Four Mile Run Stormwater Improvement Project and Mon-Oakland Mobility Project

Project Update:
June 20, 2019

Local 95 Union Hall

Four Mile Run
Stormwater
Improvement Project

Welcome & Introductions

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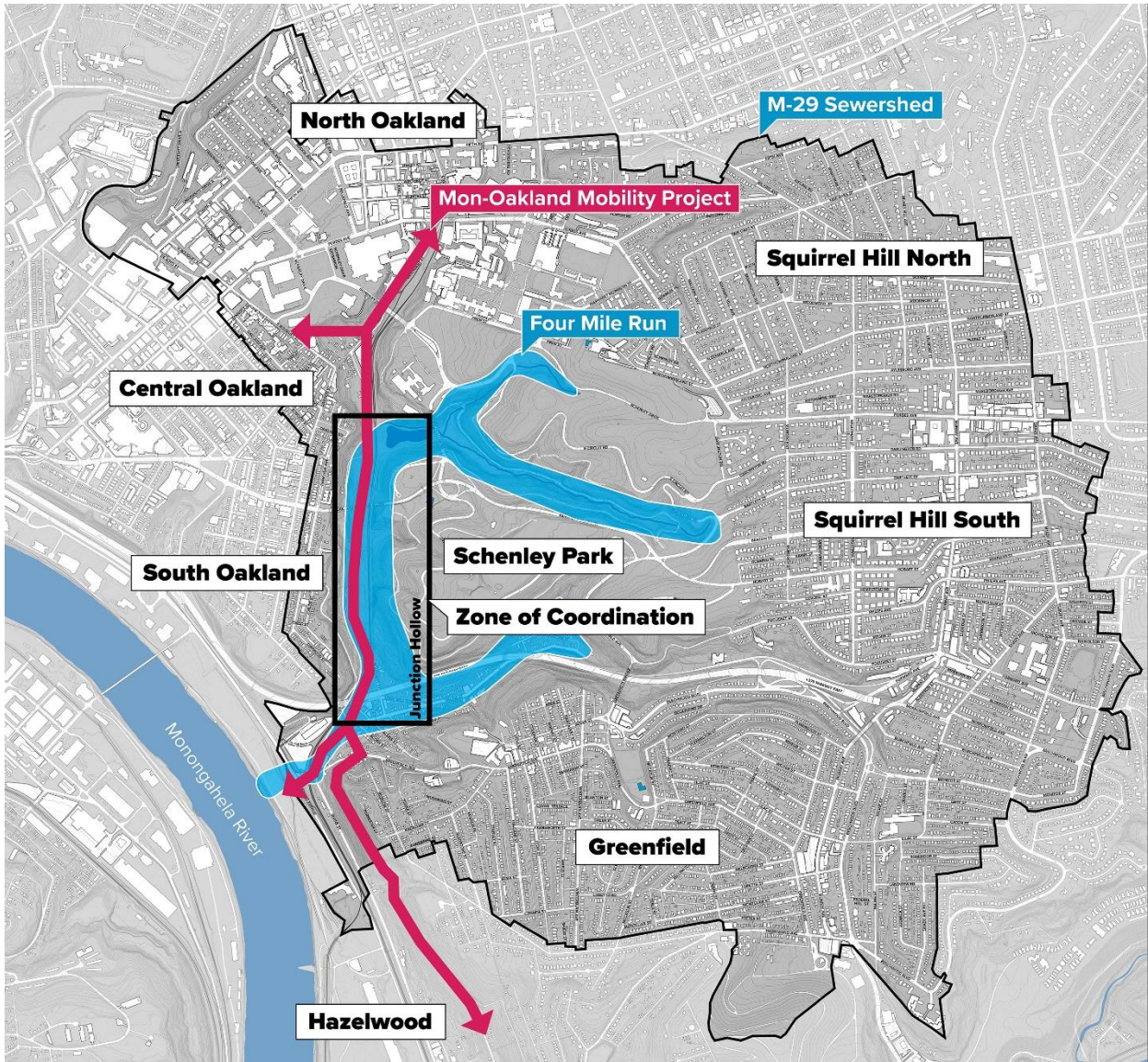
One Project with Coordinated Action

PWSA's Four Mile Run Stormwater Improvement Project sets the design criteria for park and mobility improvements within the Junction Hollow zone of coordination.

DOMI's Mon-Oakland Mobility Project improves connections between neighborhoods and employment centers while enhancing the park experience.



