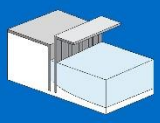
RESIST

A continuous line of defense along the waterfront to protect against storm surge from the Hudson River

Potential Sites for Water Resisting Features in Hoboken

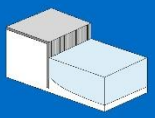
In-water Bulkhead

A structure that can be placed directly in water separate from the existing built shore condition so as not to require additional adjustments or retrofitting to existing structures.



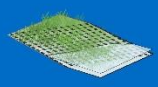
Bulkhead

Also known as a seawall, these are constructed on shorelines to protect against surge or prevent erosion.



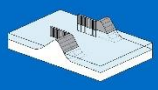
Terraced Landscape

The introduction of a terraced edge to accompany a bulkhead allows for a different type of occupation along the shoreline and can facilitate engagement between users and the water.1



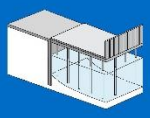
Gate

Adjustable gates used to control the flow of water through a flood barrier.



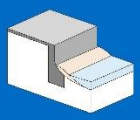
Stilts

Allows for construction to occur over water without infilling.



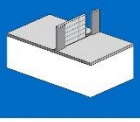
Programmed Bulkhead

A seawall that incorporates waterfront space to be occupied and



Deployable Gate

An operable barrier that can be quickly erected and operated in the case of a flood event.

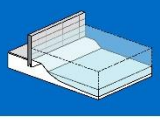


Levee

An embankment built to prevent the overflow of a river, usually constructed out of earthen material.

Flood Wall

A manmade structure erected in anticipation of a flood event.



Resist Feature References

Terraced Edge
Sea Organ
Zadar, Croatia
Nikola Bašić

Deployable Flood Barriers
Shropshire, UK

Terraced Landscape
Jack Evans Boat Harbor
Gold Coast, Australia
Aspect Studios

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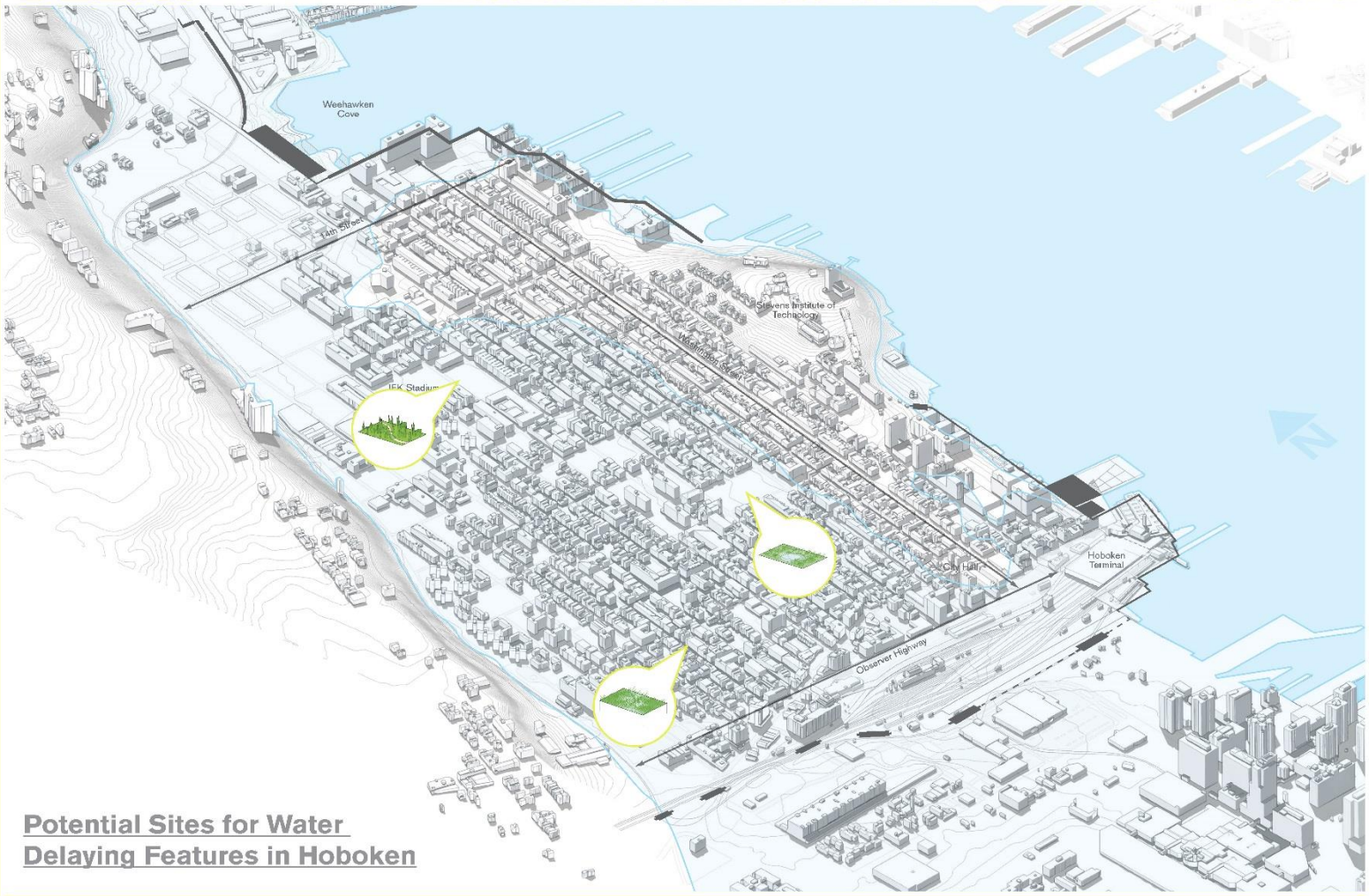
DELAY

Absorbs and slows water to alleviate water flow into sewer



Potential Sites for Water Delaying Features in Hoboken

Green Roof

A roof of a building that is partially or completely covered with vegetation. Green absorbs, delays, and cleanses rainwater, alleviating some of the burden on the municipal sewer system.

