



# PORTSMOUTH'S HISTORIC DISTRICT AND SEA LEVEL RISE

2018 Climate Summit





# Pre-Disaster Planning Grants for Historic Properties, Portsmouth, NH







Partridge Street







Ceres Street



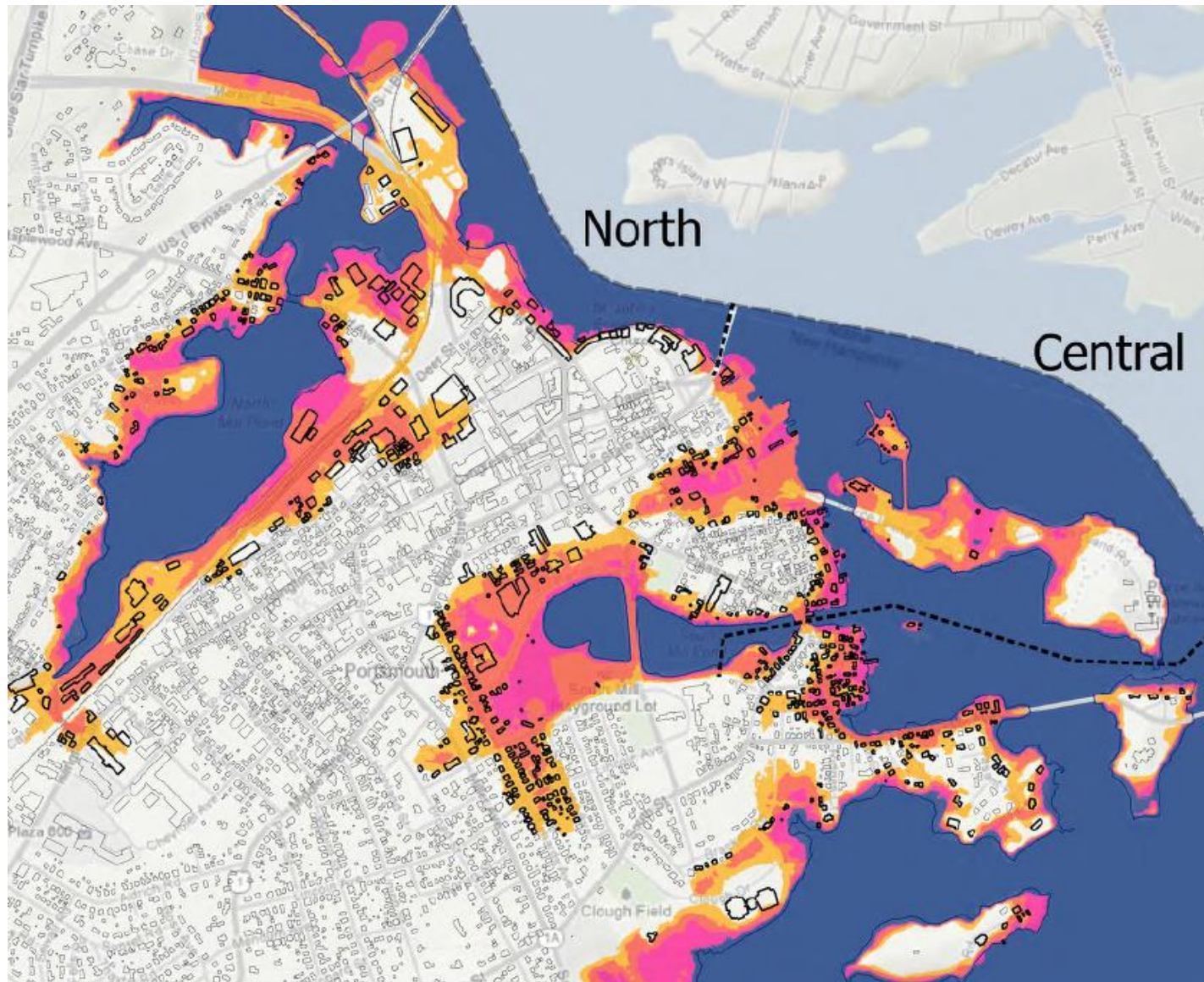




Marcy Street



## 13.5' Flooded Building Layer



# Local Adaptation Committee

Assembled by City staff with >10 members from

- Historic District Commission
- Strawberry Banke
- Interested local businesses and residents
- City Departments

