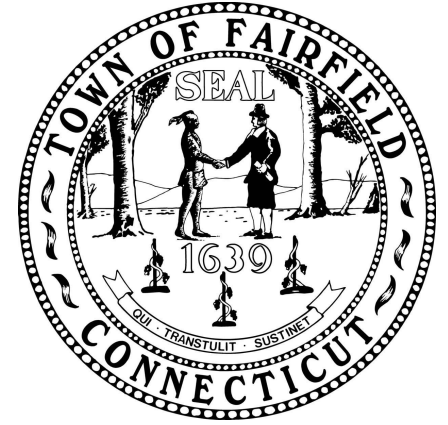


# Town of Fairfield GIS Mapping Project

UConn Climate Corps Semester Project

Kristopher Dow

May 3, 2023



**UCONN**  
COLLEGE OF AGRICULTURE,  
HEALTH AND NATURAL  
RESOURCES

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EXTENSION

# Project Introductions



Kristopher Dow – UConn Student Project Lead

Julianna Barrett – Project Advisor/UConn Extension

Dave Dickson – Interim CLEAR Director/UConn Extension

Zbigniew Grabowski – UConn Extension

Chester Arnold – UConn Extension

Mary Donegan – Urban and Community Studies Professor

UConn Climate Corps Classmates

Becky Bunnell – FECB Chair

Emmeline Harrigan – Assistant Planning Director

Jim Wendt – Planning Director

Donald Lamberty – FECB Vice-Chair

Ross Murray – Town Assessor

Bill Hurley – Engineering Manager

Flood and Erosion Control Board Members

# Project Overview



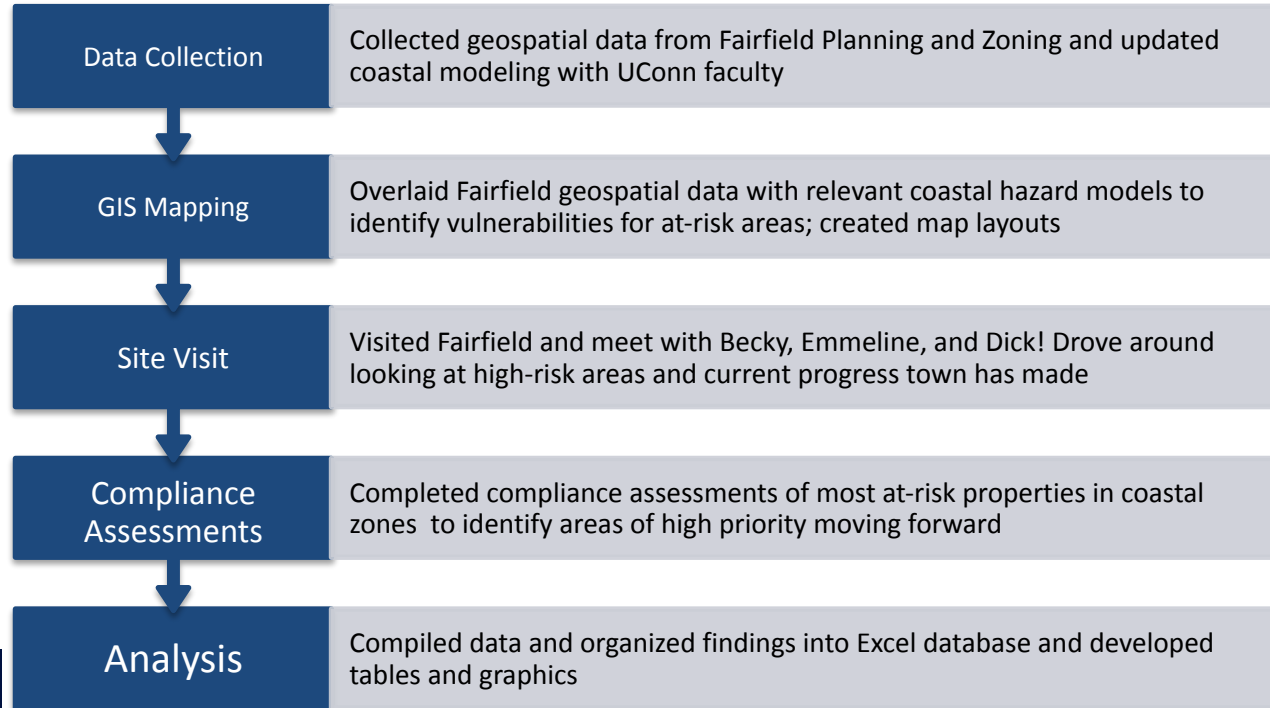
## □ Fairfield, CT - Background

- High Risk of Coastal and Riverine Flooding
  - 15% of residential areas is in flood plane
- Superstorm Sandy
  - Damaged over 600+ homes
- Cost to Adapt
  - Estimated cost of raising a home is \$175,000 - \$300,000
  - FEMA grants

