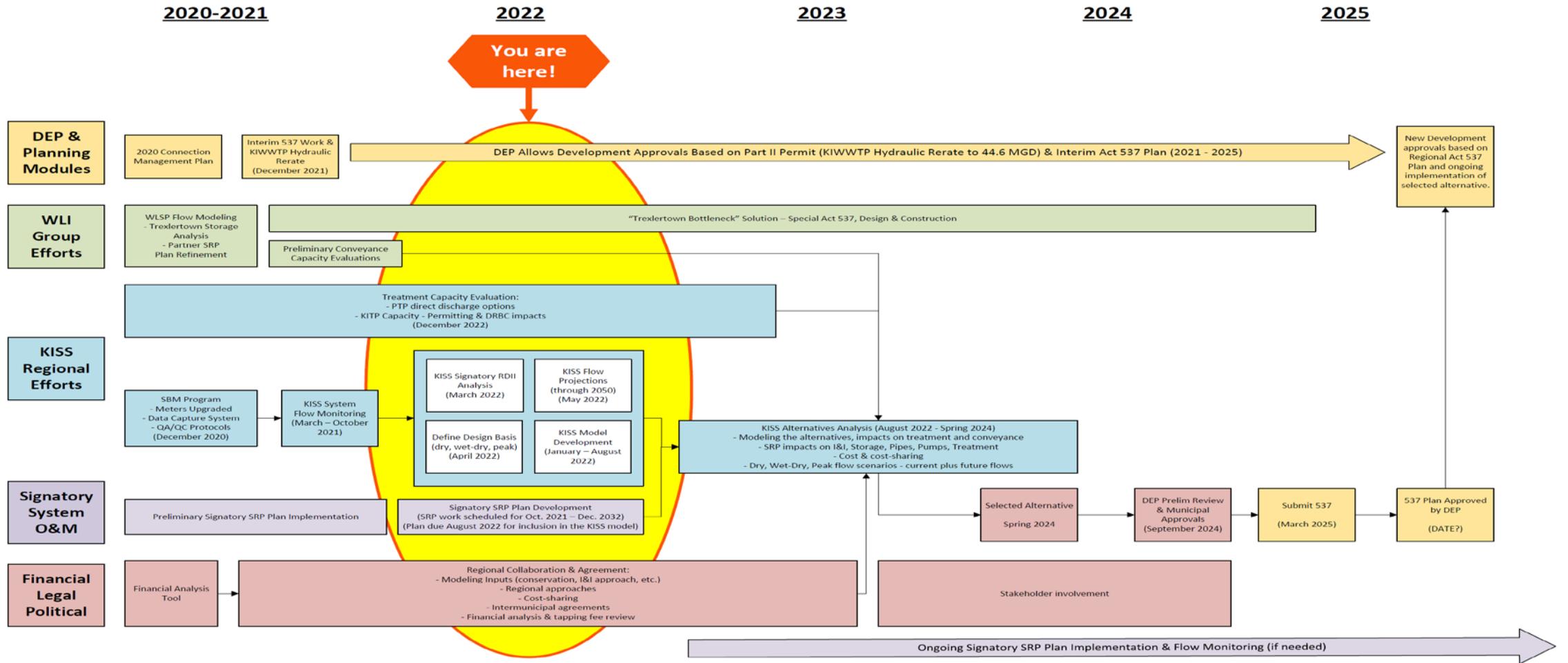
7.35 MGD System-wide

1.94 MGD City only

Act 537 Plan Timeframe - What's involved

Diagram date: 2/10/2022

Kline's Island Sewer System – Pathway to Regional Sewage Facility Plan in Support of Continued Economic Vitality in Lehigh County



What are the REAL Issues?

Adequate, reliable sewage conveyance and treatment is the most critical issue to Continued Economic Development.

PaDEP's position is: Your System is already challenged by existing Sewage Flows. How can you continue to add additional flows to the System?

