



Pittsburgh
Water & Sewer
Authority

Four Mile Run Stormwater Improvement Project

18 June 2020 Project Update

Welcome and Introductions



Alex Sciulli, P.E.
Chief of Program Management

Jim Turner, P.E.
Project Manager



Kari Mackenbach, CFM, ENV SP
ms consultants – Hydraulic Modeling



Tim Nuttle, PhD
CEC – Panther Hollow Lake and Junction Hollow Design



Mallory Griffin, P.E.
JMT – Stormwater Pipeline Design



Today's Agenda

6:30pm – 8:00pm



- 1: PWSA's Mission and this Project's Goals**
- 2: Update on Early Action Projects**
- 3: Enhanced Modeling and Flood Mitigation Benefits**
- 4: Four Mile Run Design Update**
- 5: Project Schedule and Costs**
- 6: Questions and Answers**

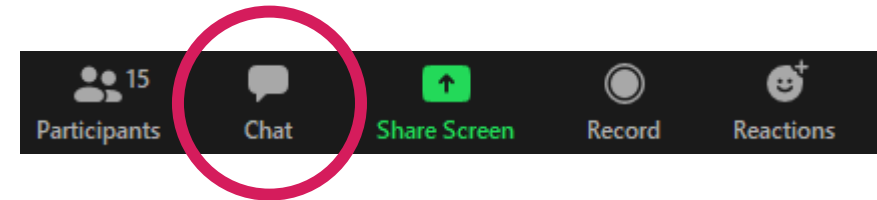
Submitting Questions Using Zoom

During Presentation

- Participants will be muted
- To ask a question use the chat box below

Click the Chat Icon

- Located bottom of screen
- Looks like cartoon bubble
- Type question in dialogue box; press enter to send
- All attendees will receive your question



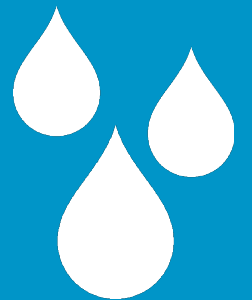
When presentation ends

- We will respond to questions individually
- We will unmute microphones to enable verbal Q&A

For more information or to ask a question after the meeting, please visit www.pgh2o.com/4mr

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PWSA's Mission and this Project's Goals



PWSA's Mission

ORIGINAL MISSION:

- PWSA's mission was originally limited to providing drinking water to Pittsburgh's homes and businesses, and to providing conveyance of wastewater through the sewer system to ALCOSAN's treatment facilities.

TODAY:

- Successful stormwater management requires participation from government, residents, businesses, and non-profits.
- As the problem has grown in scale and in intensity, PWSA identified a need and has taken the initiative to address the impacts of stormwater.
- PWSA's 2016 Green First Plan identified projects and programs, including the Four Mile Run project, that can have a positive impact.



“Creating healthy, flood-prepared neighborhoods”

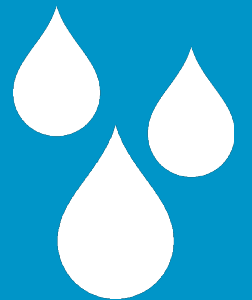


PROJECT GOALS AND BENEFITS:

1. **Reduce Combined Sewer Overflows**
2. **Reduce Flood Risk and Basement Backups**
3. **Manage Sediment**
4. **Leverage Resources for Regional Benefit**

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Update on Early Action Projects



4MR Early Action Projects

Construction completed May 2020

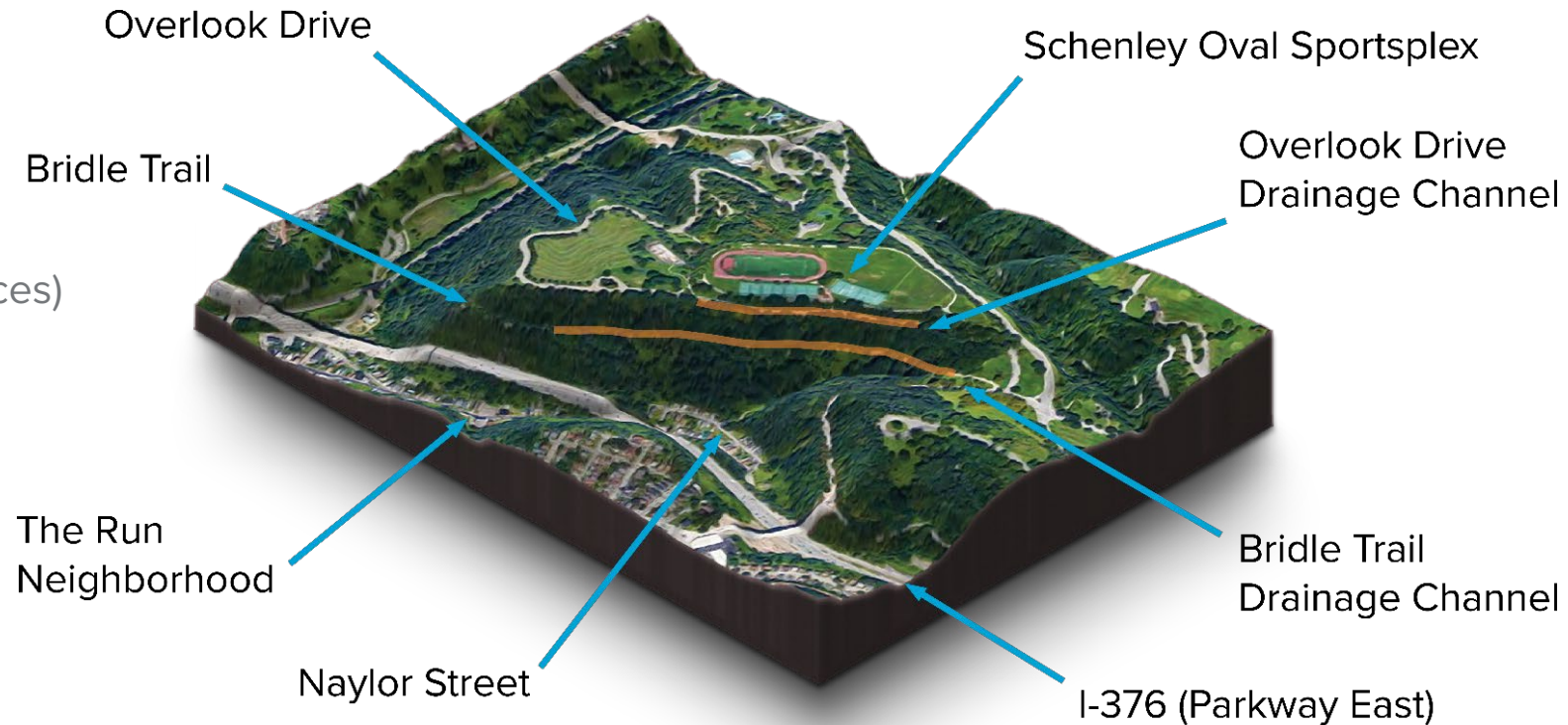
Two early action projects offer stormwater management benefits before the main construction phase.

