



**AECOM**



# Resilient Portland

*Public Workshop*

July 18, 2024

- Please provide feedback after the presentation. You will find information on how to give feedback at the end of the presentation
- We will take comments in the order hands are raised
- If calling in, dial \*9 to raise your hand and \*6 to unmute
- In order to allow everyone to speak, please try to limit your time to 1 minute
- The meeting is scheduled to end at 8:00 PM

*Please note that this public meeting will be recorded, and the recording will be posted online shortly after.*

# Agenda

- 01 Welcome and Project Introduction
- 02 Project Overview
- 03 Heat Vulnerability & Urban Tree Canopy
- 04 Site Observations & Flood Analysis
- 05 Resilient Design Strategies
- 06 Discussion

# 01 | Project Introduction

## **Town of Portland**

Ryan Curley, First Selectman

Dan Bourret, Town Planner

Margot Burns, RiverCOG

Ryan O'Halpin, Director, Public Works  
Department

Sarah Elliot, Director, Senior Center

Scott Cunningham, Captain, Police  
Department

Jennifer Billingsley, Director, Portland Public  
Library

## **CIRCA**

Mary Buchanan, Project Lead, Planner

John Truscinski, CFM, Director of Resilience  
Planning

Nicole Govert, Planner

## **AECOM**

Lorayne Black, RLA, Project Manager

Geoffrey Morrison-Logan, Lead Urban  
Planner and Community Outreach

Catherine Ellenberg, EIT, Stormwater  
Management

Ellie Peterson, Landscape Designer

# CIRCA

## Connecticut Institute for Resilience and Climate Adaptation (CIRCA)

### Mission:

CIRCA's mission is to increase the resilience and sustainability of communities vulnerable to the growing impacts of climate change on the natural, built, and human environments. Our Institute is a multi-disciplinary, center of excellence that brings together experts in the natural sciences, engineering, economics, political science, finance, and law to provide practical solutions to problems arising as a result of a changing climate

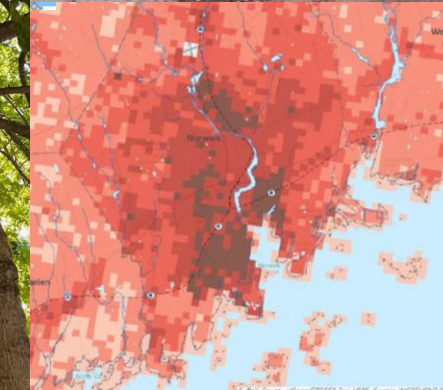
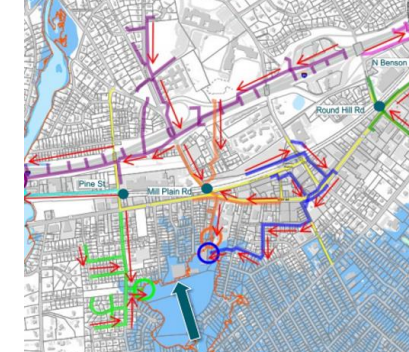
**Executive Director:** James O'Donnell

### CIRCA's climate research focus areas:

- Coastal and inland flooding
- Heat islands
- Resilience of critical infrastructure
- Innovative adaptation approaches (green infrastructure & living shorelines)
- Environmental Justice

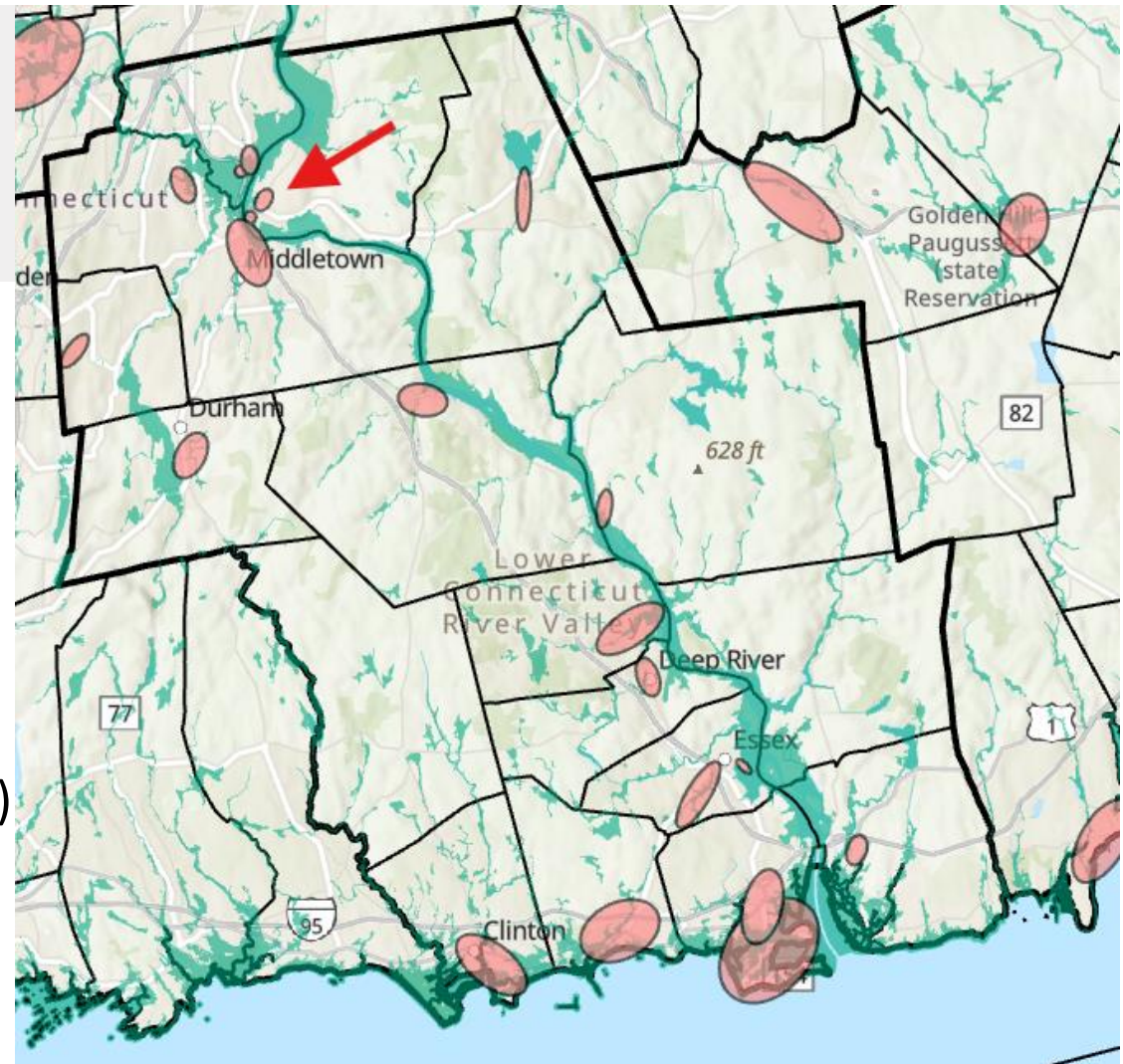
# CIRCA's Resilient Connecticut Program

- CIRCA initiated Resilient CT in Fairfield and New Haven Counties 2018 – 2023. Program expanded to New London, Middlesex, Hartford, and Tolland Counties in 2021-2024.
- Goals: Support development of a statewide resilience project pipeline, increase coordination across municipal, regional, and state planning.
- Data & mapping tools to support project development include: Climate Change Vulnerability Index (CCVI) for flooding and heat, zones of shared risk, resilience opportunity areas.



