

An aerial map of North Walnut Township, Michigan, showing a network of roads and waterways. The map is overlaid with a semi-transparent green filter. Major roads include South Park Dr, Bar Cir, Pillows Dr, Marquardt Dr, Avalon Dr, Fair Oaks Dr, and Walnut. A creek labeled 'South Park Creek' flows through the area. Highway markers for 79 and 360 are visible. The text 'North Walnut Township' is faintly visible in the upper left.

NORTH WALNUT TOWNSHIP STORMWATER CONVEYANCE STUDY

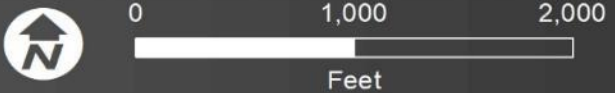
April 20, 2023



AGENDA

- **Introductions**
- **Project Overview and Goals**
- **Project Tasks**
- **Alternatives Analysis**
- **Regulatory Floodplain Considerations**
- **Next Steps**

Overview of Area



Tasks Completed

- Data Collection
- Survey and Field Mapping
- CAD Base Mapping
- Evaluate Existing Flooding Issues (Photos & Gages)
- H&H Modeling
- Alternatives Analyses
- Stormwater Master Plan



Historic & Recurring Flooding

The area has known flooding issues and photographs of past flood events:

- 1997
- 2002
- July 11th & 14th 2017
- February 17th 2022

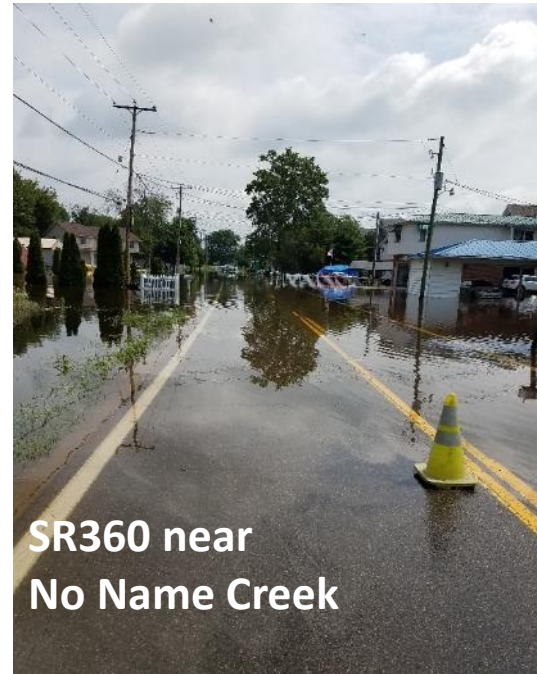
The 2017 and 2022 flooding events were due to approximately 2-year to 5-year rainfall events with ~1.8 to 2.7 inches. This suggests the current level of service is the 2-yr event or less.



