The Mystery of Fern Hollow Creek

Where does the flow go?

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Project Team

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UpstreamPgh History

For over two decades, UpstreamPgh has advocated to restore and protect the waters of Nine Mile Run, and beyond – for the people and habitat who rely on it.
What started as an ecological art project has led to a national model of stewardship, advocacy, outreach, and engagement.

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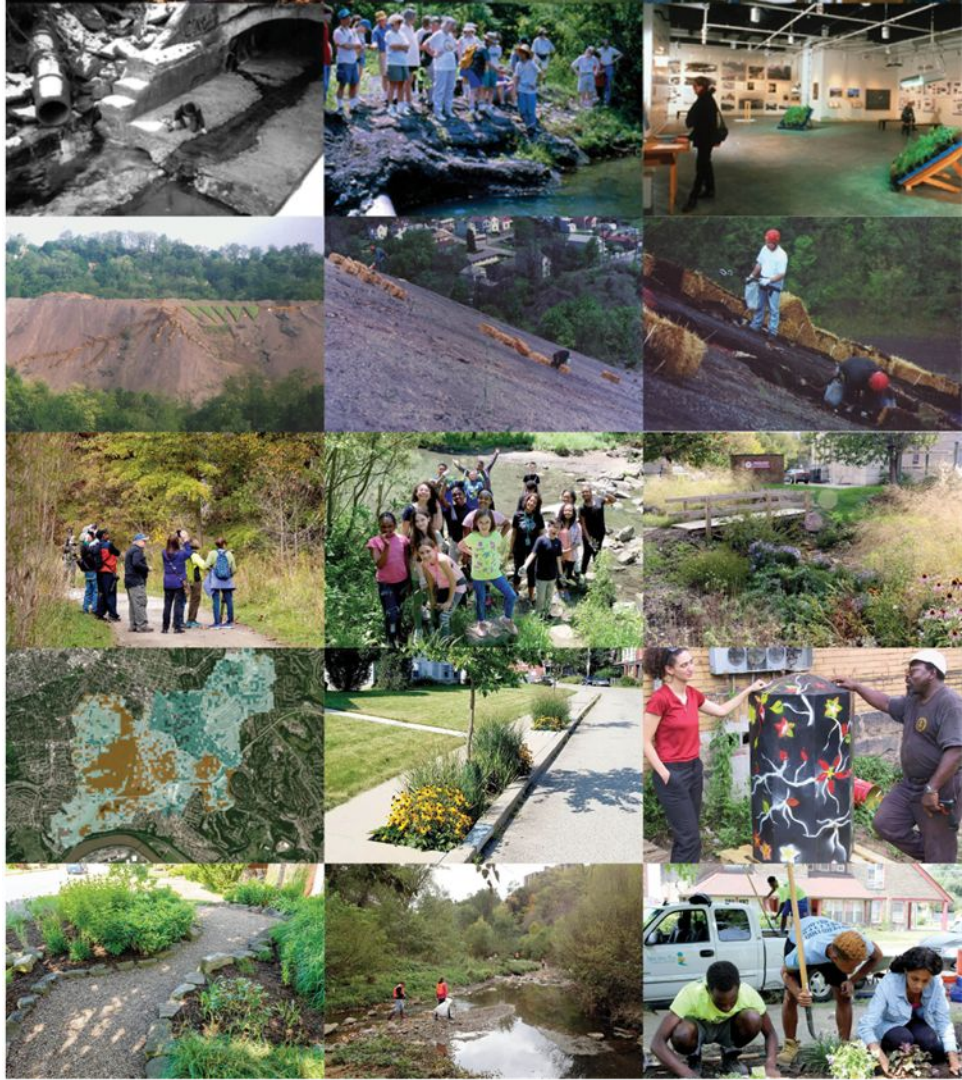

UpstreamPgh Vision & Mission

We **envision** a region with clean water accessible to all, healthy and resilient communities, and ecosystems restored to their natural functions.

We **restore and protect our watershed ecosystem**, while working regionally to support and implement resilient solutions for a healthier urban environment.

Project Introduction

- Why did we start this project?
- What have we been working on?
- What will we cover today?