# RiverCOG Resilience Opportunity Areas

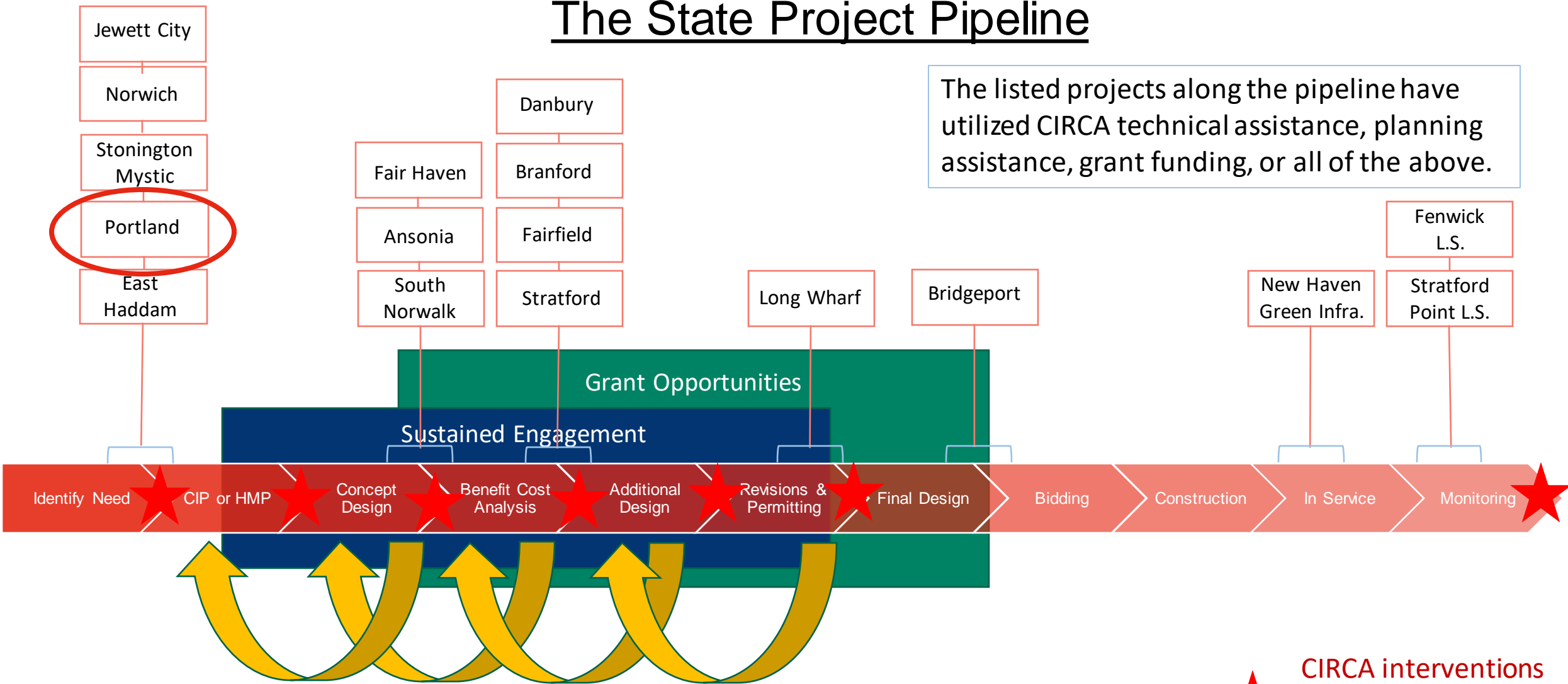
- CIRCA identified Resilience Opportunity Areas (ROARs) throughout the RiverCOG region through a combination of GIS computer mapping and meetings with each of the towns to discuss climate concerns and priorities.
- The ROARs are delineated based on where important town assets (like critical facilities or community resources) overlap with areas of high flood or heat vulnerability.
- The Portland Critical Facilities ROAR was selected for a focused CIRCA-funded project.





# The State Project Pipeline

The listed projects along the pipeline have utilized CIRCA technical assistance, planning assistance, grant funding, or all of the above.



*Taking a step backward is possible and often will occur, in practice, along a project pipeline*

**★** CIRCA interventions and value added possible

## Phase I

Resilient Connecticut Planning Framework

January 2020

## Phase II

Resilient Connecticut Vulnerability Assessment Report

Fall 2021

## Phase III

RESILIENT PORTLAND

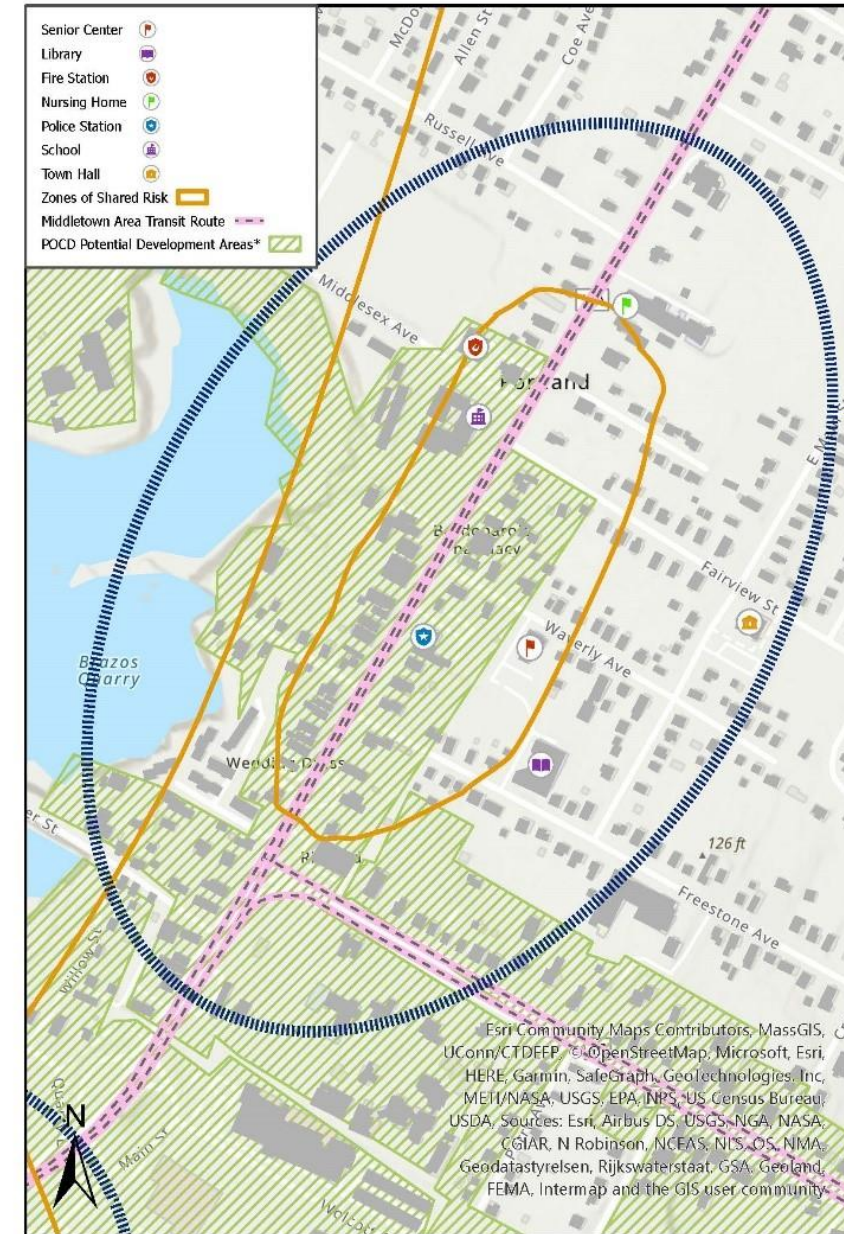
To be Completed January 2025

### Resilient Connecticut 2.0 Phase II

#### Regional Adaptation/Resilience Opportunity Areas

Name: Portland Critical Facilities  
Location: Portland

Consideration	Characteristics of Area				
Flood Vulnerability	●	●	●		
Heat Vulnerability	●	●	●	●	●
Social Vulnerability	●	●	●		
<p>Three of Portland's critical facilities and associated parking lots -- the police department, the library, and the senior center -- experience shallow pluvial flooding after intense precipitation events. The senior center is the cooling center, warming center, and public food pantry for Portland. The area that floods is a topographic depression located on the east of Main Street and the south side of Waverly Avenue. Middletown Area Transit bus access is located on Main Street, Route 66, and High Street. Resiliency solutions for the town could have key co-benefits to advance cooling opportunities along the pedestrian accessways from transit lines to the senior center.</p>					
Portland Senior Center Portland Police Department Portland Public Library Portland Town Hall		Portland Care & Rehab Center Portland Company 1 Station Brownstone Intermediate School			








