

Kent Garden Neighborhood Stormwater Improvement Project Conceptual Design Alternatives Review

Community Meeting
April 18, 2023

Department of Public Works and Environmental Services
Working for You!



A Fairfax County, VA, publication
April, 2023

Housekeeping and Logistics



PLEASE MUTE YOURSELF



ASK QUESTIONS FOR US IN
THE CHAT



Q/A WILL BE AT THE END



SLIDES WILL BE POSTED TO
THE PROJECT SITE AFTER
THE MEETING



Introductions

- Department of Public Works and Environmental Services (DPWES)
 - Stormwater Planning Division (SWPD)
 - Maintenance and Stormwater Management Division (MSMD)
 - Utilities Design and Construction Division (UDCD)
 - Land Acquisition Division (LAD)
- Fairfax County Park Authority
- Land Development Services (LDS)
- Pennoni – Design Consultants



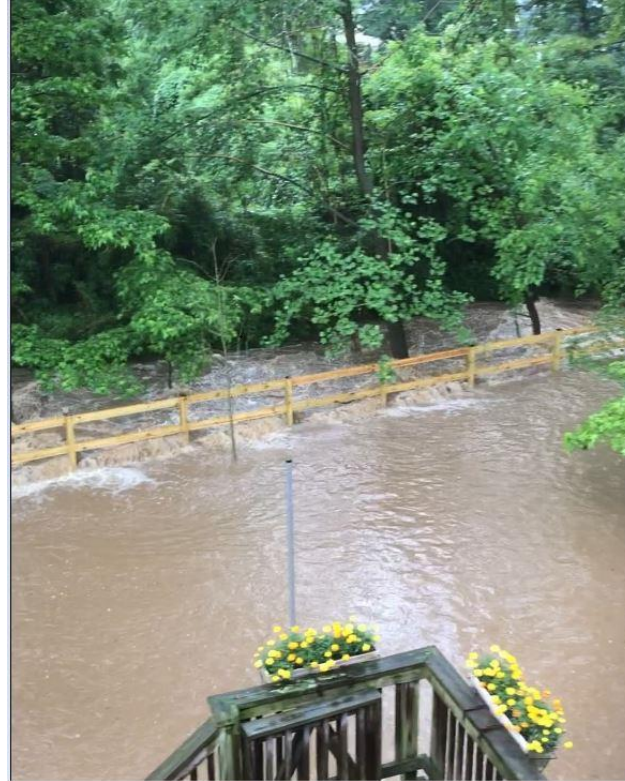
Agenda

- Meeting Purpose
- Project Background
- Project Area
- Project Objectives
- Existing Conditions
- Proposed Solutions
- Easement Requirements
- Project Schedule and Next Steps
- Contact Information



Meeting Purpose

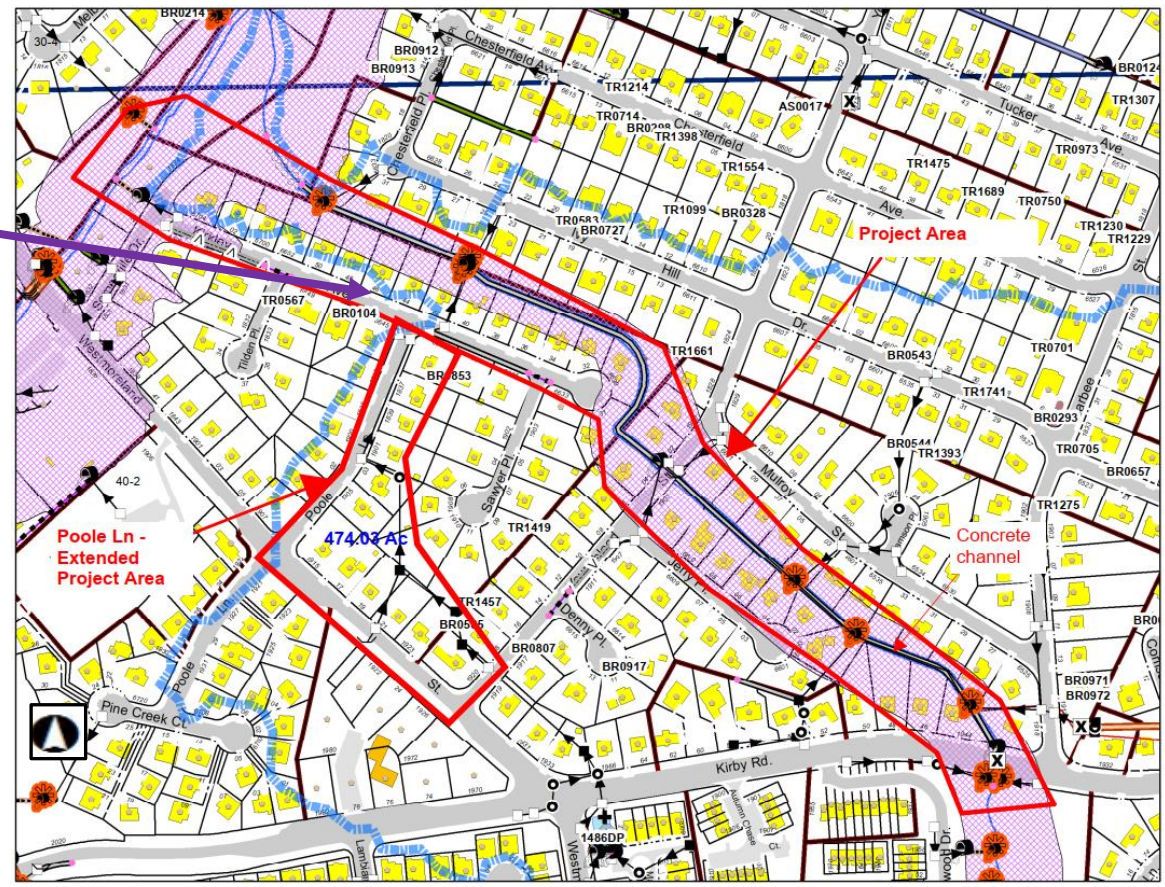
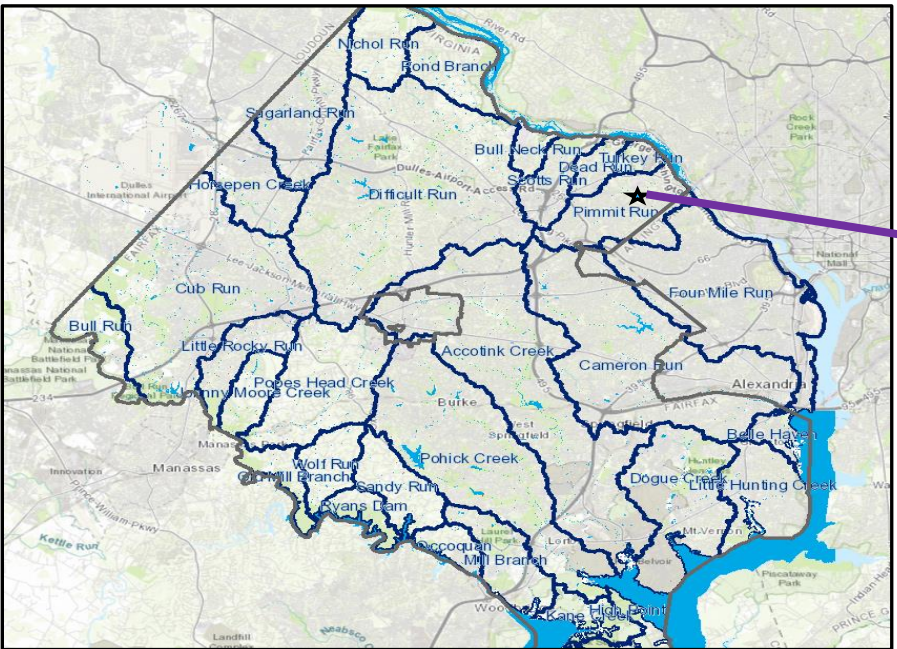
- Review of condition of the existing drainage system in the community
- Inform community of the impact of the July 8, 2019 storm
- Provide information on the proposed solution to mitigate structural flooding from future large storm events*