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Fern Hollow Bridge Collapse

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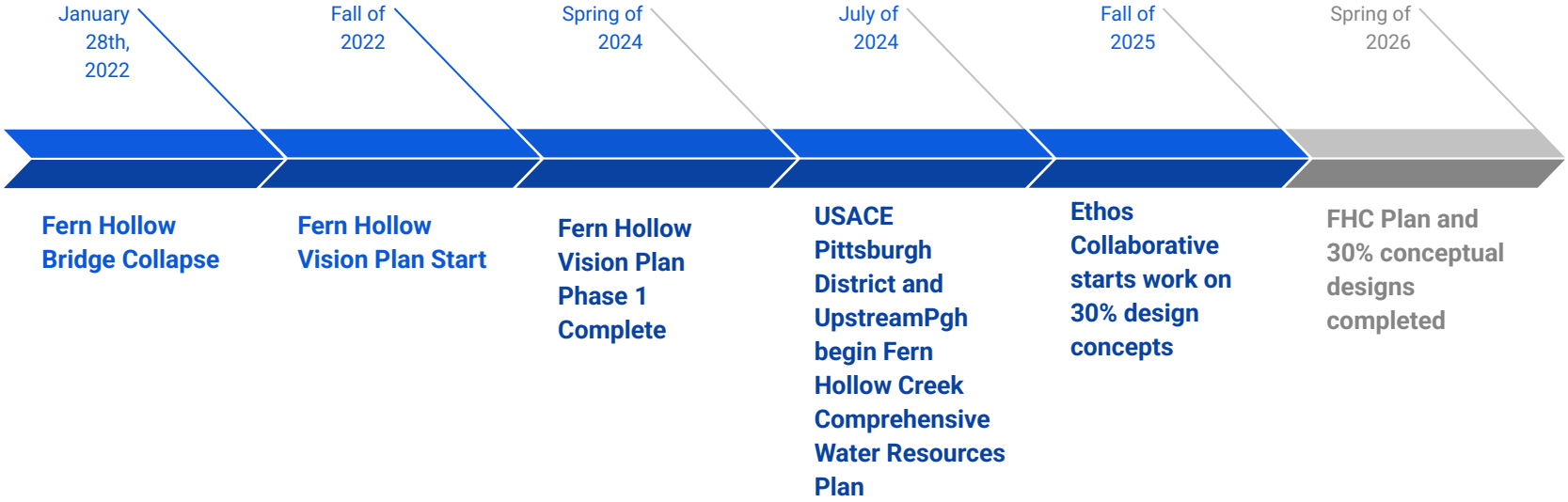
Project Timeline



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Study Area

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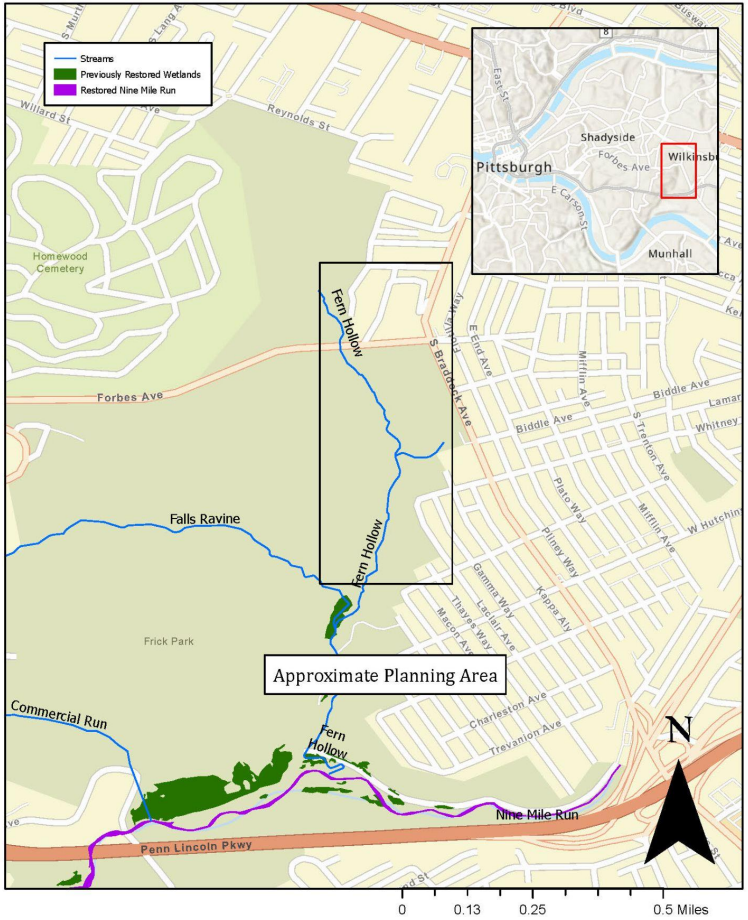
Attachment 1. Project Area Map

Map shows the approximate planning area boundary for the Fern Hollow Tributary of Nine Mile Run. The upper extent is bounded by the Fern Hollow Bridge and the lower extent is bounded by the northernmost restored area of Nine Mile Run. The inset map shows the location of Fern Hollow and Frick Park relative to the City of Pittsburgh.



Historical Context

- William Black Report 1947
- Sewer Construction and stream alterations
- Frick Park is on National Register of Historic Places

Fern Hollow Creek disappearing under the Storm Sewer

Area 3 in Fern Hollow looking upstream into the Picnic Area

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Credit: The Ecology of a City Park: Frick Park, Pittsburgh, PA by William LeRoy Black, M.S., University of Pittsburgh, 1947

Fern Hollow Vision Plan Phase 1

- Work with agencies & local non-profits to advocate for
  - Public art
  - Reforestation
  - Improved bike/pedestrian infrastructure
  - Improved stormwater management
- Work with Neighborhood Allies over year long planning effort to identify park needs - funded by CFA
  - Most people surveyed wanted better bathrooms (than port o jons), shelters/pavilions, better signage and more benches.
  - Worked this feedback into designs for Wetland and Confluence

Fern Hollow Vision Plan Sites

2 Wetland Zone

1 The Confluence

PROPOSED INTERVENTIONS

Based on feedback from the online survey, trail walks, and steering committee meetings, four ideas for potential interventions in the Fern Hollow Valley were created. Each intervention was designed to fit seamlessly into the park and to improve upon its surroundings while maintaining a natural feel. From there, those four ideas were narrowed down to the final two.