Bioswale

An open-air drain filled with vegetation, compost, and/or rip-rap that cleans surface runoff through biofiltration while also delaying the flow of water.

Parkland / Terraced Edge

Parkland can help to add pervious surface coverage to the city and alleviate the load on the municipal sewer system. Additionally, parkland can be used to clean water through biofiltration and temporary water storage during flood events.

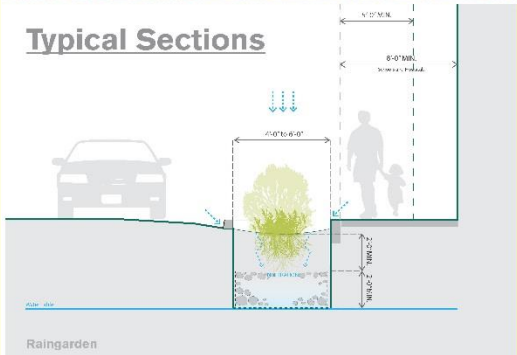
Delay Feature References

Green Roof
Milstein Hall
Ithaca, New York
OMA / SCAPE

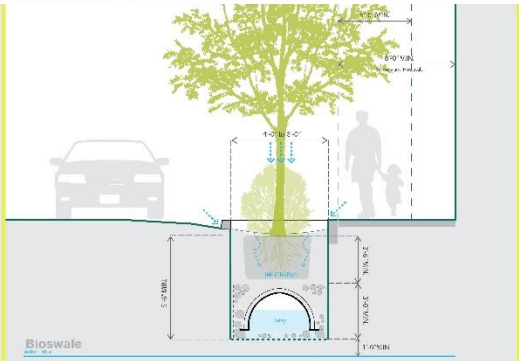
Parkland, Gabion, and Boardwalk

Permeable Pavers
Glen Oaks Branch Library
Queens, New York
SCAPE

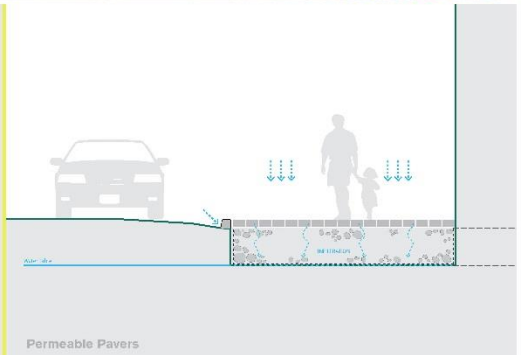
Typical Sections



Raingarden



Bioswale



Permeable Pavers

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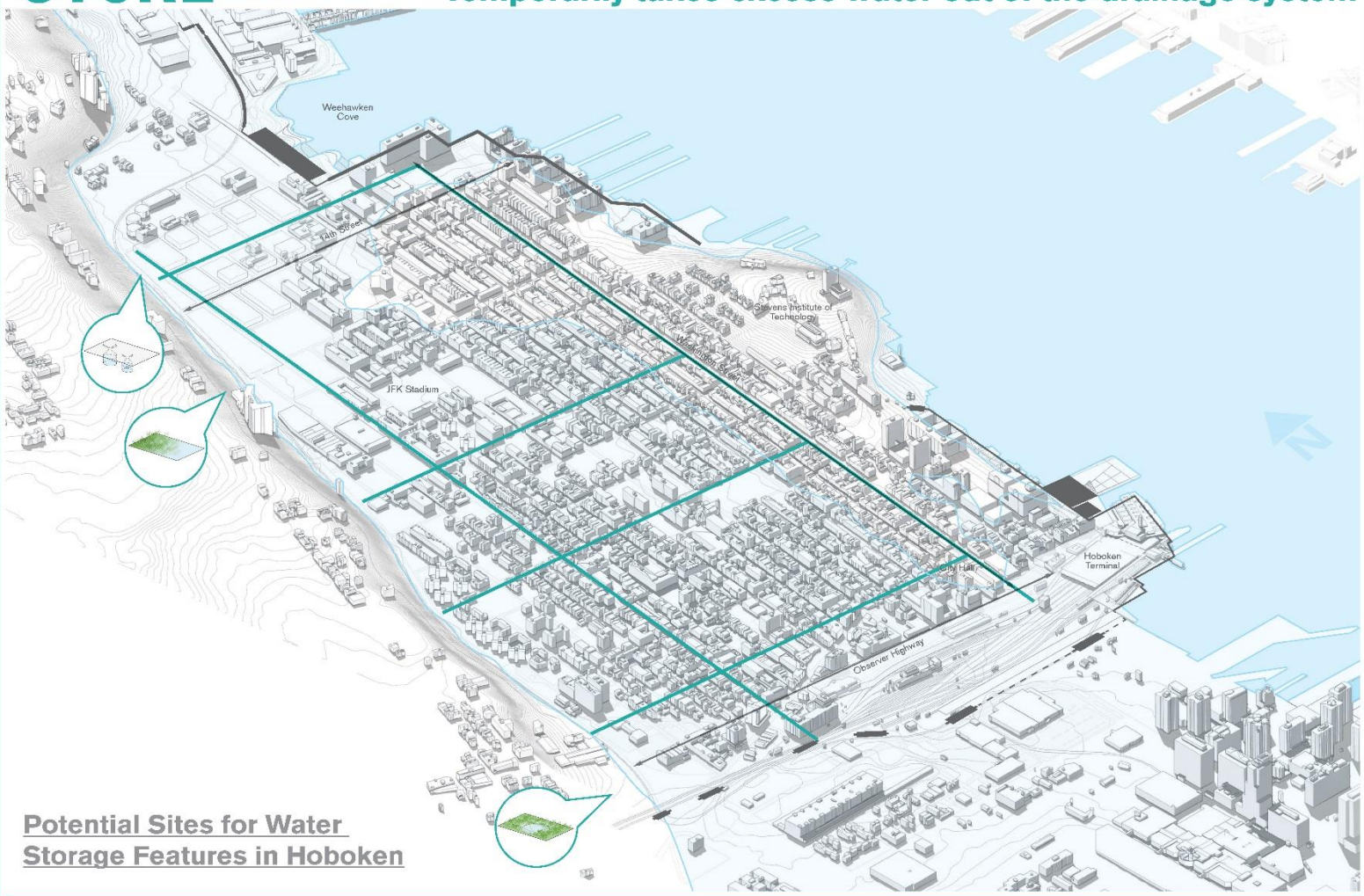
STORE

Temporarily takes excess water out of the drainage system



Potential Sites for Water Storage Features in Hoboken

Constructed Wetlands

Wetlands created as new or restored habitats for storm water runoff and water storage. In addition to storing water, constructed wetlands can provide protection against storm winds and surge and act as a natural biofilter.