OVERLOOK DRIVE

Manages 1.1 acres (mostly roadway surfaces)
Capacity of about 72,500 gallons

BRIDLE TRAIL

Manages 9.4 acres (mostly forest)
Capacity of about 71,000 gallons



4MR Early Action Projects

Construction completed May 2020

Overlook Drive Retention Swale



Bridle Trail Retention Swale

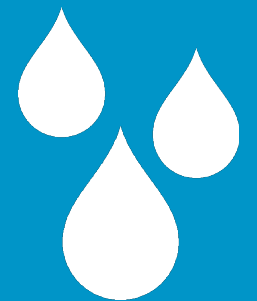


Civil & Environmental Consultants, Inc.

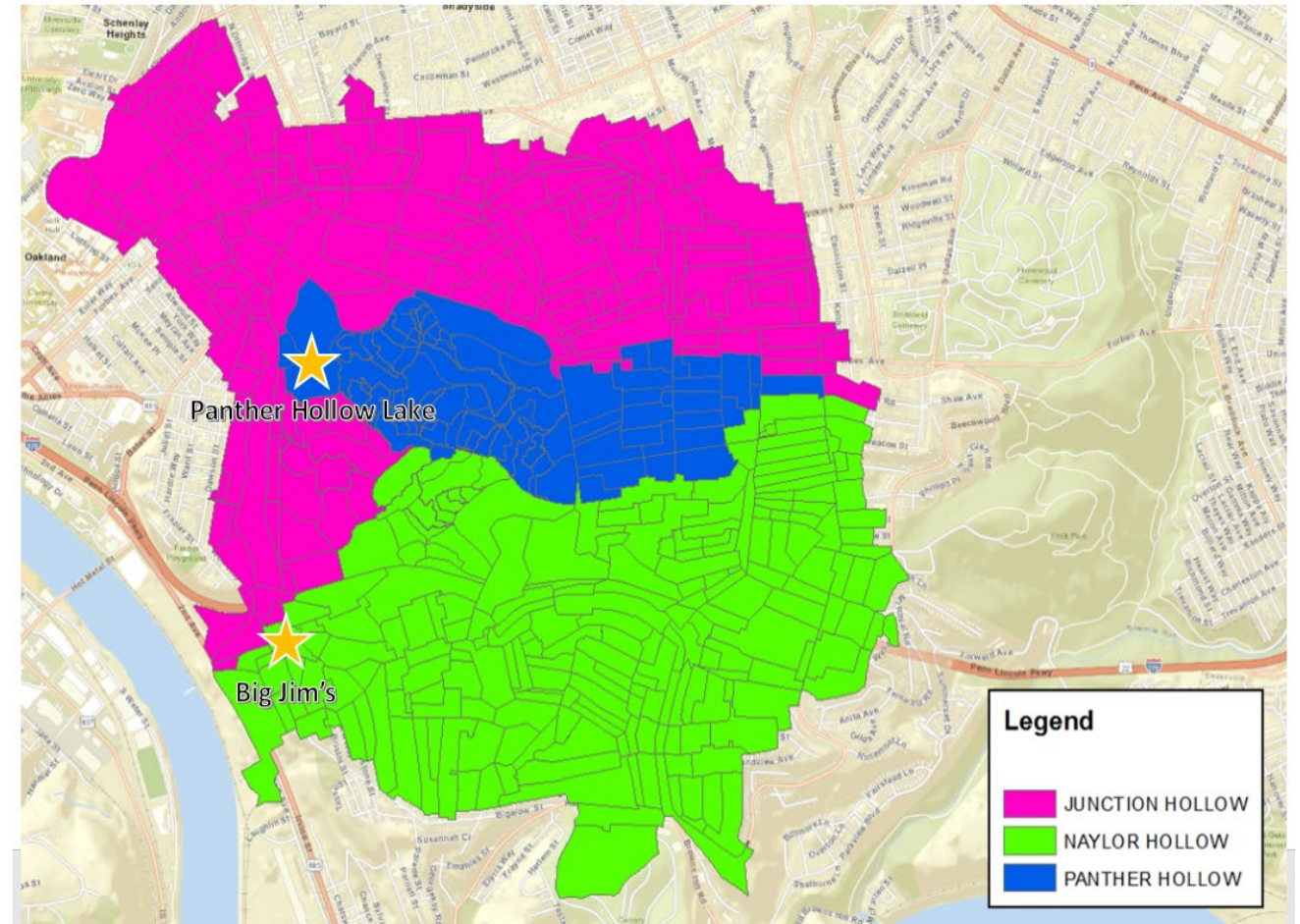
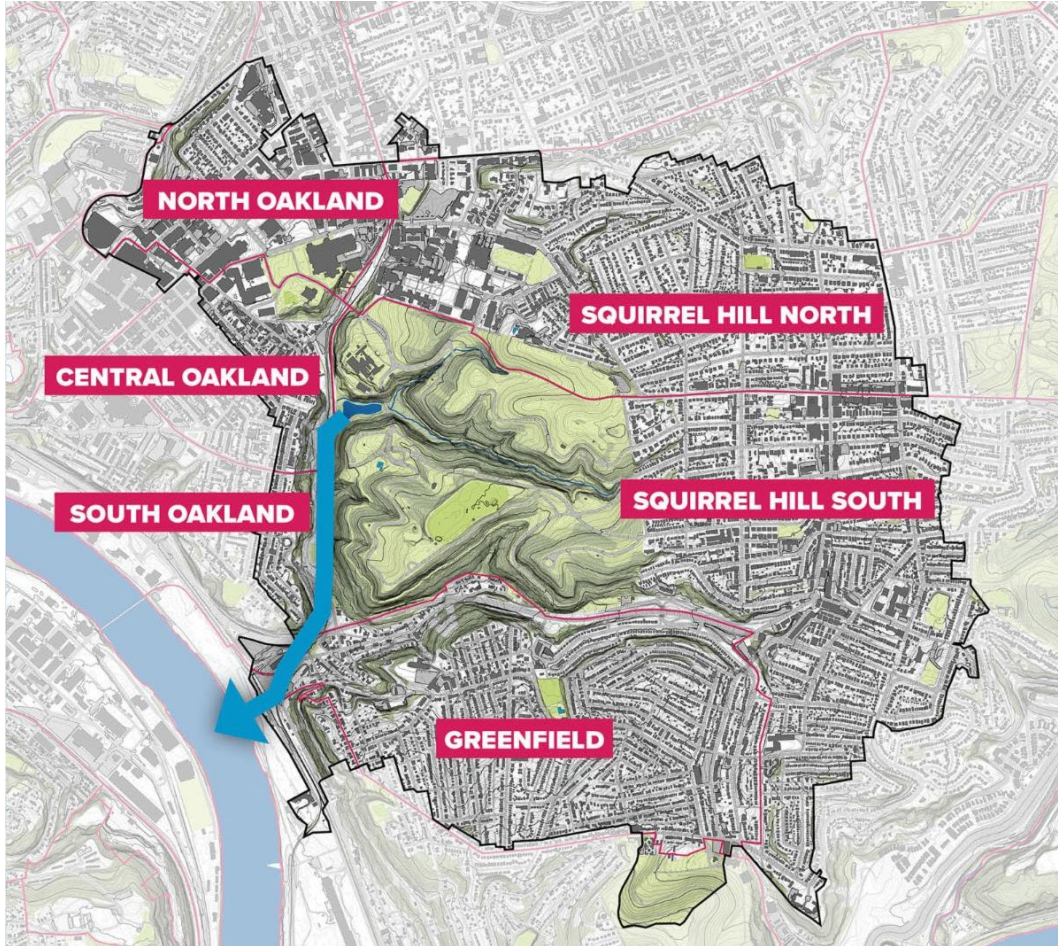