Near Term 537 Plan Challenge: Technical evaluation of the KISS System now and into the future considering growth, wet weather events, potential SSOs, and other variables and development of a short list of alternatives to address the identified problems.

Longer Term 537 Plan Challenge: Evaluate the short-listed alternatives based on costs, timing, environmental impacts, constructability, etc. Address the contractual, institutional, and financial issues necessary to secure regional acceptance of the alternative(s) selected.

What's Been Done to Date?

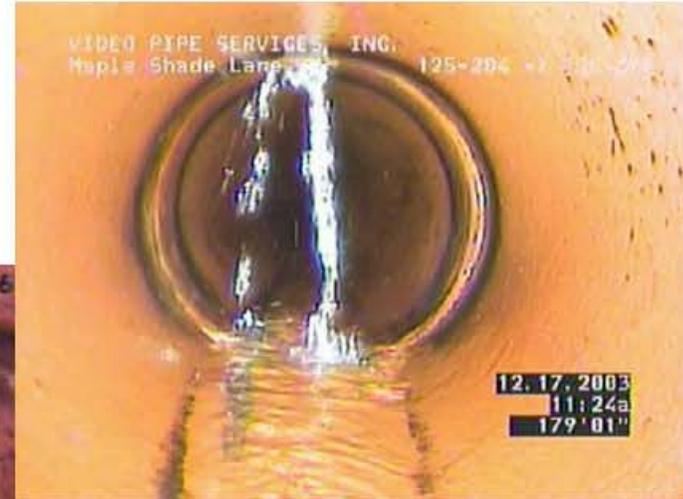
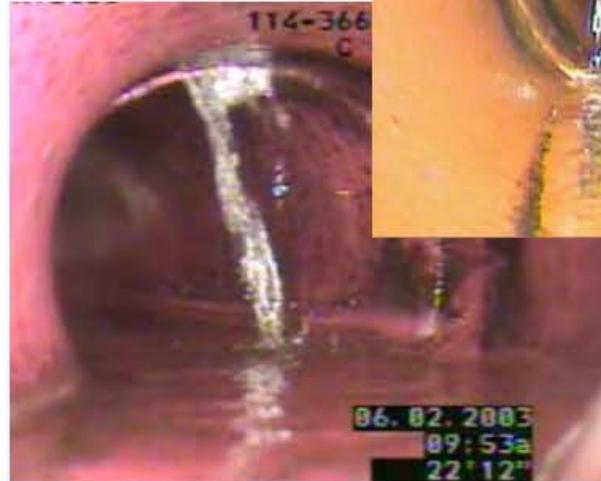
January - March 2021 - Initiated the FCS using some existing meters and installing and calibrating ~100 meters in the KISS System (~40 meters in the City) and identifying 29 rain gauges that could provide localized rainfall data.

January - October 2021 - Contributors provided System attributes (pipe sizes, GIS maps, pipe and manhole elevations, slopes, etc.) which were loaded into the KISS model.

March - October 2021 - Flow data collected at 5-15 - minute intervals at the meters. Fortuitously Fred, Henri, and Hurricane Ida provided excellent wet weather events to see how the System reacted and provided a sound basis for forecasting future flows and impacts.

March 2022 - Metered data presented in spread sheet form to quantitatively represent baseline flows, infiltration rates, inflow rates. Essentially identified catchments which were areas of greater concern.

INFILTRATION



INFLOW



What's Been Done to Date?