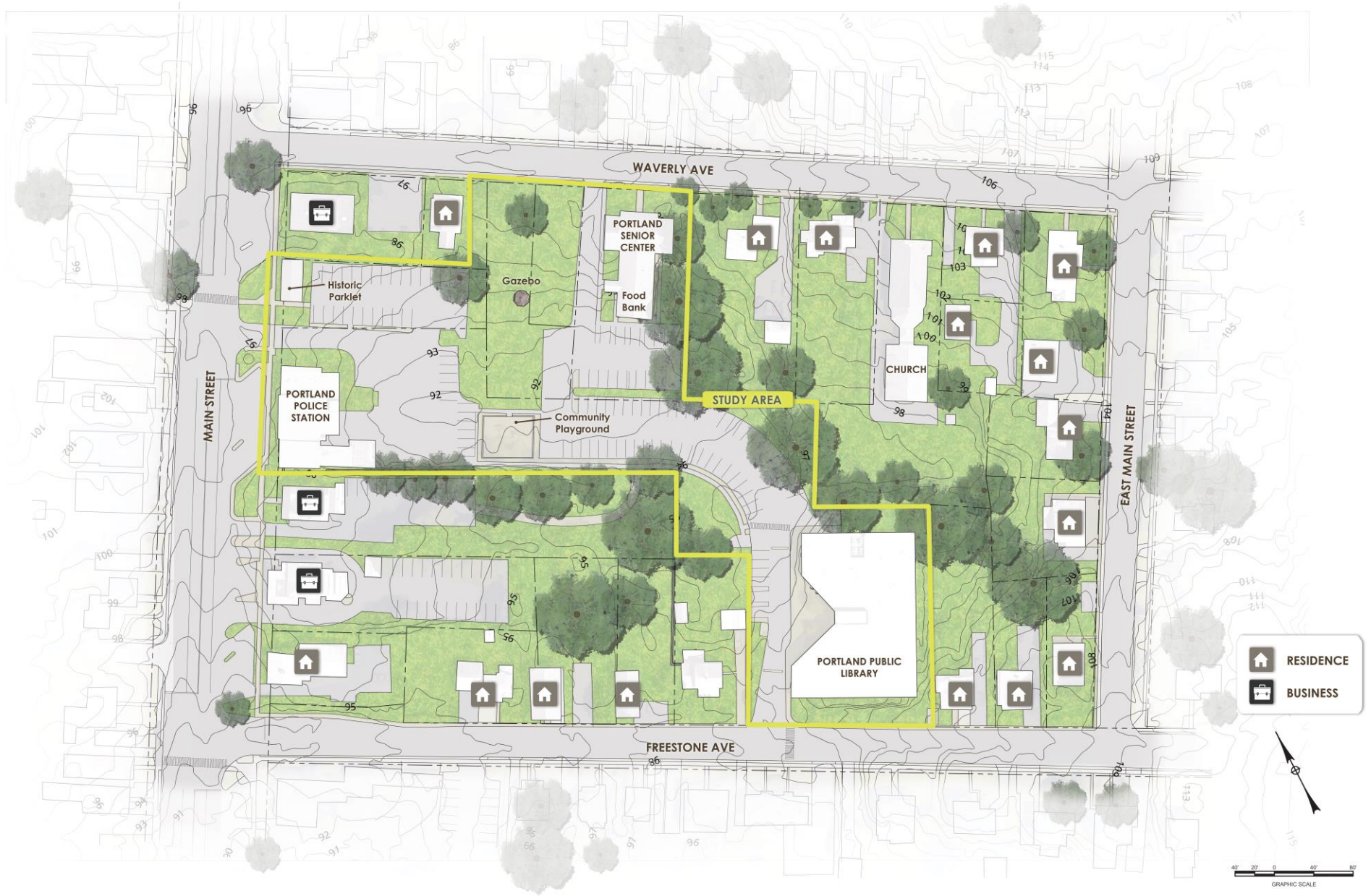
\*Areas identified in POCDs as supporting development, redevelopment, or other types of economic activity

## 02 | Project Overview



## Project Objectives:

-  Reduce flood impact on the critical facilities core of the Town of Portland from effects of excessive flooding and heat.
-  Community and stakeholder priorities should drive the selection of strategies and projects.
-  Develop plans to reduce the frequency, area and depth of flooding by reducing stormwater runoff
-  Apply future projections of precipitation events by years 2050 and 2100.
-  Reduce impacts of extreme heat for the community



## Existing Situation:

- Shallow flooding of parking lots and flooded cars
- Flooding inside lower levels of police station and senior center
- Flooding is caused by extreme rainfall events
- Study area is within a 'bowl' depression
- Older drainage systems may be impaired
- Public green space and playground are in a heat zone with little shade
- Senior Center in center of extreme heat zone with lack of trees along access routes

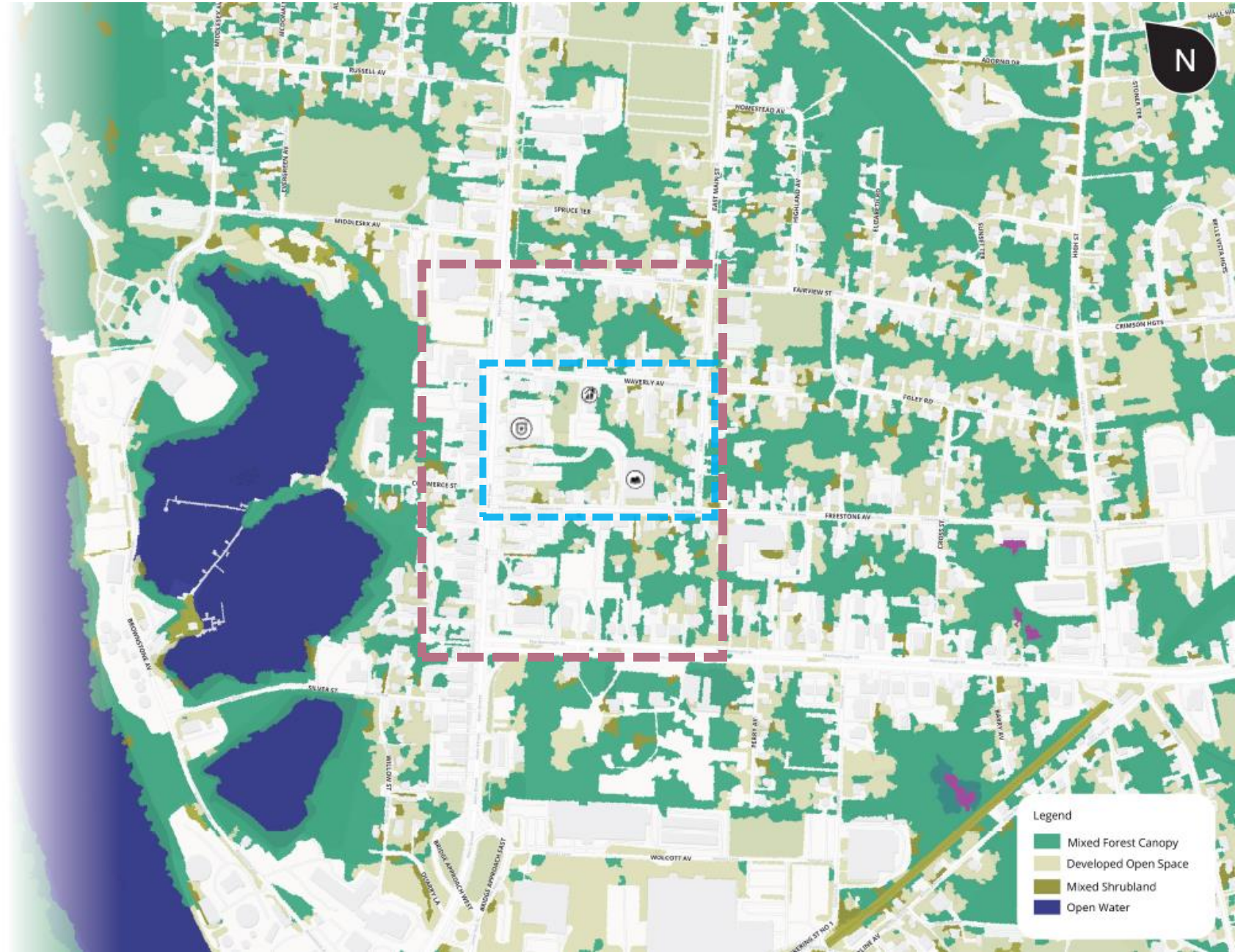
# **03 | Heat Vulnerability + Urban Tree Canopy**







- Hot spots shown along Main Street and in the Library Parking Lot could greatly benefit from additional shade trees and less impervious area



# Heat, Accessibility, & Urban Tree Canopy Analysis

## EXPOSURE

LEAST  MOST

Exposure includes the change, including the magnitude and frequency of extreme events



## SENSITIVITY

LEAST  MOST

The degree to which a built, natural, or human system will be impacted by changes in climate conditions