* A large storm event is defined as a 100-year, 24 –hour rain event, or 1% chance of storm occurring in any given year

Kent Garden Neighborhood Stormwater Improvement Project

Project Area and Description



- Total watershed drainage area 478 Acres
- Drains to Pimmit Run to the North
- Concrete channel from Kirby to End of Ivy Hill Dr
- Poole Lane subshed currently drains to the concrete channel



Project Background – July 8, 2019 Storm Event

- Flooding
 - House flooding around the Mulroy Channel sewer backup
 - Yard flooding
 - Lifting of manholes and inlets gushing out stormflow
 - House flooding along Poole Lane
- 5.84” of rainfall in 1 hour with a total of 6.38” for the day.
 - On average: 4” of total rainfall for the month of July in Fairfax County
- Flooding of homes and manhole lifting occurs frequently within the project limit with larger events

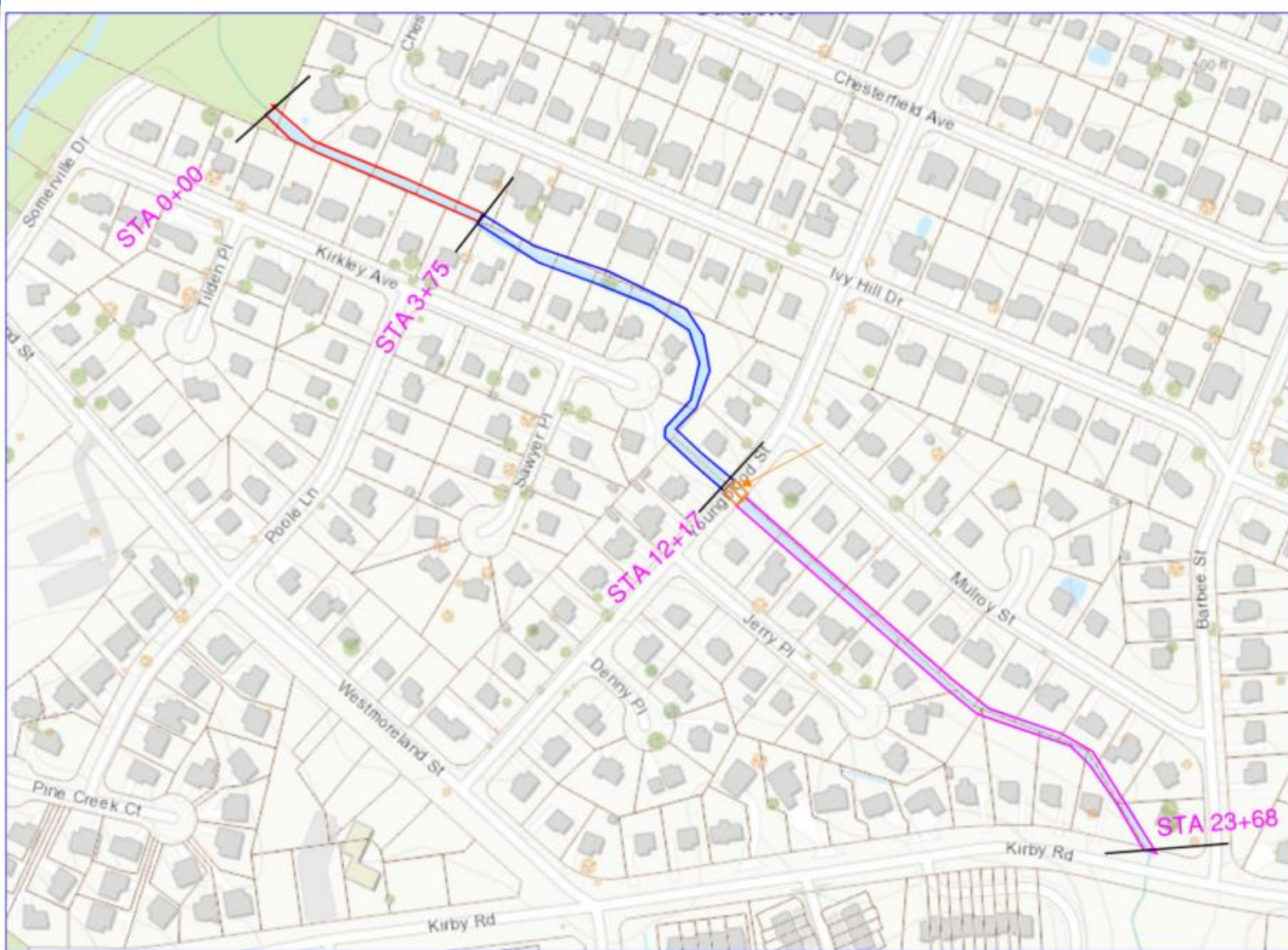


Objectives

- Identify and evaluate house flooding and public safety concerns
- Improve the drainage system and reduce localized flooding and erosion by designing adequate drainage systems as defined in the county codes and Public Facilities Manual
 - Specifically, evaluate the potential to convey the 100-year 24-hour storm within the storm drainage system
- Use resilient & functional designs
- Make improvements compatible with characteristics of neighborhood
- Partner with community to develop sound, cost effective solutions that can be collaboratively implemented and maintained