ALLIES SOCIAL IMPACT DESIGN upstream pittsburgh

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The Confluence

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The Wetlands

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SHIFTWORKS
Community + Public Arts

Ginger Brooks Takahashi, Divya Rao Heffley, Petra Floyd, Tess Dally, Carin Mincemoyer, John Peña, LaKeisha Wolf, Erica Jackson, & Lauren Basing

Photo courtesy of Shiftworks Community + Public Arts.

ecs

We grow citizens.

Fern Hollow Vision Plan Phase 2 - Work with USACE

- Planning Assistance to States Project started in July 2024.
- Goal is to restore flow and function to Fern Hollow Creek
- Work done so far includes
  - Stream gauge installation and monitoring
  - LiDAR survey & DEM
  - Hydraulic and Hydrologic (H&H) Model Development
  - Alternatives Analysis

Stream Gauge Data

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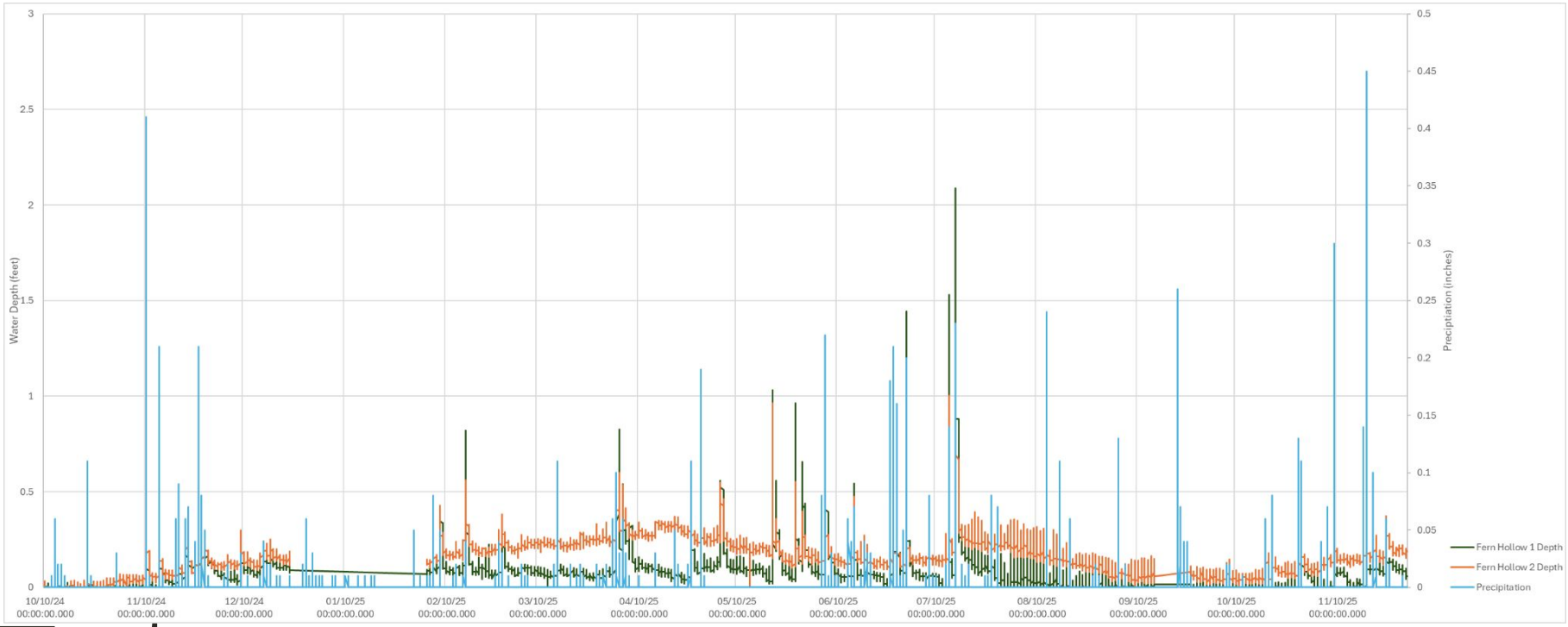
Stream Gauge Data