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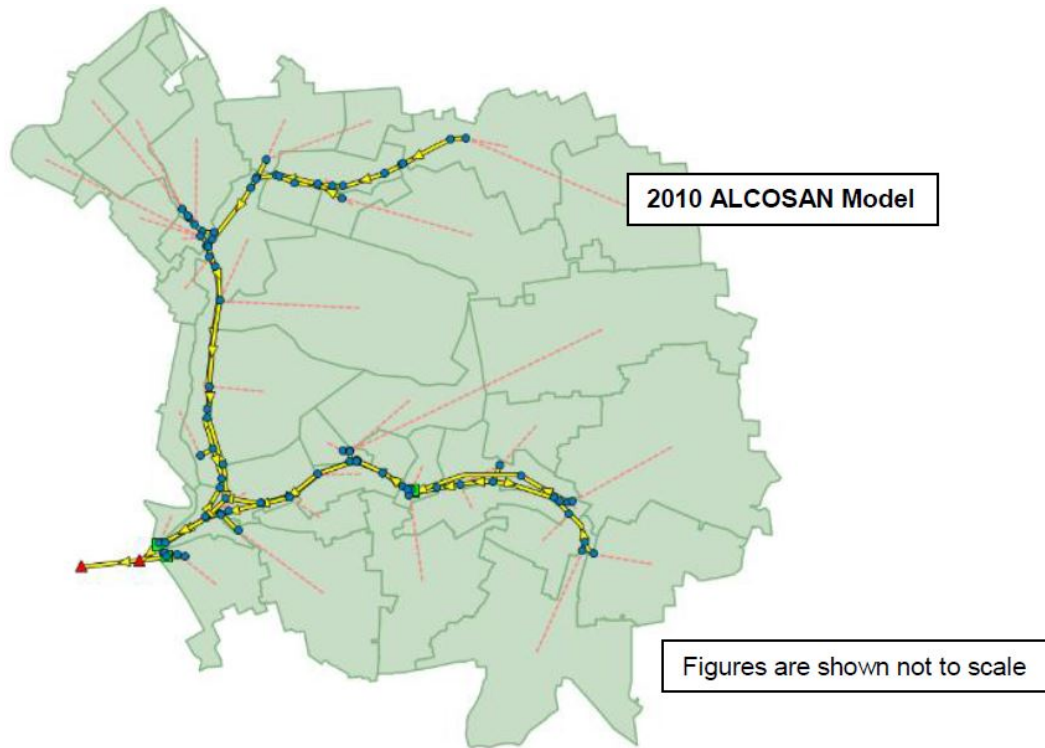
Enhanced Modeling and Flood Mitigation Benefits



