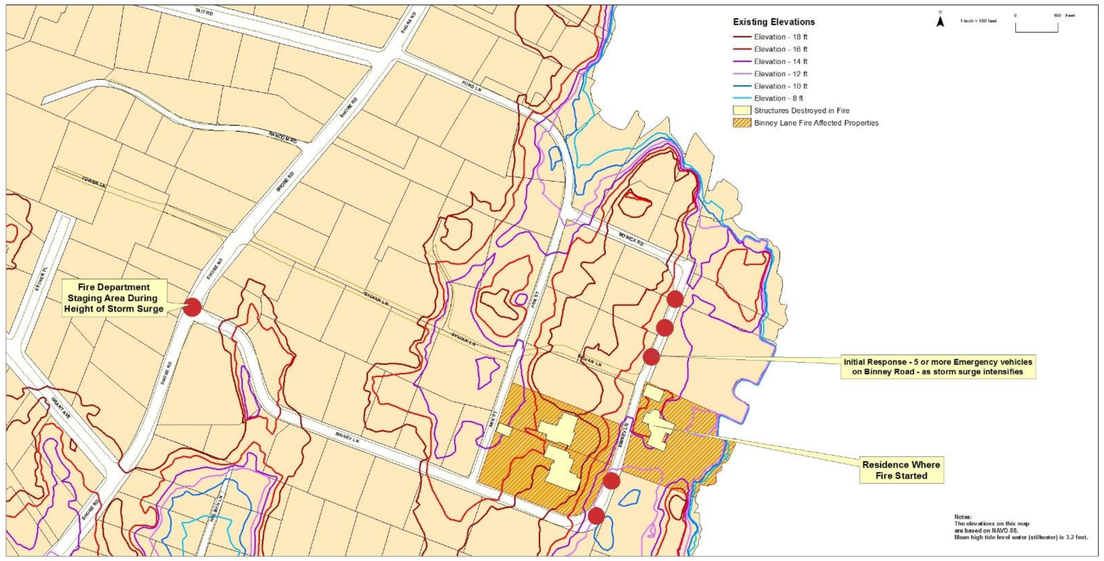
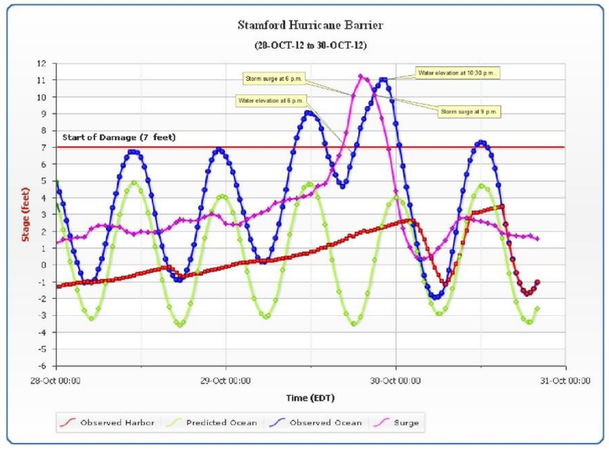
# Hurricane Sandy - October 29, 2012
# Binney Lane Fire - Old Greenwich
# Staging Emergency Response




**On Monday, October 29, 2012, the Greenwich Fire Department responded to a house fire at 45 Binney Lane in Old Greenwich. The call came in at 6:06 p.m. just at the height of the storm. Winds were gusting between 70-80 mph and the storm surge had reached over 10 ft. and was accelerating. The area was beginning to experience coastal flooding, even with low tide at 6 p.m.**

**With the hurricane force winds, the fire quickly spread to four other structures (2 homes and 2 garages). The 1st responders were faced with a raging fire, an accelerating storm surge, trees and power lines blocking roads, and 33 residents who had not evacuated the area. The Town used its GIS and information from the ACOE Stamford Hurricane Barrier to determine: 1) the best evacuation route, and 2) the staging area for emergency personnel as the event unfolded. The intent was to keep Fire equipment and personnel as close to the fire to prevent spreading but also out of the storm surge.**

**The Town has 2 ft. contour lines and had created separate layers for elevations to 20 ft. This way we could just show the elevations needed without cluttering the entire map. Using this layer and with information from the field on observed flooding, Emergency Operation Center staff were able to direct the evacuations and fire operation. Additionally, incoming storm surge data was correlated to street elevations to allow fire personnel to move back in immediately once the surge and water elevations began receding.**

**Follow-up Post Storm**

**The Town went out and surveyed coastal surge wrack lines from Byram to Old Greenwich. Preliminary determination is that still high water reached 10.0 ft. NAVD88 - which is a 50 year storm event according to FEMA maps. 10.5 ft. is a 100 year storm event.
This information will now be correlated with tidal information provided at the ACOE Stamford Hurricane Barrier and the NOAA tidal gages at King's Point, NY and Bridgeport, CT.
It will also be used to refine SLOSH evacuations maps working with state and federal agencies.**

20 Year Superstorm Sandy Anniversary Poster prepared by
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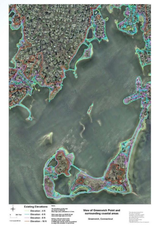
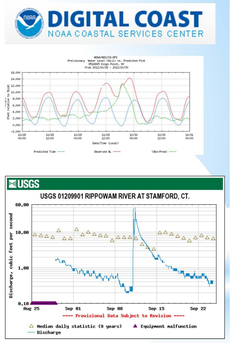
# Using GIS and Real-time Data in Local Emergency Operation Centers and for Emergency Preparedness Planning

New tools are available to help local governments do a better job of planning, monitoring real time weather events, and educating the public.