Sellers Drive
February 17, 2022



Summer 1997
Shepard



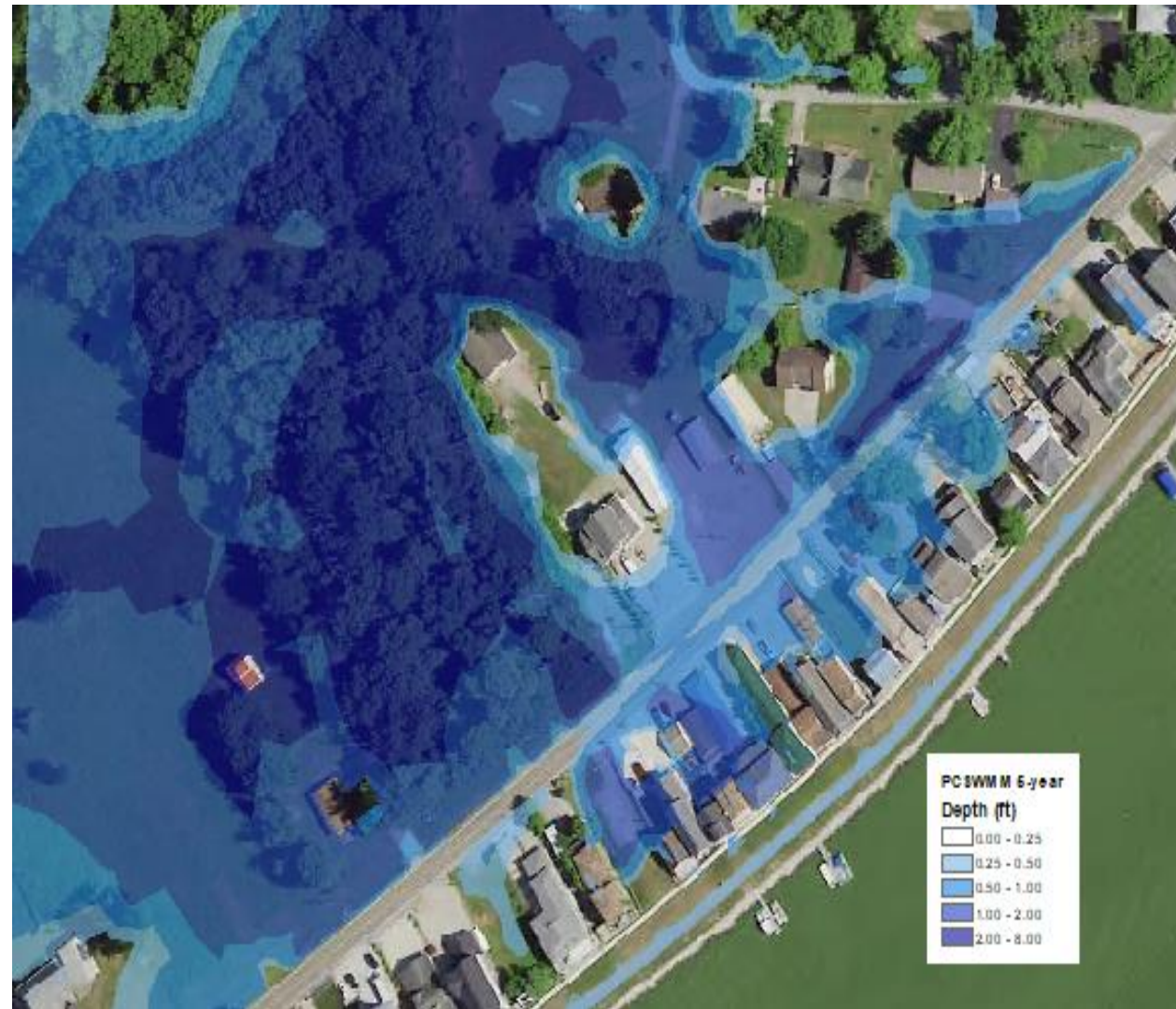
**SR360 near
No Name Creek**



Sellers Drive

July 14, 2017

5-year Model Run vs. July 14, 2017 Photographs



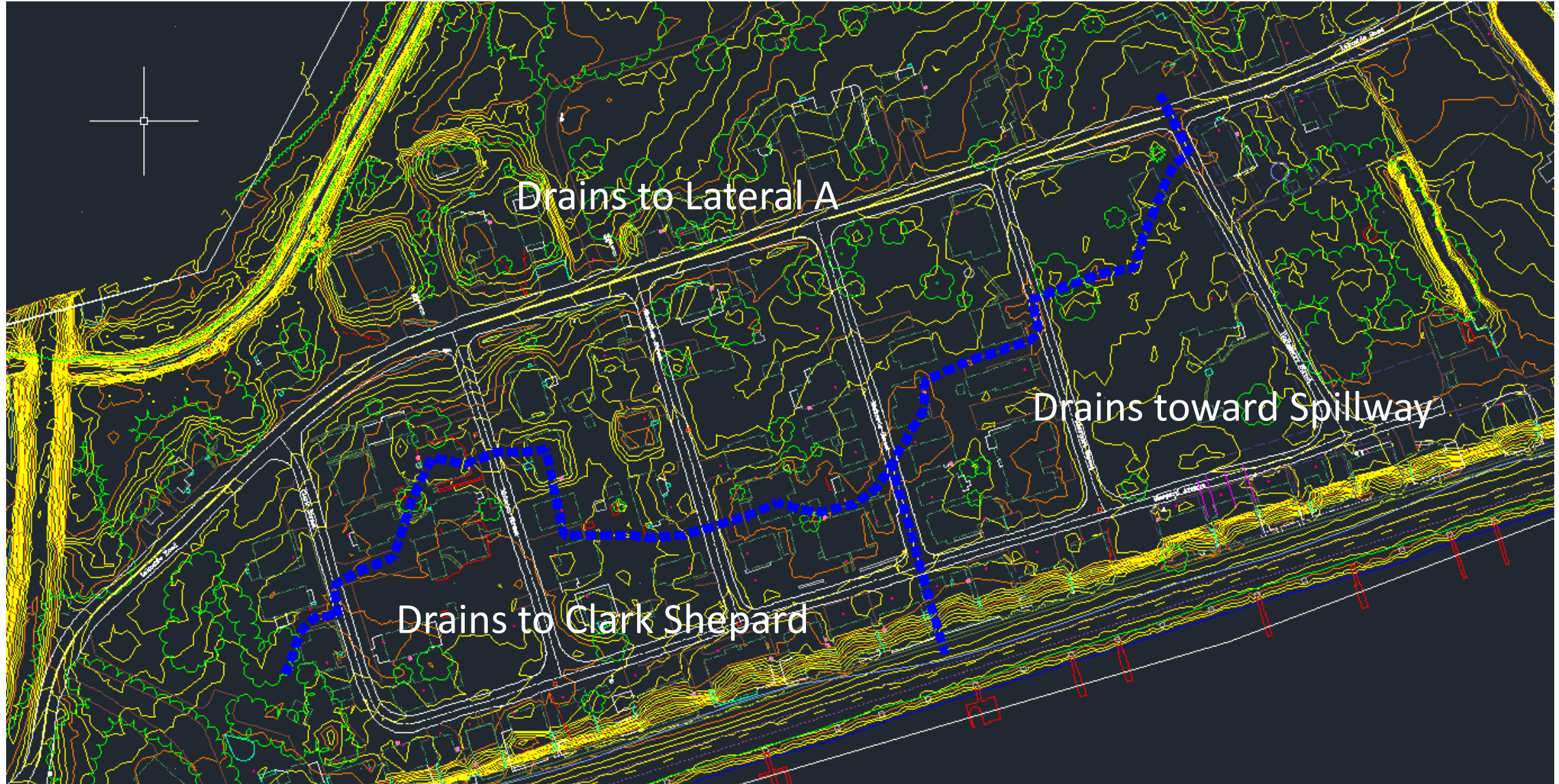
5-year Model Run vs. July 14, 2017 Photographs