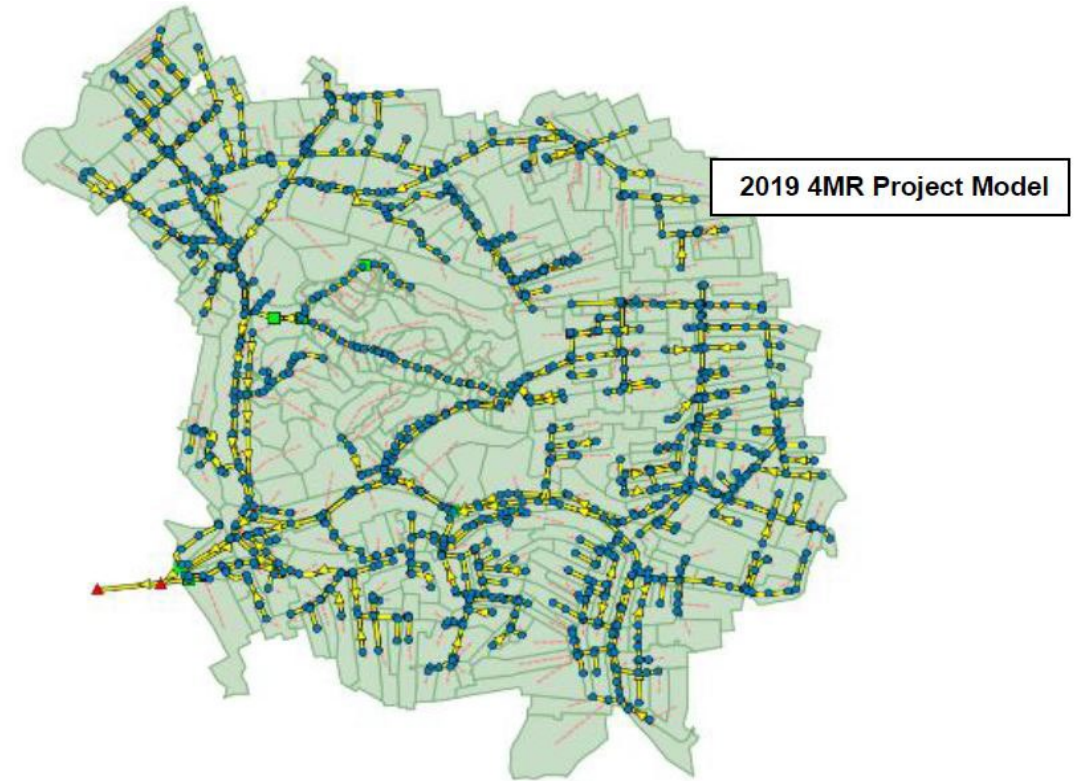
Four Mile Run's Sub-Watersheds



Detailed Model Development



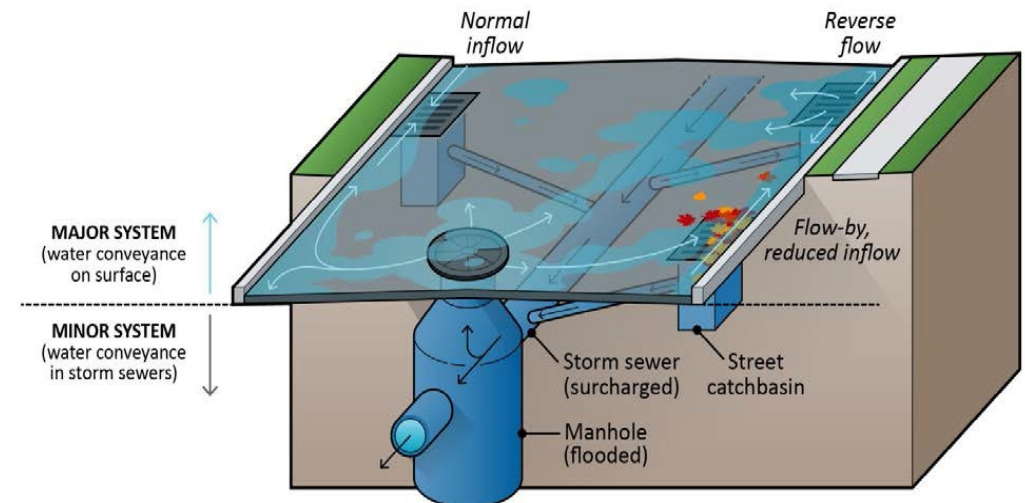
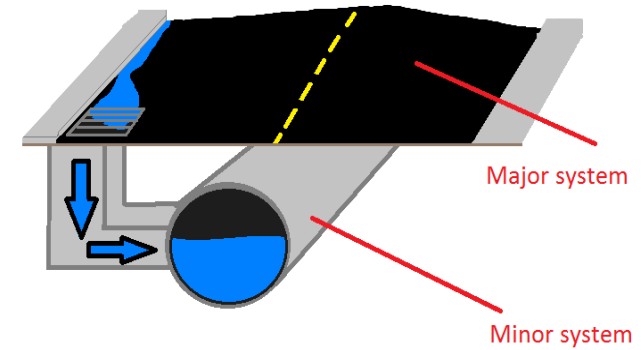
ALCOSAN's 2010 Model



PWSA's 2019 Model by
CEC and Mott MacDonald

Enhanced Modeling

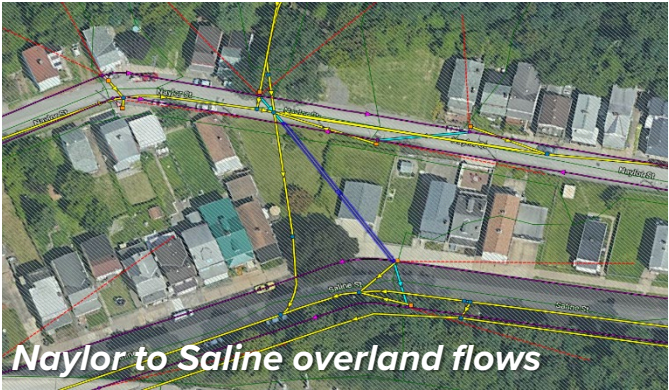
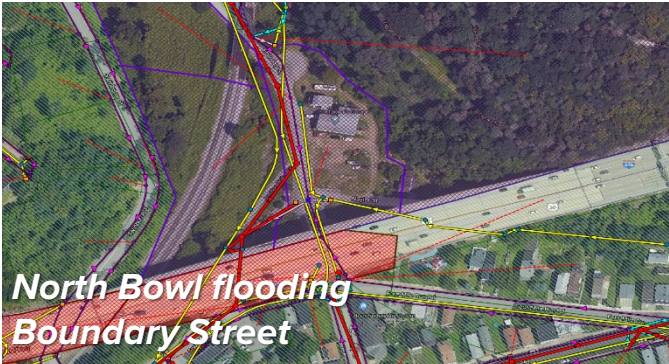
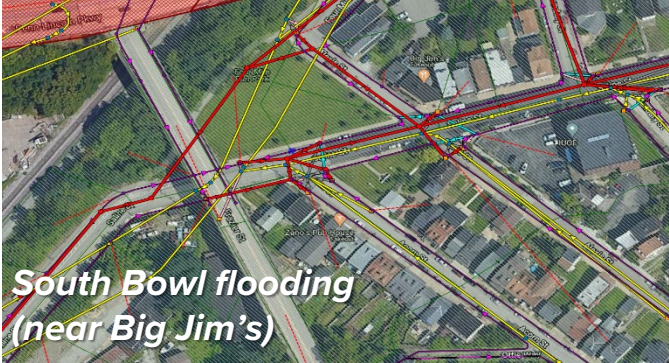
- The 2019 model revealed unique conditions that require enhanced modeling to understand the design implications.
- Completed in 2020, PWSA created an enhanced “Dual Drainage” model that allows for a more precise simulation of stormwater flows both above and below ground.
- PWSA reevaluated previous alternatives based on the enhanced dual drainage model.
- PWSA extended the design schedule to incorporate updated model results.



Enhanced Modeling



The 2020 Dual Drainage Model provides PWSA with a greater understanding of the issues at sensitive areas within The Run community.



Historic Flooding

Mapping and comparing historical flooding events allows us to verify the model.

2009 Flood Event

- 75-year rainfall event
- 34 structures affected

2011 Flood Event

- 25-year rainfall event
- 12 structures affected



Flood Mitigation Solution

Designing for a 10-year event was determined to be a cost-effective solution for reduced flood risk.

- A “10-Year” event is approx. 3.3 inches in 24 hours and there is a 10% chance that an event like this will take place within a given year.
- Smaller events than this are more frequent. This solution mitigates up to a 10-year event for 8 structures.
- Even the structures vulnerable to a 75-year event area will see less flooding.