Bioretention Basin

Bioretention basins collect storm water runoff, filtering the water and slowly allowing it to evaporate into the air or ex-filtrate through lower layers of soil.

Cistern

A waterproof receptacle for holding excess water, usually rainwater.

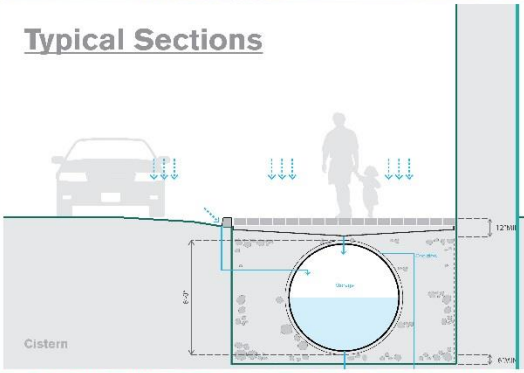
Storage Feature References

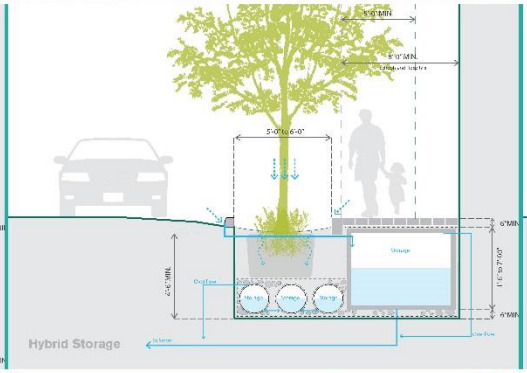

Constructed Wetlands
Renaissance Park
Chattanooga, Tennessee
Hargreaves Associates

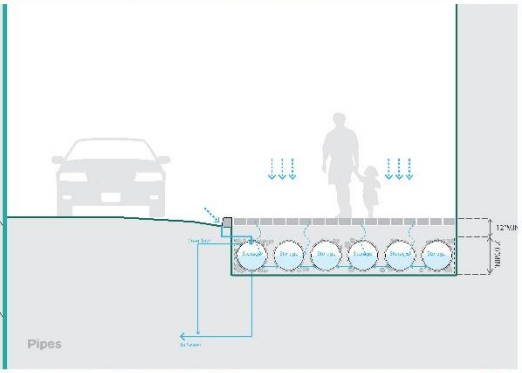

Bioretention Basin


Stormwater Management Pipes

Typical Sections







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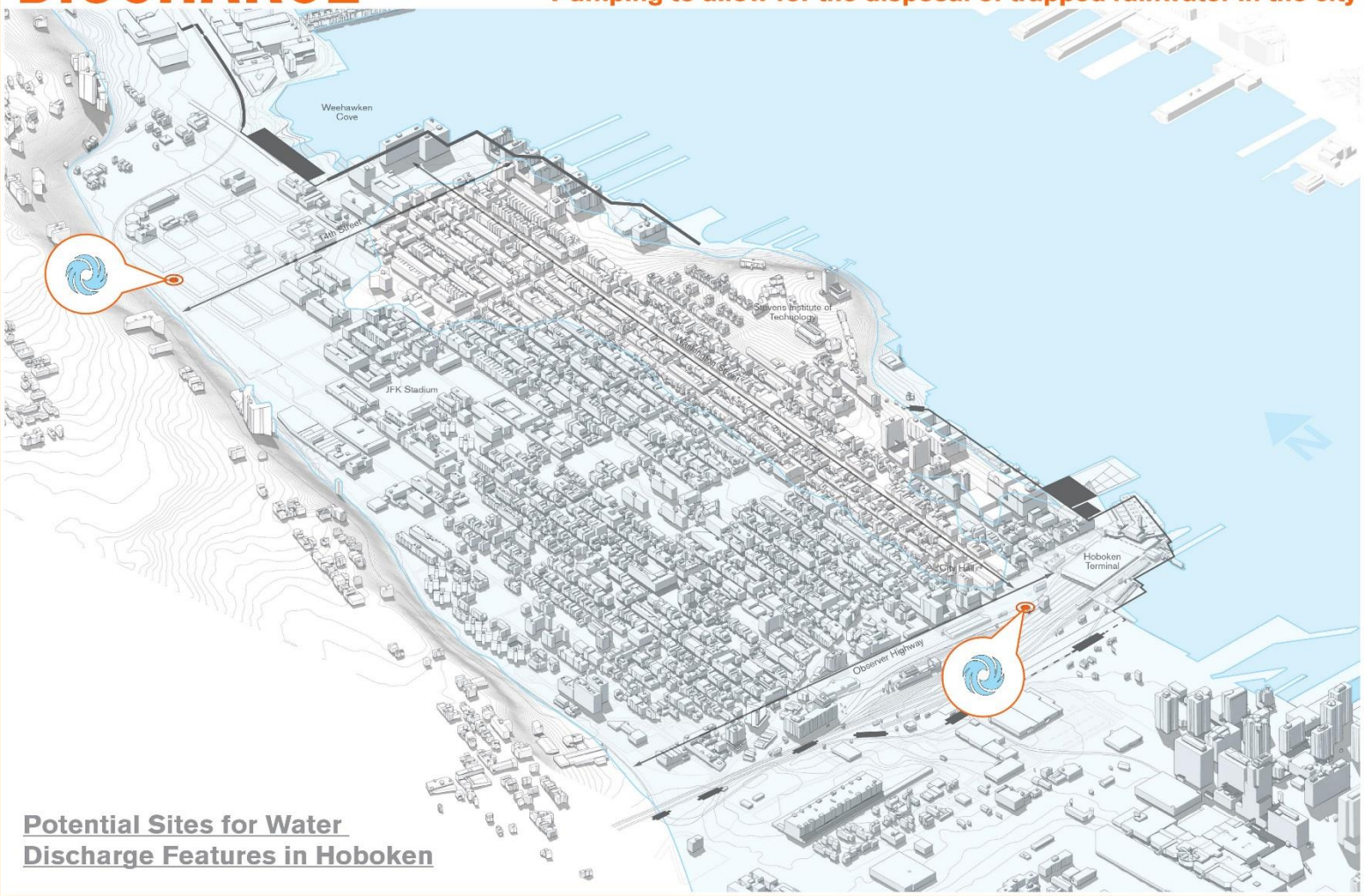
DISCHARGE