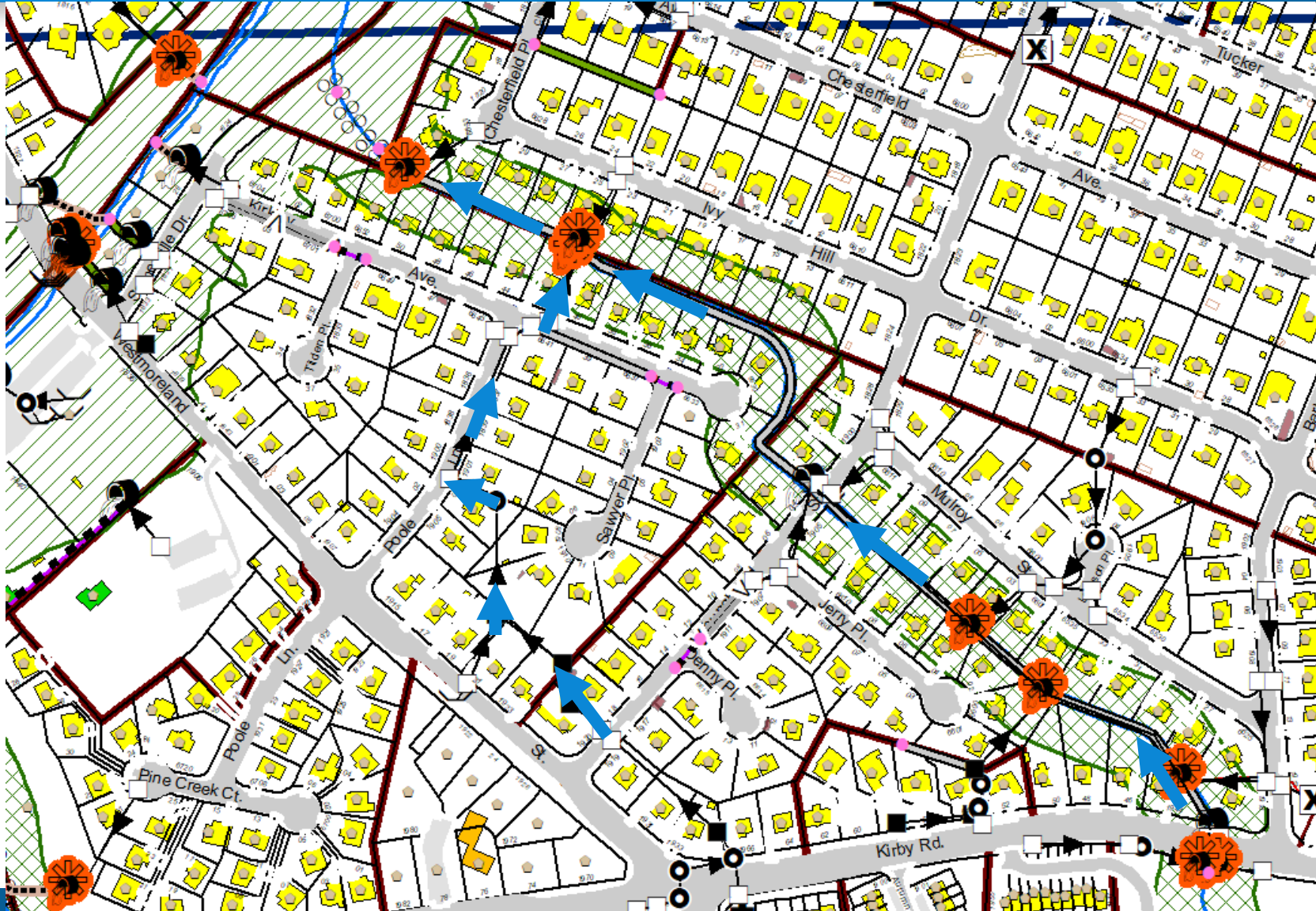
Concrete Channel Layout



- Section 1: Station 0+00 to 3+75
 - Wider width channel
- Section 2: Station 3+75 to 12+17
 - Medium width channel
- Section 3: Station 12+17 t 23+68
 - Lower width channel

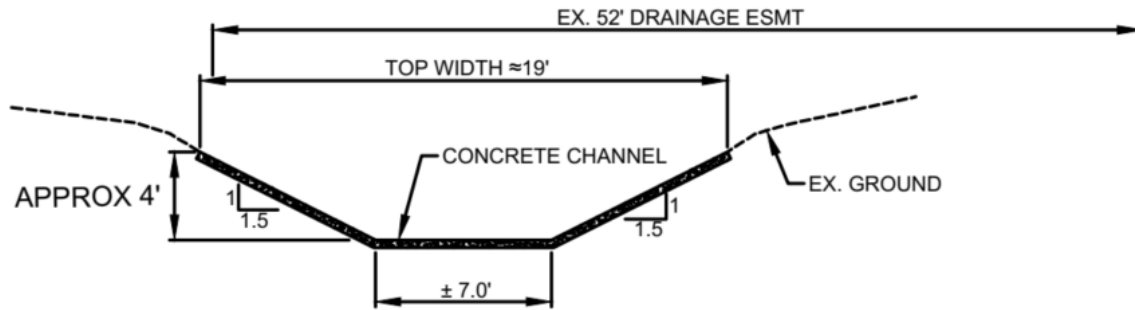


Existing Drainage Conditions – Project Area

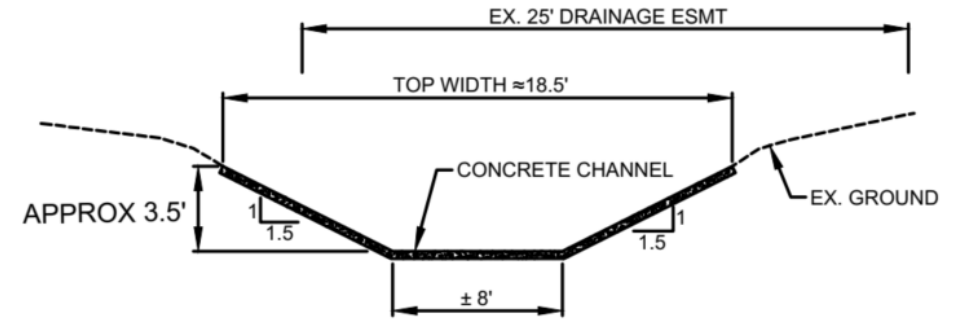


- Concrete Ditch:
 - Kirby to Youngblood to Pimmit Run
 - Existing channel inadequate to carry 10-year flow
 - Multiple home floods during significant major events (100-year)
 - Huge hydraulic jump occurs on Section 1 and 2 causing flooding
- Pipe System:
 - 18" diameter pipe from Youngblood to 30" diameter pipe to Poole Lane
 - Pipe is inadequate to handle 10- year flow
 - Floods during 100-year event