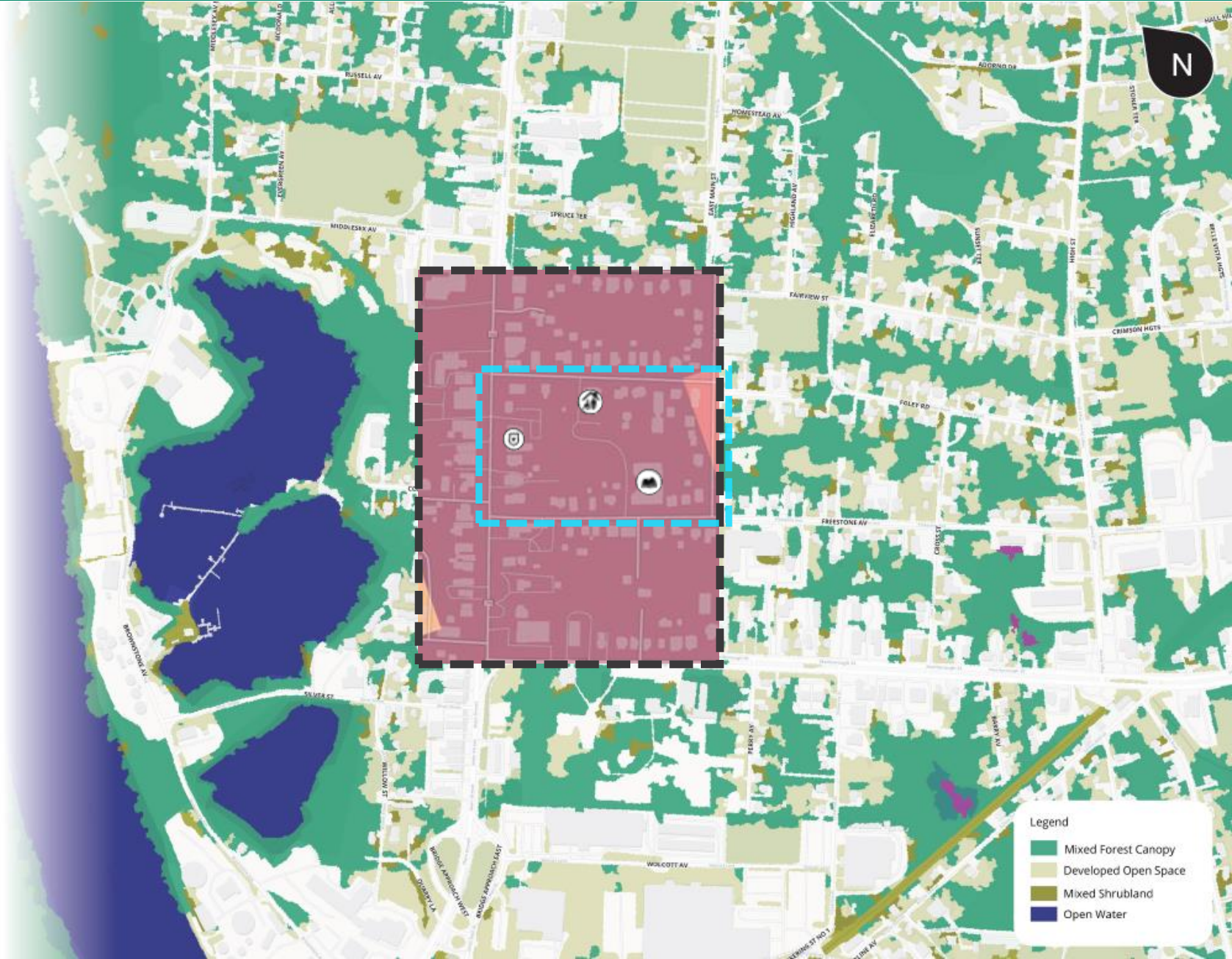
## ADAPTIVE CAPACITY

LEAST  MOST

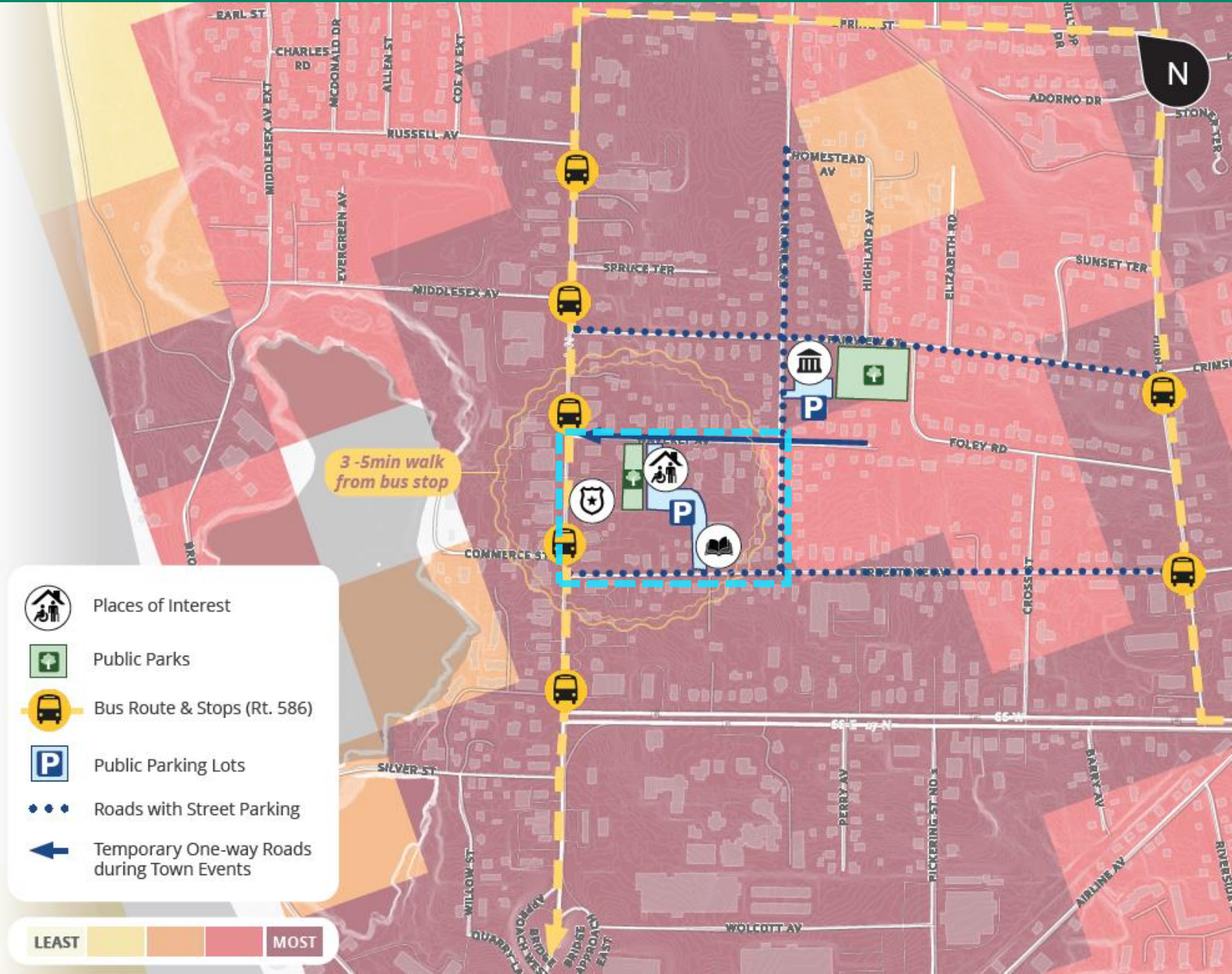
The ability of a system to adjust to changes, manage damages, take advantage of opportunities, or cope with consequences.



- Hot spots shown along Main Street and in the Library Parking Lot could greatly benefit from additional shade trees and less impervious area



- Downtown places of interest, such as the Police Station (🚓), the Public Library (📖), and the Senior Center (👴), are all located within a 3-5min walk from public transit
- Limited Public Parking, especially on high demand days when the Food bank is operational (Monday/Wednesday)





Study Area



Lack of Tree Canopy for Shade



## **04 | Site Observations + Flood Analysis**

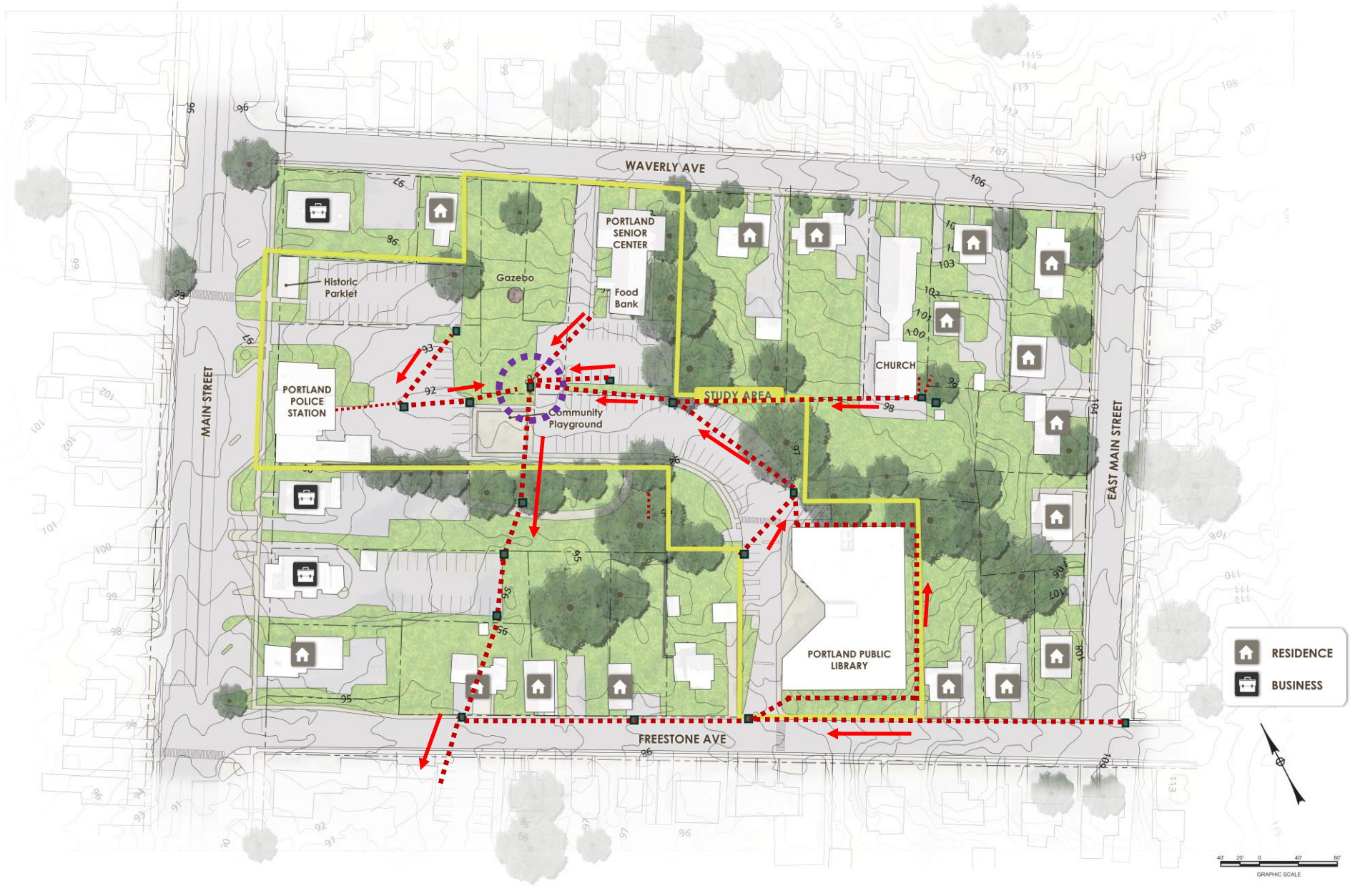
Senior Center Basement,  
September 2023