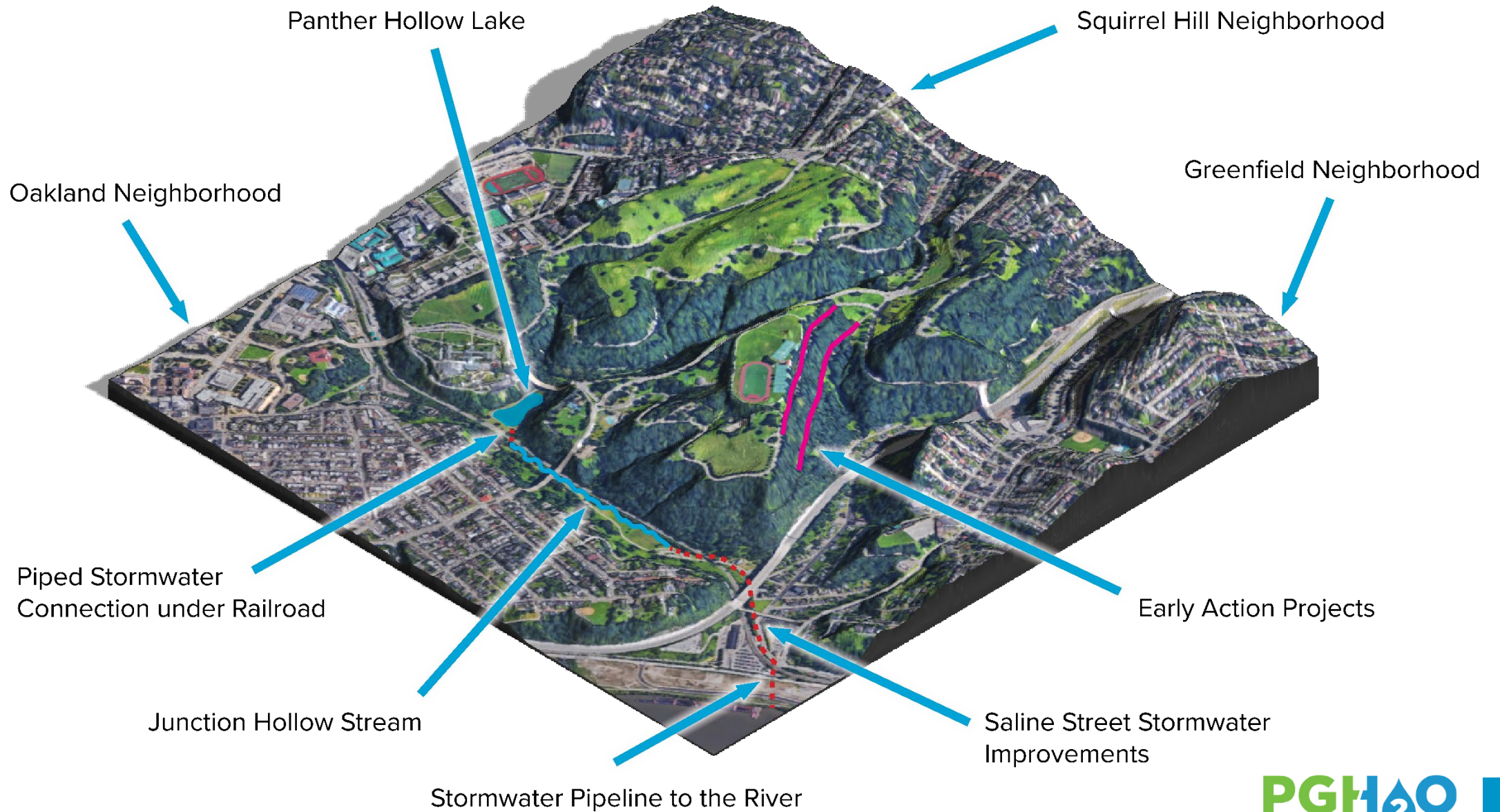


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Four Mile Run Design Update



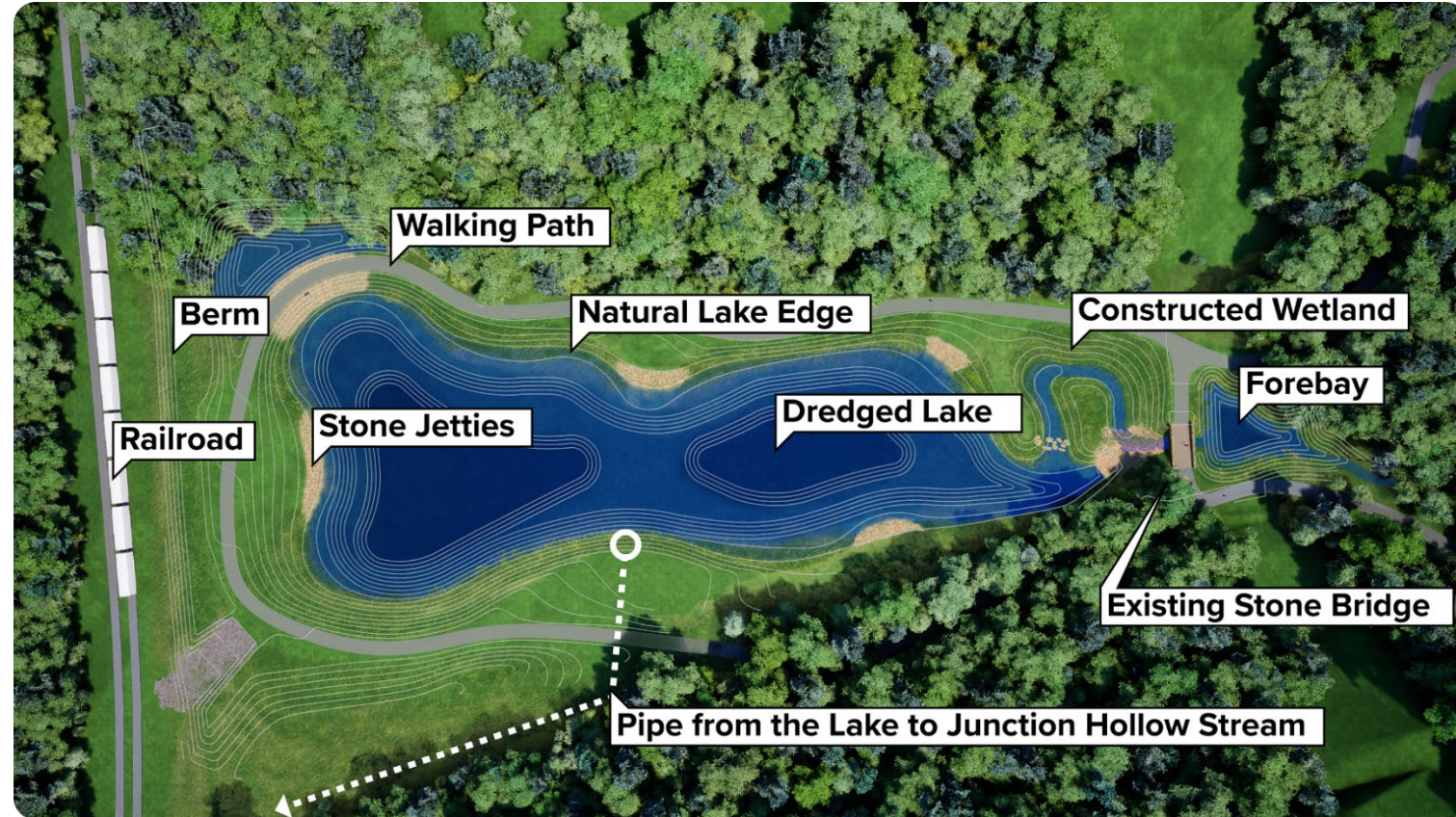
Project Overview



Panther Hollow Lake

DAM PERMIT REQUIREMENT

- The State DEP requires a “dam” permit for this lake.
- Upgrades will be made to the lake to ensure dam safety regulations are met.
- Permit is currently under review by DEP and will take time to be approved.