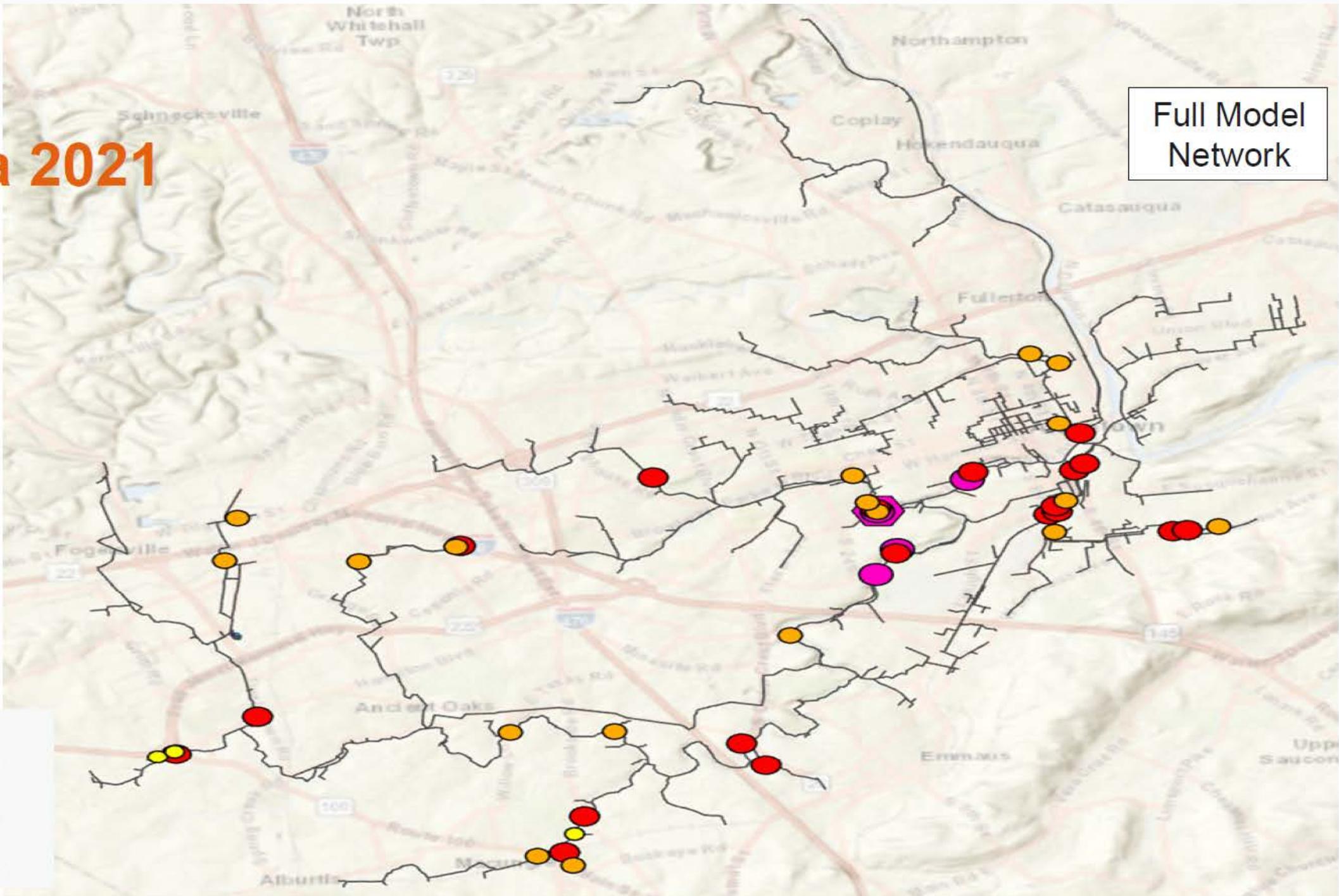
April 2022 - June 2022 - Nighttime weiring identified pipes that were disproportionate contributors of infiltration.

June 2022 - present - Discussions and presentations to assist 16 contributors in developing Source Reduction Programs (SRP) to reduce I&I.