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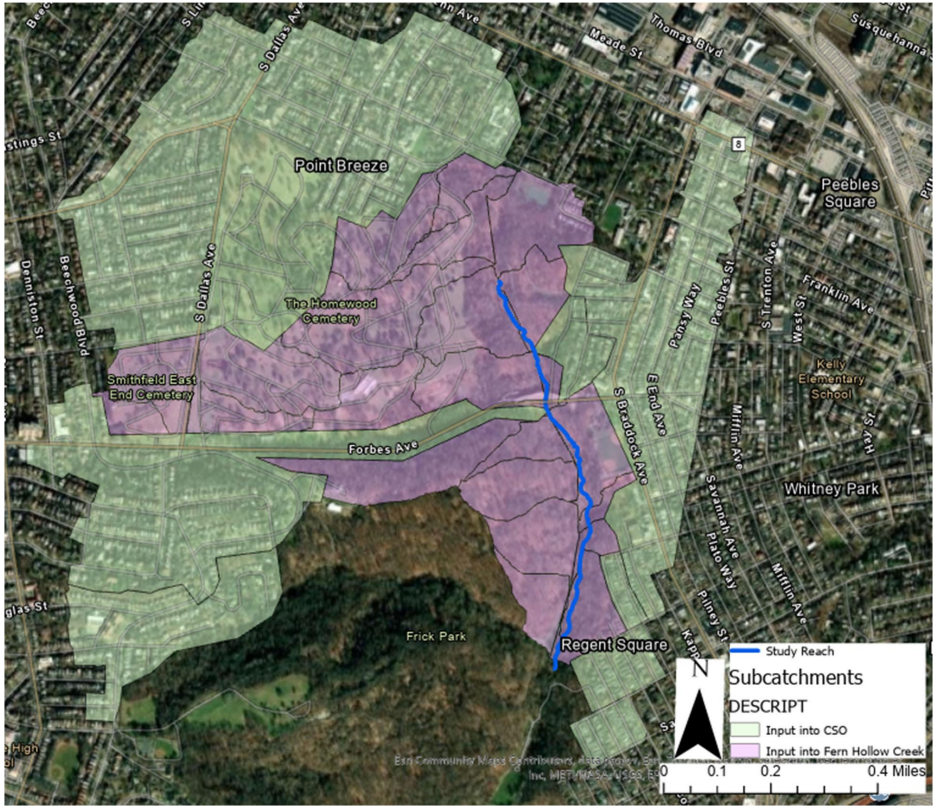
H&H Model Slide

- Much of the contributing area is captured by the combined sewer system
- PCSWMM Model focused strictly on surface flow in contributing area
- Developed Inundation Raster within study area



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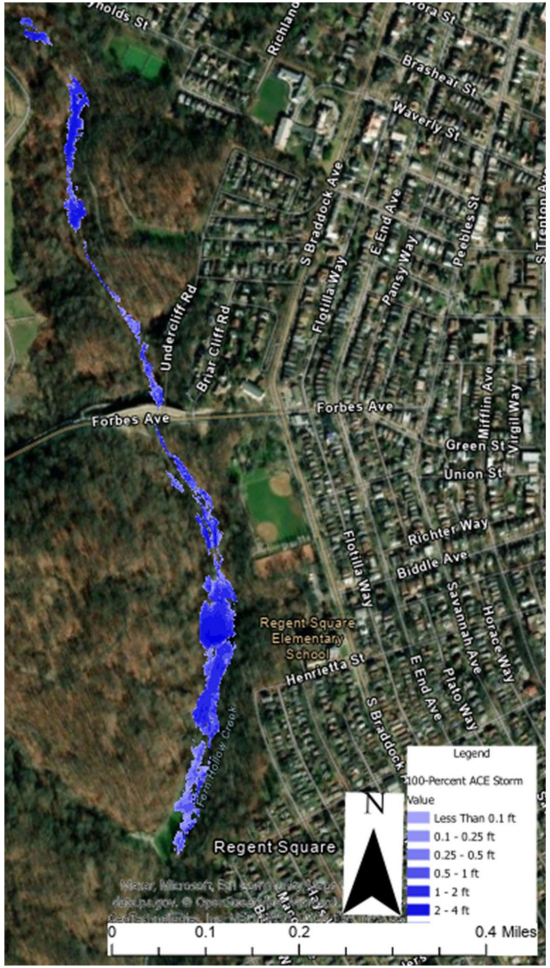
H&H Model - Existing Conditions

Inundation depth for 100% Annual Chance of Exceedance Storm



Inundation depth for 2% Annual Chance of Exceedance Storm

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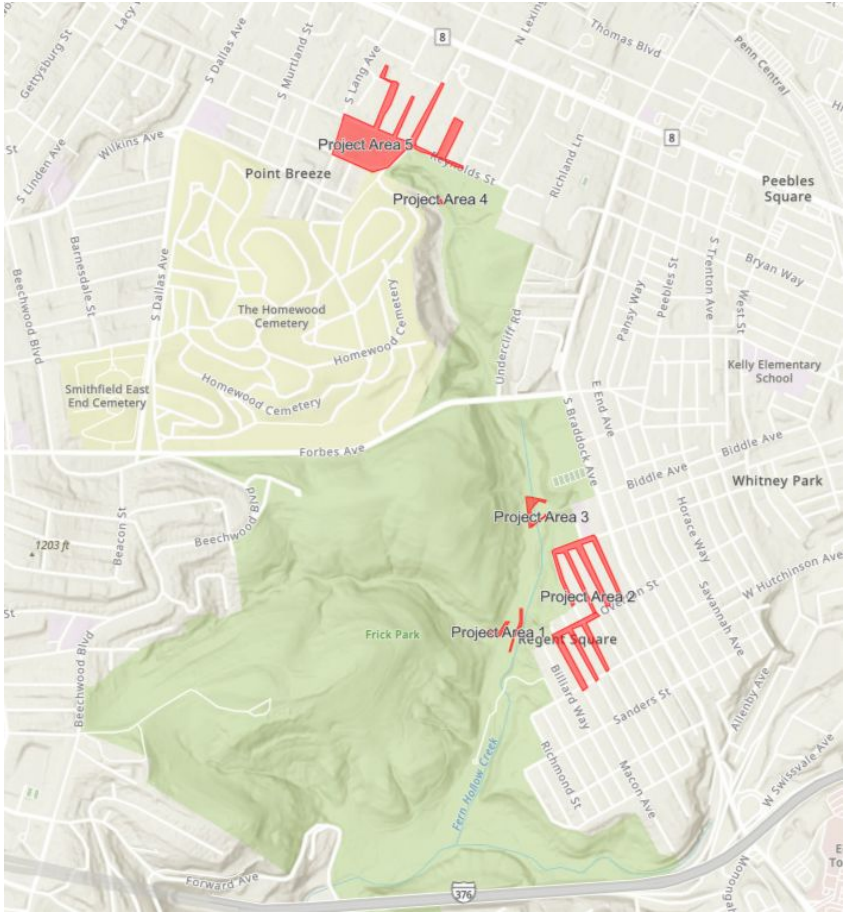
Alternatives Slide