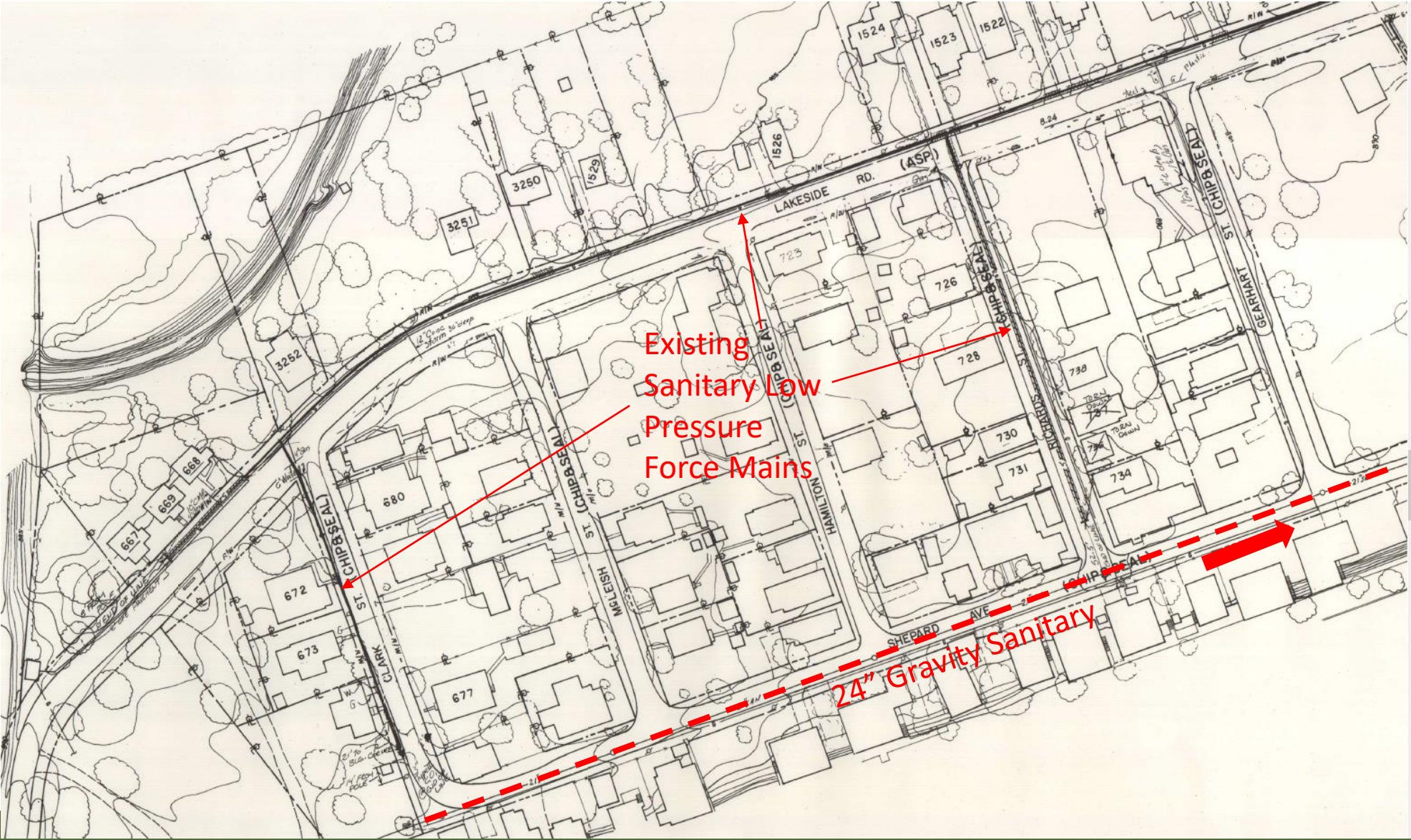
Study Expectations

- Typical stormwater design level of service in central Ohio
 - Local Roads: 2-year
 - Minor Arterial Roads: 5-year
 - Major Arterial Roads: 10-year
- North Walnut Township stormwater design level of service
 - Goal: 25-year
 - Minimum: 10-year
- The study will develop alternatives to improve interior flooding and drainage but will not address flooding from the South Fork Licking River.

Lakeside Major Watershed Divides



Existing Sanitary



Existing Water





Legend

Lakeside Phasing: Junctions

- Existing Junctions
- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Alternative Outlet

Lakeside Phasing: Pipes

- Existing Pipe
- Phase 1
- Phase 2
- Phase 3
- Phase 4
- Alternative Outlet
- ▭ parcels
- ▭ 2D Model Boundary

4,170 Feet of Storm Sewer
 71 Catch Basins/Manholes
 Cost: 3.0 Million

Available Outlets



★ South Fork - 876

★ No Name Creek - 877

X - 882.8

★ Spillway Channel - 877
Not permitted

X - 886.1

X - 883.0

★ Buckeye Lake - 890.97
(summer)



Existing Conditions SR 360 Looking West

- Mix of newer and older homes on south side
- Newer homes higher to be above floodplain elevation
- Newer drives drain to neighboring older homes that are lower
- Roadside ditch on north side