Five meetings through 2017

- Review project progress
- Evaluate results and how to use them
- Contribute to draft recommendations

# Historic Valuation in the NRHP District



- Valuation Score 5
  - Retains all aspects of integrity
  - Very little or no alterations or modern materials
  - Historically sensitive restoration and/or renovation



# Historic Valuation in the NRHP District



- Valuation Score 4
  - Retains nearly all aspects of integrity
  - Very few alterations
  - Only minor use of modern building materials
  - Historically sensitive restoration and/or renovation



# Historic Valuation in the NRHP District



- Valuation Score 3
  - Retains some aspects of integrity
  - Large or significant alterations
  - Additions
  - Use of modern building materials and/or partial loss of original materials
  - Still retains some historic characteristics



# Historic Valuation in the NRHP District



- Valuation Score 2
  - Retains very few aspects of integrity
  - Large or significant alterations
  - Additions, especially on the main facade
  - Use of modern building materials and loss of majority of original materials
  - Retains very few historic features



# Historic Valuation in the NRHP District

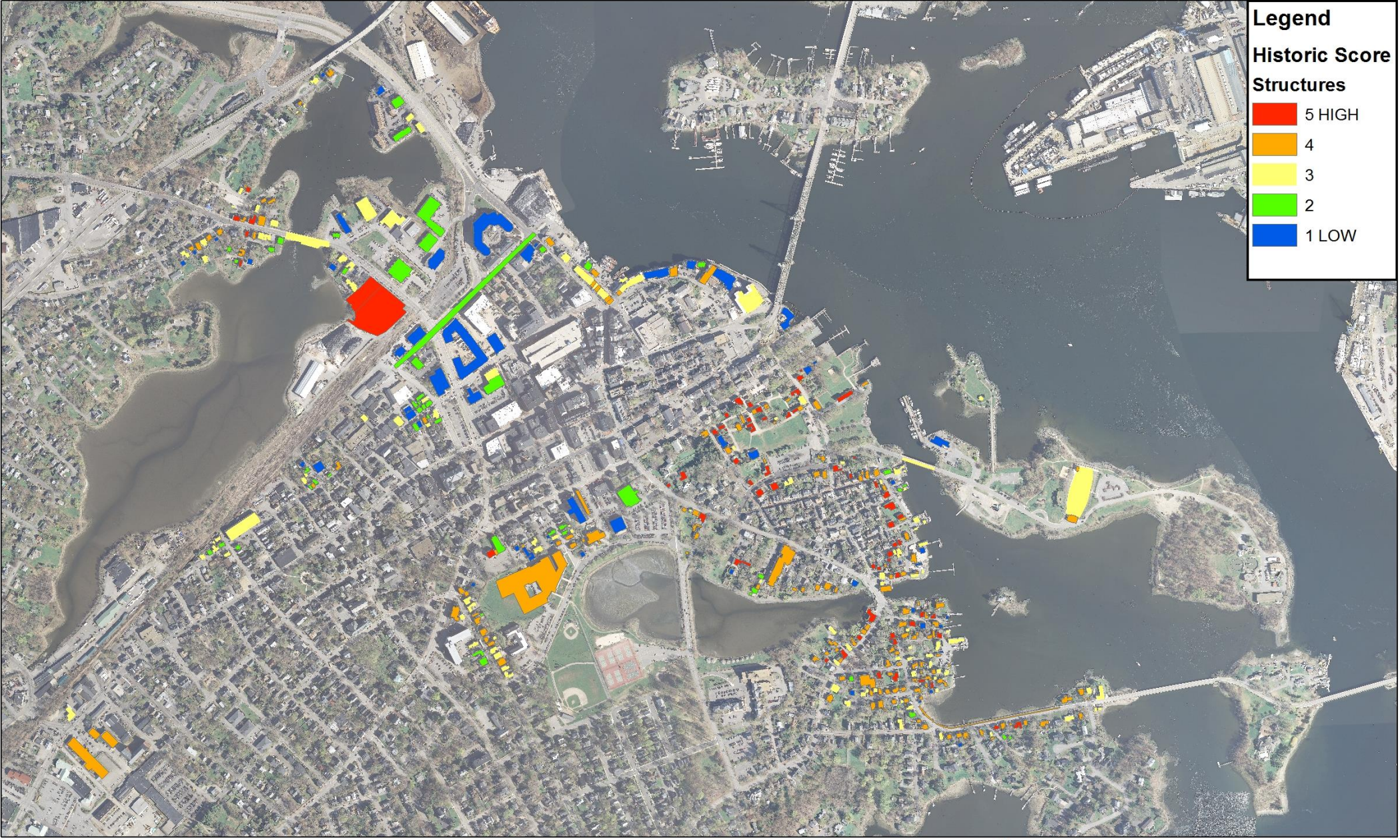


- Valuation Score 1
  - Not of historic age
  - Retains almost no historic/original building materials
  - Major additions and/or alterations
  - No longer exhibits historic features