- Identified 5 “alternatives” aka potential projects
- Alternatives are designed to restore flow and function to Fern Hollow Creek
- USACE modeled 5 alternatives to understand impacts to inundation depths in park



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What we have learned so far

- FHC has perennial flow for a ~1/2 mile stretch from just north of Fern Hollow Bridge to the intersection of Biddle and Tranquil Trail
- Biddle and Tranquil trail intersection contains sewer regulators, overflows and very shallow pipes
- Sewer foundation drains and leaky connections/manholes are likely contributing to stream loss, but further investigation is needed
- 5 Alternatives modeled by USACE show potential to increase flow without increasing inundation depths in Frick Park

Fern Hollow Vision Plan Phase 2 - Work with Ethos

- Developing 30% conceptual designs for 5 alternatives identified through work with USACE.
- Incorporating USACE model and other available data to better understand underground infrastructure through 3D modeling.
- Developing solutions to retain surface waters through natural methods and better align stream channel.
- Identifying areas along Tranquil trail that require regrading for adequate trail drainage.
- Looking at opportunities to bring more stormwater into the park.

Ethos Concept - The Confluence Existing Conditions

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Ethos Concept - The Confluence Proposed Stream Realignment

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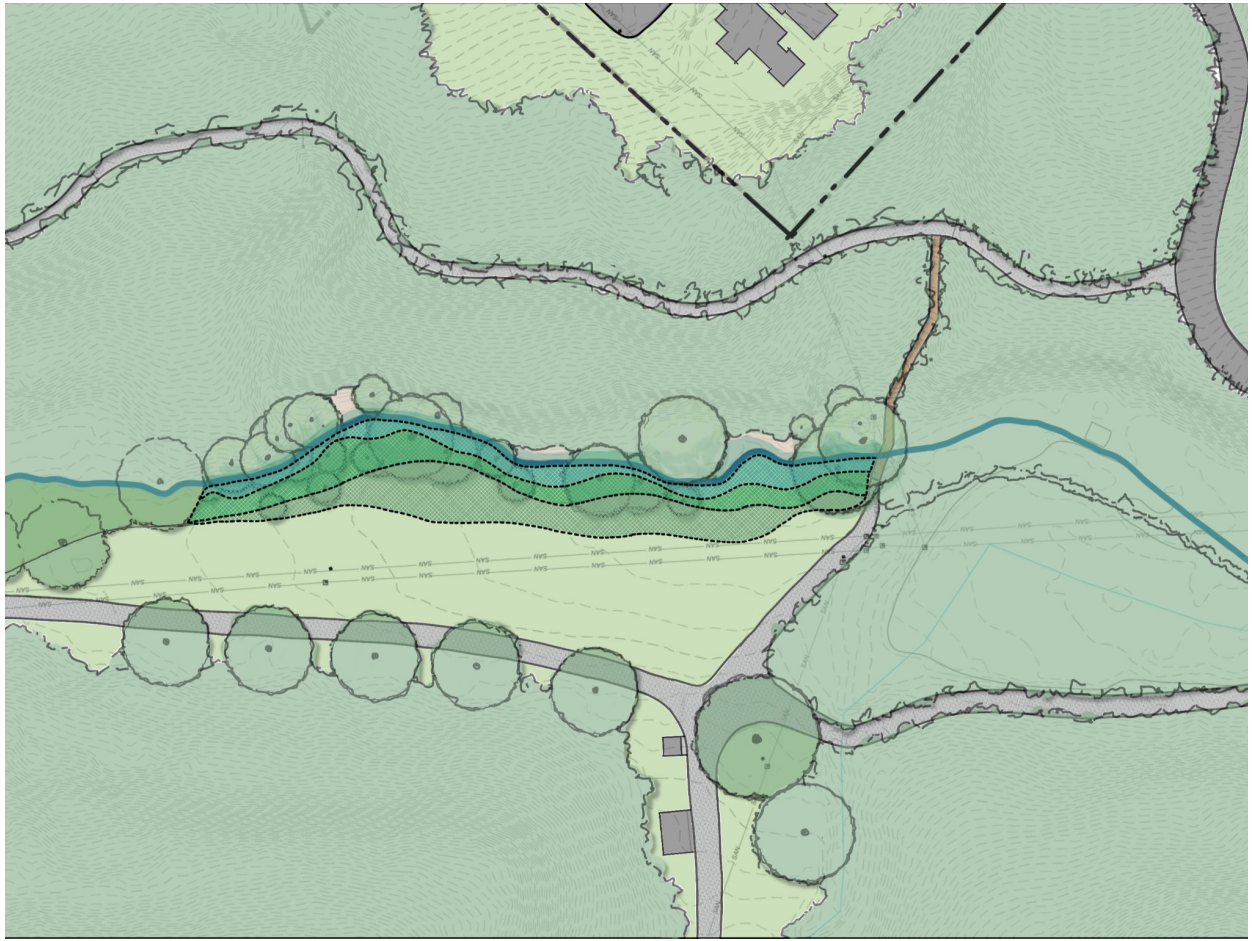
Ethos Concept - The Confluence Alternative Proposed Stream Stabilization