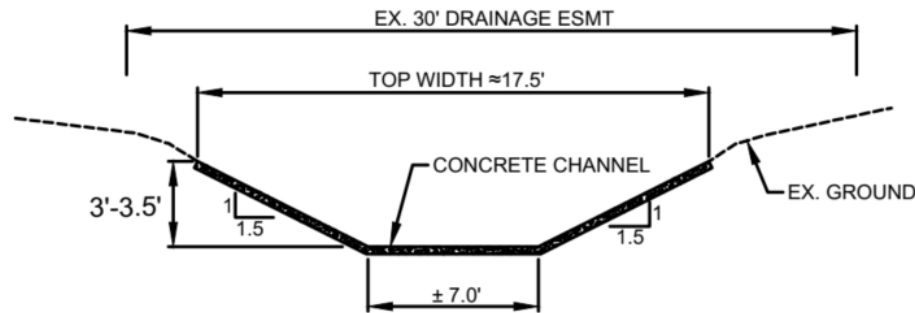
Existing Condition – Concrete Channel



EXISTING CONCRETE CHANNEL
FROM STA 0+00 TO STA 3+75



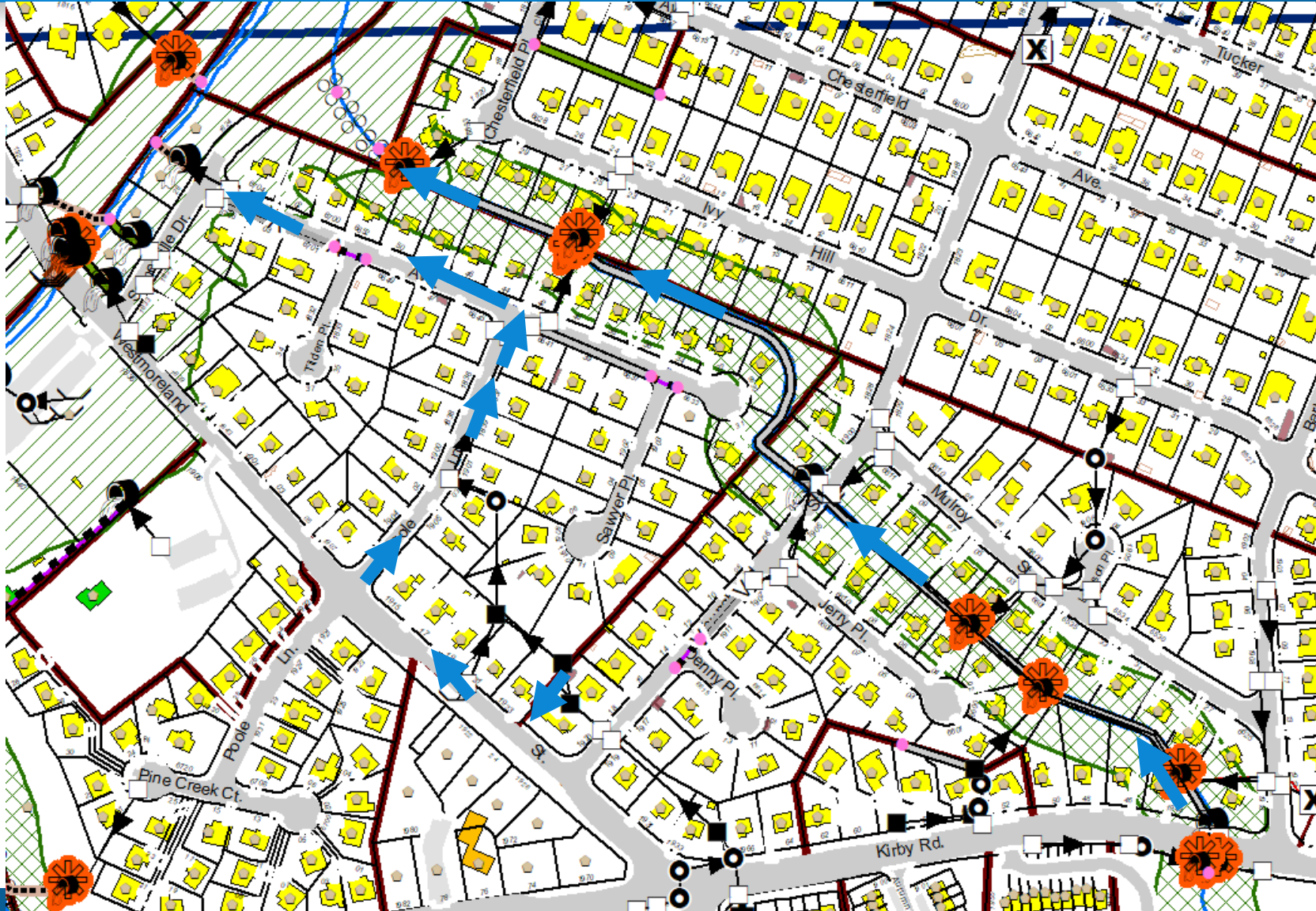
EXISTING CONCRETE CHANNEL
FROM STA 3+75 TO STA 12+17
(YOUNGBLOOD ST)



EXISTING CONCRETE CHANNEL
FROM 12+17 (YOUNGBLOOD ST) TO END
(KIRBY RD)



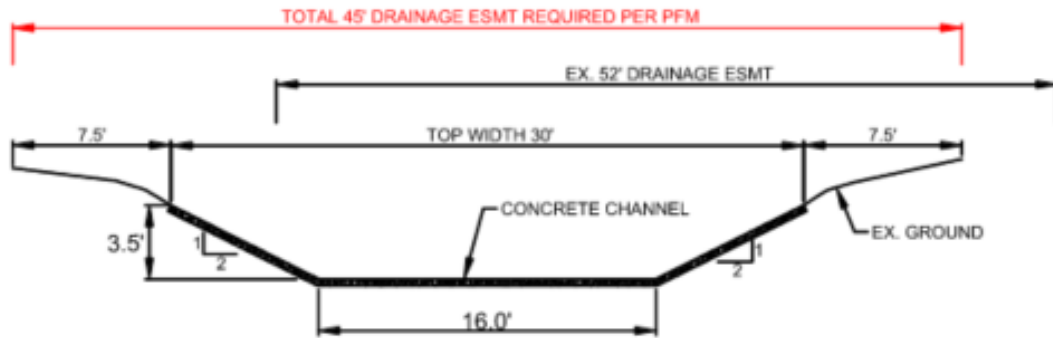
Proposed Drainage Conditions – Project Area



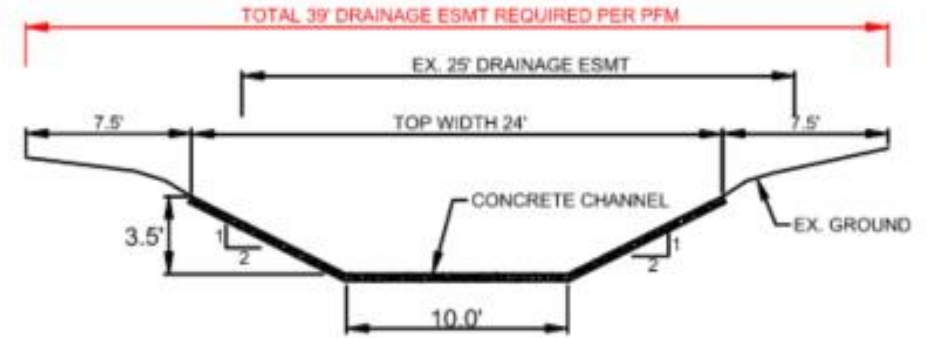
- **Concrete Ditch:**
 - Kirby to Youngblood
 - Youngblood to the end at Pimmit Run
 - The flow pattern is same as existing condition
 - Channel sections have been enlarged in different sections
 - The channel can pass 100-year flow within it
- **Pipe System:**
 - New pipes are being installed
 - Pipe is routed from Westmoreland St to Poole Lane to Kirkley to Pimmit run (Option 1)
 - Pipe is routed from Westmoreland St to Poole Lane to concrete channel (Option 2)
 - Pipe carries 100-year flow



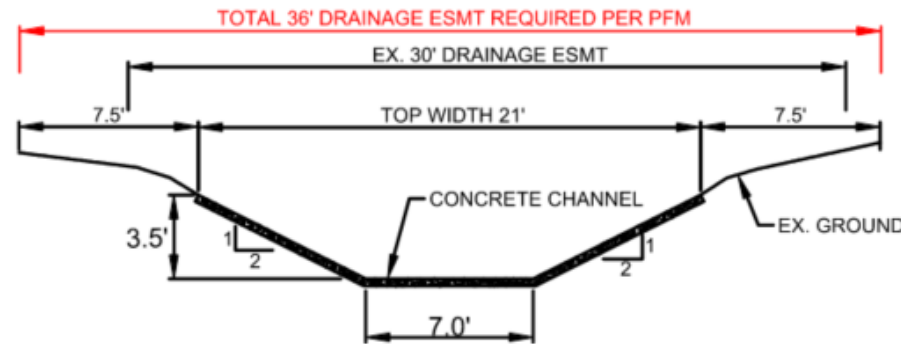
Concept Design Layout Concrete Channel – Option 1



OPTION #1
CONCRETE CHANNEL IMPROVEMENTS
FROM STA 0+00 TO STA 3+75



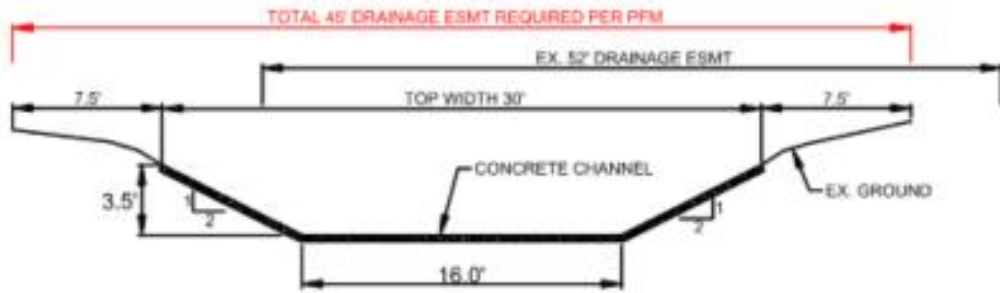
OPTION #1
CONCRETE CHANNEL IMPROVEMENTS
FROM STA 3+75 TO STA 12+17
(YOUNGBLOOD ST)