Typical Flooding Spot
3685 North Bank
Road Looking East

Roofs and driveways
drain to edge of
pavement then drain
laterally to low spot





Typical Flooding
3685 North Bank Road
South Side Looking North

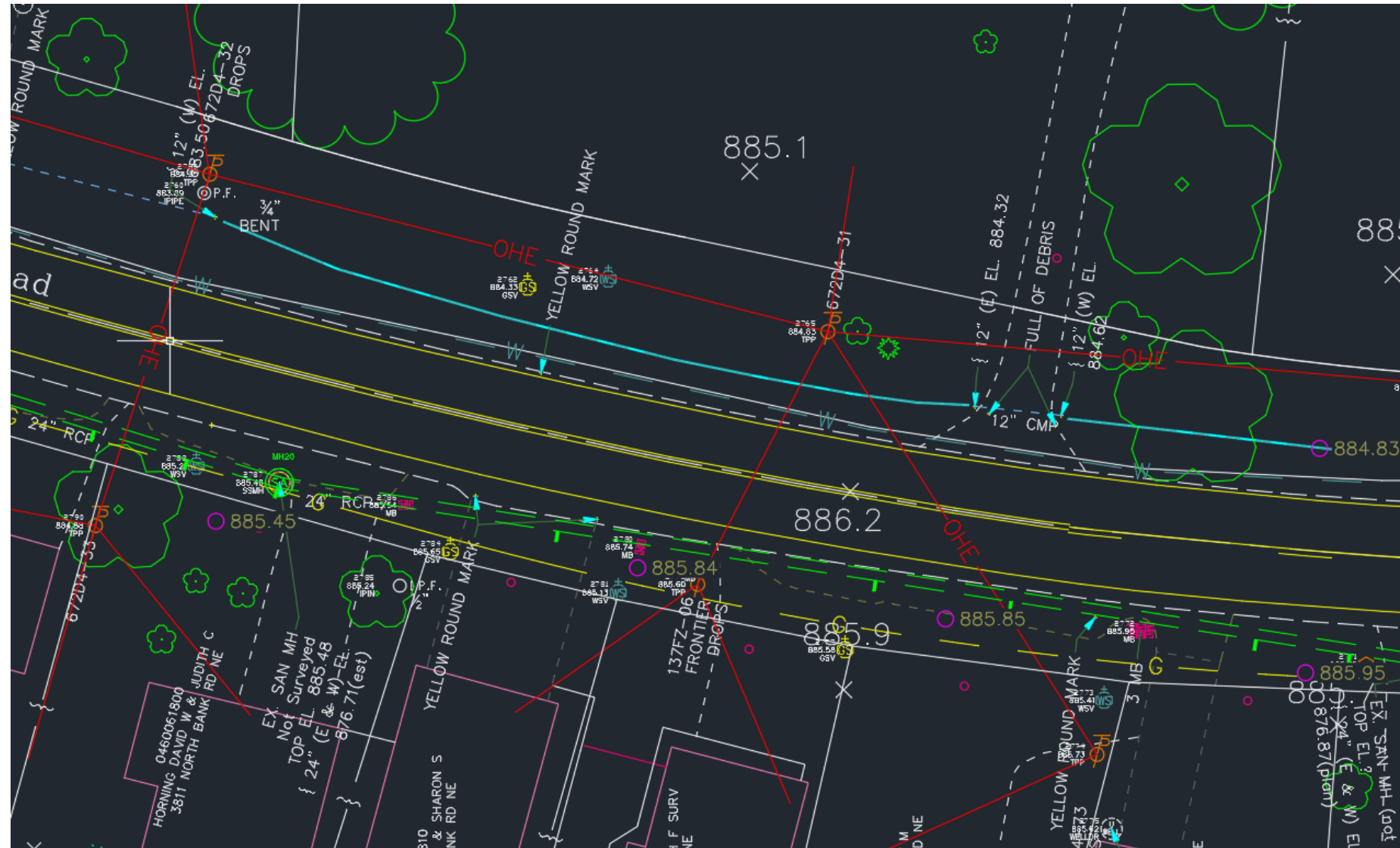


Typical Drainage

Roofs and driveways
drain to edge of
pavement then drain
laterally to low spot

Existing Utility Challenges – SR 360

- 24" Sanitary South Edge of Pavement
- Waterline North Edge of Pavement
- Overhead 3-phase electric north side
- Gas main south side
- Sanitary and water services cross road