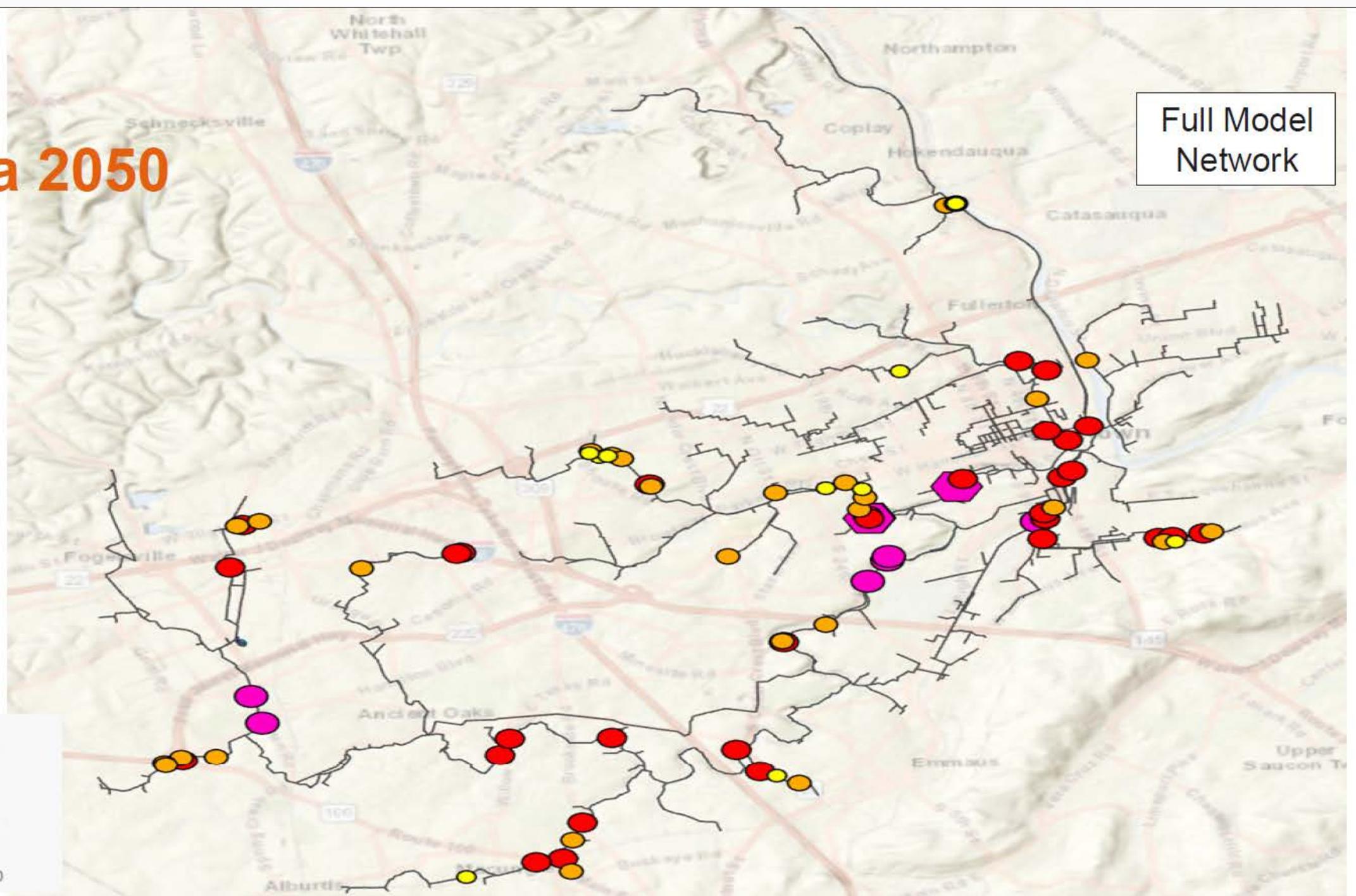
August 2022 - Preliminary modeling of the system to show SSOs, bottlenecks, or basement backups based on 2021 flows and 2050 flows using Hurricane Ida which will serve as the wet weather design event for future modeling.