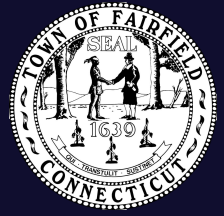
## □ Project Deliverables

- Updated GIS Mapping
- Excel Database of Flood Zones in Town
  1. Hurricanes Surge Projections
  2. 20-inch Sea Level Rise Projections
  3. FEMA FIRM Maps
- Compliance Assessments

# Project Timeline

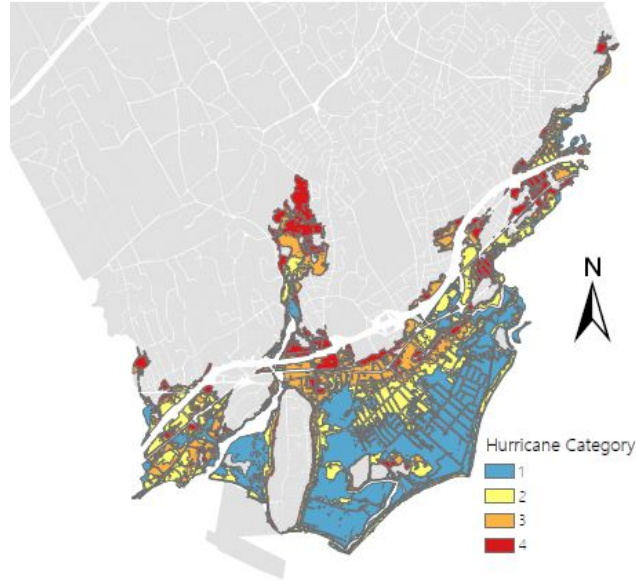


# Hurricane Surge Projections



<b>Category 1</b>
Area inundated by a hurricane category 1 storm. A hurricane category 1 storm has a maximum sustained wind speed of 74-95 mph.
<b>Category 2</b>
Area inundated by a hurricane category 2 storm, which would also include. A hurricane category 2 storm would inundate this area and the category 1 areas shown on the map. A hurricane category 2 storm has a maximum sustained wind speed of 96-110 mph.
<b>Category 3</b>
Area inundated by a hurricane category 3 storm. A hurricane category 3 storm would inundate this area and the category 1 and 2 areas shown on the map. A hurricane category 3 storm has a maximum sustained wind speed of 111-130 mph.
<b>Category 4</b>
Area inundated by a hurricane category 4 storm. A hurricane category 4 storm would inundate this area and the category 1, 2, and 3 areas shown on the map. A hurricane category 4 storm has a maximum sustained wind speed of 131-155 mph.

## Town of Fairfield Coastal Hurricane Surge



0 0.5 1 1.5 Miles

Source: Connecticut Institute for Resilience & Climate Adaptation (CIRCA)  
K. Dow (2023)