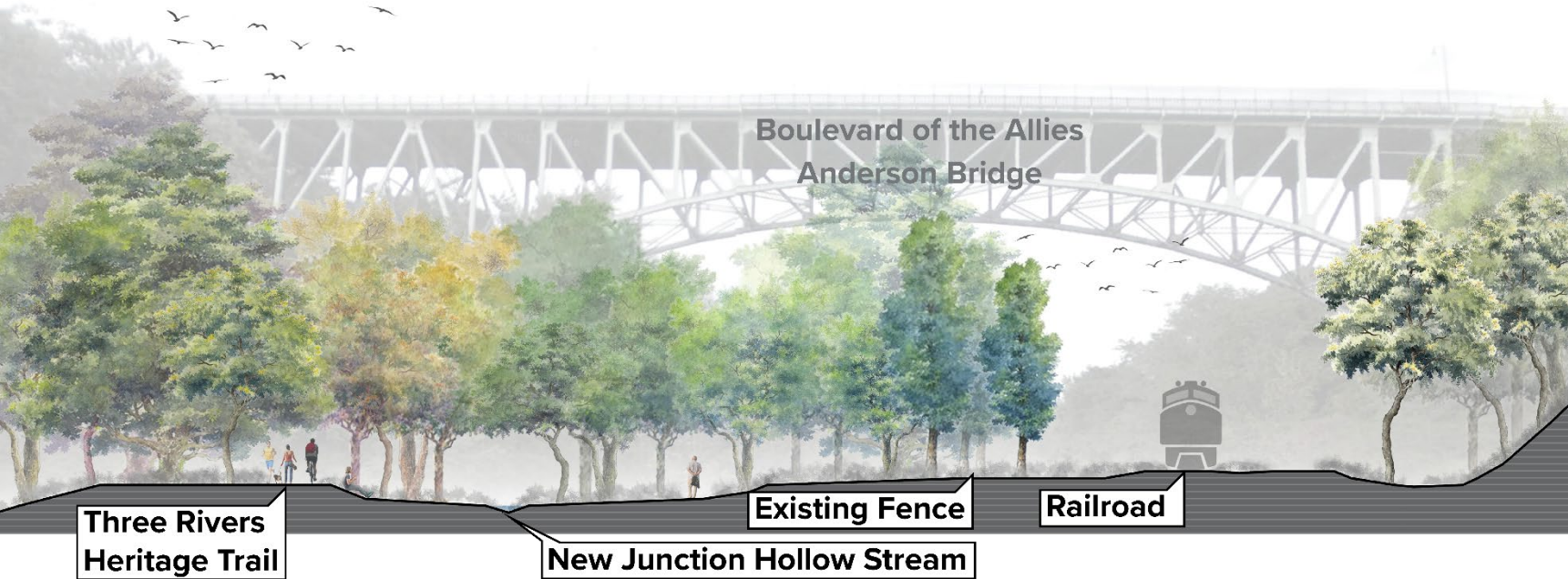


Panther Hollow Lake

- Panther Hollow Lake will include a forebay to manage sediment.
- Panther Hollow Lake will be dredged as part of this project.
- DEP regulations require the dam to retain the 100-year storm.



Junction Hollow



STREAM COMPONENTS

will mimic natural stream features to control grade, provide habitat, and support ecosystem processes.

Reminder of Alternatives Evaluated

PWSA evaluated options to convey water to the river:

1: DEEP TUNNEL

A tunnel under South Oakland was deemed to be far more expensive and allowed the least amount of flexibility.

2: DEEP, GRAVITY PIPE [Selected Alternative]

The deep gravity alternative follows Saline Street and is the option that was submitted with permit applications.

3: SHALLOW, PUMPED PIPE

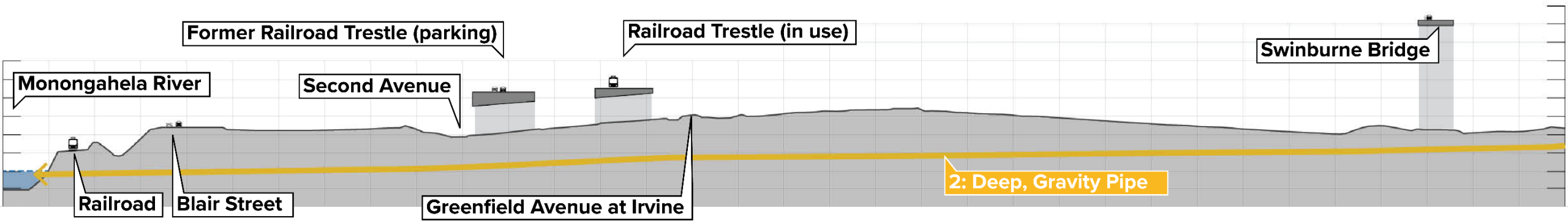
A shallower pipe along Saline Street is possible but would require a pump station.

4: EXISTING SEWER RECONFIGURATION

It was not possible to reconfigure and optimize existing pipes to achieve the same level of performance with reduced construction impacts.