Pumping to allow for the disposal of trapped rainwater in the city



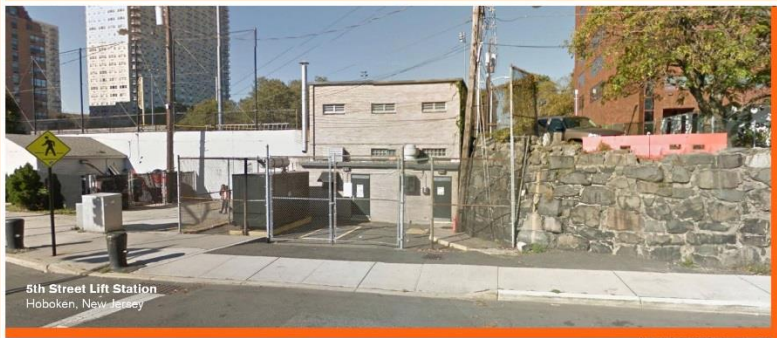
Potential Sites for Water Discharge Features in Hoboken

Stormwater Pump

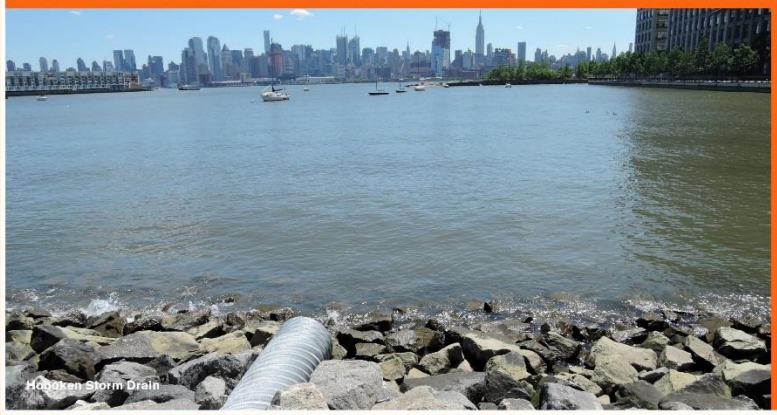
Storm water pumps mechanically move water from one area to another. Low-lying areas and areas that do not drain naturally require mechanical pumping. Additionally, during extreme storm events, storm water pumps can be used to hasten the flow of water drainage from a specific area, or after the storm has passed, to help drain water that has become trapped within an area.

Storm Drain

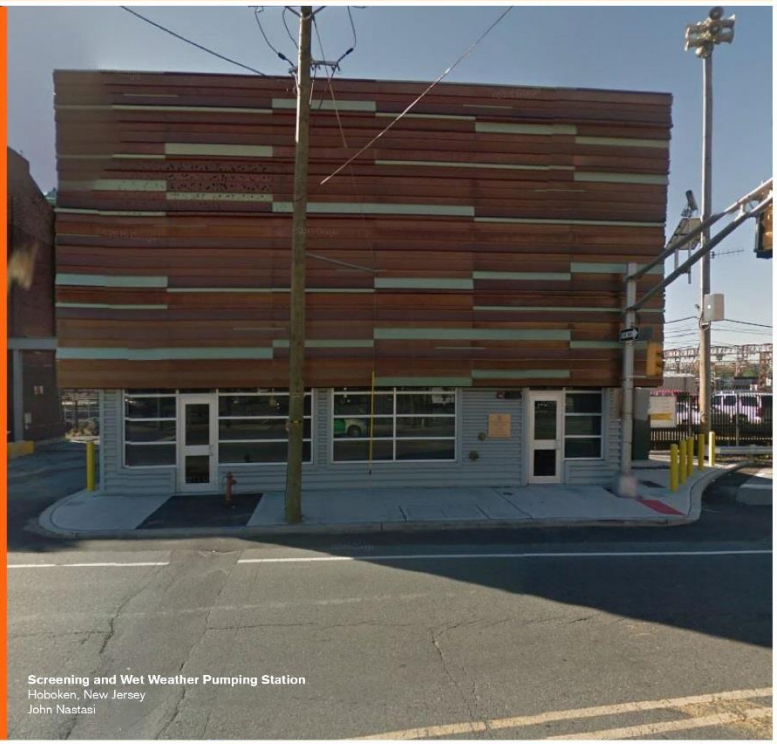
A storm drain system is the part of a municipal sewer system that manages water run-off from rain fall. In sewer systems called combined sewers, sewage and storm water runoff are collected into a single pipe system. During flood events, these types of systems can lead to Combined Sewer Overflows, which contain contaminants from both sewage and storm water.



5th Street Lift Station
Hoboken, New Jersey



Hoboken Storm Drain



Screening and Wet Weather Pumping Station
Hoboken, New Jersey
John Nastasi

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AIR, NOISE, VIBRATION

Noise, vibration and air emissions during construction activities may be disruptive when those activities adversely affect one's quality of life.

Sensitive Receptors in the Study Area

Sound, vibration and air emissions become disruptive when they interfere with normal activities or adversely affect one's quality of life. These issues are most prevalent during the construction of a project, when heavy equipment is in use. We will identify sensitive receptors within the study area including residences, schools, hospitals, and places of worship and determine appropriate levels of analysis necessary to address federal, state and local codes.