Mon-Oakland MOBILITY PROJECT

4MR

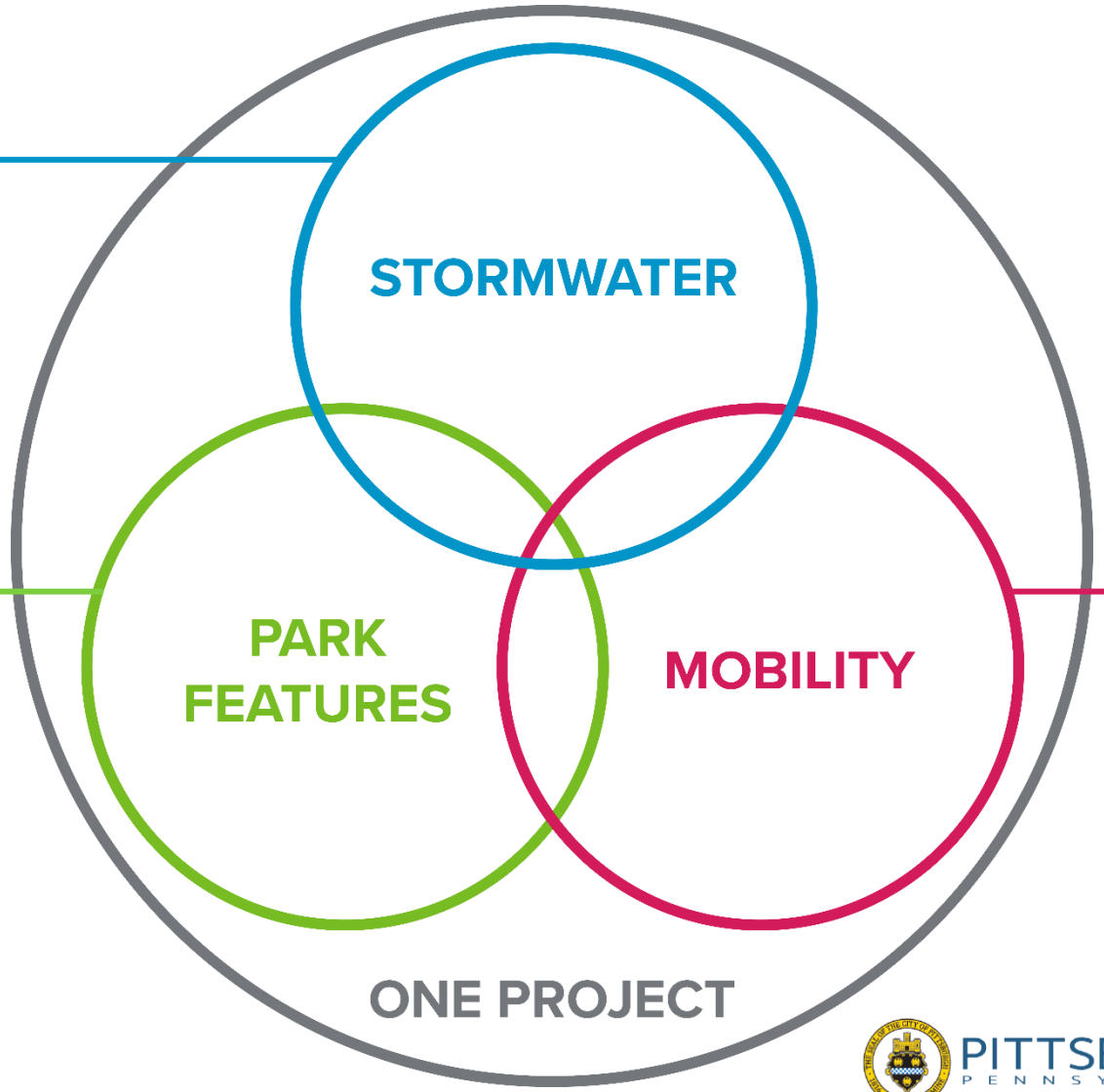
One Project with Coordinated Action

PGH2O

3 RIVERS PROUD — PWSA partner

CITY OF PITTSBURGH PUBLIC WORKS — Parks Owner

Pittsburgh Parks Conservancy www.PittsburghParks.org — Parks Partner



CITY OF PITTSBURGH DEPT of MOBILITY AND INFRASTRUCTURE

Mon-Oakland MOBILITY PROJECT

4MR

PITTSBURGH PENNSYLVANIA

PGH2O

How We Got Here

- 2016 – PWSA publishes the Green First Plan
- 2016-2017 – Pittsburgh Parks Conservancy develops a vision for Four Mile Run
- 2017-2018 – DOMI conducts Mobility Study
- January 2018 – Mobility Study Public Meeting
- February 2018 – Mobility Study Public Meeting
- May 2018 – PWSA kicks off design for the Four Mile Run project
- May 2018 – Mobility Study Public Meeting
- September 2018 – PWSA Public Meeting
- October 2018 – DOMI completes Mobility Study
- November 2018 – PWSA Public Meeting
- March 2019 – PWSA Preliminary Design complete
- March – May 2019 – PWSA Peer Review and Performance Evaluation

One Project with Coordinated Action

Four Mile Run Stormwater Improvement Project

- Project Objectives
- Stormwater Design Overview
- Peer Review and Performance Evaluation
- Early Action Projects
- Project Costs and Potential Enhancements

Mon-Oakland Mobility Project

- Project Objectives
- 2018 Study Recap
- Design Phase Approach

Four Mile Run
Stormwater Improvement Update

“Creating healthy, flood-prepared neighborhoods”

PROJECT GOALS AND BENEFITS:

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

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.

MODERN EXPECTATIONS INCLUDE:

Successful stormwater management requires participation from government, residents, businesses, and non-profits.

Addressing the impact of stormwater has been added to PWSA's mission, as the problem has grown in scale and in intensity.

Our Stormwater Problem

AGING INFRASTRUCTURE

Pittsburgh's sewer infrastructure dates back to the 1840's.

COMBINED SEWER SYSTEM

Our sewer infrastructure is primarily a "combined system" for both stormwater and wastewater. This was an acceptable practice at the time and in the 1950s ALCOSAN's interceptor system was created to accept and treat the majority of wastewater flows.

CLEAN WATER REGULATIONS

The entire region is now under a federal mandate to meet strict regulations for managing combined sewer overflows (CSOs).

CURRENT SYSTEM DOES NOT MEET MODERN STANDARDS

The combined sewer system does not have the capacity to handle increasing amounts of rainfall events according to federal regulations.

Causes of Combined Sewer Overflows (CSOs)

IMPERVIOUS DEVELOPMENT

As development has increased in the city, there are more impervious or hard surfaces like pavements, sidewalks, and rooftops. This means there is less green space to absorb rainwater. Our neighborhoods are flooding because this water has nowhere else to go during major rain events.

CLIMATE CHANGE

As our climate changes, the air becomes warmer and holds more water. The warming of the planet is causing an increase in the frequency and intensity of rain events. This pattern places a burden on the existing wastewater and stormwater system, causing them to be ineffective for intense and heavy rain.