Municipal Parking Lot: September 2023



# Existing Drainage System



Study Limits



Existing Stormwater Pipe Flow Direction



Existing Stormwater Pipes



Existing Inlets



Inlet 'E'

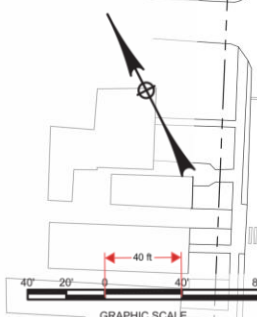
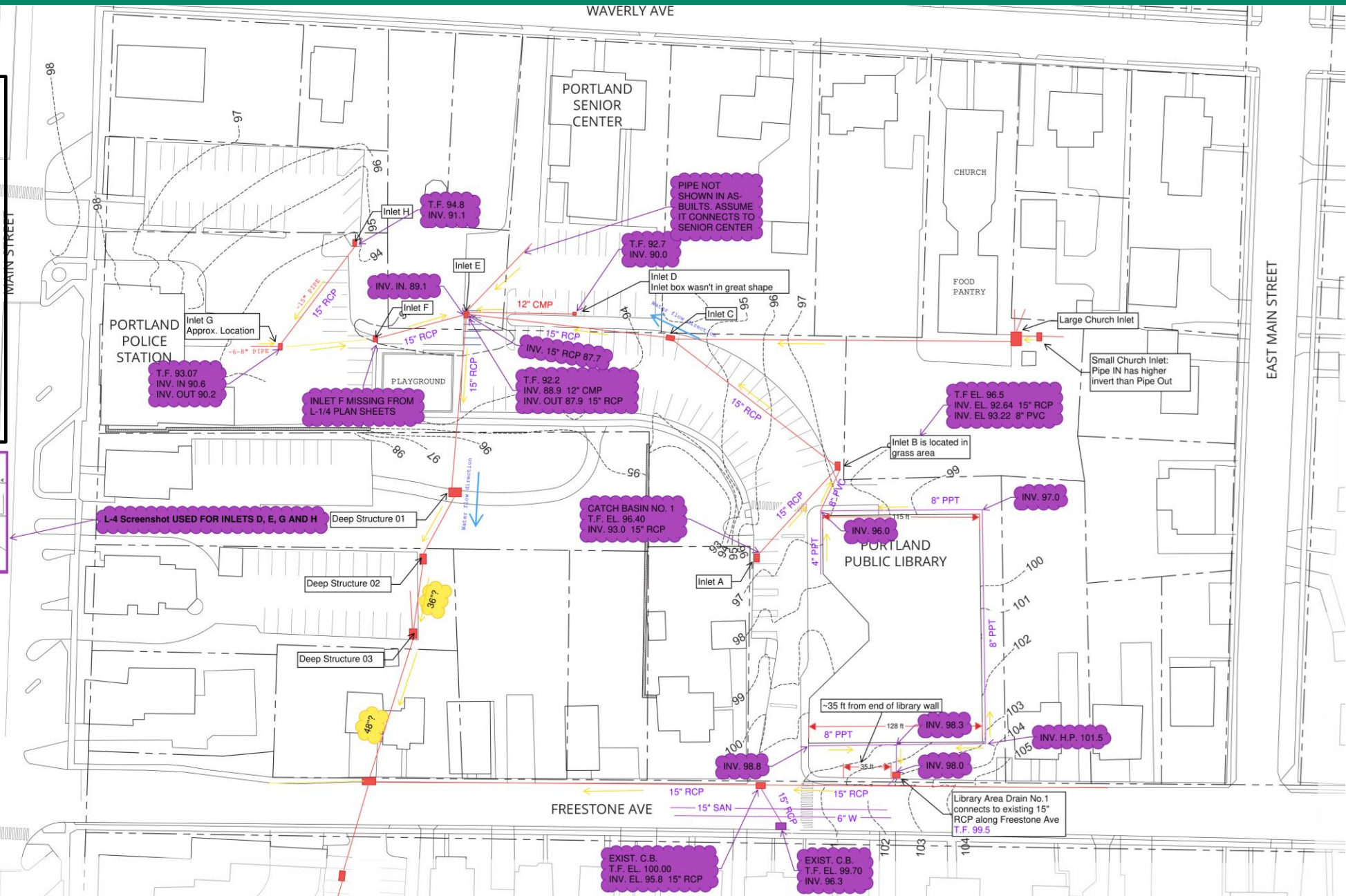
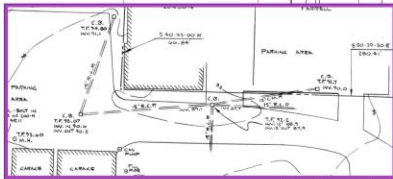