Ida 2021

Full Model Network



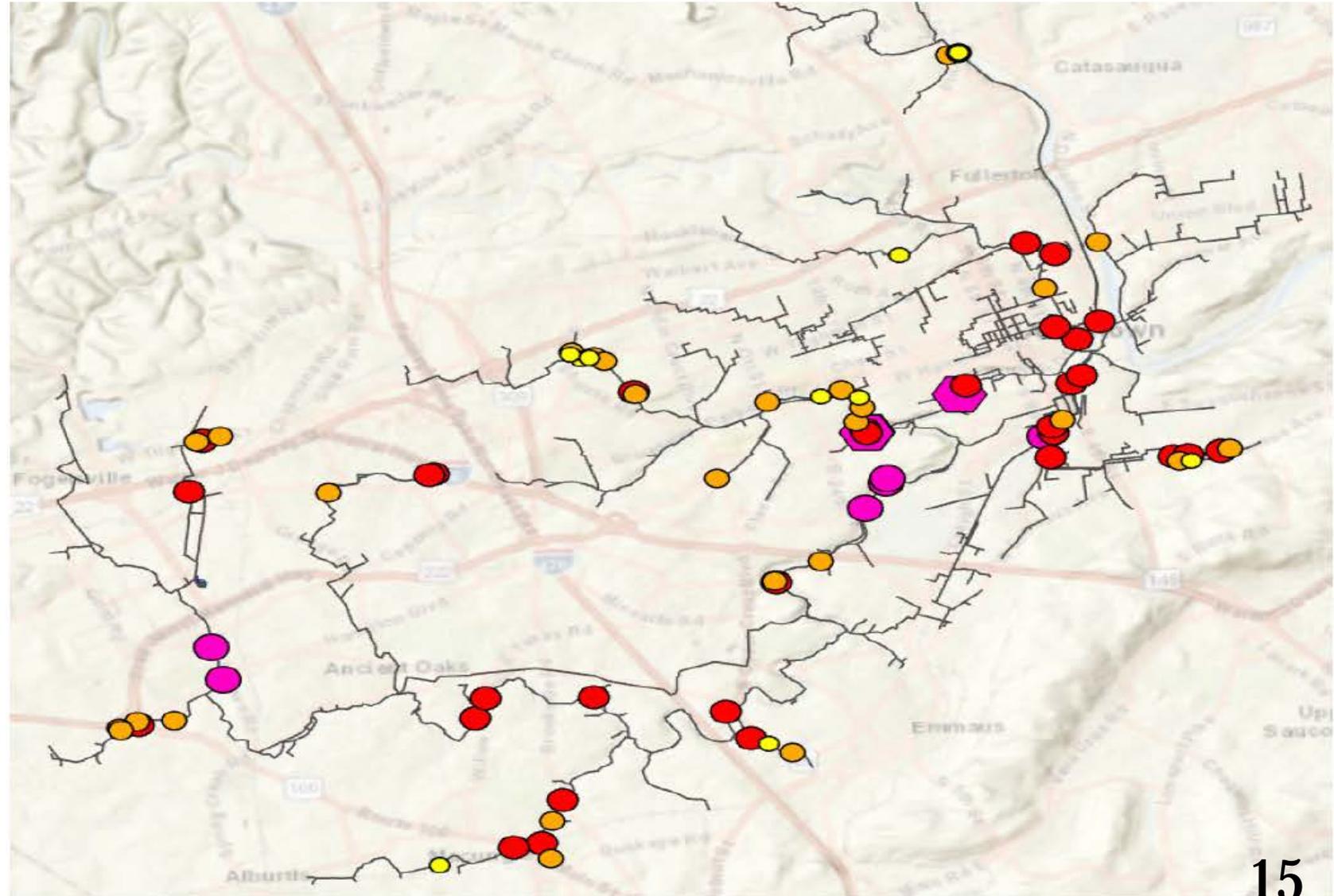
Ida 2050



What's not Removed must be Conveyed..... and Treated

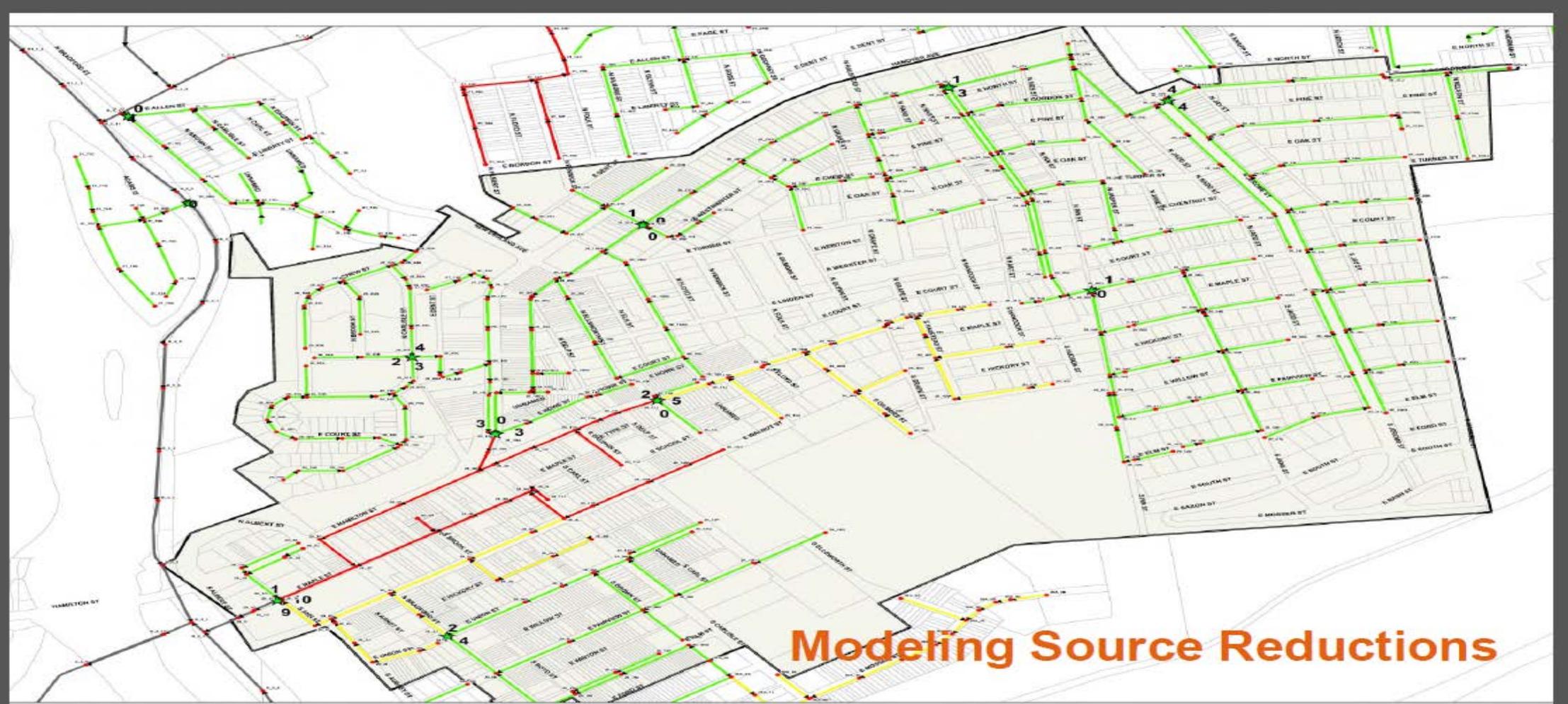
**Reducing
Extraneous
Flow**

**Reduces
Capital
Improvement
Costs**



What's the City Doing?

A 10-year Source Reduction and Manhole Rehabilitation Program



Modeling will be revised to show benefits of SRP

What are the next major Act 537 Plan activities?

Technical

- Preliminary Screening of Alternatives October 2022 to February 2023
- Final Alternatives Analysis March 2023 to December 2023

Community

- Selection of Solution January 2024 to April 2024
- Finalize Act 537 Plan May 2024 to August 2024
- Act 537 Plan Municipal Approval Process September 2024 March 2025

Q&A