Frequently Asked Questions

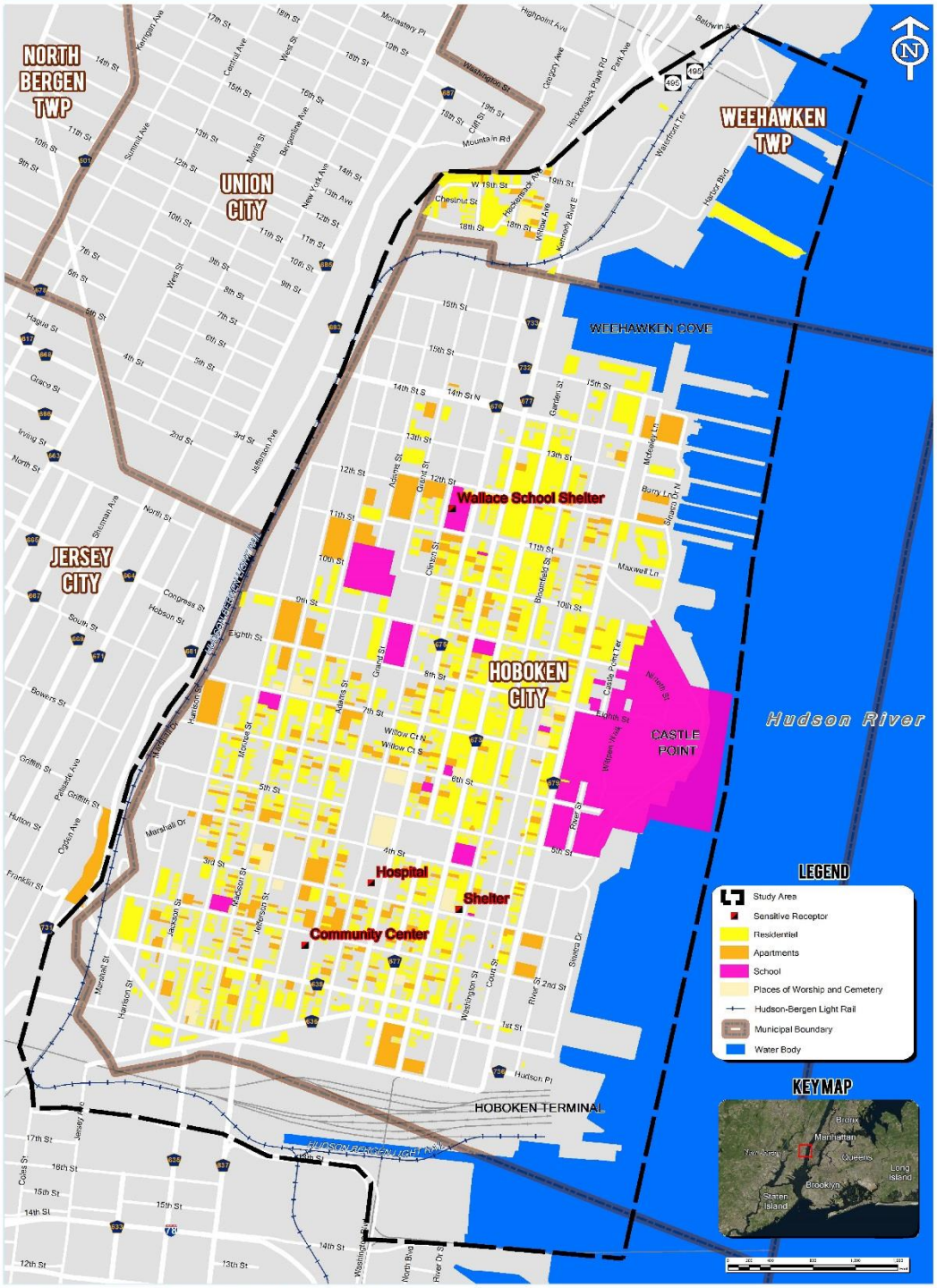
Q: How is noise measured?

A: Noise is measured in decibels. A decibel is a unit of measurement that quantifies the wave pressure differences in the air that we perceive as sound (or noise). 40 to 50 decibels is normal for a peaceful neighborhood, 70 to 80 decibels is the level adjacent to a busy urban street or 50 feet from a major freeway and 120 to 140 decibels is a typical level at which sound is painful.

Q: What is considered a noise impact?

A: We will identify sensitive receptors within the study area including residences, schools, hospitals, and places of worship and determine appropriate levels of analysis necessary to address federal, state and local codes.

Typical Noise Monitoring
Source: www.bing.com



Typical Construction Activities
Source: Paul Carpenter Associates, Inc.

Typical Construction Activities
Date: July 2015

Typical Construction Activities
Source: Paul Carpenter Associates, Inc.

Noise, Vibration Mitigation
Source: www.fhwa.dot.gov

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HAZARDOUS WASTE

Materials that pose potential threats to public health and the environment.

Potentially Contaminated Materials in the Study Area

The project design will consider the locations of potentially contaminated properties in an effort to avoid or minimize construction impacts. If contaminated soil or groundwater cannot be avoided during construction, information on the contaminated properties will guide the development of health and safety measures for workers and proper handling and disposal of materials to avoid exposure to the public.