Effects of Climate Change on Stormwater

The National Climate Assessment stated that the Northeast U.S. experienced a **70% INCREASE IN THE AMOUNT OF PRECIPITATION** between 1958 through 2010.

From 2010 to 2018, we experienced **27 RAIN EVENTS THAT RESULTED IN ONE-INCH OF RAIN WITHIN ONE HOUR**. In comparison, fewer than 10 of these rain events occurred for each decade from the 1950's to 2010.

2018 WAS THE WETTEST YEAR ON RECORD for our region with 57.83 inches of rain. This is an increase of 37% from 2017 and nearly 20 inches above the annual average of 38.19 inches.

Regulatory Compliance Objectives

REDUCE COMBINED SEWER OVERFLOWS

85% combined sewage capture system-wide per Green First Plan

IMPROVE WATER QUALITY

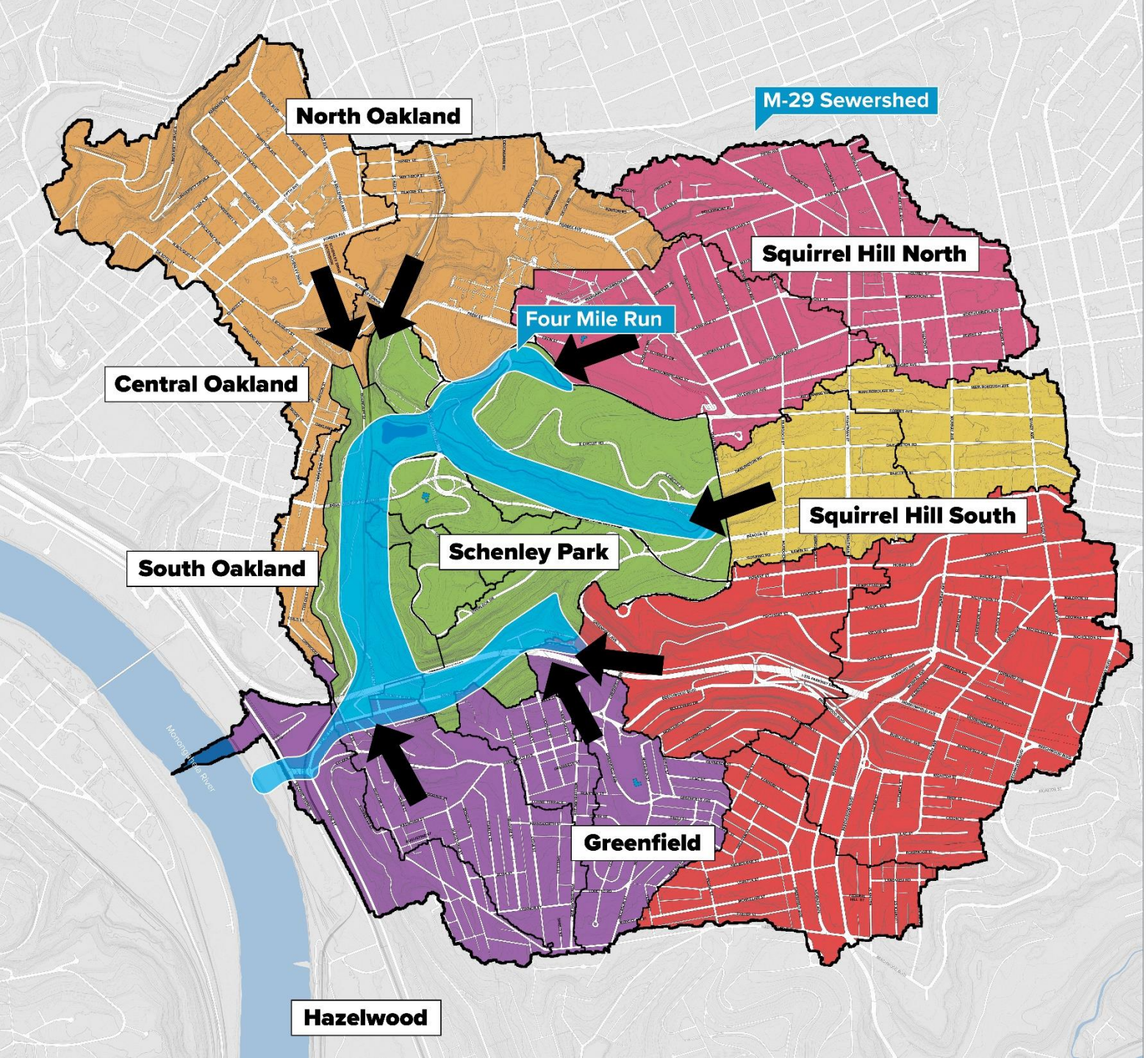
Reduce sediment in Panther Hollow per state water quality requirements

REDUCE NEIGHBORHOOD FLOODING AND BASEMENT SEWAGE BACKUPS

In response to ratepayer, constituent, and 311 reports

BEING SENSITIVE TO AFFORDABILITY FOR RATEPAYERS

Per PA PUC oversight



The Four Mile Run project is the **BACKBONE FOR A HOLISTIC STORMWATER STRATEGY** including neighborhoods within the M-29 sewershed to help PWSA meet its compliance objectives.

Design Overview

- Phipps Run restoration
- Panther Hollow Lake capacity enhancements
- Piped stormwater connection under railroad tracks
- Panther Hollow Run restoration
- Junction Hollow open channel conveyance
- Improved drainage channel along the RR tracks
- Piped conveyance from soccer field to Mon River

Peer Review and Performance Evaluation

OVERVIEW

- PWSA had a separate consultant team review the primary consultant team's design to verify feasibility, performance, and cost-effectiveness.
- PWSA also performed advanced modeling to simulate the project's impacts on reducing combined sewer overflows and flood risk.