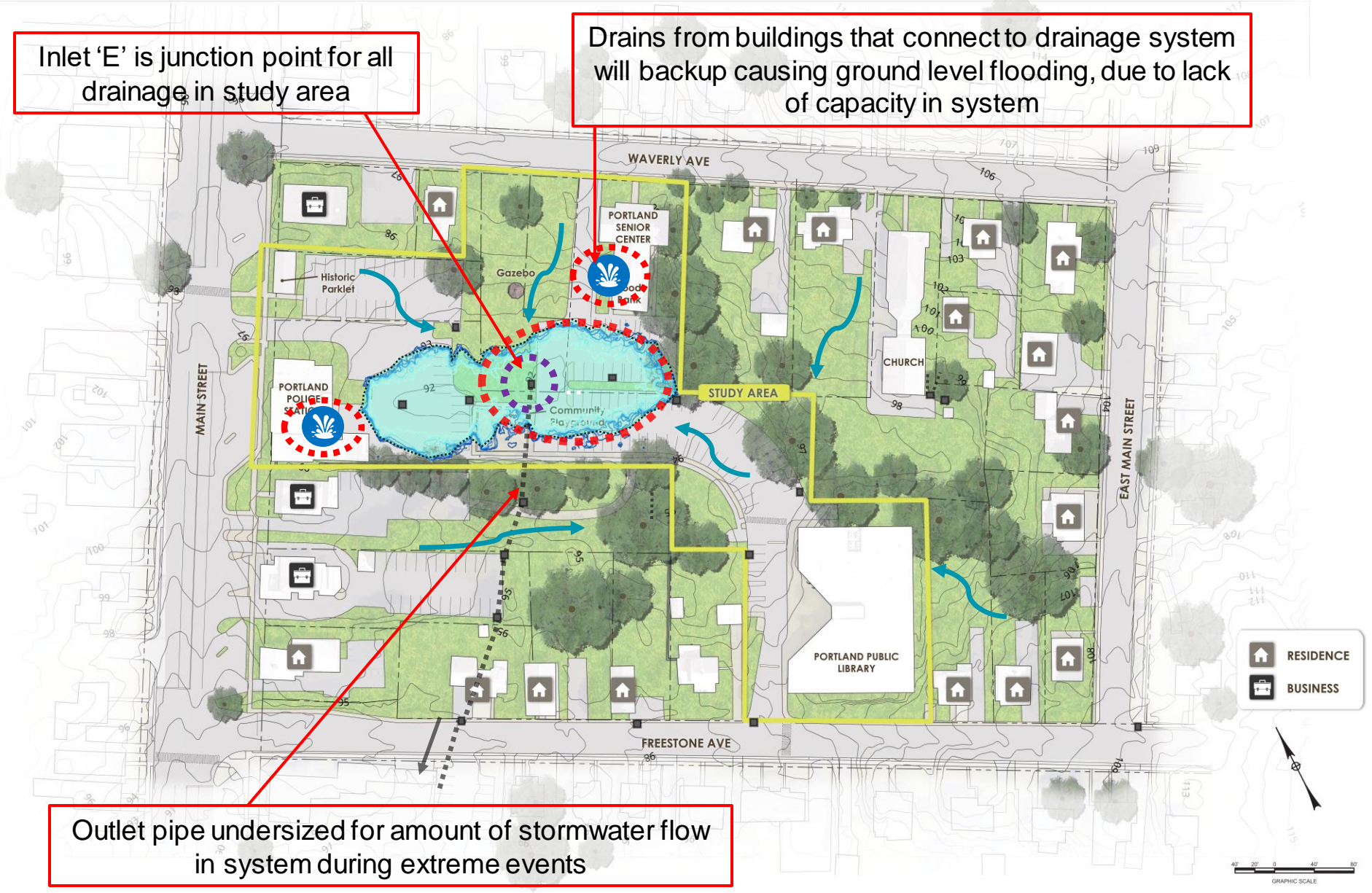
# Site Observations & Drainage Analysis

**RED** SHAPES / LINES  
WERE CONFIRMED  
DURING SITE VISIT

**PURPLE** IS  
INFORMATION FROM  
AS-BUILT LIBRARY  
PLAN SHEETS L-1, L-2,  
L-4

**YELLOW** INFORMATION  
COULD NOT BE  
CONFIRMED BUT IS AN  
ASSUMPTION



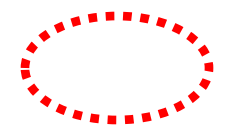


Study Area

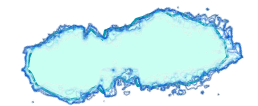


Observed Flooding Zone

September 2023



Modeled Flood Area  
(2 year to 100 year)



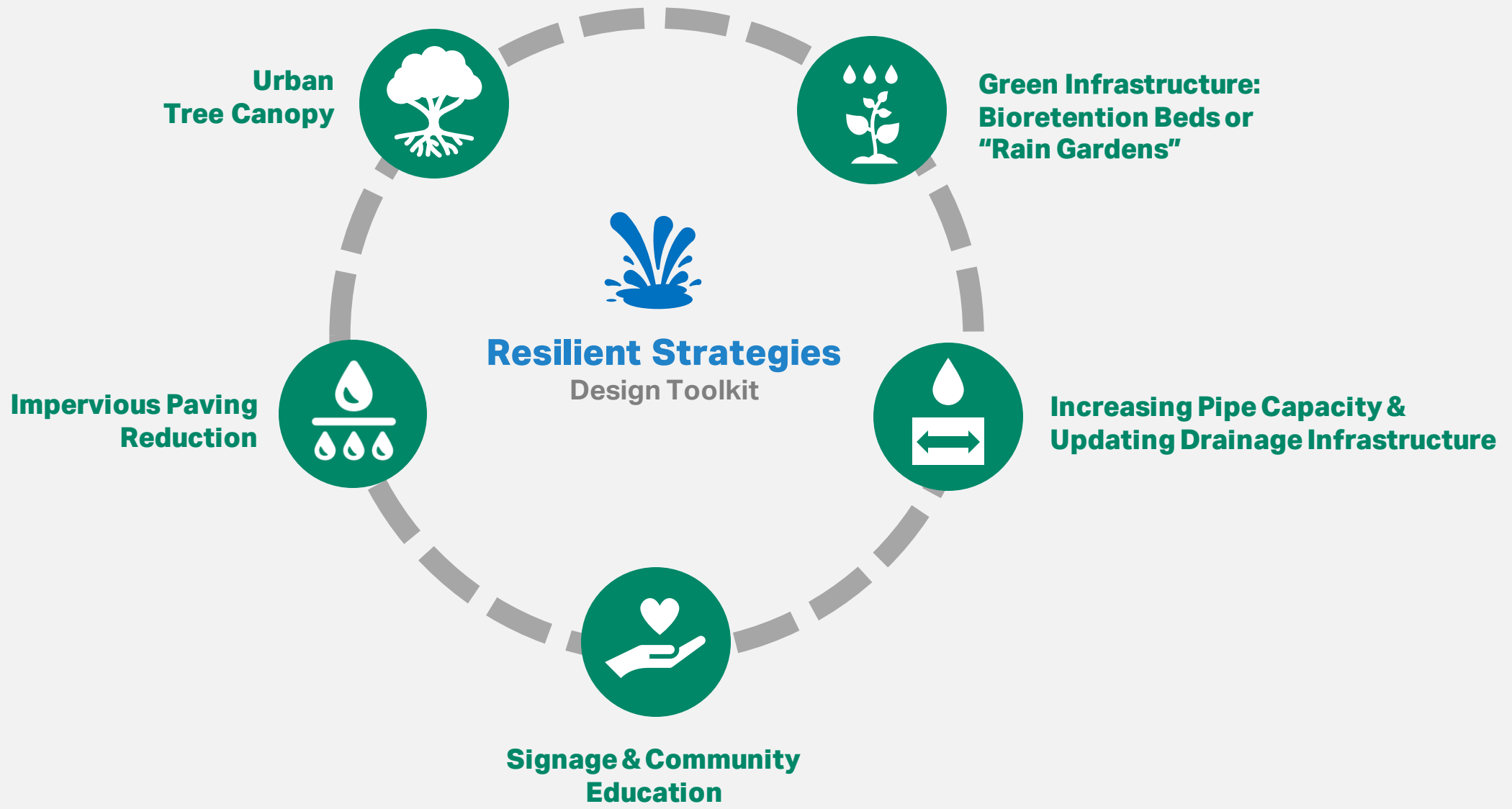
Direction of Runoff



Risk of Pipe Backflow



# **05 | Resilient Design Strategies**

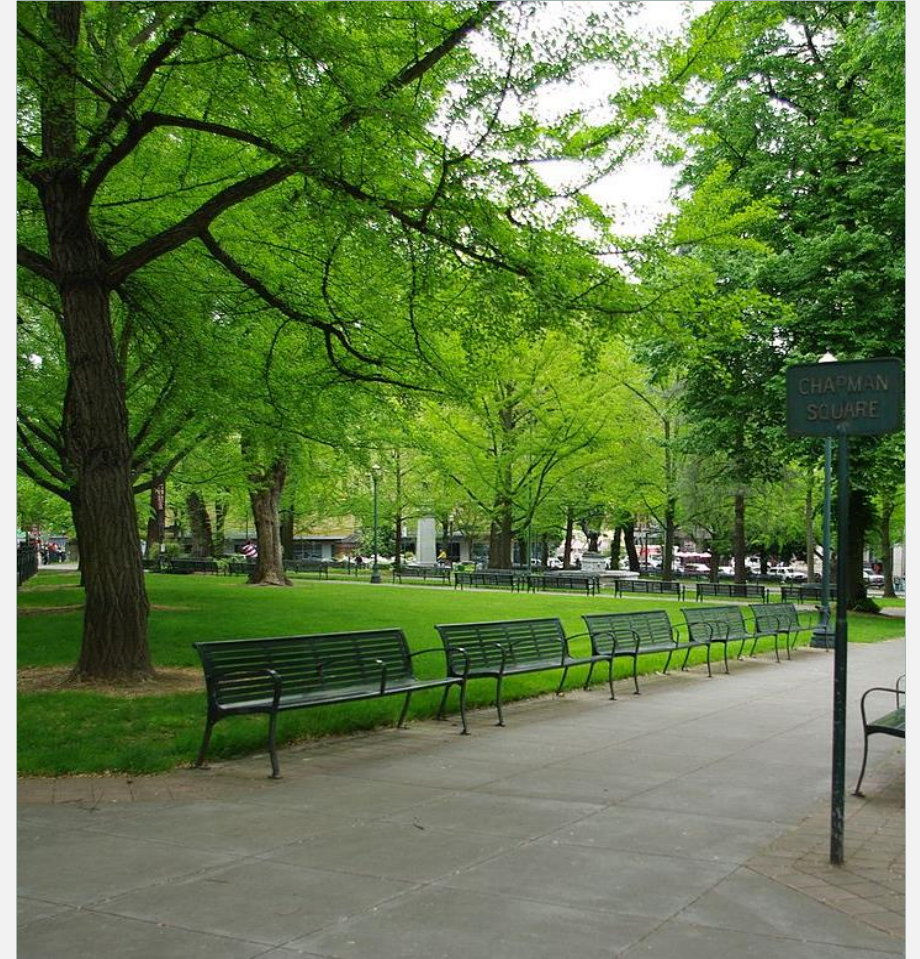




## Expand Urban Tree Canopy

### Key Benefits:

- Provides Shade for healthier community and relief from extreme heat
- Reduces surface temperature at Town green space adjacent to playground
- Improves air quality
- Absorbs additional stormwater runoff