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Ethos Concept - The Wetlands Existing Conditions

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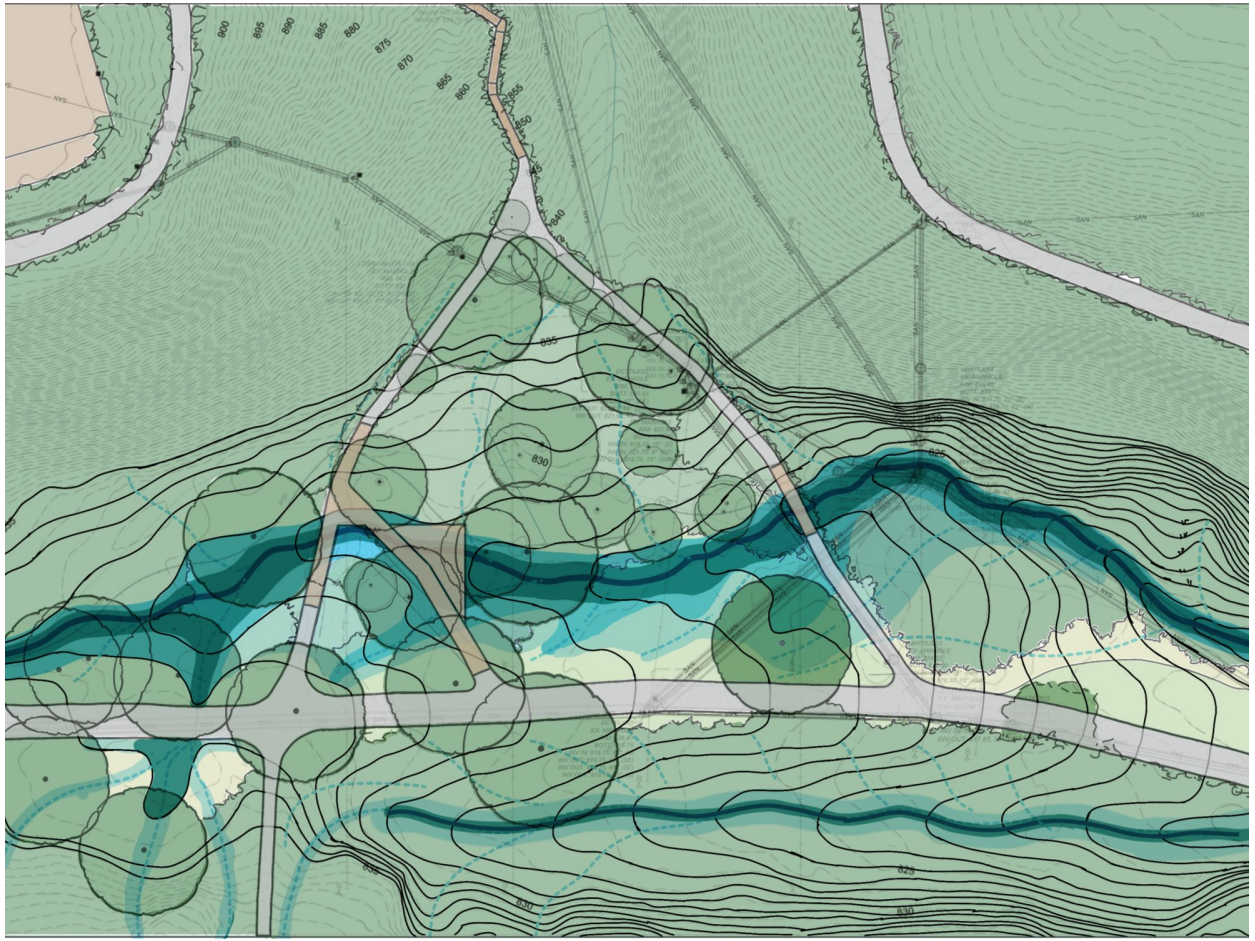
Ethos Concept - The Wetlands Proposed Option 1