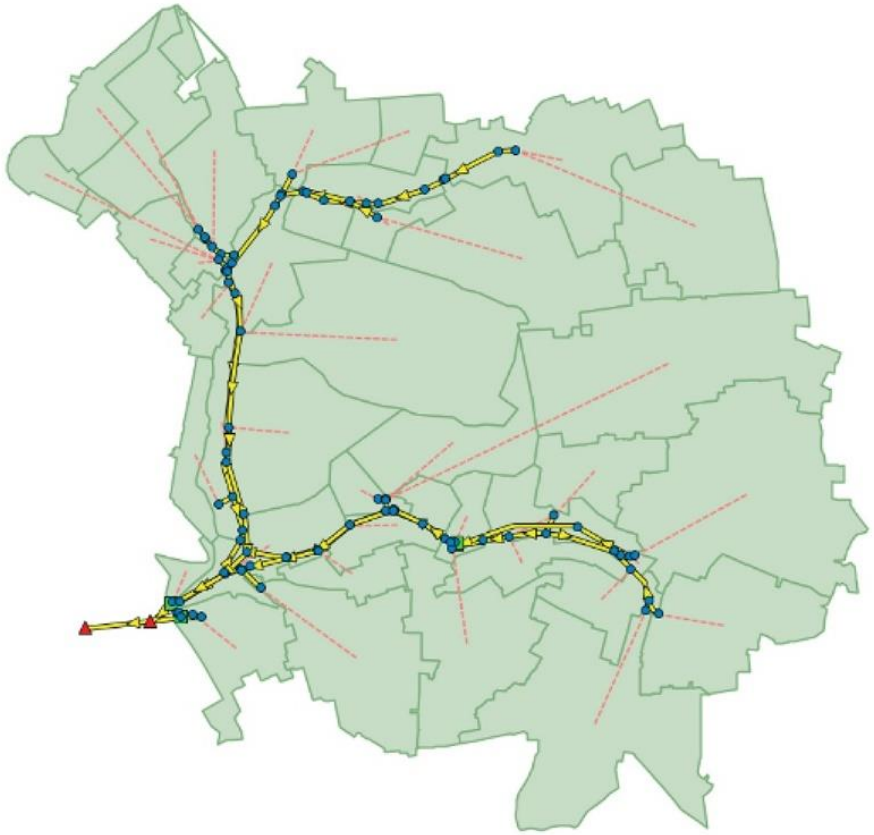
KEY TAKE-AWAYS

- The project's anticipated benefits are appropriate and proportional to the project's anticipated costs.
- The project team will pay extra attention to minimizing potential utility conflicts that could add cost or delays during construction.
- There are opportunities for *EARLY ACTION PROJECTS* that can reduce neighborhood flood risk in the near term before main construction phase.

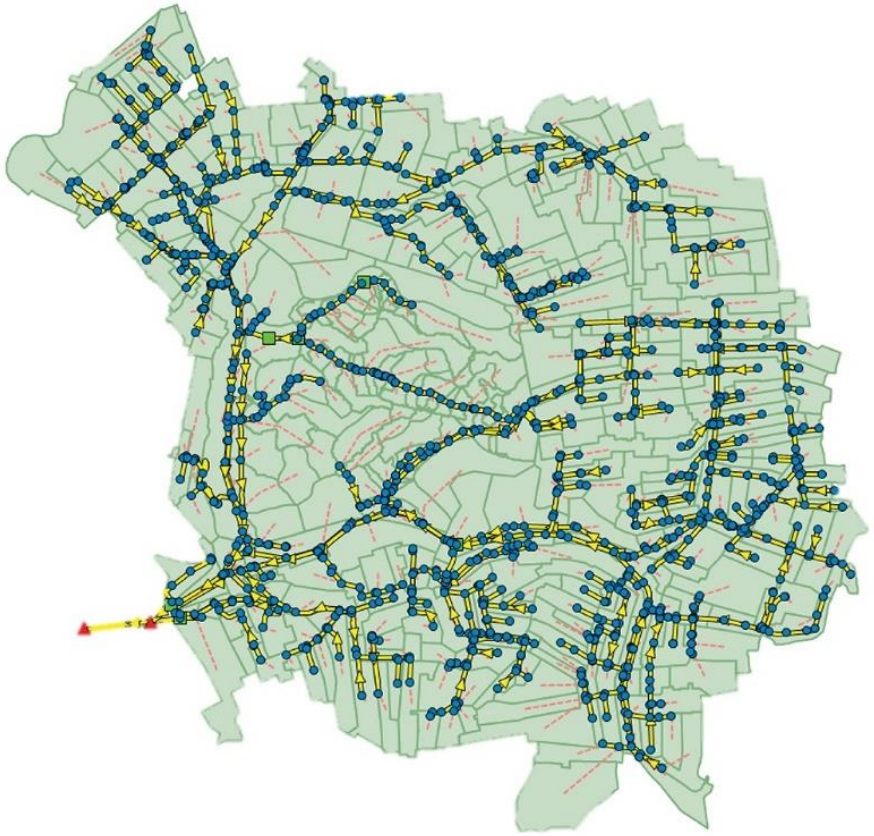
Peer Review and Performance Evaluation

ADVANCED MODELING – Before and After

Original ALCOSAN M-29 Model



PWSA 4MR M-29 Model Update



Advanced modeling provides PWSA with a better understanding of how stormwater flows through the M-29 sewer network.