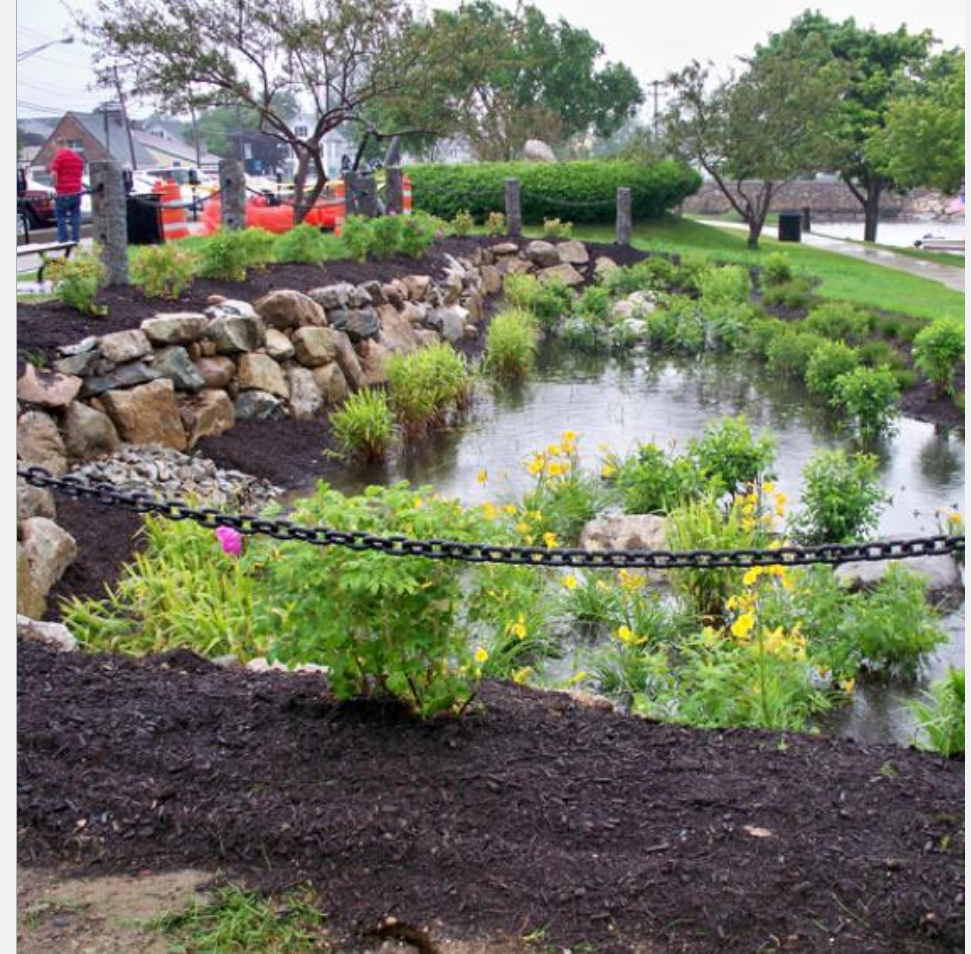




## Incorporate Green Infrastructure: Bioretention Beds or "Rain Gardens"

### Key Benefits:

- Absorbs localized flooding within the site
- Slows rainwater runoff
- Reduces stormwater flow within the drainage system
- Filters pollutants
- Increases biodiversity and helps pollinators with native plantings





## Reduce Impervious Surface (Asphalt): Revise Parking Design and/or Incorporate Pervious Paving Alternatives

### Key Benefits:

- Absorbs surface water
- Helps to maintain groundwater
- Reduces the amount of untreated stormwater runoff
- Reduces hydrocarbon pollution from asphalt
- Provides additional green open space for community enjoyment and cooling



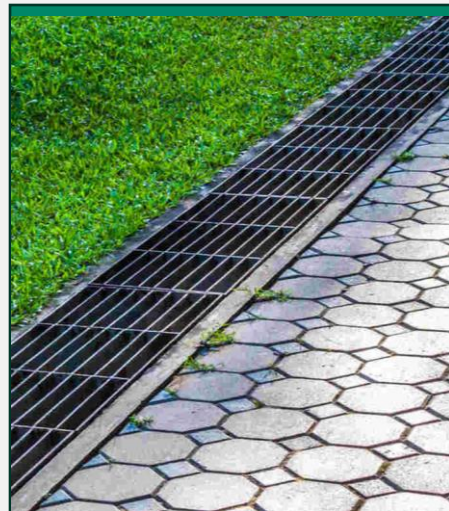




## Increasing Pipe Capacity & Updating Drainage Infrastructure

### Key Benefits:

- Prevents pooling and excessive flooding
- Reduces clogs caused by debris
- Manages higher volumes of water





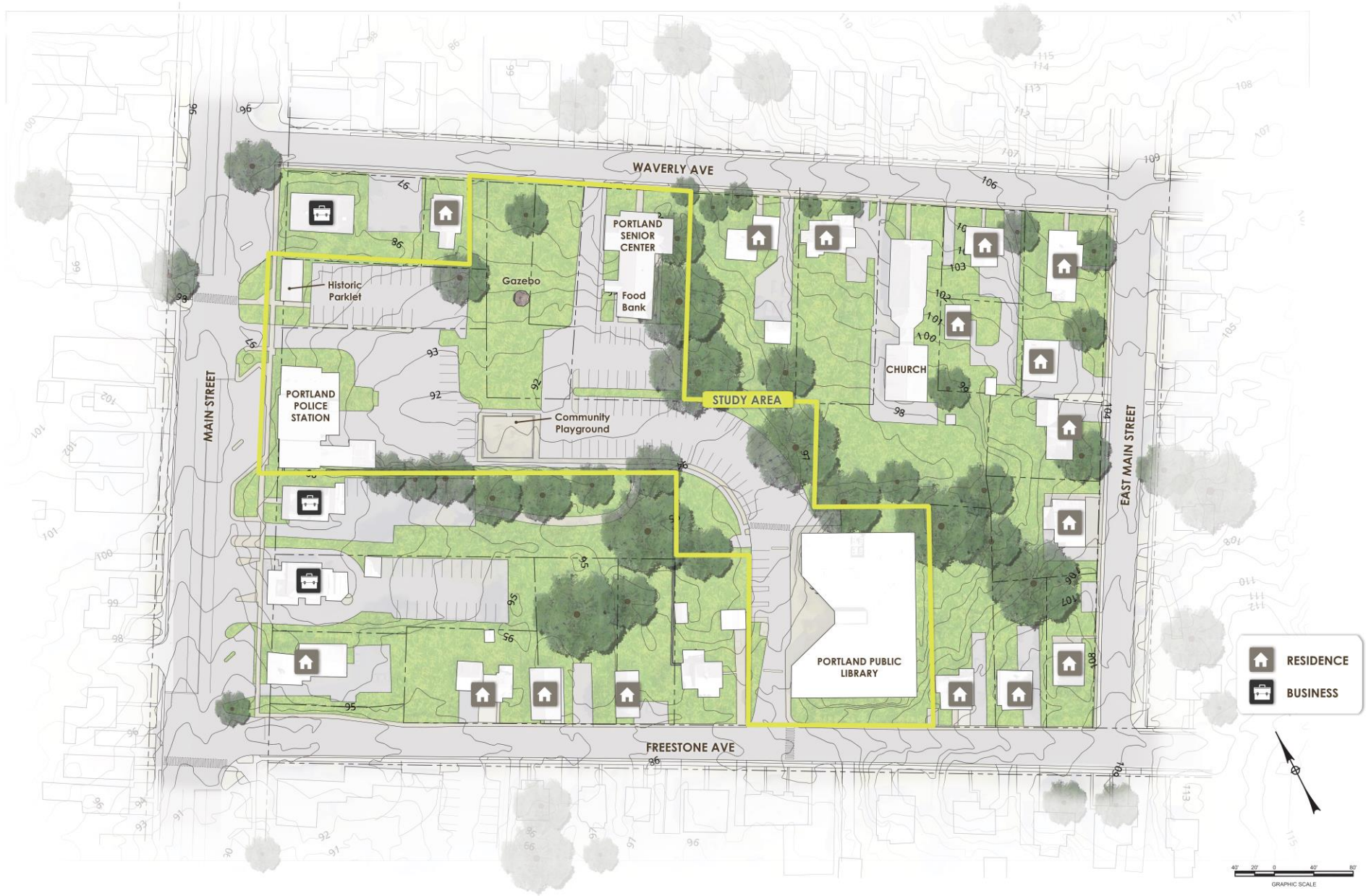
## Signage & Community Education

### Key Benefits:

- Creates more effective solutions
- Empowers and integrates the primary users
- Provides a deeper understanding of challenges and opportunities of resiliency within the community