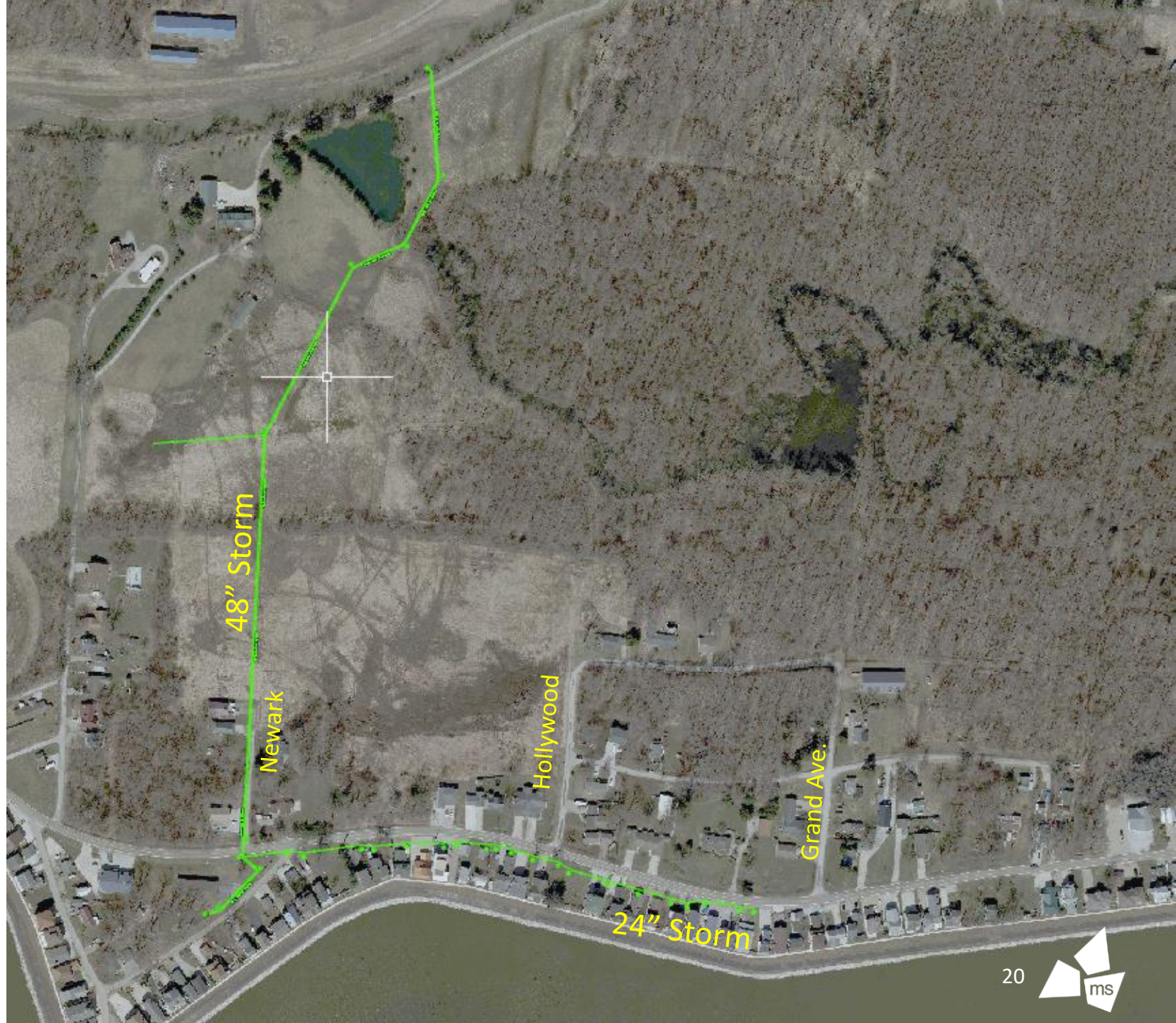


Option 1: Proposed Gravity Outlet

- 48" Sewer (0.10%) from South Fork to SR 360 then East as far as it could go
- Invert at South Fork 876 +/-
- Extent of Service to Grand Avenue (ran out of cover)
- Stay away from spillway channel

Challenges

1. Limited service area compared to pipe length
2. Interferes with existing sanitary laterals on Newark



Option 2: Gravity Sewer to Pump Station Option

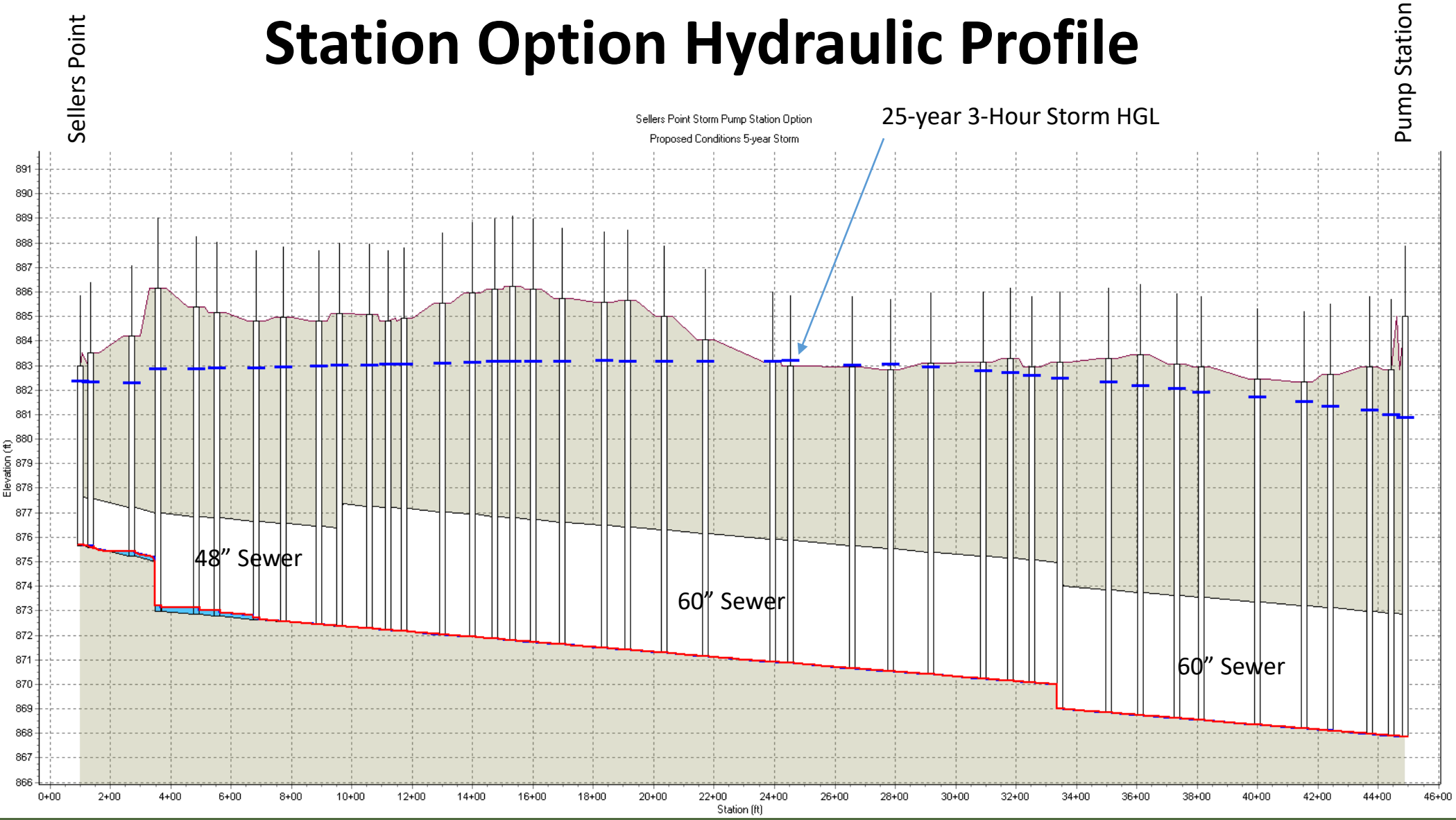
- Sewer down centerline of SR 360
- Larger Service Area