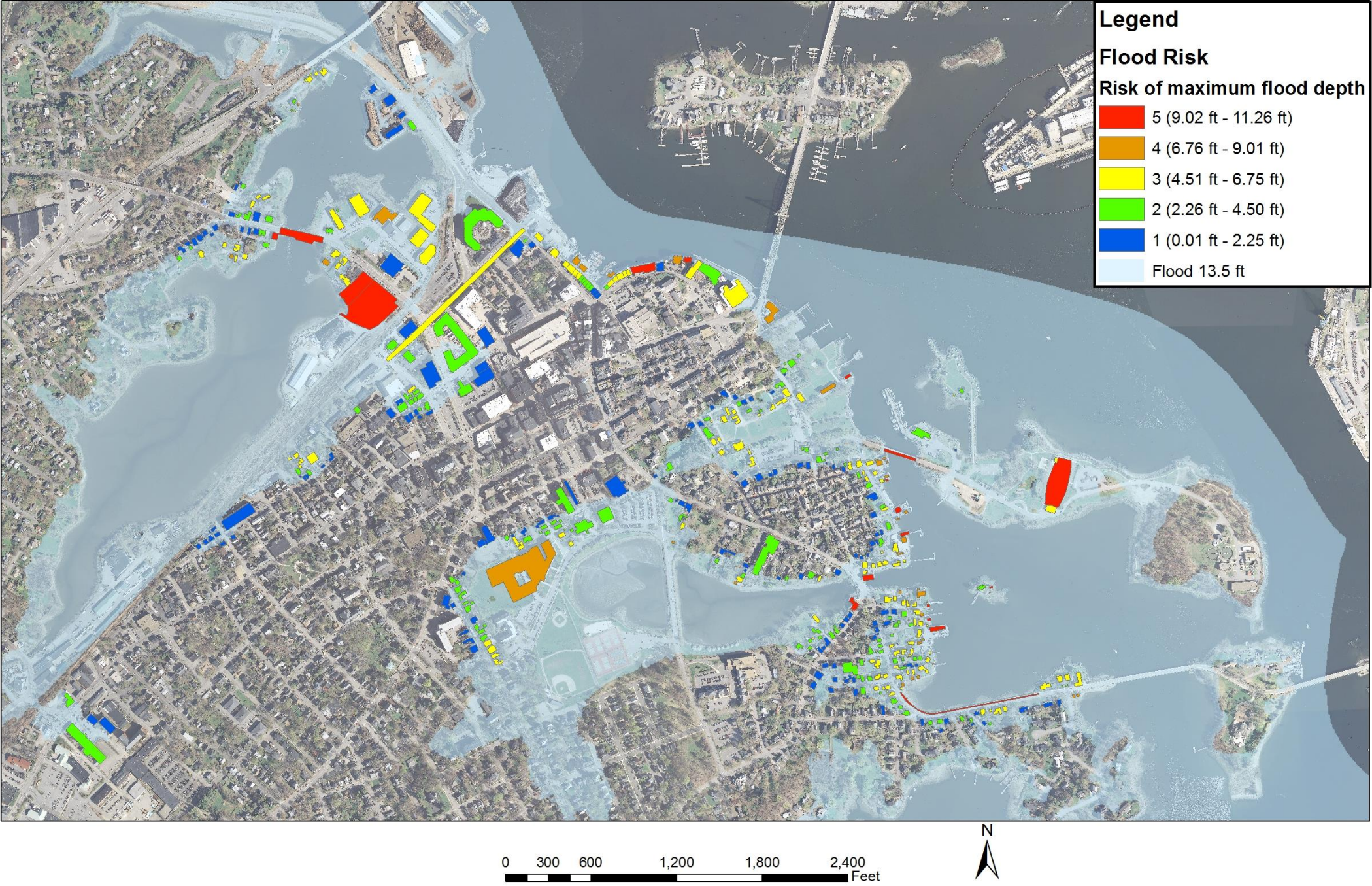


Portsmouth's Historic District and Sea Level Rise



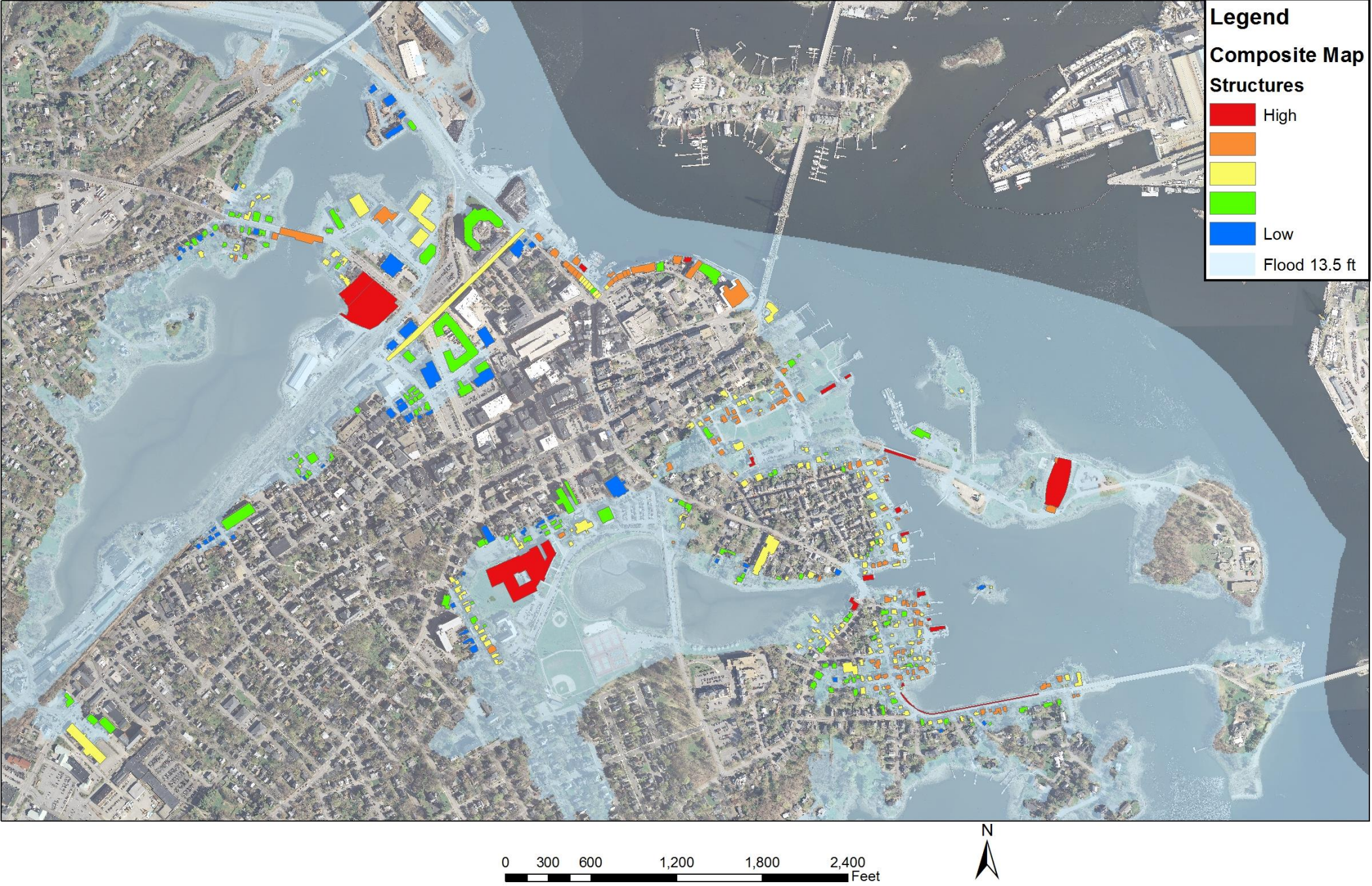


Portsmouth's Historic District and Sea Level Rise





Portsmouth's Historic District and Sea Level Rise





# Adaptation Actions

- 1) Examined 16 candidate locations and specific actions
- 2) Considered planning and emergency management actions
- 3) Developed possible groundwater monitoring actions

# Adaptation Actions

- 1) Examined 16 candidate locations and specific actions
  - Grouped by neighborhood and action type
  - Presented in an interactive online format



# Story Map Online Visualization

Actions evaluated included

- Floodproofing structures (dry and wet techniques)
- Structural elevation
- Sea walls, revetments
- Voluntary buyout programs
- Floodproofing rebate programs

<https://arcg.is/1XXj5u>



# Story Map Online Visualization

For each action we discuss:

- Potential feasibility
- Potential effectiveness
- Potential cost
- Potential impacts to historic character