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Ethos Concept - The Wetlands Proposed Option 2

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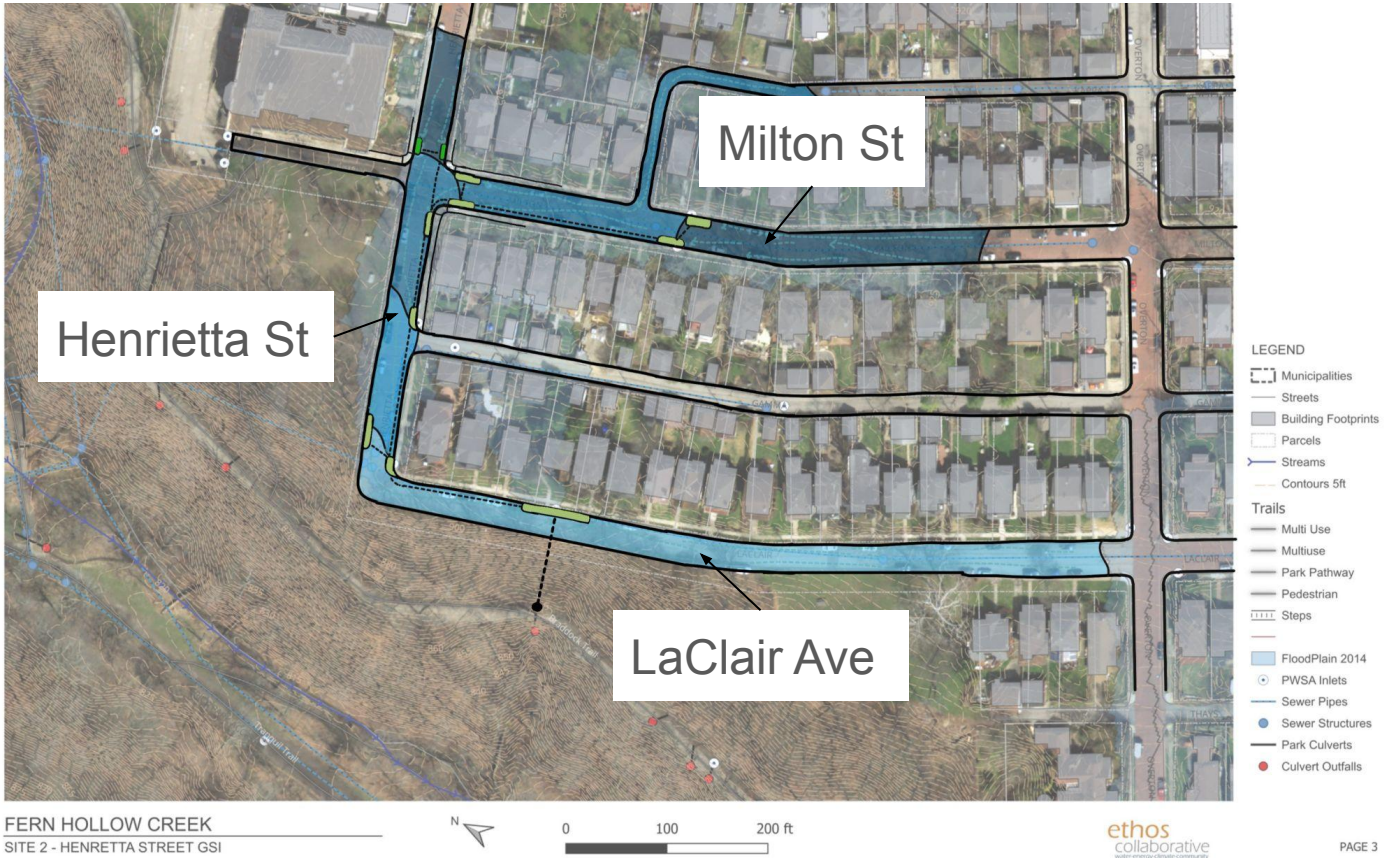
Ethos Concept - Regent Square GSI