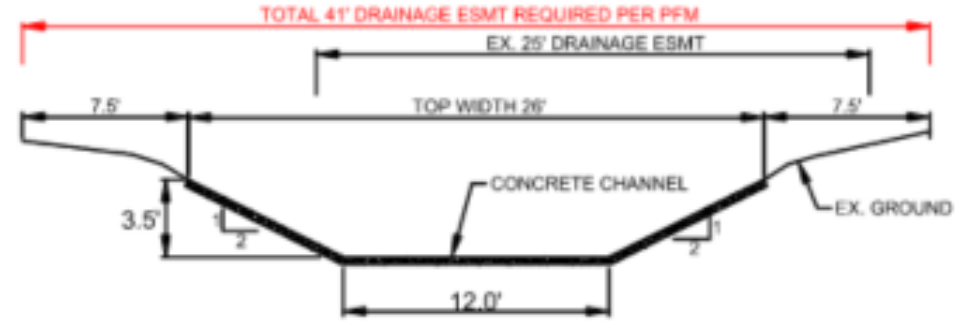
OPTION #1
CONCRETE CHANNEL IMPROVEMENTS
FROM 12+17 (YOUNGBLOOD ST) TO END
(KIRBY RD)

- Designed to accommodate 100 Year flow in the overbank areas, but closer to the channel
- 5 houses will need to be floodproofed if Youngblood culvert is not replaced
- If culvert replaced 1 house still needs to be floodproofed
- Several houses north of the channel between Youngblood and Kirby still will have yard flooding

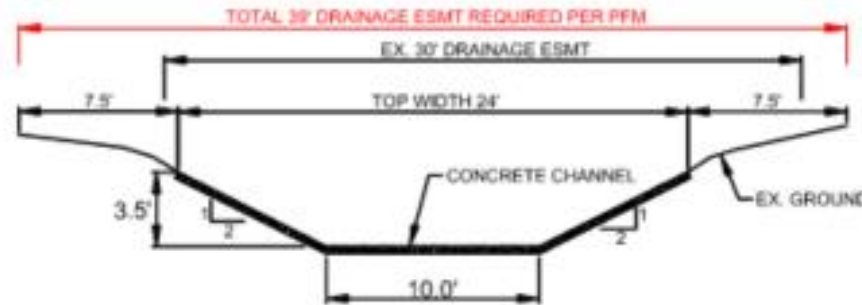
Concept Design Layout Concrete Channel – Option 2



OPTION #2
CONCRETE CHANNEL IMPROVEMENTS
FROM STA 0+00 TO STA 3+75



OPTION #2
CONCRETE CHANNEL IMPROVEMENTS
FROM STA 3+75 TO STA 12+17
(YOUNGBLOOD ST)



OPTION #2
CONCRETE CHANNEL IMPROVEMENTS
FROM 12+17 (YOUNGBLOOD ST) TO END
(KIRBY RD)

- Designed to accommodate 100 Year flow within the channel
- 4 houses will need to be floodproofed if Youngblood culvert is not replaced
- Avoids all house flooding and yard flooding for 100 year



Existing and Proposed 100-Year - Option 2

- Concrete Channel
 - 31 houses are impacted by 100 year
 - Brings 100-year flood within the channel

CONCRETE CHANNEL IMPROVEMENTS
FROM STA 1+00 TO STA 3+75

CONSTRUCTION EASEMENTS WILL BE REQUIRED ON EITHER SIDE OF THE CHANNEL.



Concept Design Layout Poole Lane - Option 1



- Designed to accommodate 100-year flow within pipe
- Requires diverting flow through Westmoreland St., Poole Lane, and Kirkley Ave to Pimmit Run

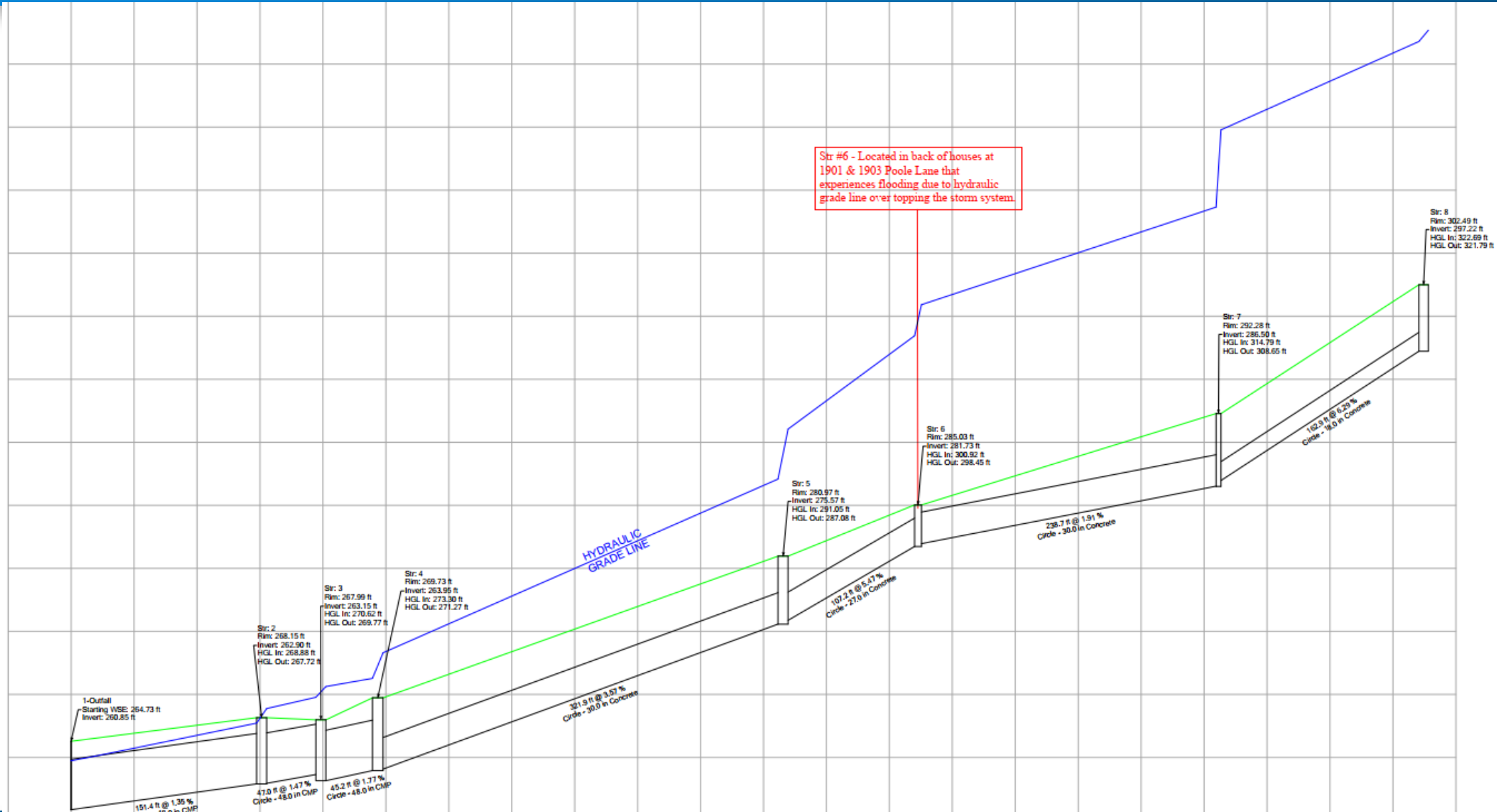
Concept Design Layout Poole Lane - Option 2