Peer Review and Performance Evaluation

PROJECTED PERFORMANCE – CSO Reduction

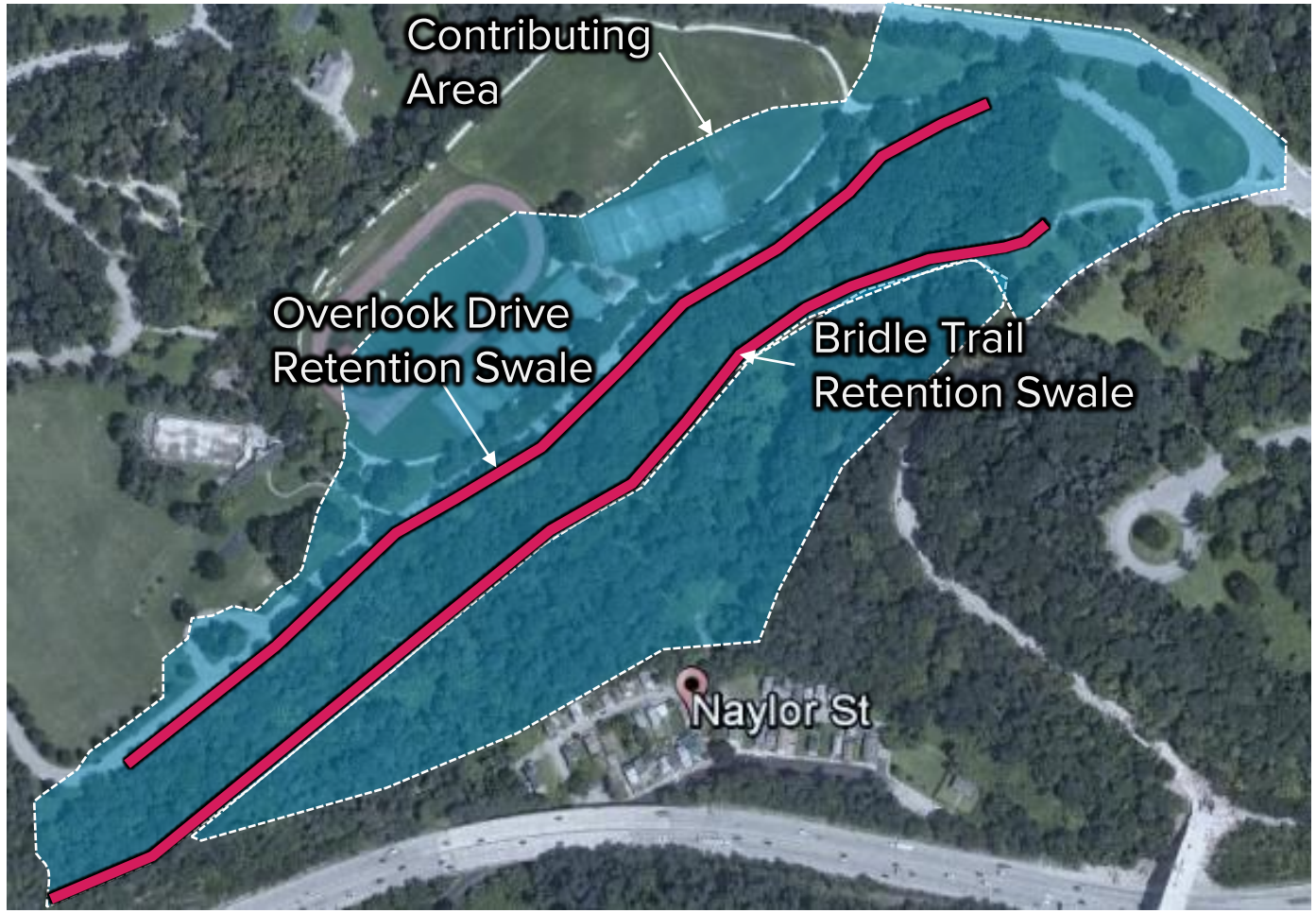
- The Four Mile Run Stormwater Improvement Project is estimated to reduce combined sewer overflows (CSOs) by approximately 40 million gallons per year in the estimated typical year and can preliminarily achieve 85% combined sewage capture at the M-29 outfall.

PROJECTED PERFORMANCE – Flood Risk Reduction

- PWSA anticipates that the Four Mile Run Project and associated Early Action Projects will reduce the risk and magnitude of flooding.
- PWSA is designing the project to reduce the frequency and severity of flooding and basement sewer backups in the project area. However, PWSA cannot protect against all size storm events
- PWSA is interested in knowing where community members have experienced flooding or basement backups and is cross-referencing 311 reports.
- Please let us know about your flooding experiences! Every bit of data helps.