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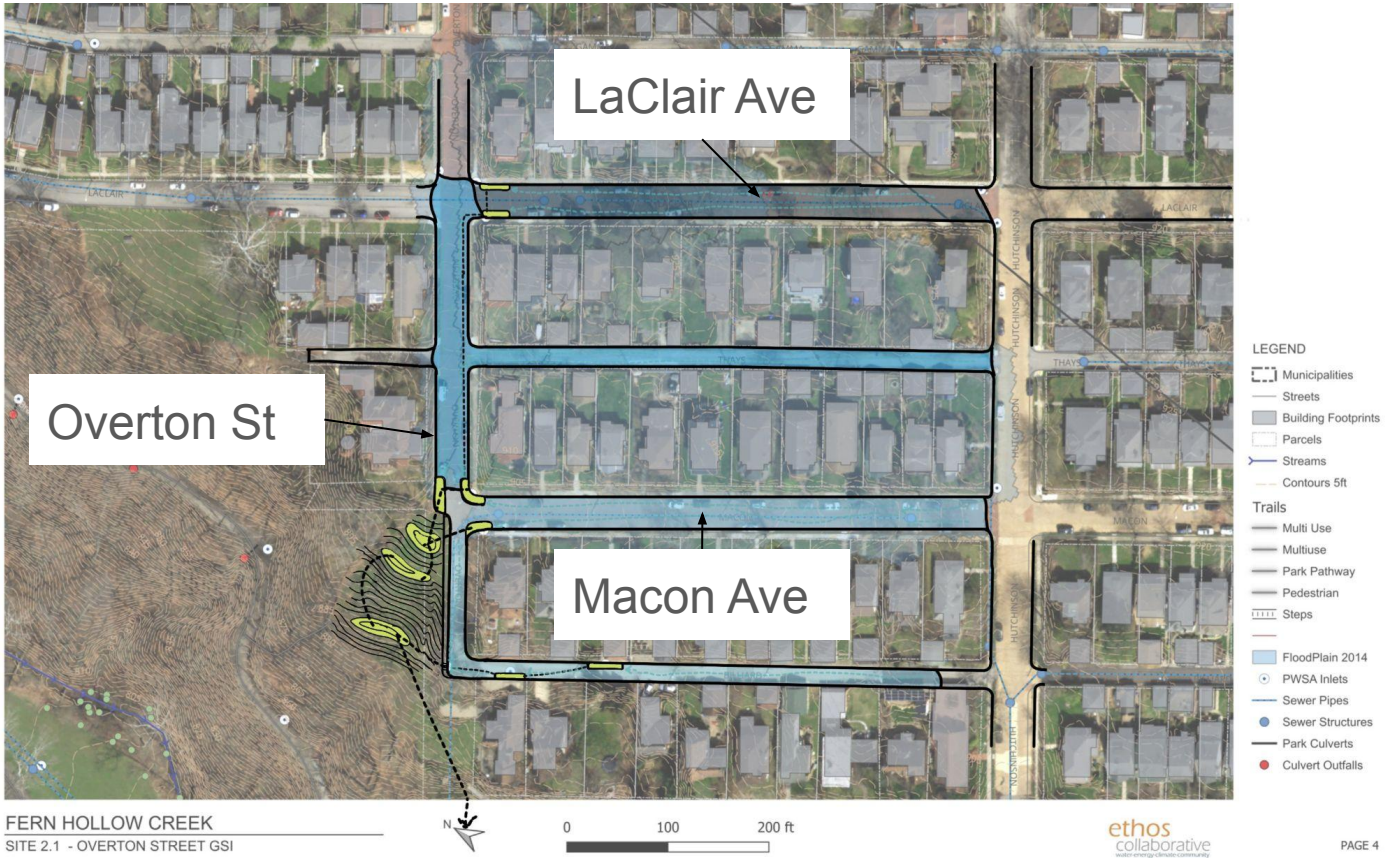
Potential Green Stormwater Infrastructure in the ROW

Existing Conditions
at Henrietta & Milton

ROW GSI designed by Ethos Collaborative, Wightman Park

Local ROW GSI Example - Wightman Park Squirrel Hill

Ethos Concept - Regent Square GSI



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Potential Green Stormwater Infrastructure Parklet

Existing Conditions at
Macon & Overton

Parklet Raingarden, Findlay Township Activity Center Rain Gardens
Photo credit (c) ACCD

Local Parklet GSI Example - Findlay Township

What's Next?

- Funding for future design work
- Coordination with partners and utilities to rehabilitate sewage infrastructure
- Ongoing work to remove invasive species and restore native ecology in Fern Hollow

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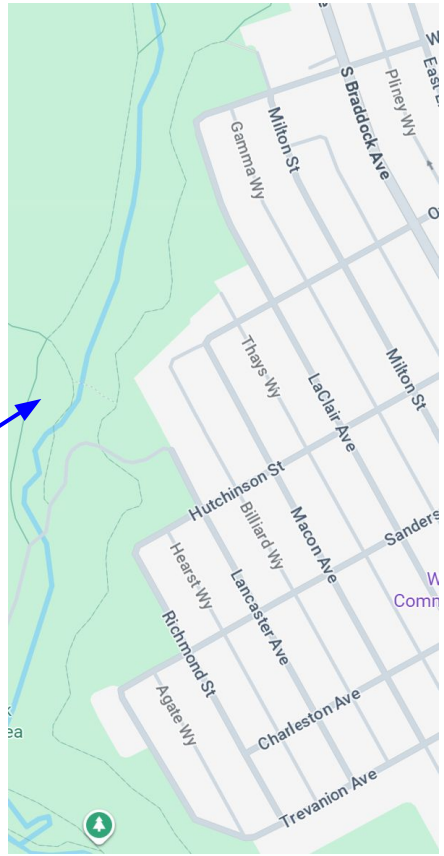
Questions and Comments

- Clarifying questions
- Discussion:
  - What opportunities do you like?
  - What potential issues do you see for work in Regent Square?
  - Are there any existing drainage or flooding problems in this area?
  - What co-benefits should we prioritize with green infrastructure, such as pedestrian safety
  - What parts of the neighborhood have high parking demand?



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Additional comments and questions can be sent to Aaron Birdy at ***aaron@upstreampgh.org***