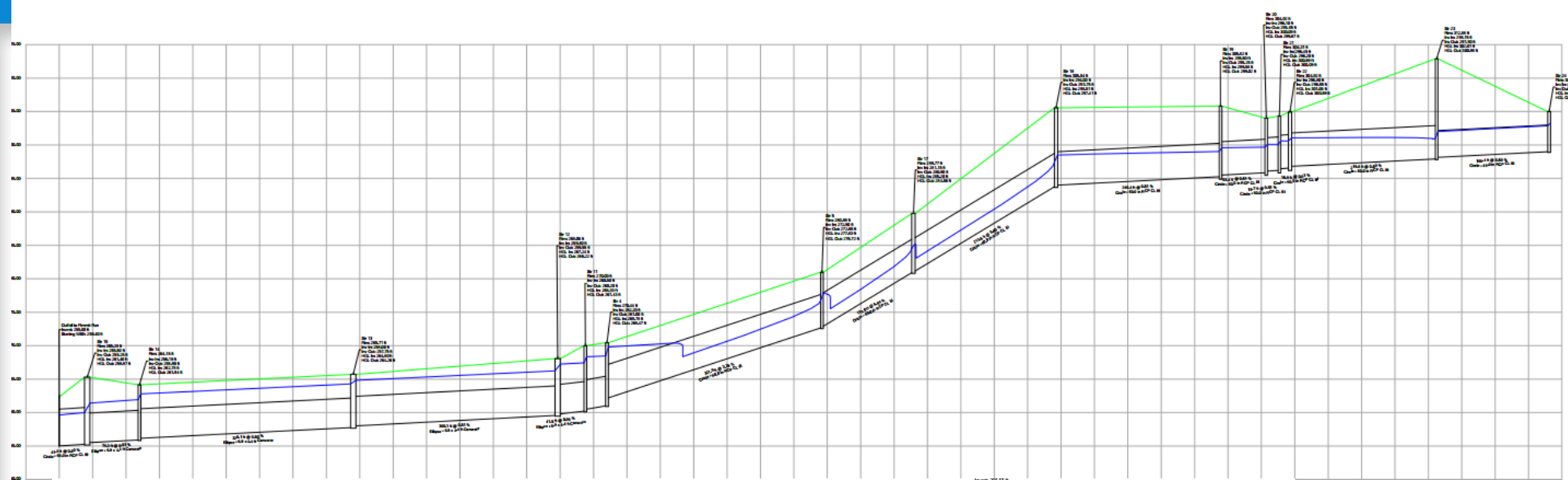
- Designed to accommodate 100-year flow within pipe
- Requires diverting flow through Westmoreland St. and Poole Lane and to the existing concrete channel



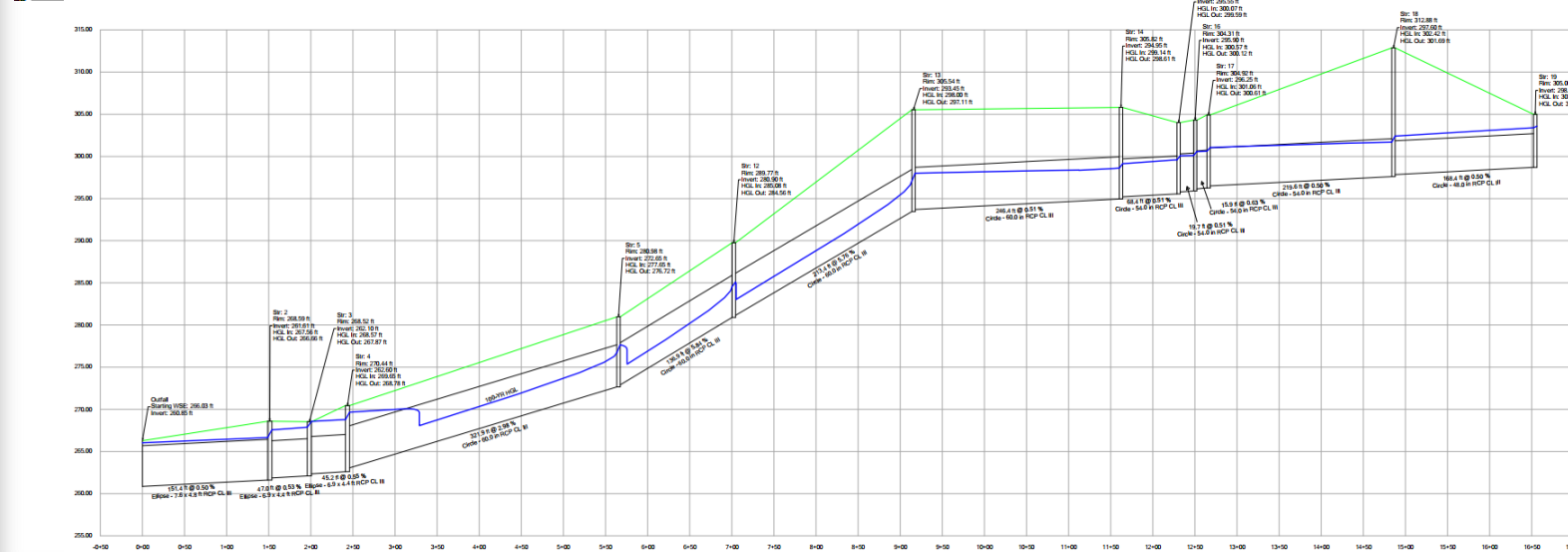
Existing 100-Year Pole Lane Pipes - HGLs



Proposed 100-Year Pole Lane Pipes - HGLs



Option 1



Option 2



Existing Easement – Concrete Channel

- Existing Easement Location:
Kirby to Youngblood (Section 3)