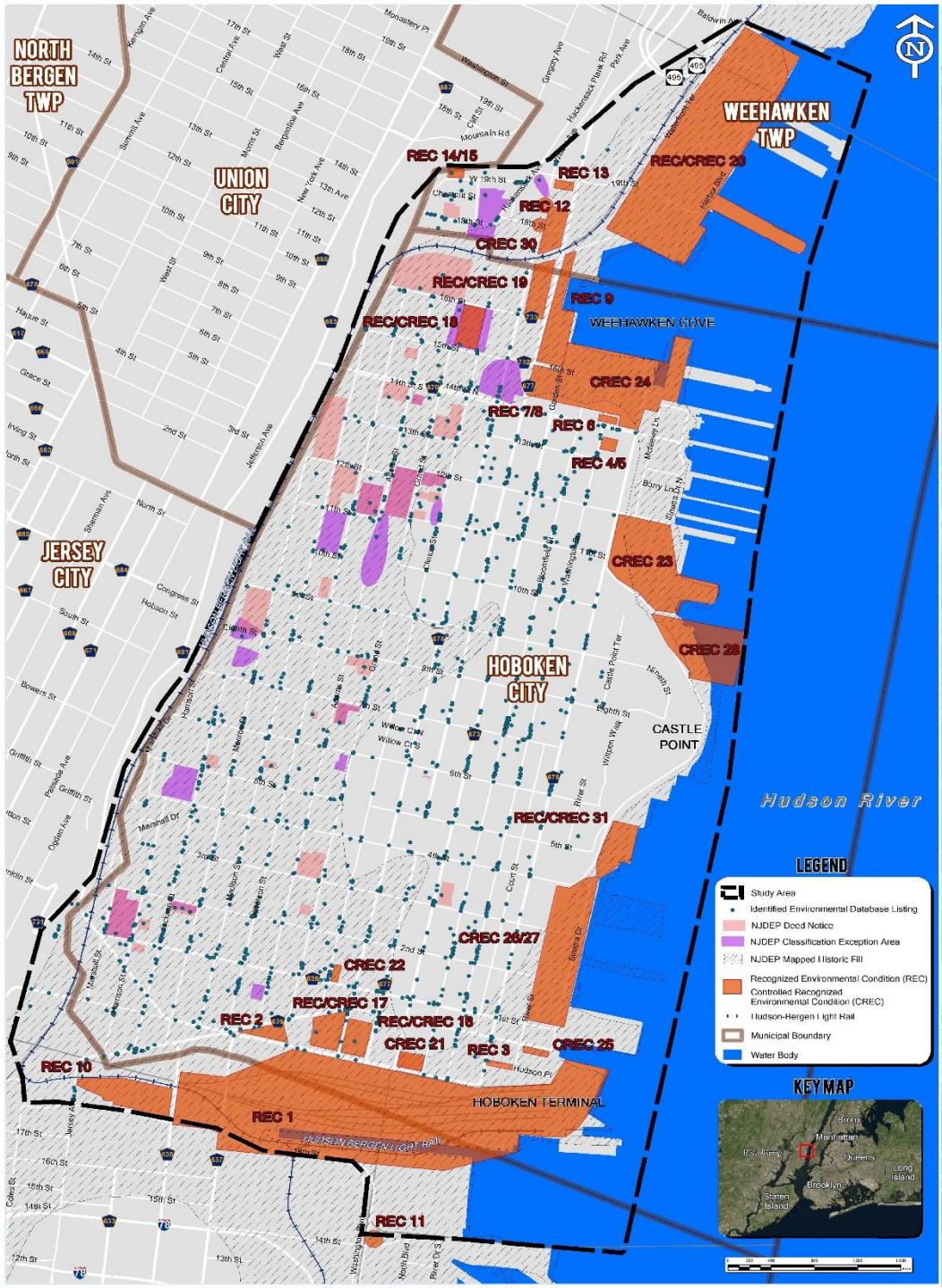
Frequently Asked Questions

Q: What types of contamination may be encountered?
A: Much of the Study Area was developed by adding fill material to the western edge of the Hudson River to increase buildable land. This type of material is typically called "historic fill" and may contain waste from industrial or manufacturing operations.

Q: How will you protect the public from exposure to site contamination?
A: Our approach is to avoid incorporating contaminated sites into the project to the greatest extent possible.

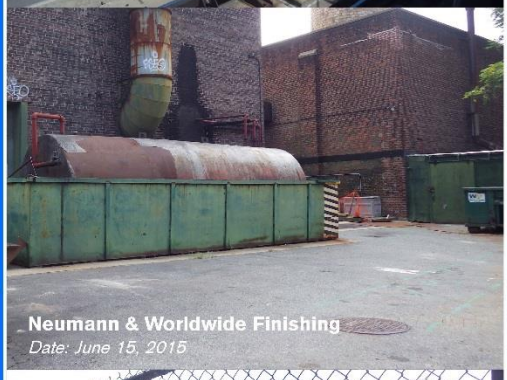
Q: What happens if the contamination is unavoidable?
A: The potentially contaminated area will be characterized following NJDEP regulations to assess type and level of contamination present. Recommendations will be made for safe management protocols to protect workers and the public during construction. Contaminated materials encountered will be managed in accordance with local, state and federal regulations.

Typical Excavation
Source: NJDOT, June 21, 2007



BASF / Cognis Corporation
Date: June 15, 2015

Hoboken Light Rail Station
Date: June 15, 2015



Neumann & Worldwide Finishing
Date: June 15, 2015

Neumann & Worldwide Finishing
Date: June 15, 2015

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HISTORIC PROPERTIES

Prehistoric or historic district, site, building, structure, or object included in or eligible for inclusion in the National Register of Historic Places.

Historic Properties in the Study Area

The National Historic Preservation Act states that the public has the right to comment when a project involving federal action, approval, or funding may affect properties that qualify for registry in the National Register of Historic Places. Section 106 of the National Historic Preservation Act gives the public the opportunity to tell the federal government about their valued historic properties which can influence decisions about projects that may affect historic properties.

Frequently Asked Questions

Q: What is the National Register of Historic Places?
A: The National Register of Historic Places is the record of properties recognized for their significance in American history, architecture, archaeology, engineering, and culture.

Q: What is Section 106 of the National Historic Preservation Act?
A: Section 106 requires federal agencies to consider the effects of projects they carry out, approve, or fund on historic properties.

Q: Who is SHPO?
A: State Historic Preservation Officer (SHPO) directs the state's historic preservation program and consults with agencies during Section 106 review.


Sidewalk Vault - Potential Historic Impact


Sidewalk Vault - Potential Historic Impact


Sidewalk Vault - Potential Historic Impact


Urban Archaeology - Potential Historic Impact


Urban Archaeology - Potential Historic Impact

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NATURAL ECOSYSTEMS

A diversity of plants and animals benefitting our environment and improving our quality of life - clean air, clean water, recreational and aesthetic values.