Selected Alternative: 2: Deep Gravity Pipe





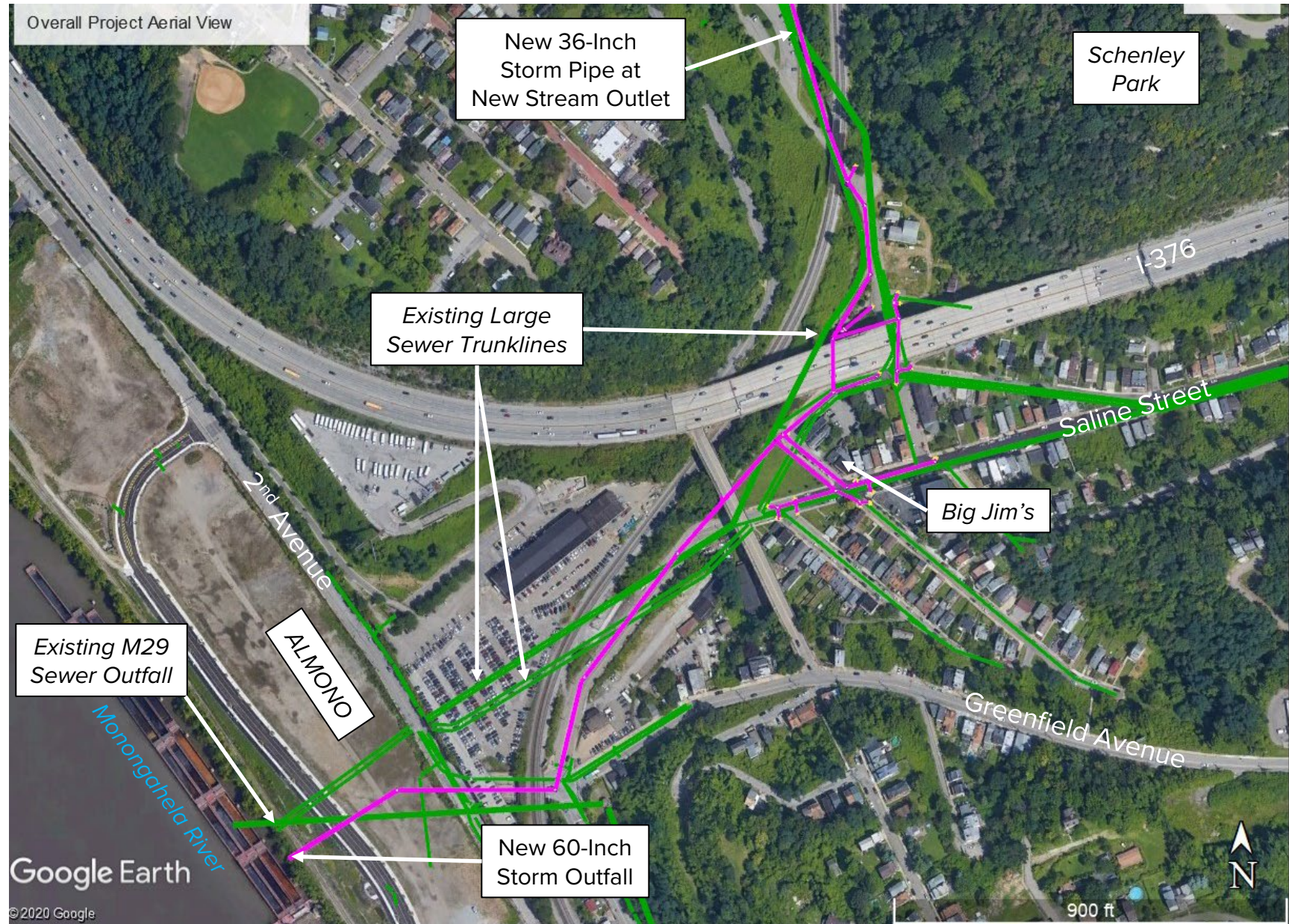
Stormwater Pipeline Project Limits

Challenges:

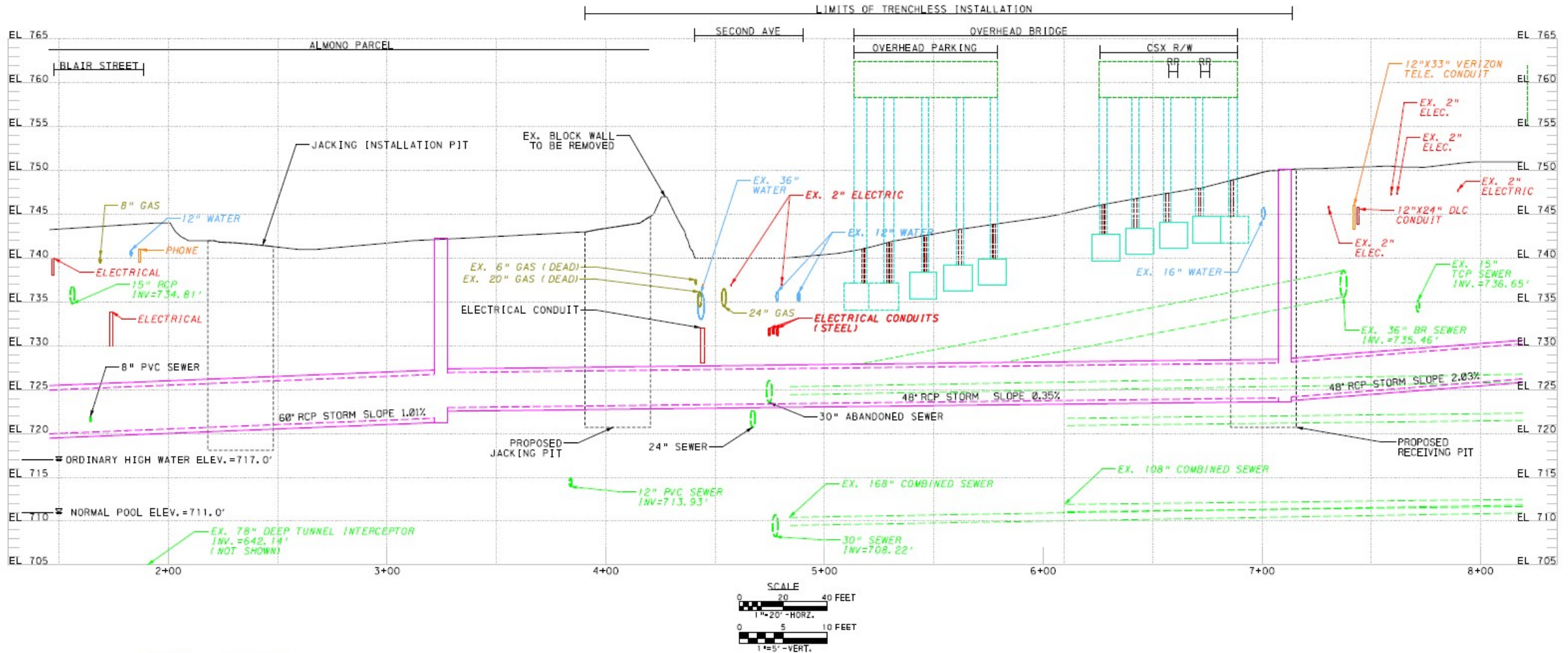
- topography
- utilities
- railroads (CSX & AVRR)
- highways
- bridges