Challenges

1. Too much impact to ODOT roadway, ODOT would prefer mainline sewer outside of pavement
2. Deep sewer to get under sanitary laterals and mains, challenge to build
3. Ability for borrow pit to accept and drain water efficiently not clear



Proposed Gravity Sewer to Pump Station Option Hydraulic Profile



Option 2 Tributary Map (47 Acres)



Preferred Option



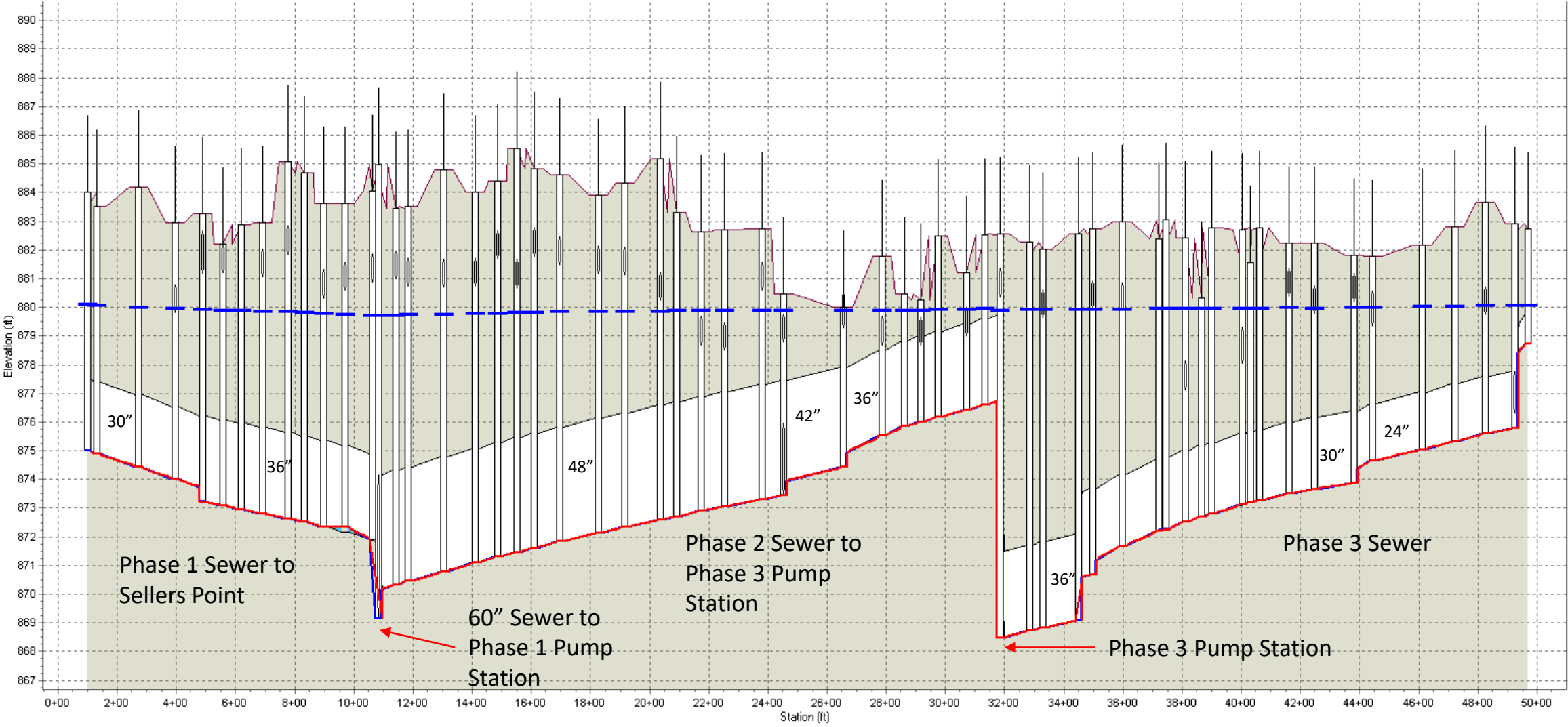
- Sewer on north side of SR 360 to avoid excessive impact to SR 360, easier maintenance of traffic during construction
- Similar Service Area as option 2
- New outlet to South Fork on Mock Property
- Limited impact to Mock farm
- Pump stations are mainly to drain baseflow, larger events surcharge sewer and gravity flow out to South Fork
- Avoids conflicts with sanitary main and laterals
- Less structures than option 2
- Less impact to water services