<https://arcg.is/1XXj5u>





# Portsmouth Historic Vulnerability Assessment

## Strategy #5

<https://arcg.is/1XXj5u>



359 Marcy Street (Sanders Fish Market)

### Candidate Action

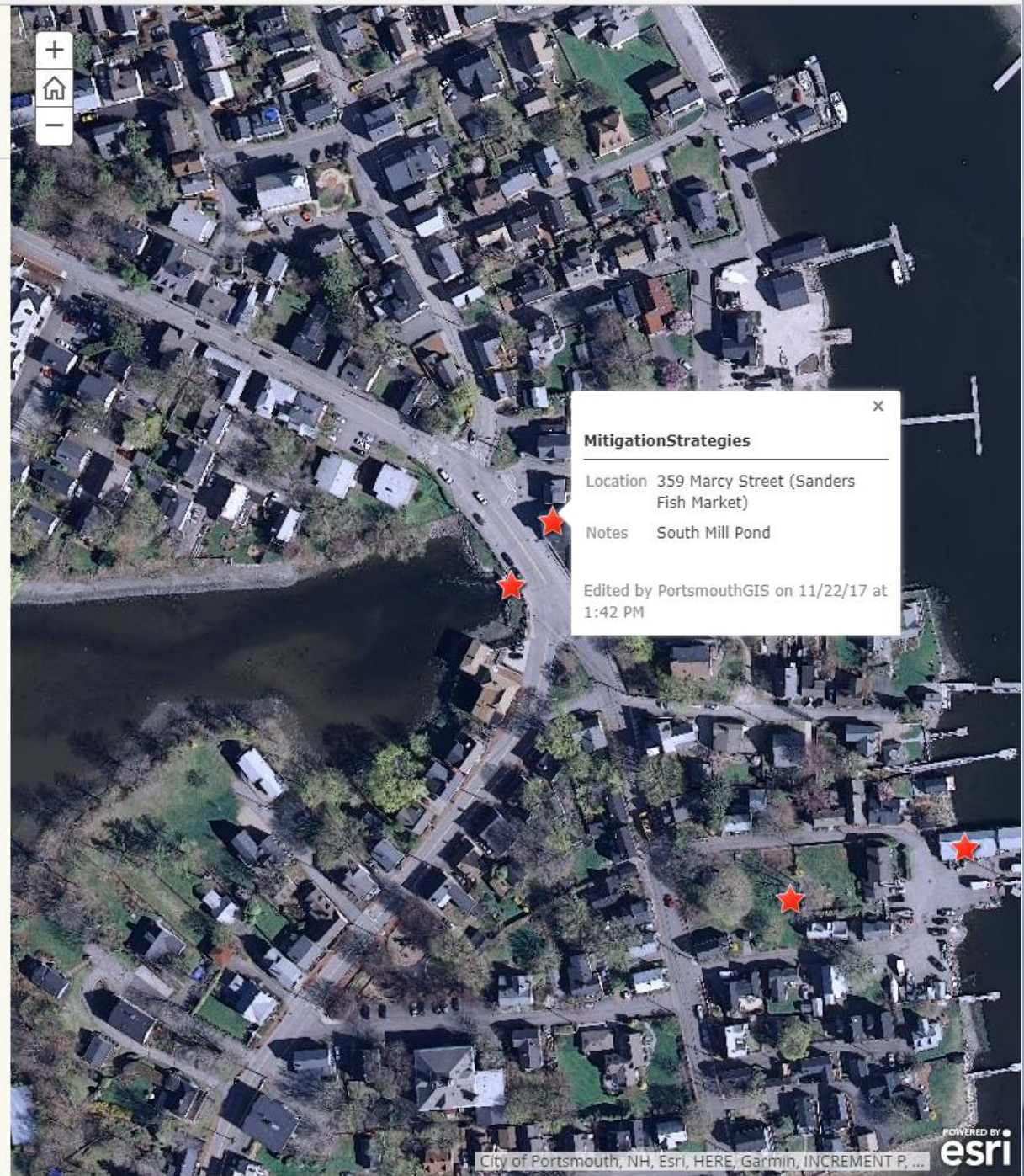
Elevate structure

### Potential Feasibility

Structural elevation is a standard approach used in many commercial and residential coastal settings. Feasibility is often determined by cost and who would pay; complications of making changes to existing utility connections; public perception of the proposed elevation; road and parking access that may need to be reconfigured; or rights of way that may be compromised. With proper planning and attention at this site few of these constraints are likely to be impossible to address, but there may need to be a substantial and coordinated effort to increase public acceptance and address legal and regulatory issues invoked by the effort. Although a subset of these actions may be feasible for this structure, firm conclusions would need to be further evaluated through additional engineering and conversations with the property owner.

### Potential Effectiveness

When structures and their contents are entirely elevated above where flood waters are likely to pass, they are less likely to be damaged – so with proper construction this action has strong potential to protect the structure from damages from sea level rise, storm surge, and extreme rainfall events. Prior to reaching firm conclusions about likely effectiveness, however, these possibilities would need to be carefully evaluated using hydrologic models and other engineering investigations.