Map Legend

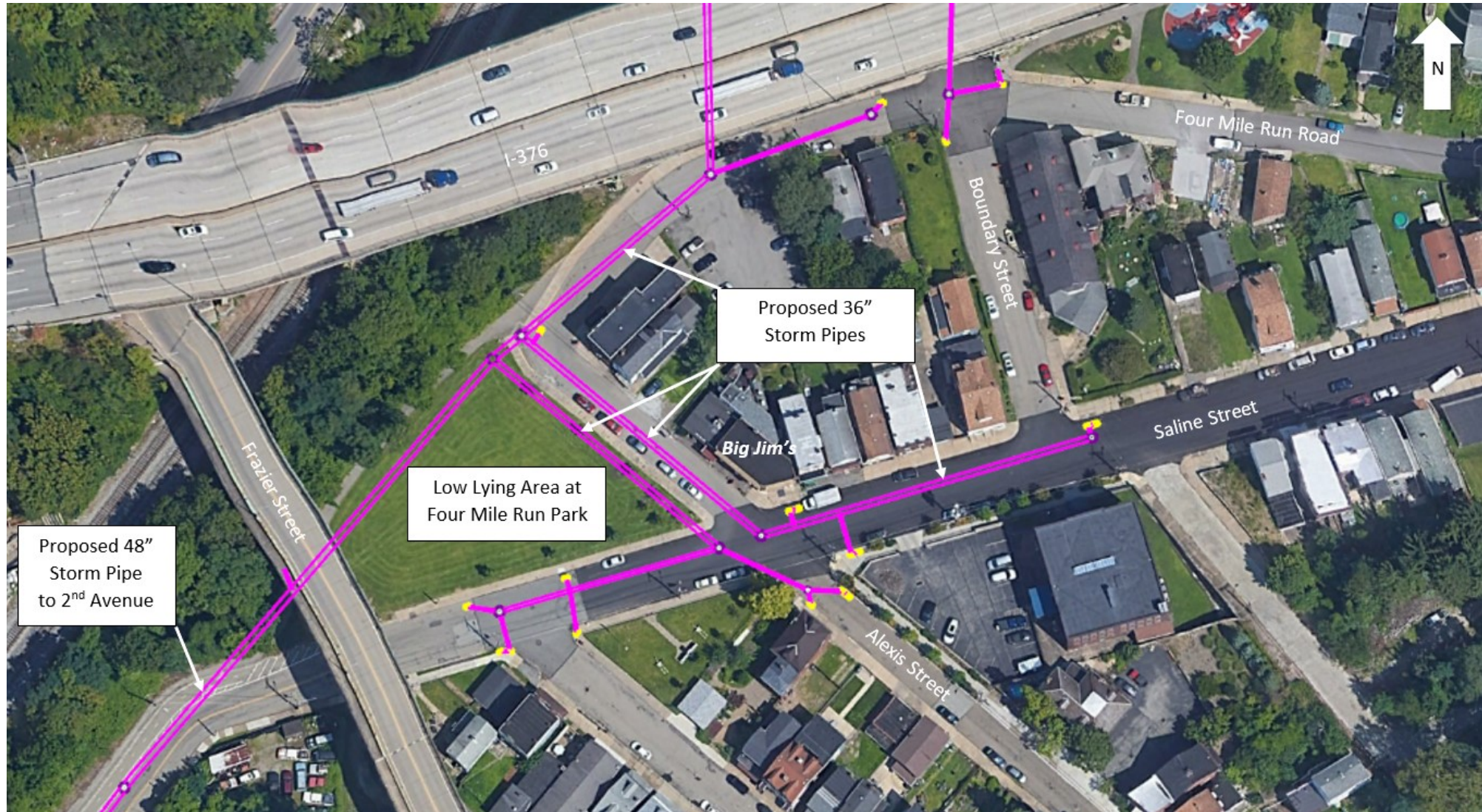
-  Existing Combined Sewer
-  Proposed Storm System



Major Utility Challenges – 2nd Avenue



Critical Project Area – Four Mile Run Park



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Schedule & Costs



2018

2019

2020

2021

Sept 2018
Public Meeting
Nov 2018
Public Meeting

June 2019
Public Meeting
Sept 2019
Walking Tour
Dec 2019
Public Meeting

June 2020
Public Meeting

Periodic
Updates

Periodic
Updates

Engineering

May 2018
Project Kickoff
by PWSA

March 2019
30% Design Complete
Preliminary Design Memo

January 2020
60% Design Complete

Enhanced
Modeling

Q3-2020
Design Substantially Complete

Construction

Construction anticipated in Spring 2021
Construction to begin after permits are approved.

Permitting

Permits submitted June 2020
Permits may delay construction.

The Joint Permit Application (JPA) was resubmitted to reflect the results of the Enhanced Modeling.



Project Cost and Funding

The project is fully-funded:

- Committed funding includes modeling, design, permitting, easements, and construction costs.

Early Action Construction Costs: *Completed in May 2020*

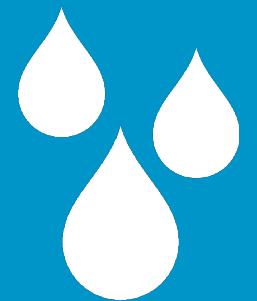
- Bridle Trail and Overlook Drive: \$537,000

Estimated Construction Costs: *Anticipated to commence in Spring 2021*

- Stormwater Pipeline and Outfall: \$10M
- Junction Hollow Stream: \$1.9M
- Panther Hollow Lake and Dam: \$1.5M

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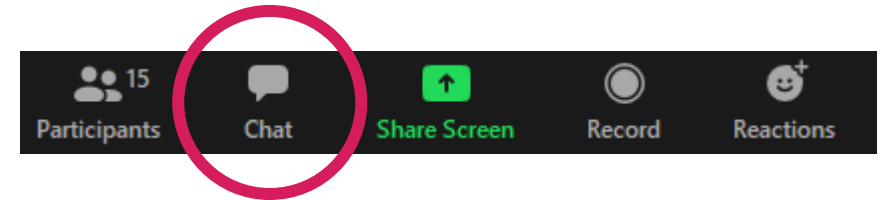
Questions and Answers



Facilitating Today's Q&A

Click the Chat Icon to ask a question

- We will answer questions in the chat first
- Located bottom of screen
- Looks like cartoon bubble
- Type question in dialogue box; press enter to send
- All attendees and facilitators will see your question



Open Q&A Discussion

- We will call on those with questions
- Everyone will have a chance to speak
- Speak politely; one at a time
- You may continue to use chat feature to ask questions

For more information or to ask a question after the meeting, please visit www.pgh2o.com/4mr