## 06 | Discussion



## Objectives:

- Reduce flood impact on the critical facilities core of the Town of Portland from effects of excessive flooding and heat.
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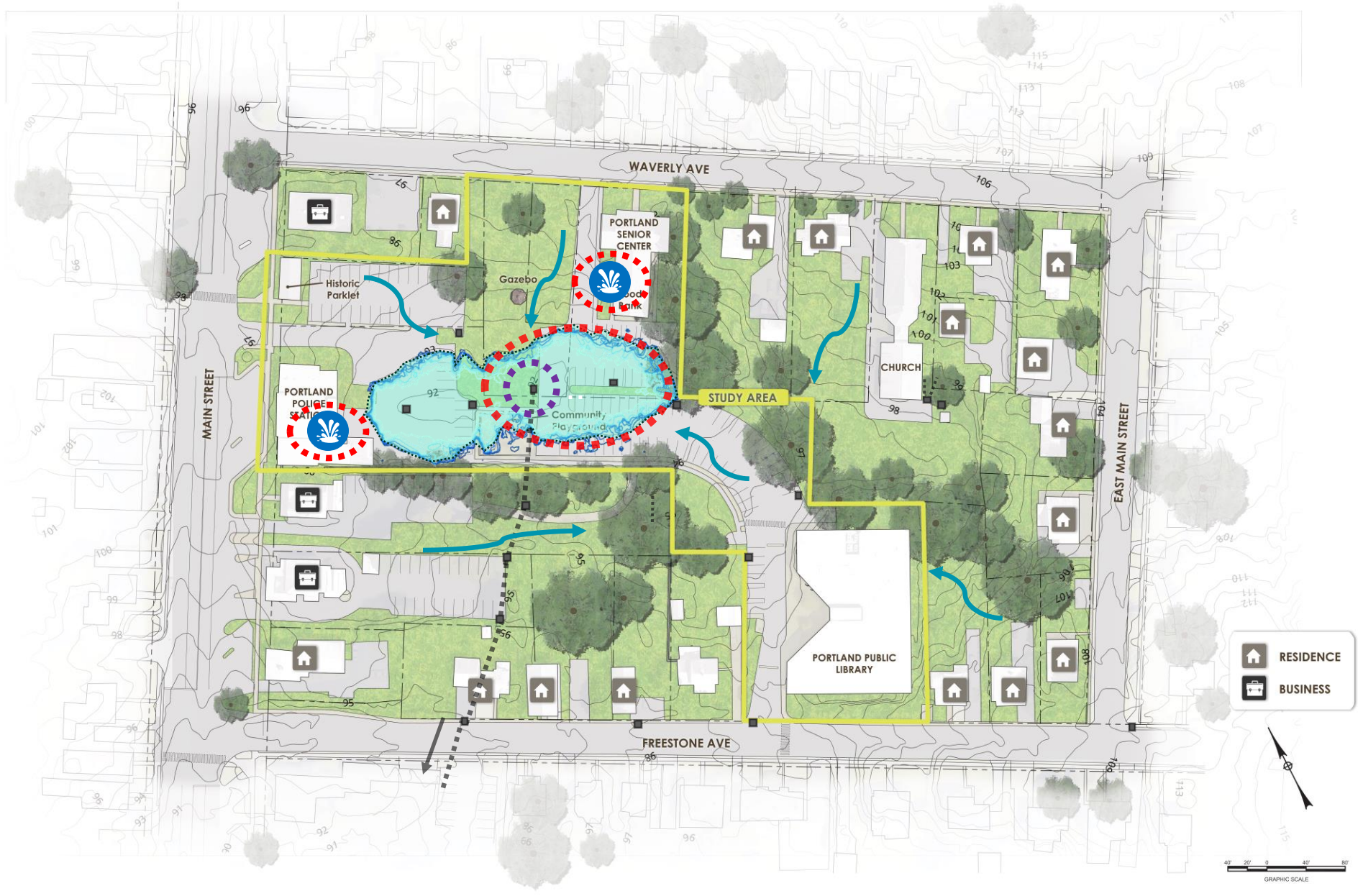
Study Area



Lack of Tree Canopy for Shade



# Site Observations | Flooding Recap



Study Area

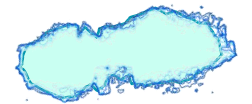


Observed Flooding Zone

September 2023



Modeled Flood Area  
(2 year to 100 year)



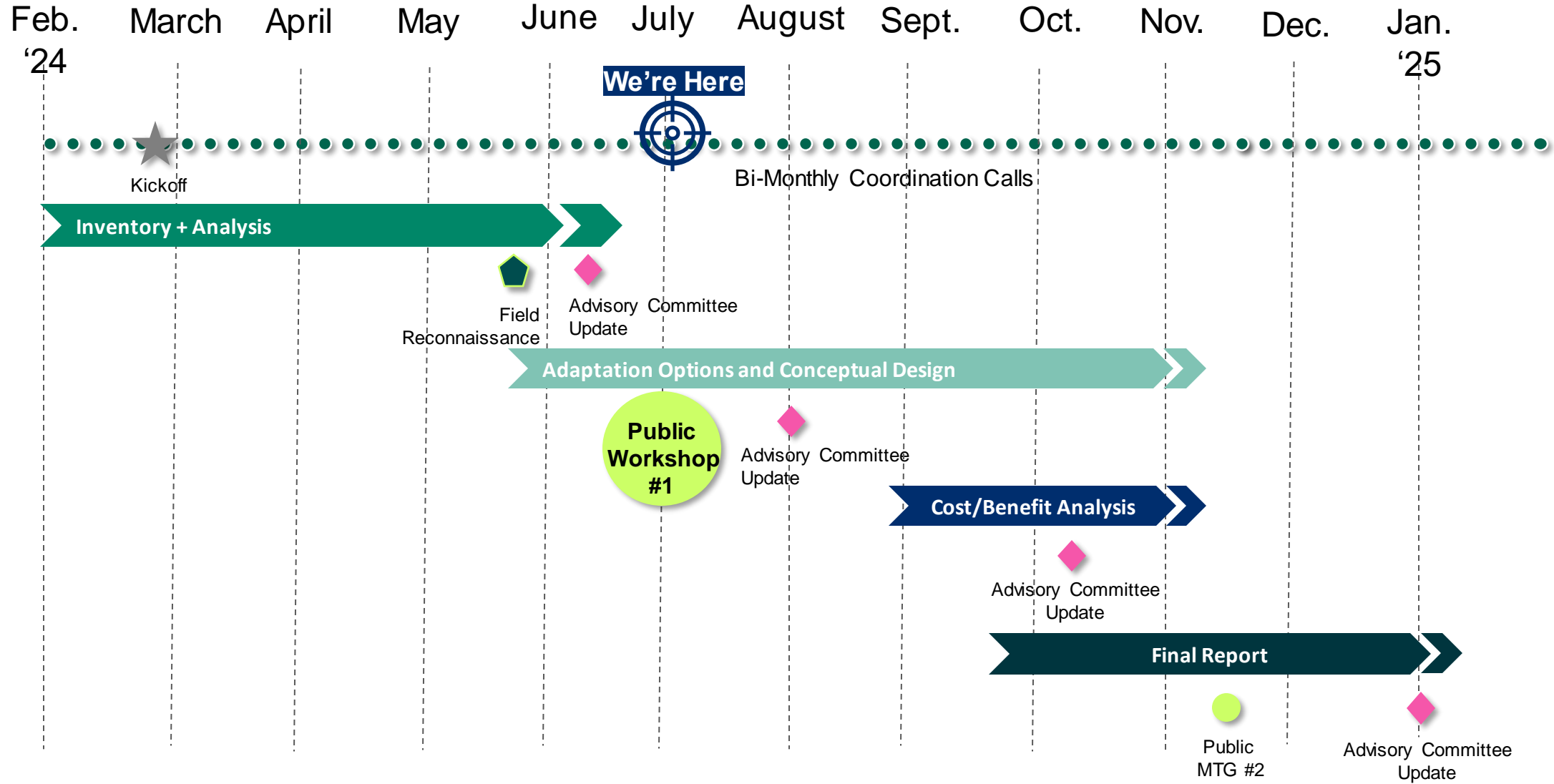
Direction of Runoff



Risk of Pipe Backflow



## **07 | Schedule + Next Steps**





## Next Steps for Project Development

### **NEXT: Develop Adaptation Options and Concept Designs**

- Identify Possible Modifications to Existing Drainage System
  
- Evaluate Adaptation Options:
  - Flood Risk Mitigation
  - Flood-Related Building Retrofit Opportunities
  - Extreme Heat Mitigation Strategies
  
- Develop and Select Preferred Alternatives
  
- Develop Conceptual Designs

*Thank you!*