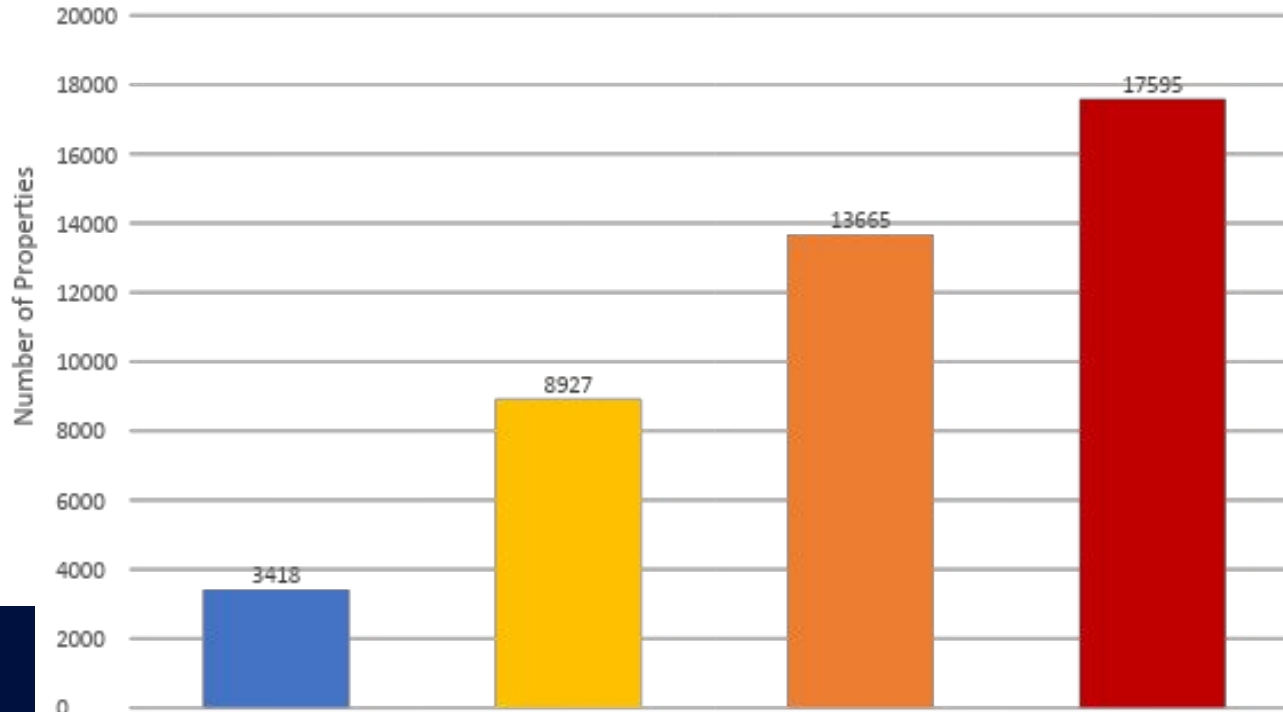
This layer shows Hurricane Surge Inundation for hurricanes striking the coast with a peak surge arriving at high mean water. This layer was developed by the National Hurricane Center using the Sea Lake and Overland Surge from Hurricanes (SLOSH) Model. The SLOSH model hurricane surge elevations have an accuracy of +/- 20 percent.

Source: CIRCA/CT DEEP

# Hurricane Surge Projections



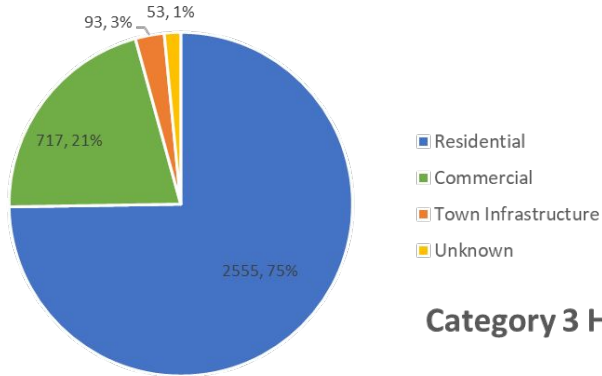
## Hurricane Surge Impact in Fairfield, CT