# Portsmouth Historic Vulnerability Assessment

## Strategy #16



Bow Street

### Candidate Actions

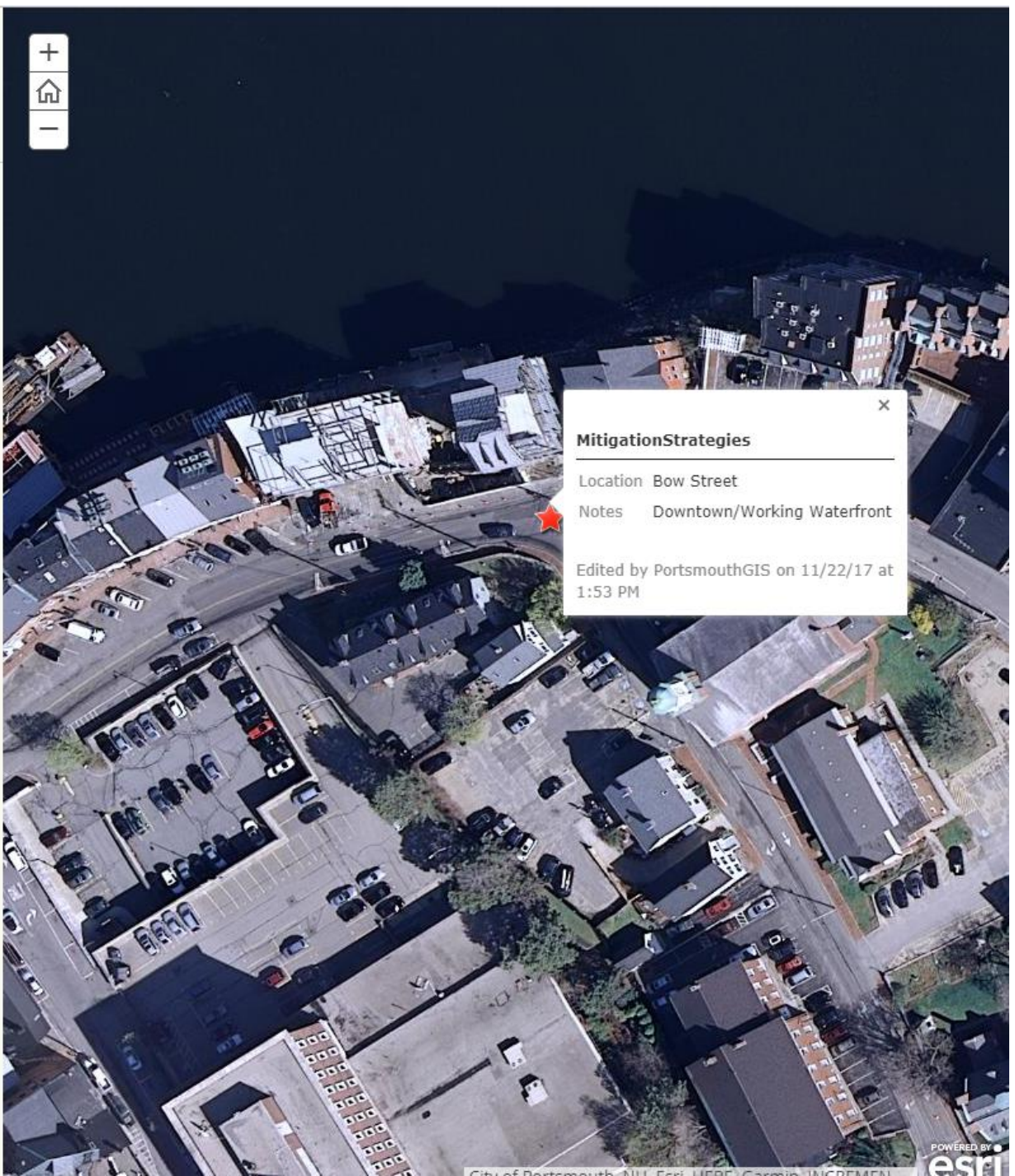
Designate a floodproofing retrofit district, offer rebate program for commercial retrofits

### Potential Feasibility

The row of structures along the water on Bow Street avenue has a relatively high composite value and risk score. One option that may benefit structures throughout the Downtown/Working Waterfront strategy area or the whole City is creation of a flood district where a rebate program that covers part of the cost of implementation of floodproofing techniques would be offered for businesses. Programs of this type resemble rebate programs that many municipalities offer for installing solar panels. Feasibility would likely be determined by political will to support the financial commitment to be made by the City, however firm conclusions would need to be developed through careful evaluation of social, political, and financial capacity for broad-based programs of this type in the City.

### Potential Effectiveness

Depending on degree of participation in such a program, it could substantially reduce potential for flood-related losses throughout a designated flood district. Prior to reaching firm conclusions about likely effectiveness, however, these possibilities would need to be carefully evaluated using hydrologic models to confirm amounts of protection each type of floodproofing under consideration might convey to structures in the district.





# Collaborative Monitoring

- Steps taken to track changes that could trigger actions in policy, finance, or other adaptation action. e.g.,
  - Property owners checking basements for humidity and standing water, possibly through checklists provided to homeowners with request for data submission.
  - The City establishing a new network of groundwater monitoring wells and a system to track changes over time and identify appropriate actions at certain trigger points.
  - Have a full time summer fellow working on surveying most vulnerable properties to determine impacts and possible next steps.