Natural Ecosystems in the Study Area

The community is deeply connected to the vitality of the waterfront. The waterfront area is part of the Lower Hudson River-Upper New York Bay, a shallow estuary that contains habitat for shellfish and marine, estuarine and anadromous fish. The information gathered will help determine whether the project will further impact this habitat and what, if any, mitigation measures may be needed.

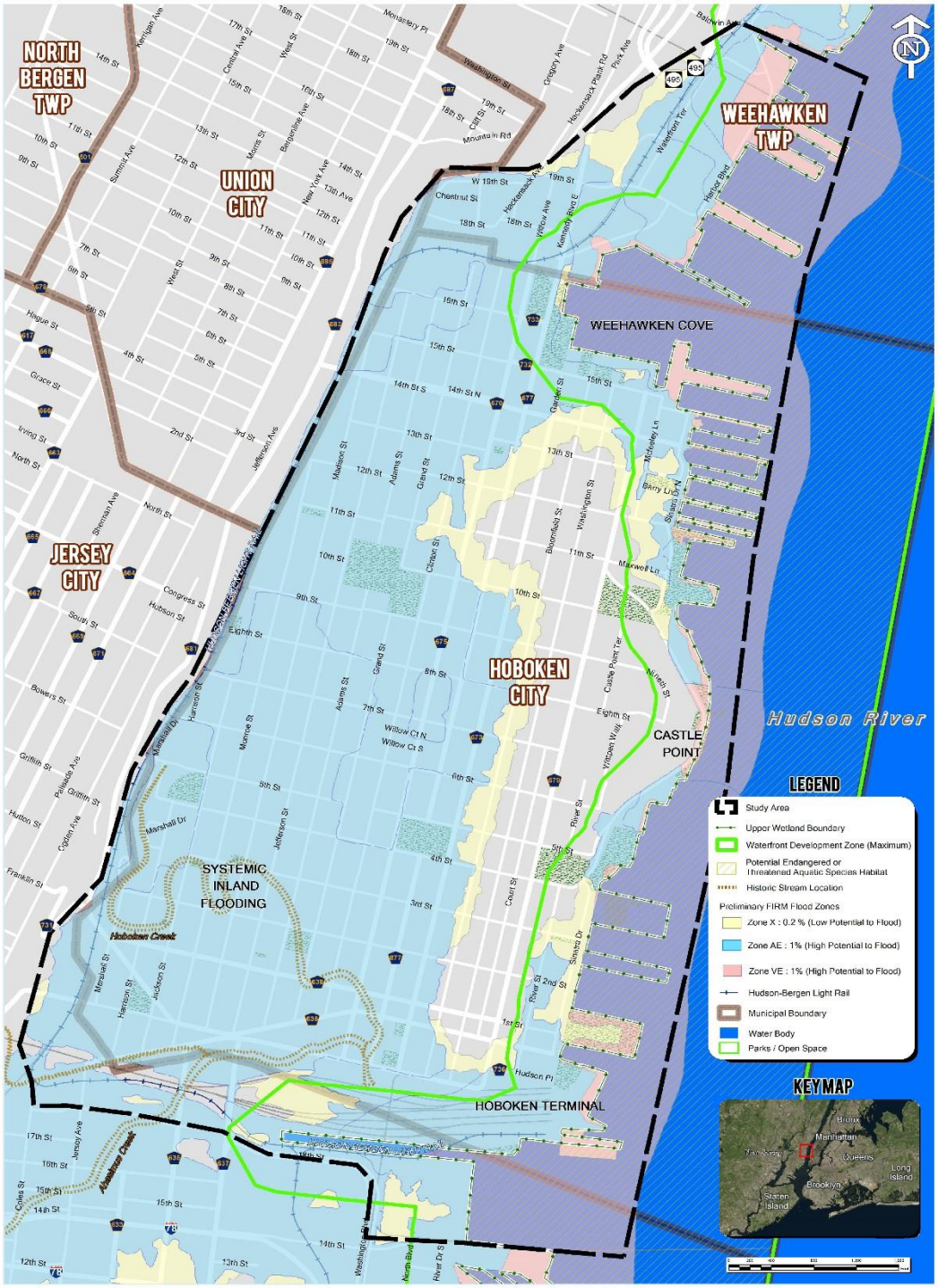
Frequently Asked Questions

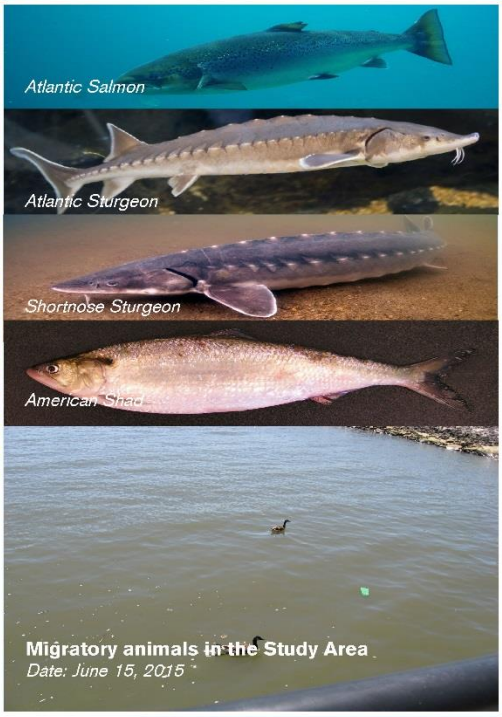
Q: How are wetlands identified?
A: Wetlands are identified by the presence of vegetation, hydric soils, and wetland hydrology using NJDEP and USACE protocols.

Q: Do we have any wetlands in the Study Area?
A: No NJDEP-Mapped wetlands are in the Study Area, but small unmapped wetlands may exist. We will be investigating further.

Q: What is Essential Fish Habitat (EFH)?
A: EFH are areas designated as critical habitats for federally-managed aquatic species.

Wetland Creation for Storwater Storage
Source: Springfield Gardens, Queens NY





Migratory animals in the Study Area
Date: June 15, 2015

Waterfront Improvement Opportunity
Date: June 15, 2015

Waterfront Improvement Opportunity
Date: June 15, 2015

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LAND USE/ZONING

The ways we develop land can impact our exposure to flood risks.