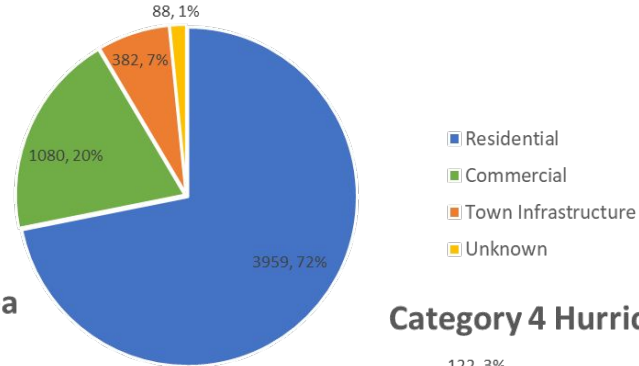
# Hurricane Surge Projections



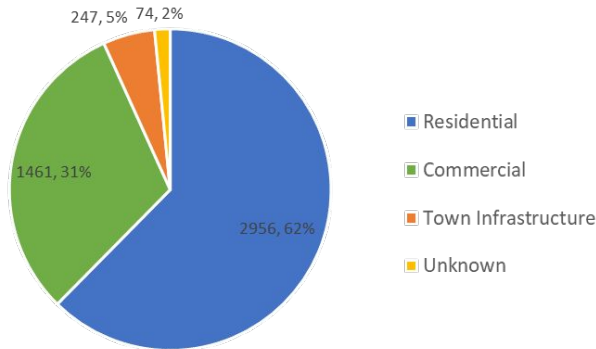
Category 1 Hurricane Surge Area



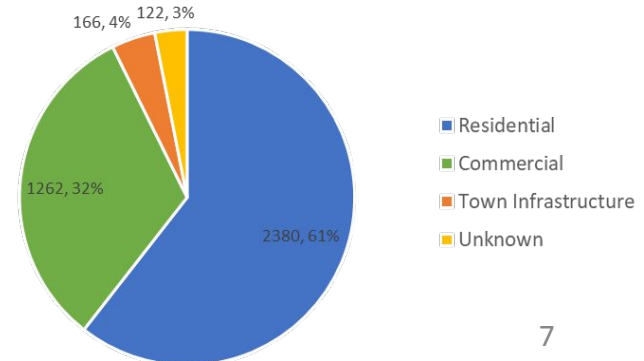
Category 2 Hurricane Surge Area



Category 3 Hurricane Surge Area



Category 4 Hurricane Surge Area



# FEMA National Flood Hazard Layer – FIRM



## National Flood Hazard Layer FIRMette



### Legend

SEE FIG REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Description
(Light Blue)	Without Base Flood Elevation (BFE) Zone A, X, VE
(Dark Blue)	With BFE or Depth Zone AE, AO, AH, V1, VE, AH
(Red)	Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD	Description
(Orange)	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile. Zone B
(Yellow)	Future Conditions 1% Annual Chance Flood Hazard Zone F
(Green)	Area with Reduced Flood Risk due to Levees. See Notes. Zone D
(Light Green)	Area with Flood Risk due to Levees. Zone D

OTHER AREAS	Description
(White)	Area of Minimal Flood Hazard Zone X
(Blue)	Effective LOWRIs
(Light Orange)	Area of Undetermined Flood Hazard Zone D

GENERAL STRUCTURES	Description
(Dashed line)	Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall

OTHER FEATURES	Description
(Circle with 'A')	Cross Sections with 1% Annual Chance
(Circle with 'S')	Water Surface Elevation
(Dashed line)	Coastal Transect
(Dashed line)	Base Flood Elevation Line (BFE)
(Red line)	Limit of Study
(Green line)	Jurisdiction Boundary
(Dashed line)	Coastal Transect Baseline
(Blue line)	Profile Baseline
(Blue line)	Hydrographic Feature

MAP PANELS	Description
(Green square)	Digital Data Available
(Light Green square)	No Digital Data Available
(White square)	Unmapped

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards.

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 10/13/2023 at 8:22:09 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unredetermined areas cannot be used for regulatory purposes.



## Moderate to Low Risk (Flood Insurance is Available)

- Zone X (shaded)** - Area of moderate flood hazard, usually the area between the limits of the 100- year and 500-year floods. B Zones are also used to designate base floodplains of lesser hazards, such as areas protected by levees from 100-year flood, or shallow flooding areas with average depths of less than one foot or drainage areas less than 1 square mile

## High Risk Areas (Mandatory Flood Insurance Req.)\*

- Zone A** - The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.
- Zone AE** - The base floodplain where base flood elevations are provided. AE Zones are now used on new format FIRMs instead of A1-A30 Zones.

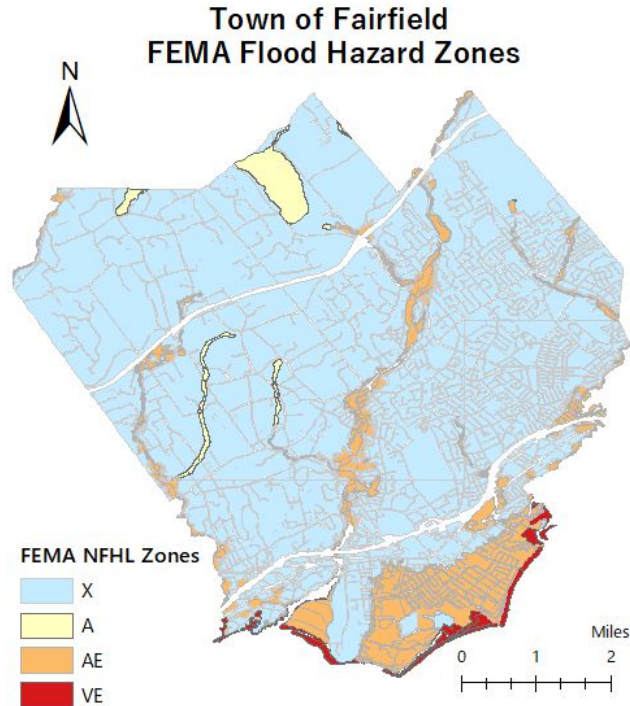
## Coastal High-Risk Areas (Mandatory Flood Insurance Req.)\*

- Zone VE, V1-30** - Coastal areas with a 1% or greater chance of flooding and an additional hazard associated with storm waves. These areas have a 26% chance of flooding over the life of a 30-year mortgage. Base flood elevations derived from detailed analyses are shown at selected intervals within these zones.