Challenges

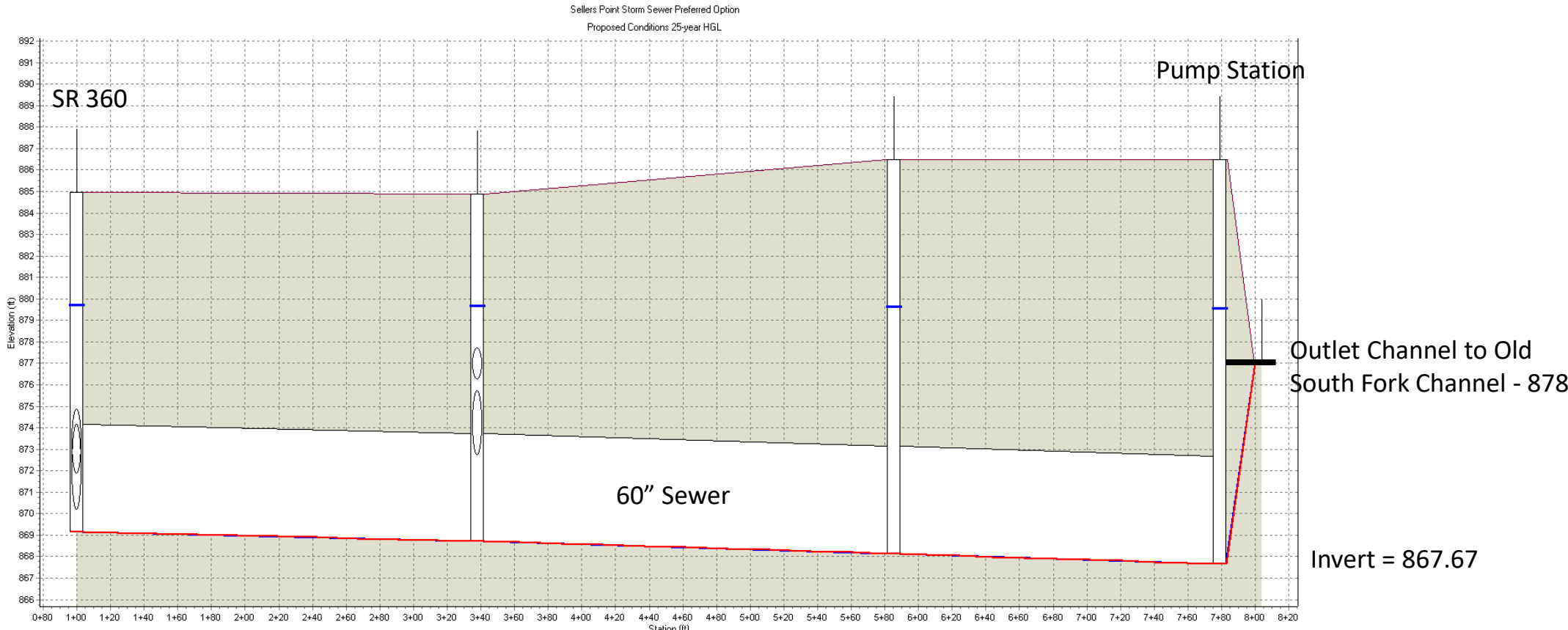
1. 2nd Pump station needed to shallow up sewer for so benching is not needed for sewer installation
2. Limited room between existing waterline and power poles on north side of pavement

Hydraulic Model Profile – SR 360

Sellers Point Storm Sewer Preferred Option
Proposed Conditions 25-year HGL



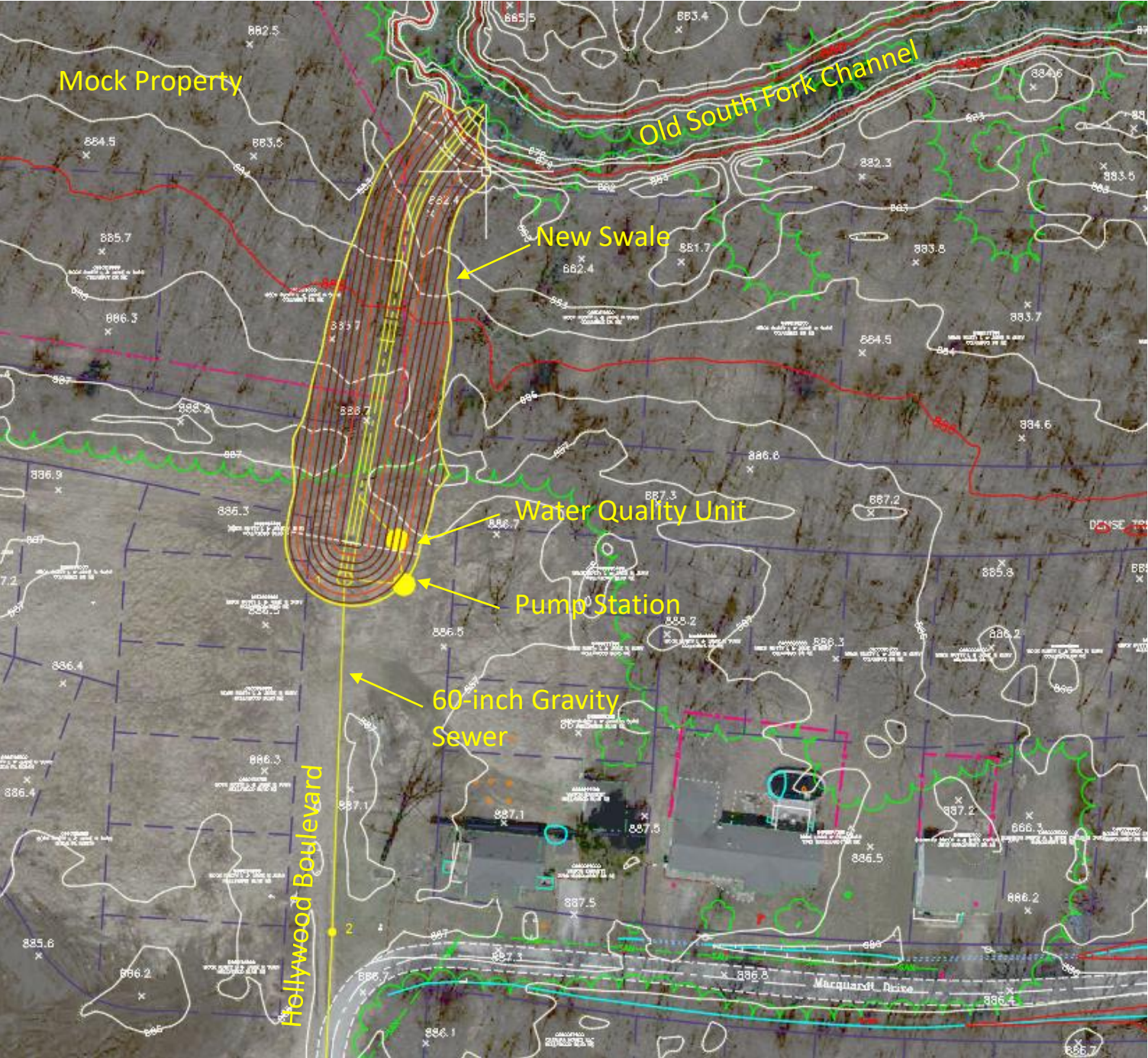
Hydraulic Model Profile – Hollywood Boulevard