**Applications of GIS and Real-time Data in Greenwich**

- **Pre-storm planning including prep of evacuation maps and lists by street/property address and storm surge prediction maps. Created separate contour layer up to 18 ft with ability to show just one contour line.**
- **Used GIS contours and real-time tidal gages to direct fire crews during Sandy**
- **Immediate post storm, the same GIS layers were used to provide building department officials with water elevations to conduct post-storm audit of properties. For Sandy created a simple layer with 10 ft contour only to show expected extent of flooding.**
- **Same GIS used for planning purposes, infrastructure assessment, and to better understand FIRM maps and prepare evacuations maps for future events.**
- **Post-storm evaluation was done for lessons learned including importance of catch basin top-of-rim elevations**

**REAL TIME DATA**

**At the Emergency Operation Center (EOC) in Greenwich, we monitored multiple gaging stations during a storm event.**

**The four key stations we watch most closely for tidal surge are:**

- **NOAA sites – (1) King's Point, NY and (2) Bridgeport, CT**
- **(3) ACOE site – Stamford Hurricane Barrier**
- **(4) USGS tidal gage at Grass Island (post Sandy installation)**

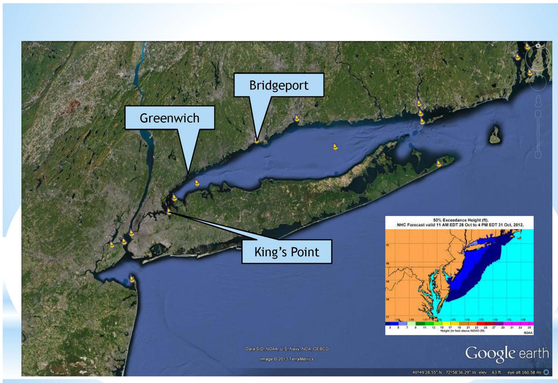
**We also have watch USGS real-time stream gages for river flooding including:**
- **USGS Stream gages at Byram River**

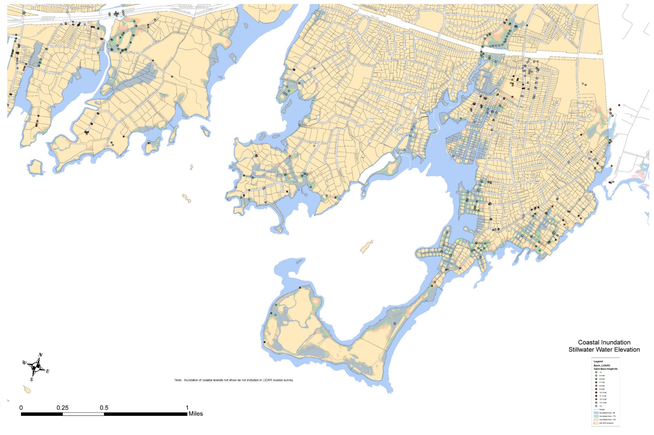
**Other real time information:**

**We use the NOAA weather site for predicted surge reports for our area (north shore of western LIS) and for wave action (surf).**

**We also received information directly from the State and Federal agencies at the EOC.**

**We translate all information into NAVD 88 which is the elevations used on our GIS and on the FEMA flood maps and strongly recommend that all tidal gages provide information in NAVD 88 for community use.**




Post Sandy Advanced Capabilities Based on New Coastal LIDAR and Field Observations

- Generated 1 ft contour lines to replace 2 ft contour. Again limited layer to 18 ft and created both single contour lines and shaded areas for predicting/displaying inundation. Took our buildings in LIDAR to reduce clutter in contours.
- Refine visualization of flooding impacts to 1) for EOC use based on real time gauge data and 2) aid in Emergency Response Preparedness and Hazard Mitigation Planning
- Estimated elevation of infrastructure based on GPS coordinates:
  - Extracted value by points tool
  - Catch basins – important for surge as CB are often lower than surrounding area elevations and first to flood. During Nor'easters, plow crews used data to understand where may have flooding under snow cover. Police able to know which streets would flood first and based on real time gage data know when to deploy
  - Buildings – although excluded from contour layer available elevations in infrastructure layer
  - Roads – often at different elevations than surrounding land due to development fill