\* Only applicable to communities that participate in NFIP



# FEMA National Flood Hazard Layer (NFHL)



Source: FEMA NFHL  
K. Dow (2023)

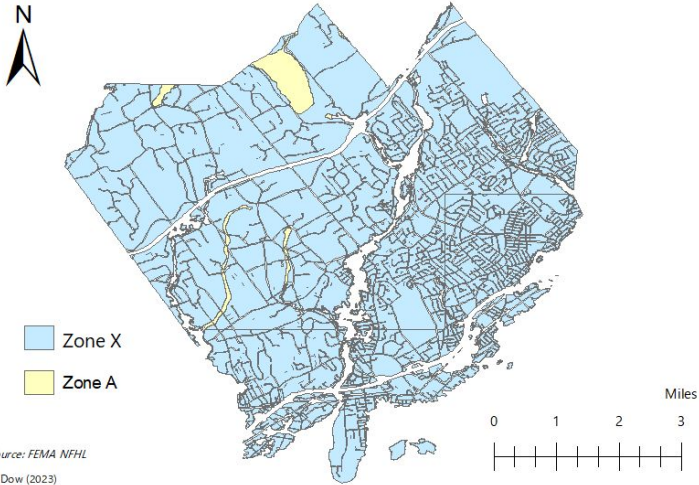
*Flood zones are geographic areas that the FEMA has defined according to varying levels of flood risk. These zones are depicted on a community's Flood Insurance Rate Map (FIRM) or Flood Hazard Boundary Map. Each zone reflects the severity or type of flooding in the area.*

Source: FEMA NFHL (2013)

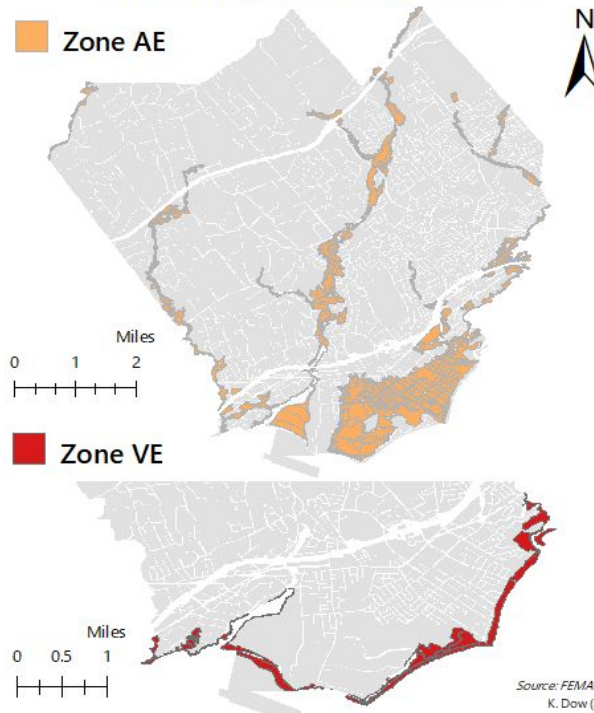
# FEMA National Flood Hazard Layer (NFHL)