Peer Review and Performance Evaluation

EARLY ACTION PROJECTS



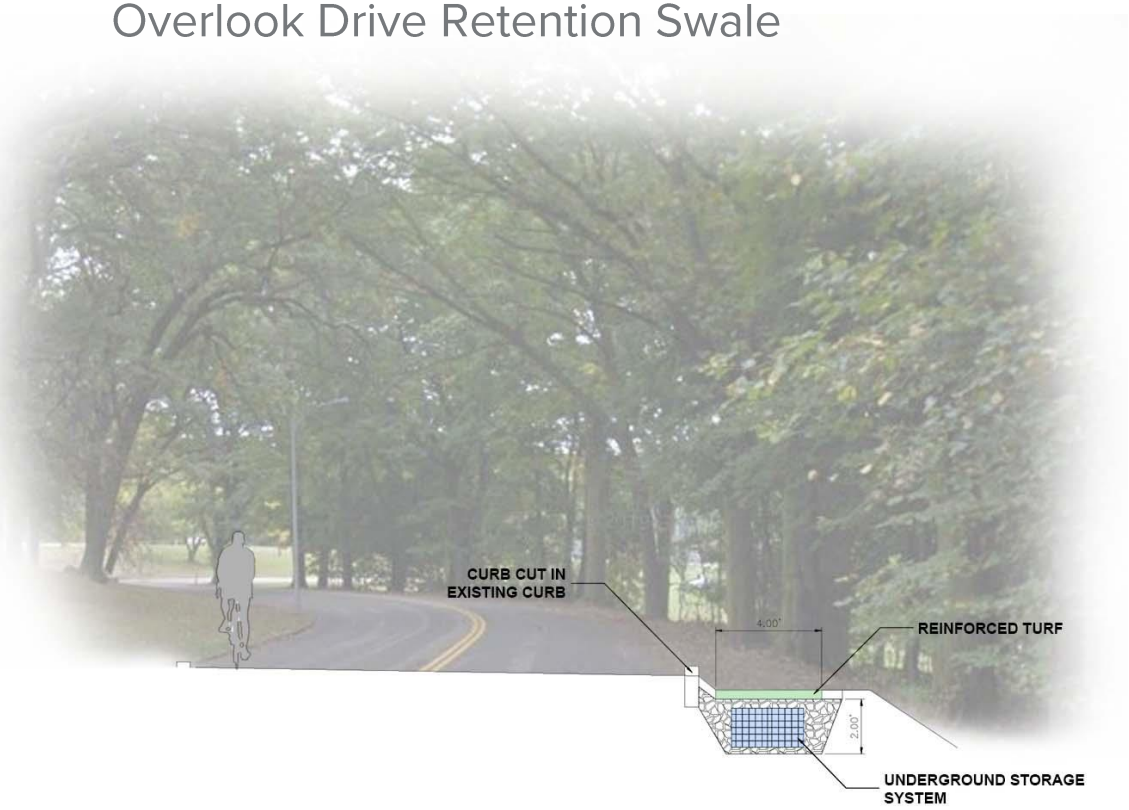
Two early action projects can offer stormwater benefits in the near term before the main construction phase.

Drainage Area	28 acres
Storage provided	294,000 gallons
Runoff by storm size:	
2 yr storm	212,000 gallons
5 yr storm	328,000 gallons
10 yr	425,000 gallons