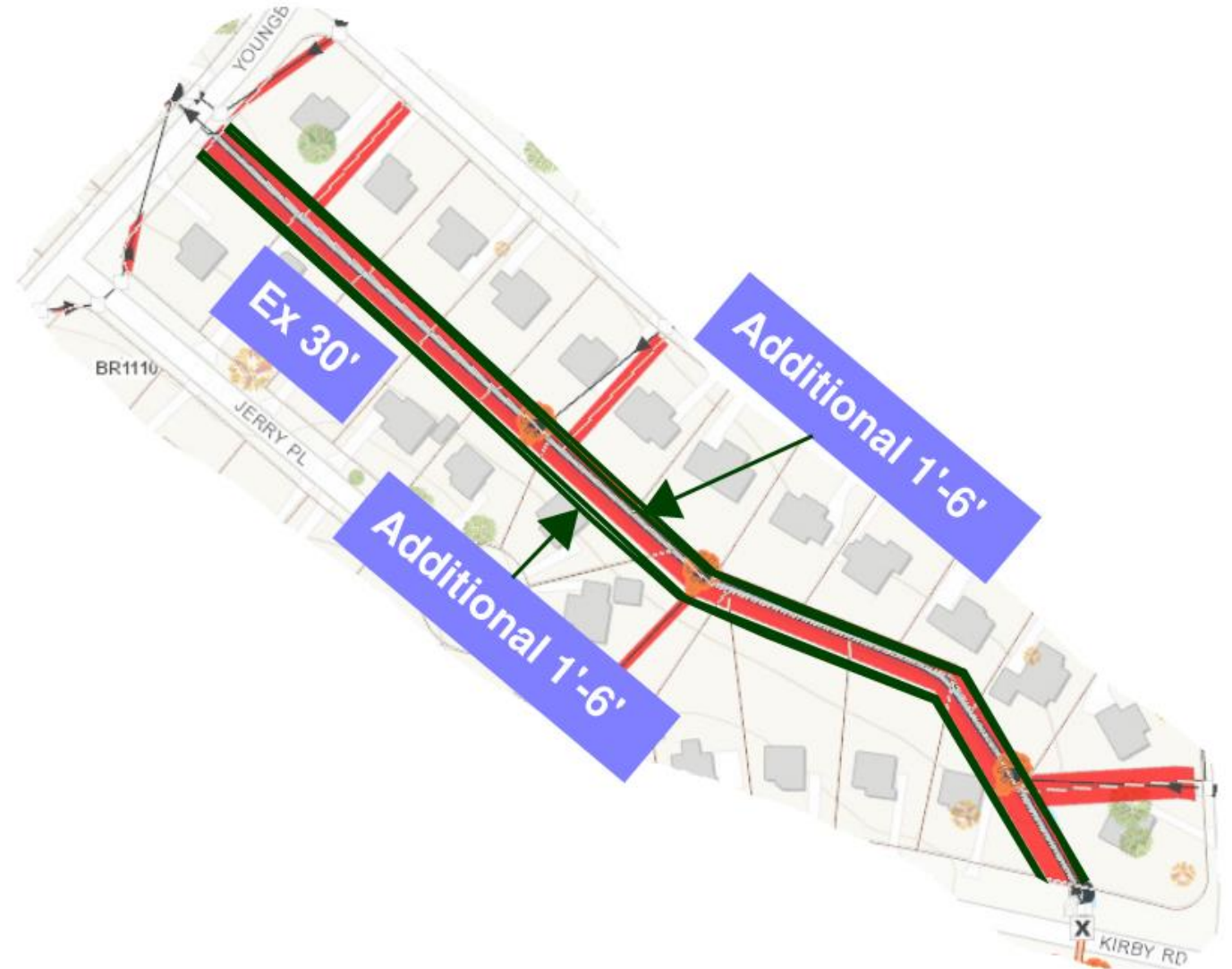
Existing Easement – Concrete Channel (continued)

- Existing Easement Location:
Youngblood to the end of concrete
channel (Section 1 & 2)



Proposed Easement – Concrete Channel (Option 1)

- Kirby to Youngblood (Section 3)
Total easement required 36'
Additional total 6'



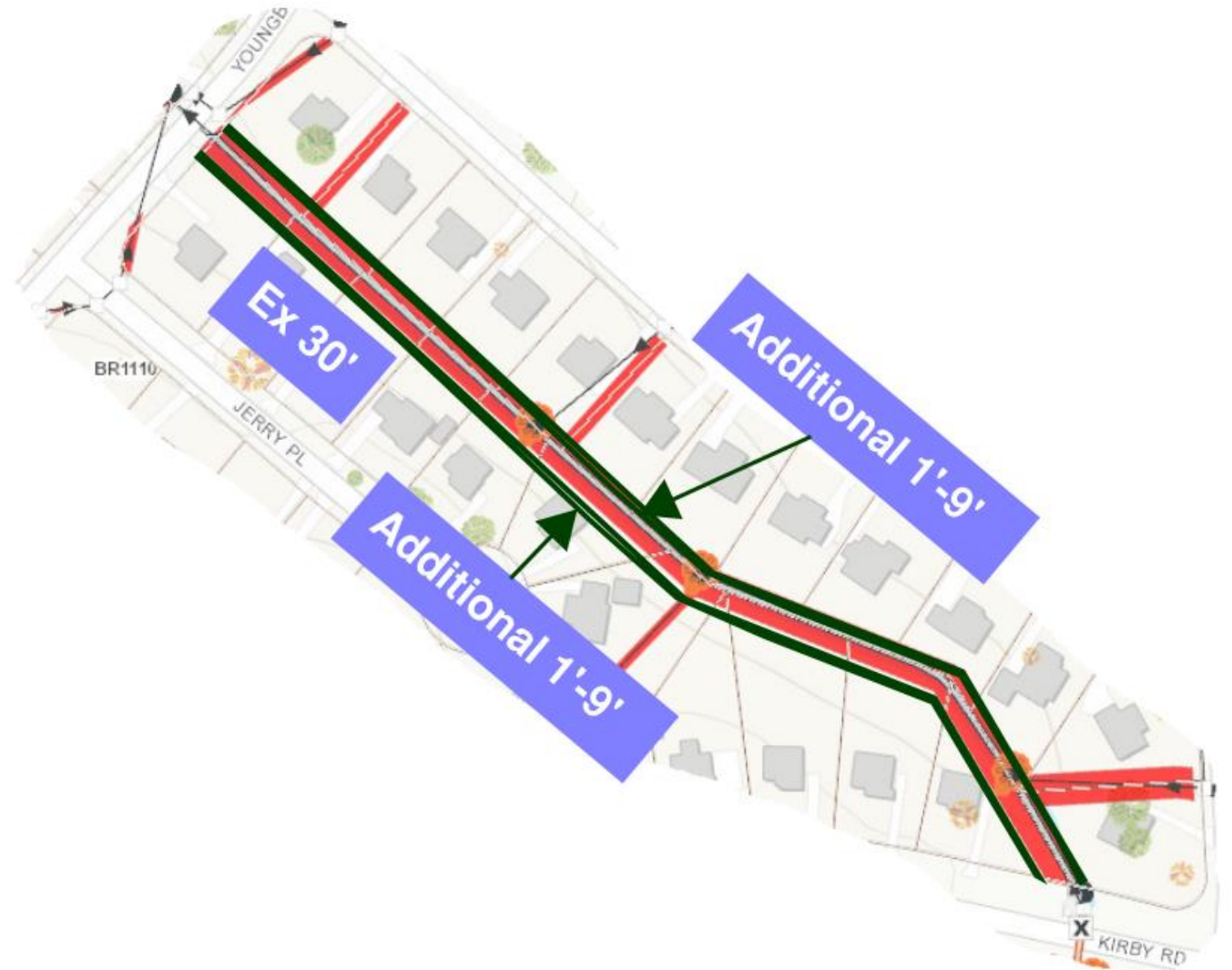
Proposed Easement – Concrete Channel (Option 1 - continued)

- Youngblood to end of concrete channel (Sections 1 & 2)
 - ❖ Section 1
 - Additional easement: 13'-22.4' on Kirkley Side
 - ❖ Section 2
 - Total easement: 39'
 - Additional total – 14'