Town of Fairfield  
FEMA Moderate to Low Risk Flood Zones



Town of Fairfield  
FEMA High Risk Flood Zones



**No. of Properties  
within FEMA Zone**  
Zone X → 17,968

Zone AE/A → 3,384

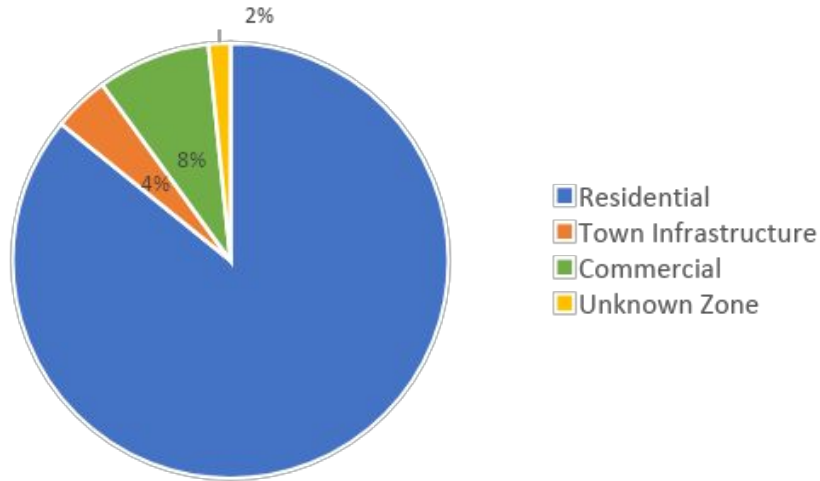
Zone VE → 488

*\*\*Only Properties fully within designated zone contribute to count*

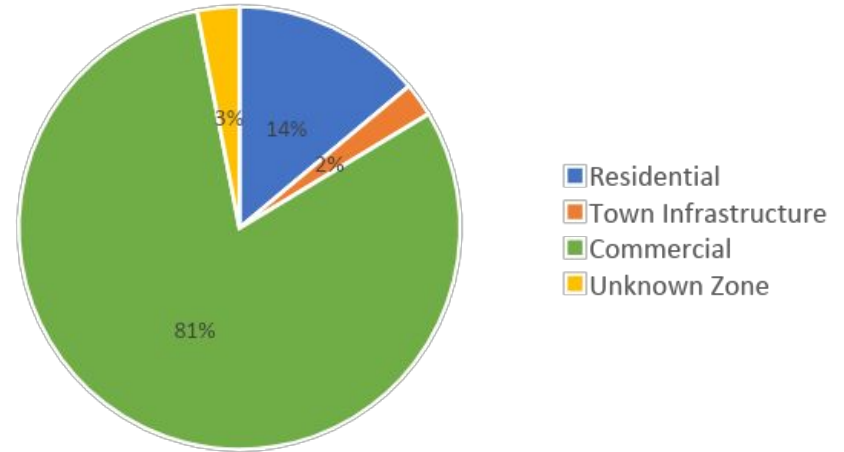
# FEMA National Flood Hazard Layers (NFHL)



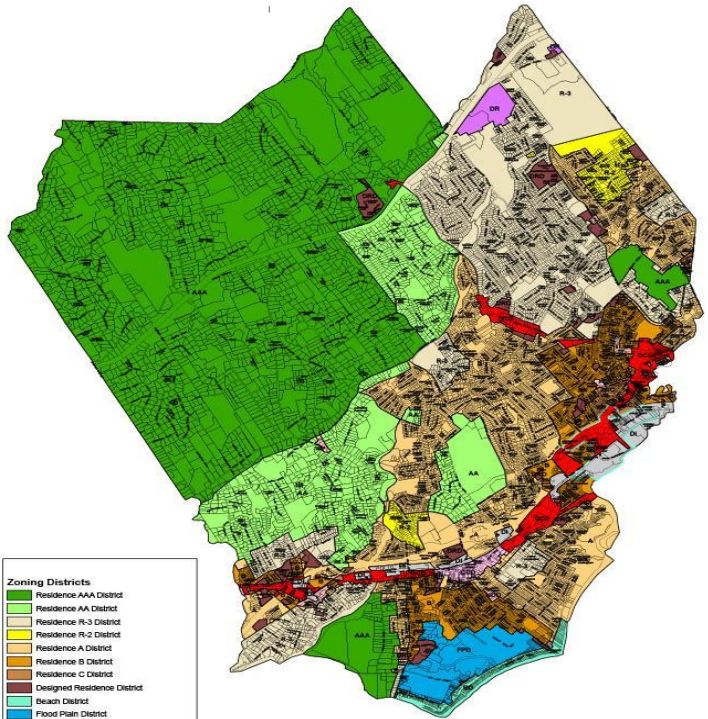
## NFHL Zone AE - Fairfield Zoning



## NFHL Zone VE - Fairfield Zoning



# Fairfield Zoning Assumptions



Zoning Districts	
Green	Residence AAA District
Light Green	Residence AA District
Yellow	Residence R-3 District
Orange	Residence R-2 District
Light Orange	Residence A District
Dark Orange	Residence B District
Brown	Residence C District
Dark Brown	Designated Residence District
Blue	Beach District
Light Blue	Flood Plain District
Pink	Center Designed Business District
Red	Designated Commercial District
Light Red	Neighborhood Designed Business District
Light Purple	Designated Industrial District
Dark Purple	Designated Research
Light Blue-Green	Commerce Drive Area Designated District

## Residential

- Residence AAA District (AAA)
- Residence AA District (AA)
- Residence R-3 District (R-3)
- Residence R-2 District (R-2)
- Residence A District (A)
- Residence B District (B)
- Residence C District (C)
- Designed Residence District (DRD)

## Town Infrastructure

- Flood Plane District (FPD)
- Properties owned by Town of Fairfield

## Commercial

- Beach District (BD)
- Center Designed Business District (CDBD)
- Designated Commercial District (DCD)