	4	3	2	PS	Out-01
Node ID:	4	3	2	PS	Out-01
Rim (ft):	884.96	884.87	886.48	886.48	
Invert (ft):	869.16	868.73	868.14	867.67	877.00
Min Pipe Cover (ft):	10.11	7.14	13.34	0.00	
Max HGL (ft):	879.71	879.66	879.63	879.55	877.00
Link ID:	4-3	3-2	2-1		Outlet-01
Length (ft):	238.20	247.45	193.28		
Dia (ft):	5.00	5.00	5.00	0.00	
Slope (ft/ft):	0.0018	0.0024	0.0024		
Up Invert (ft):	869.16	868.73	868.14	867.67	
Dn Invert (ft):	868.73	868.14	867.67	877.00	
Max Q (cfs):	20.45	27.98	27.98	4.00	
Max Vel (ft/s):	3.36	2.88	1.81	0.00	
Max Depth (ft):	5.00	5.00	5.00	0.00	

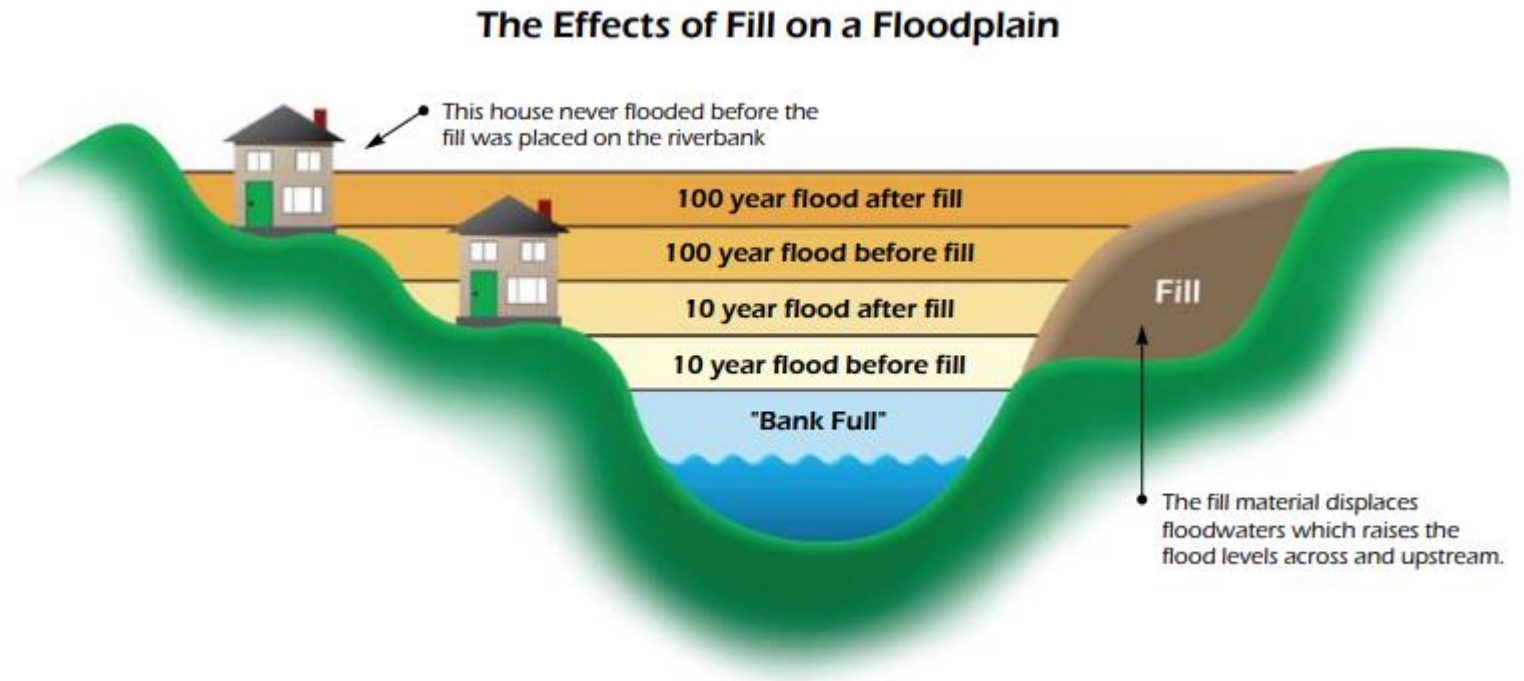


Preferred Option Primary Pump Station & Outfall



Regulatory Floodplain Considerations

- Current Fairfield County FP Regulations state that fill must be placed in the 100-year FP in order to build in the designated floodplain.
- Considerations for Fill
 - Option 1-Allow fill with specific requirements
 - Option 2-require a study to demonstrate no rise with the placement of fill
 - Option 3- do nothing



FEMA: NFIP Floodplain Management Guidebook

Next Steps

- Evaluate regulatory considerations with new Fairfield County FP Administrator
- Continued coordination with Licking County Sanitary Engineer on I/I issues
- Continued coordination with SLWCD and Licking County
- Seeking funding for different phases of project
 - OPWC Fall 2023
 - Community Project Funding Fall 2023
 - Other funding opportunities
- Lakeside Detailed Design starting soon





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THANK YOU!

Questions and Breakout
Session