Peer Review and Performance Evaluation

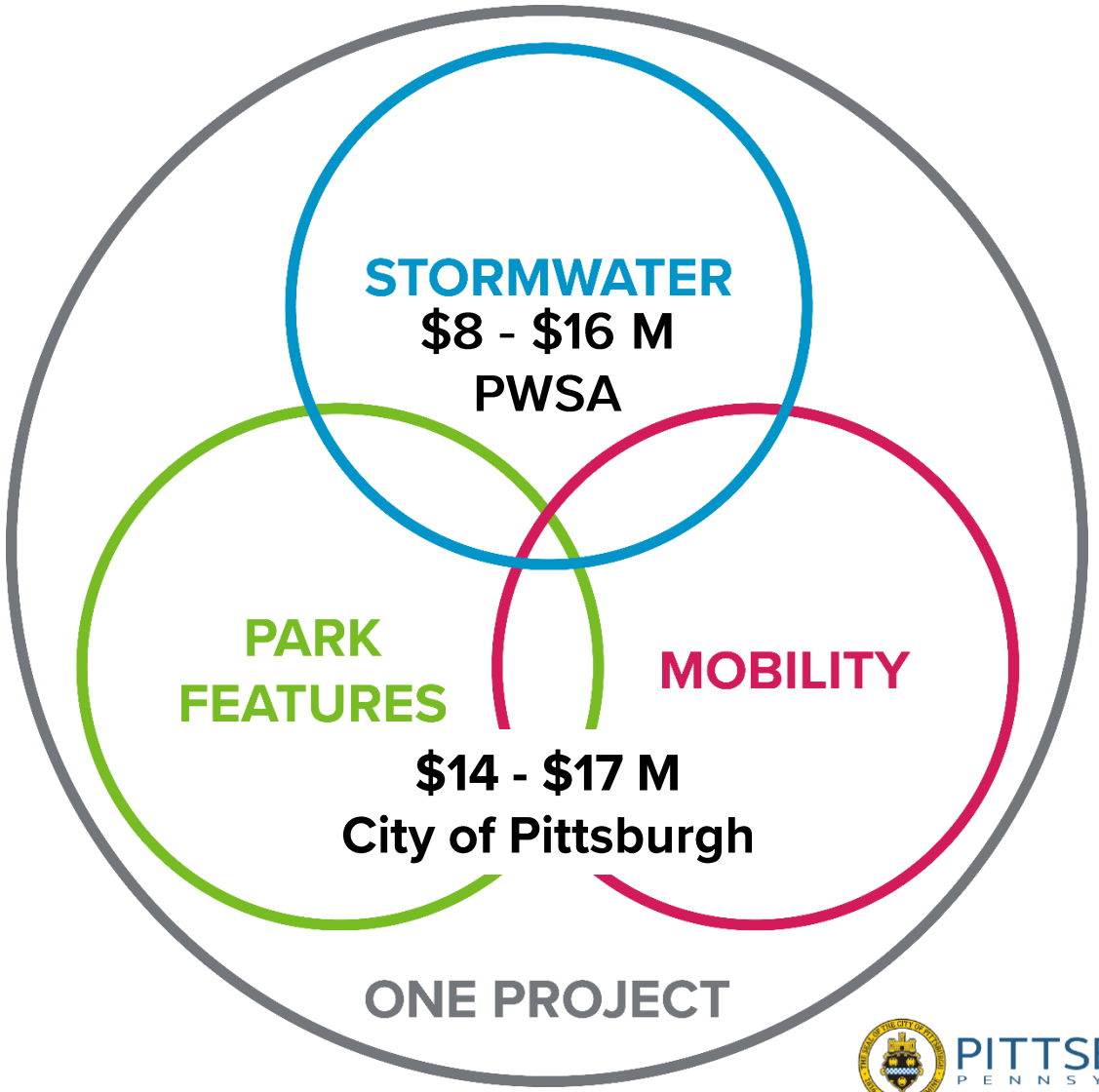
EARLY ACTION PROJECTS

Overlook Drive Retention Swale



Bridle Trail Retention Swale

One Project with Coordinated Action

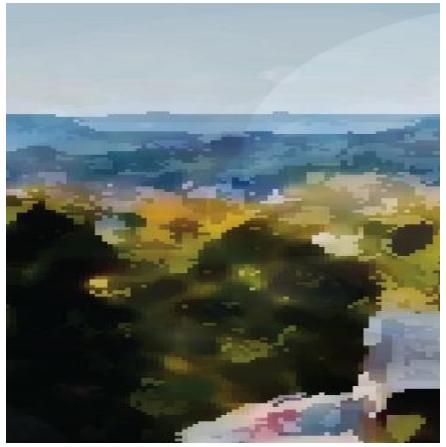



Mon-Oakland
MOBILITY PROJECT

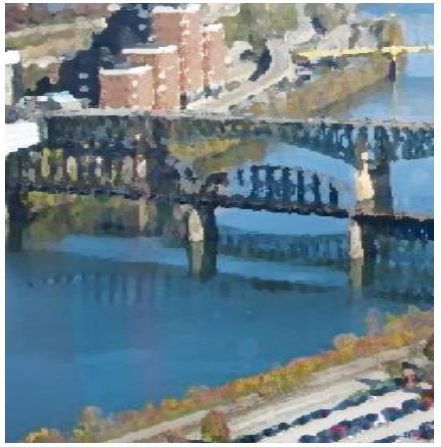
Project Update

- Stormwater Parameters
- 2017/2018 Study Recap & Outcomes
- Design Phase

Project Principles & Objectives



PRIORITIZING STORMWATER INFRASTRUCTURE
Supporting the implementation of green infrastructure and stormwater overflow mitigations



PROVIDING A MOBILITY CORRIDOR
Accommodating new mobility options while supporting sustainability goals

CONNECTING COMMUNITIES
Addressing mobility gaps, increasing connectivity and equitable access to opportunity

EXPANDING BICYCLE AND PEDESTRIAN CONNECTIONS
Providing alternatives to vehicular traffic

About the Mobility Corridor

The Project creates a Mobility Corridor that is:

- Publicly accessible and controlled;
- Designed to accommodate future mobility technologies that are quiet, electric, and safe; and
- Accessible to varied user types, including, small electric shuttles, e-scooters, and e-bikes.

Sylvan Avenue Segment Rendering

About the Bike/Ped Trail

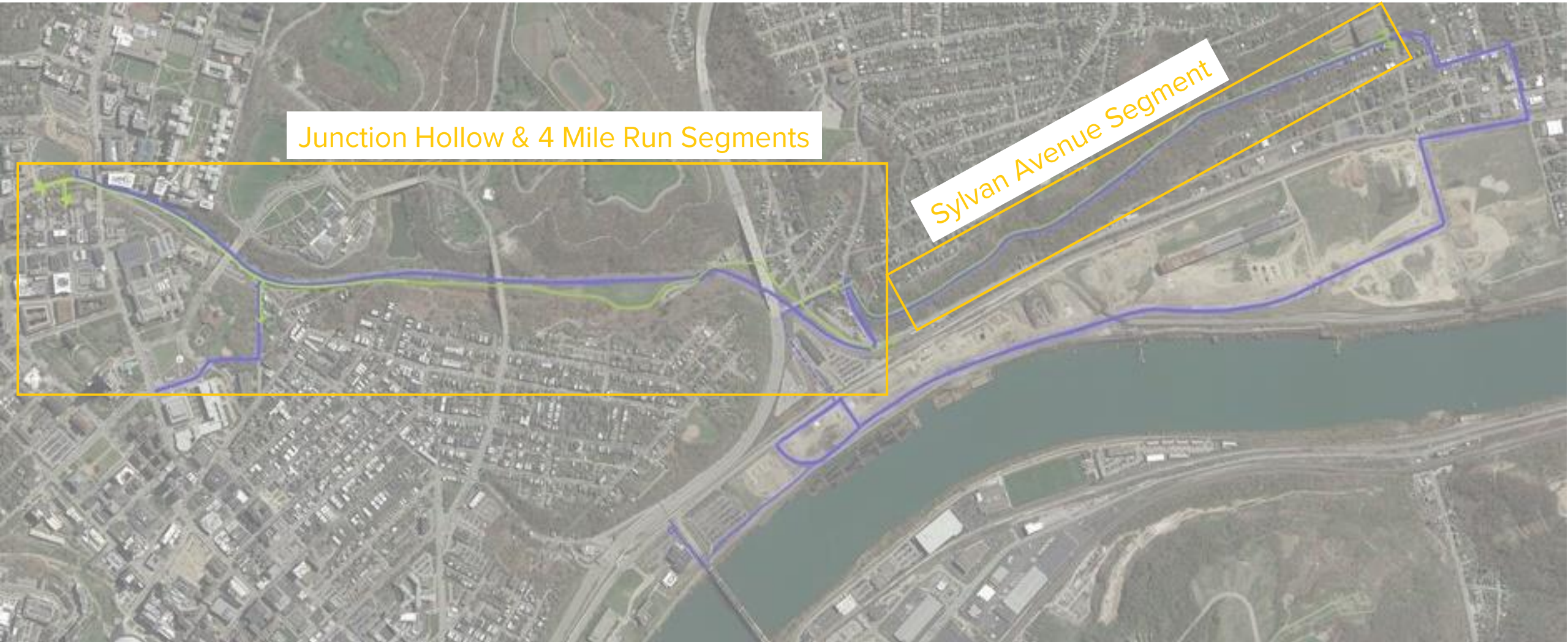
The Project creates a Bike/Ped Trail that will:

- Enable and supplement non-motorized transportation
- Expand upon the network of bicycle and pedestrian routes in the area to provide additional connections
- Include improvements to the Junction Hollow Trail in Schenley Park

Junction Hollow Segment Rendering

2017/2018 Study Outcomes

Mobility Corridor Bike/Ped Trail



Designing for User Types

Mobility Corridor (Commuter)

- Electric Shuttles
- E-Bikes
- E-Scooters
- Pedal Bikes

⊘ Pedestrians
⊘ Buses
⊘ Cars

Bike/Ped Trail (Recreational)

- Pedal Bikes
- Pedestrians
- E-Bikes
- E-Scooters

⊘ Buses
⊘ Cars

Design Phase Approach

- **Phased Development**
  - Junction Hollow and the Run Segments
  - Sylvan Avenue Segment

- **Engineering Activities**
  - Geotechnical Investigations/Borings
  - Field/Land Survey
  - Environmental Clearance
  - Refining Alignments for Mobility Corridor and Bike/Ped Trail
  - Delineating the Dimensions of the Mobility Corridor to Accommodate Defined Users
  - Construction Documents

One Project with Coordinated Action

Mon-Oakland
MOBILITY PROJECT

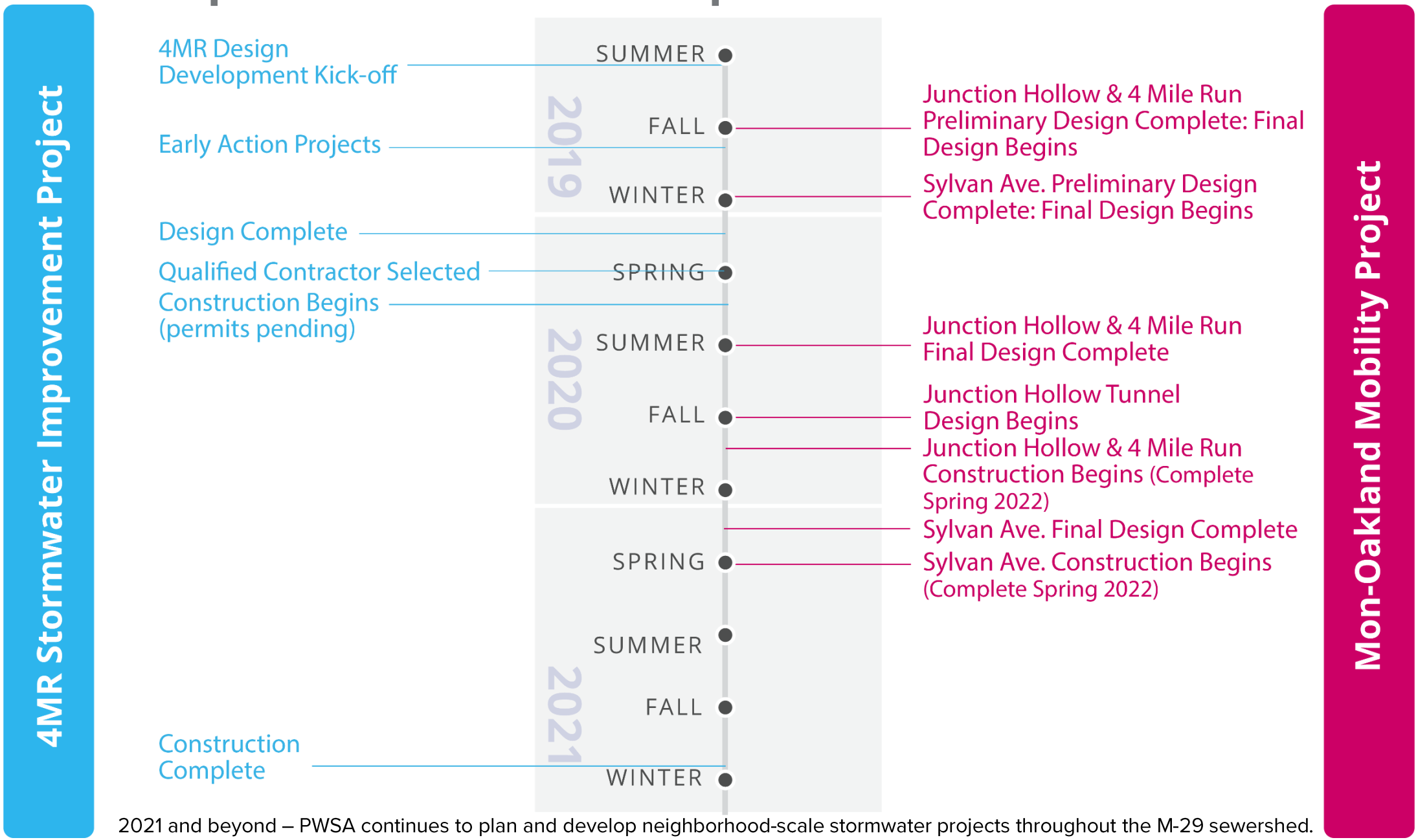
Planned Public Meetings

PWSA and DOMI will present joint project updates at quarterly meetings through 2019.

Two meetings anticipated:

- September 2019
- November 2019

Anticipated Next Steps



2021 and beyond – PWSA continues to plan and develop neighborhood-scale stormwater projects throughout the M-29 sewershed.

Thank You!

www.4mr.org

www.mon-oaklandmobility.com

Facilitated Q&A

- Please limit questions and comments to TWO MINUTES PER PERSON.
- PWSA and DOMI responses will be limited to FIVE MINUTES.
- Questions, comments, and responses will be WRITTEN DOWN AND SHARED with this presentation.
- You may also submit questions and comments via PAPER FEEDBACK FORM OR ONLINE.