# Compliance Assessments



- Assessment Area
  - North of Fairfield Road
  - Oyster Road to Reef Road
- Special Flood Hazard Area (SFHA)\*
  - Build prior to 2015 (AYB)\*
  - Excluding FEMA Zone VE
  - Empty Parcels
  - Structure Footprints



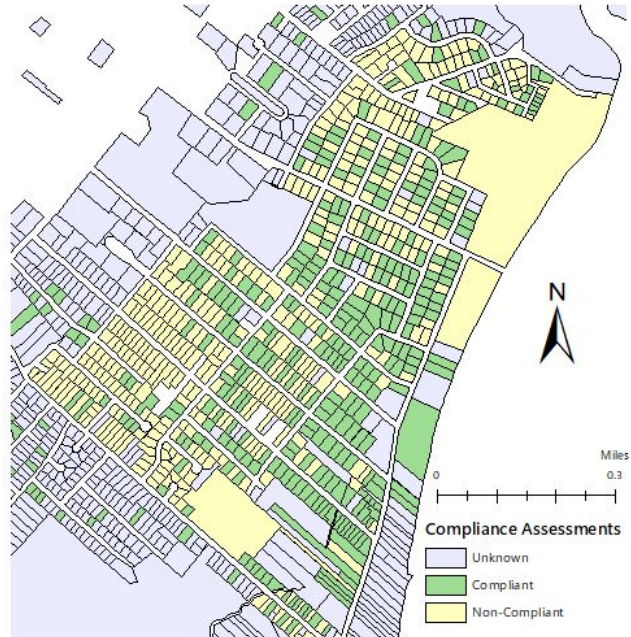
\* Town of Fairfield Assessor's Office



# Compliance Assessments



## Town of Fairfield Coastal Compliance Assessments



Source: Assessor's Office and  
Town Plan & Zoning Department

K. Dow (2023)

Compliance assessments were made for all properties located within the Special Flood Hazard Area (SFHA) with structures built prior to 2015. The boundaries of this assessment were properties north of Fairfield Beach Road between Clinton Street and Reef Road.

# Compliance Assessments



**Town of Fairfield GIS**

Parcel ID: 1380470000

Description



HERLET SHANE C  
24 FAIRFIELD BEACH ROAD  
[Field Card](#)  
[Zoom to Feature](#)  
[Buffer Feature](#)

**Is this property within or in close proximity to a FEMA Special Flood Hazard Zone? YES**  
Click [here](#) to toggle the Flood Hazard Area Layer.  
Click [here](#) for more information.

Details

OBJECTID

Home Layers Parcel ID... World To... 100 200ft 1500

A GIS map interface showing a street grid with parcel boundaries. A specific parcel, labeled '24', is highlighted in blue. The map includes various navigation controls like zoom in (+), zoom out (-), and a search bar. The parcel ID '1380470000' is displayed at the top.

Town of Fairfield GIS - MetroCOG

# Compliance Assessments



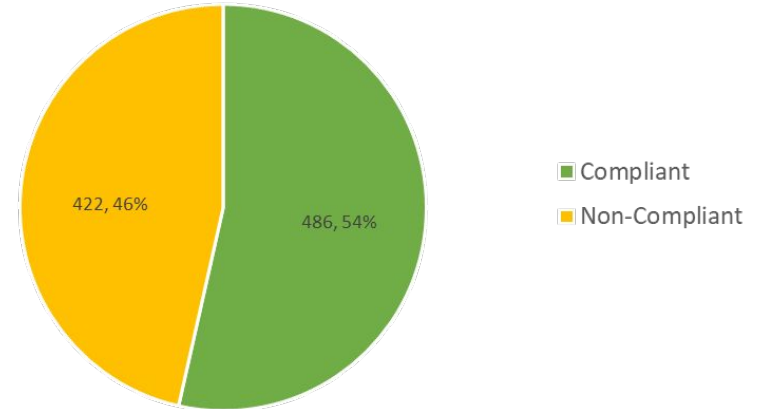
## Town of Fairfield Coastal Compliance Assessments



Source: Assessor's Office and  
Town Plan & Zoning Department  
K. Dow (2023)

Compliance assessments were made for all properties located within the Special Flood Hazard Area (SFHA) with structures built prior to 2015. The boundaries of this assessment were properties north of Fairfield Beach Road between Clinton Street and Reef Road.