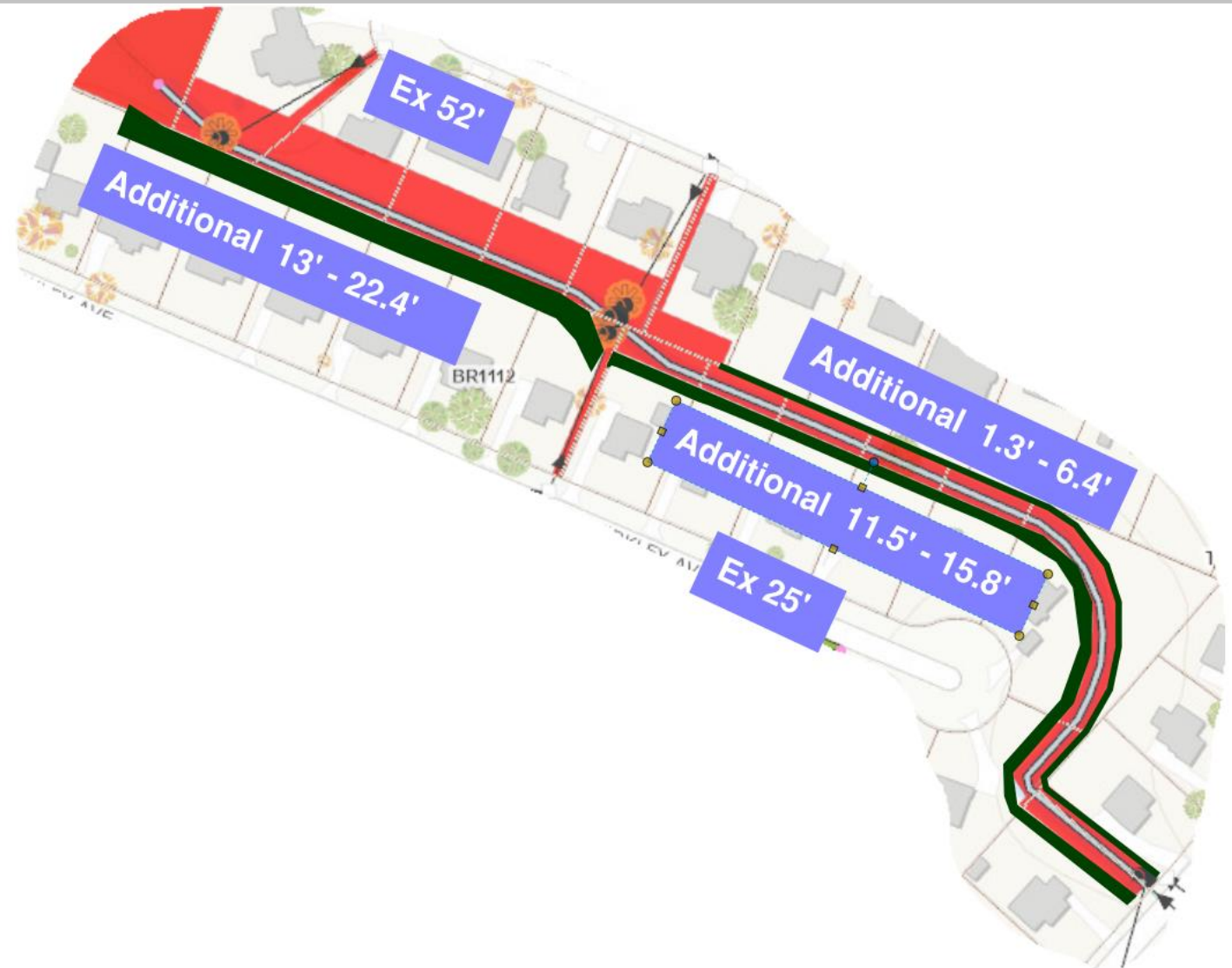
Proposed Easement – Concrete Channel (Option 2)

- Kirby to Youngblood (Section 3)
Total easement required 39'
Additional total 9'



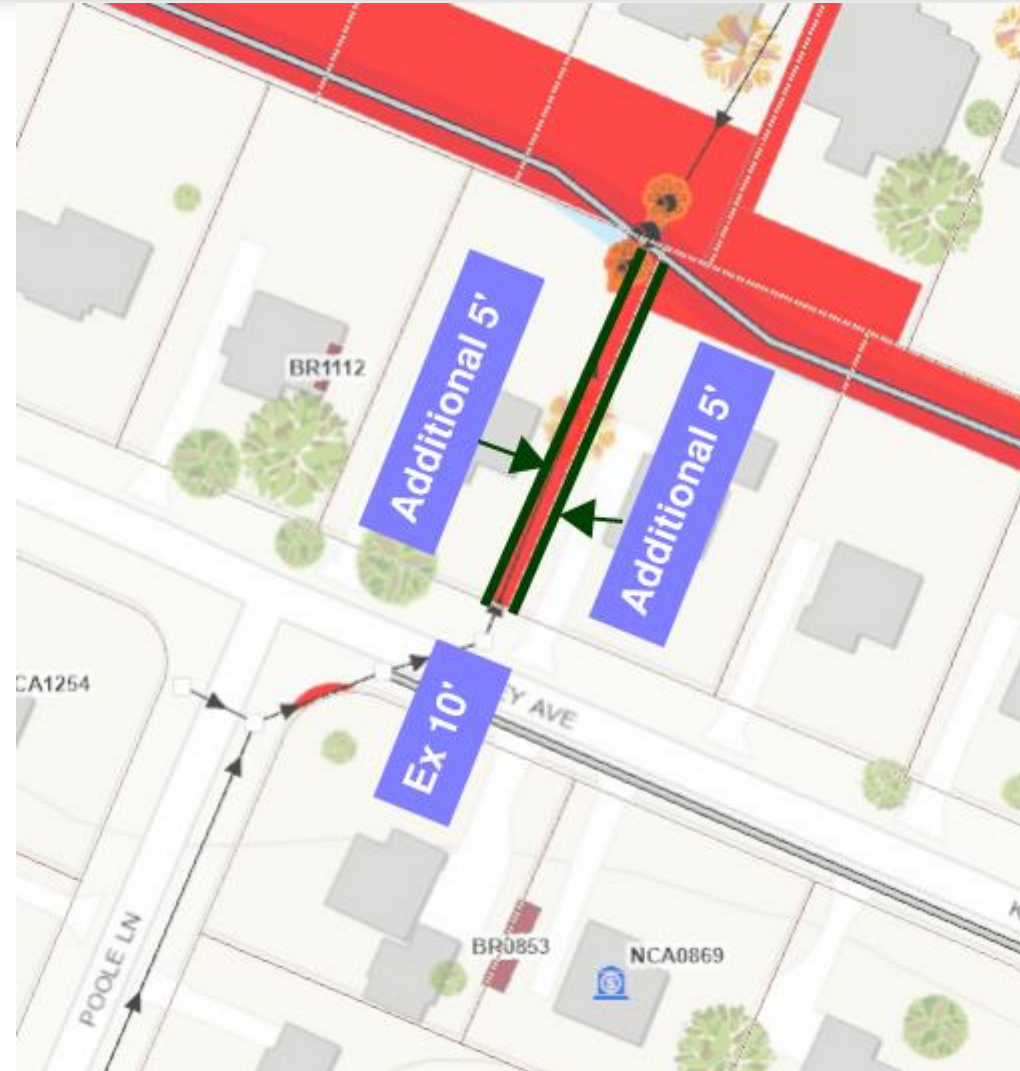
Proposed Easement – Concrete Channel (Option 2 - continued)

- Youngblood to end of concrete channel (Sections 1 & 2)
 - ❖ Section 1
 - Additional easement: 13'-22.4' on Kirkley Side
 - ❖ Section 2
 - Total easement: 41'
 - Additional total – 16'



Existing and Proposed Easement – Poole Lane

- Option 1: No easement required
- Option 2:
 - Existing easement: 10'
 - Proposed Easement: 20'



Project Schedule & Next Steps

- Concept Design : Complete
- Easement Acquisition: To begin
- 65% Design: TBD



Contact Information

Sajan Pokharel, Project Manager

703.324.5687

Sajan.Pokharel@fairfaxcounty.gov

To request this document in an alternate format, call 703-324-5500,

TTY 711, or email SWPDmail@fairfaxcounty.gov

www.fairfaxcounty.gov/publicworks/stormwater