## Zone AE – Compliance Assessments





# Compliance Assessments



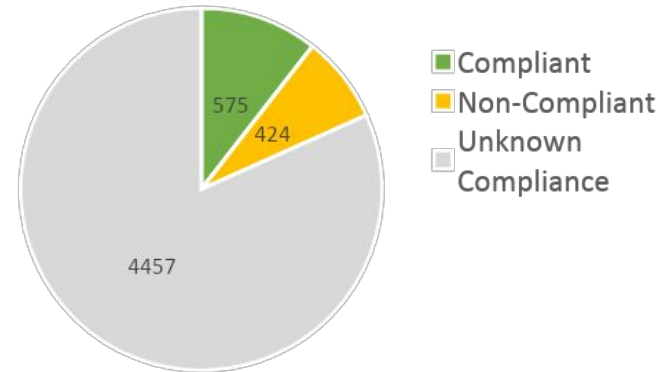
## Town of Fairfield Coastal Compliance Assessments



Source: Assessor's Office and  
Town Plan & Zoning Department  
K. Dow (2023)

Compliance assessments were made for all properties located within  
the Special Flood Hazard Area (SFHA) with structures built prior to  
2015. The boundaries of this assessment were properties north of  
Fairfield Beach Road between Clinton Street and Reef Road.

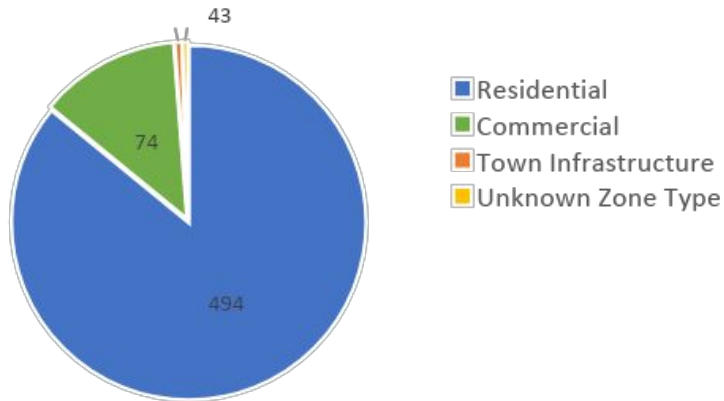
## Property Compliance in SFHA



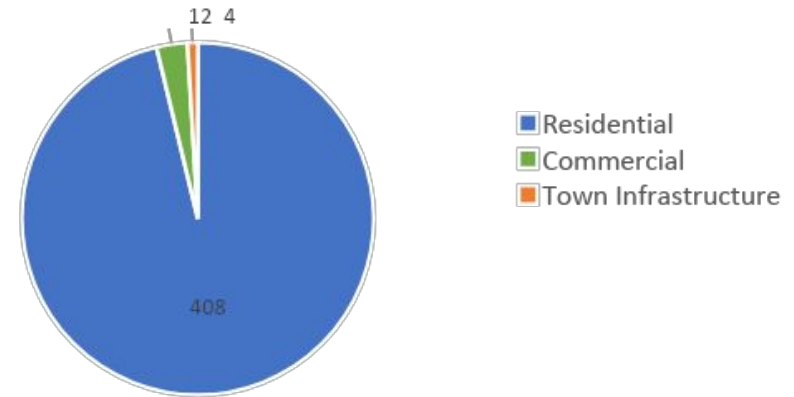
# Compliance Assessments



## Compliant Properties in SFHA



## Non-Compliant Properties in SFHA



# Placing Priority – Compliance



## ☐ “Compliant” Areas

- Birch Road / Edward Street
- Carlynn Drive
- Lalley Blvd
- Rowland Road (Lower)

## ☐ Priority Areas

- Oyster Road
- Benson Place
- Beach Road
- Rowland Road (Upper)
- North of Quincy Street

**Town of Fairfield  
Coastal Compliance Assessments**

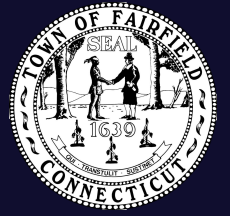


Source: Assessor's Office and  
Town Plan & Zoning Department

K. Dow (2023)

Compliance assessments were made for all properties located within the Special Flood Hazard Area (SFHA) with structures built prior to 2015. The boundaries of this assessment were properties north of Fairfield Beach Road between Clinton Street and Reef Road.

# ArcGIS Story Map



## *Purpose of this Resource ...*

- Educate residents and community of costal threats/hazards
- Accessibility of online mapping resources
- Provide resources applicable to residents in high flood risk areas
- Assist with municipal projects in residential areas

## [Town of Fairfield Costal Resilience Story Map](#)



ArcGIS StoryMaps

# Acknowledgement



Thank You to *ALL* who  
Supported this Project!



EXTENSION