Land Use/Zoning in the Study Area

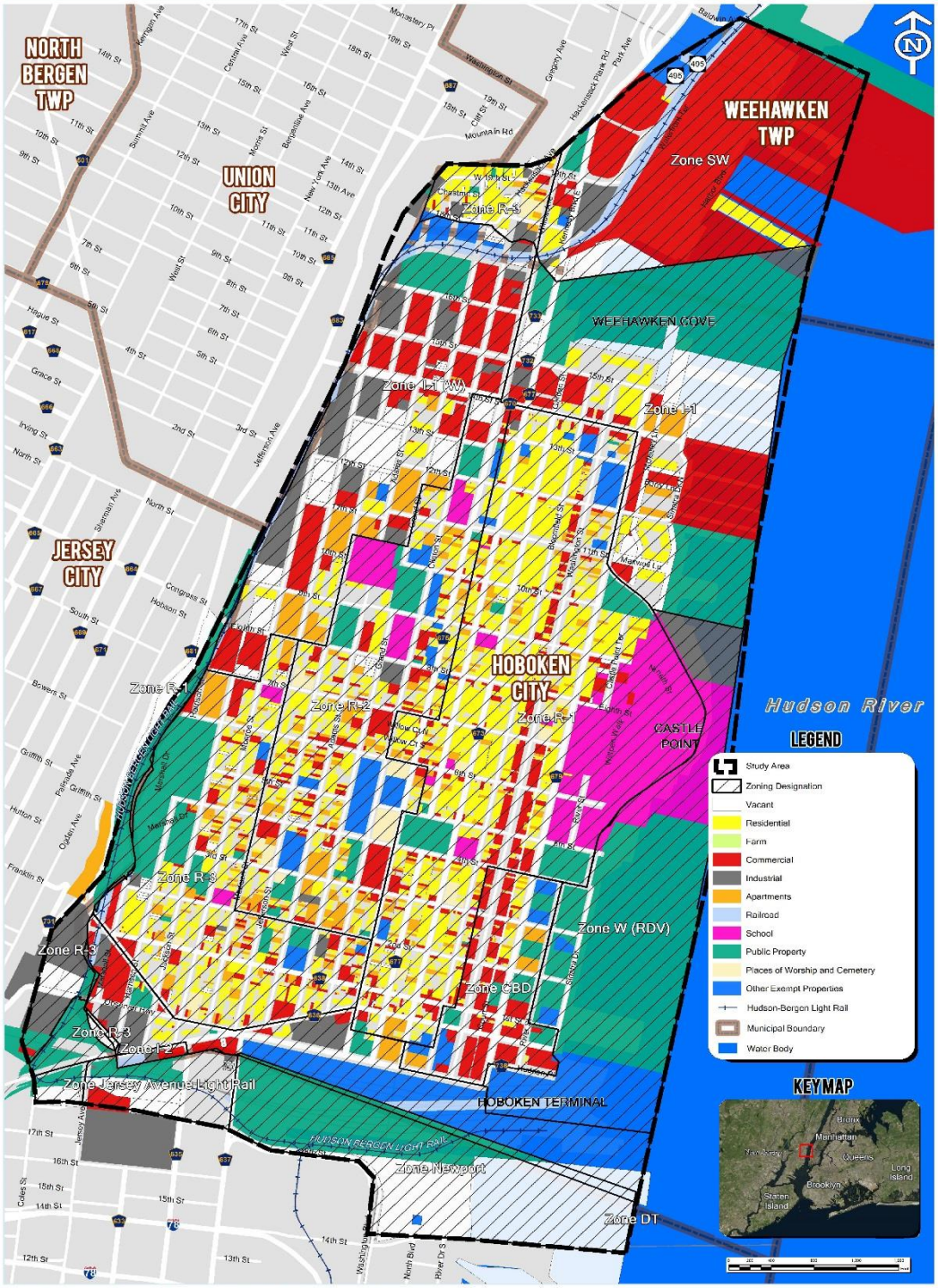
The project design will consider the existing land use of the Study Area and evaluate what, if any, impacts may occur as a result of the proposed improvements. In addition to existing land uses, the project will also evaluate on-going redevelopment efforts within the Study Area. If impacts are unavoidable, recommendations to minimize these impacts will be provided.

Frequently Asked Questions

Q: What is land use?
A: Land use describes the type of activity that occurs on property. The use is typically described as residential, commercial, or industrial.

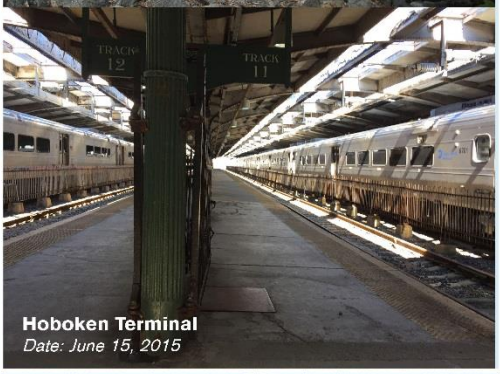
Q: What is zoning?
A: Zoning is the ordinance that identifies various geographic areas and defines what type of land uses are permitted within these areas.

Q: What is the basis for characterizing land use in the Study Area?
A: Land use within the Study Area is based on each municipality's established zoning and/or Redevelopment Plans.




Commercial Buildings within the Study Area
Date: June 15, 2015


Recreation Activities on Public Property
Date: June 15, 2015


Hoboken Terminal
Date: June 15, 2015


Residential land use with Public Property
Date: June 15, 2015


Apartments and Commercial Property
Date: June 15, 2015

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SOCIOECONOMICS

The most economically-disadvantaged communities are located in the areas identified as most at-risk for flooding.

Environmental Justice (EJ) in the Study Area

EJ is the fair and meaningful treatment and involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. EJ communities are located mostly in the low-lying western portions of the Study Area and are therefore subject to the most frequent flooding. The project will study ways to help alleviate this flooding, thereby improving the quality of life for this specific community.

Frequently Asked Questions

Q: How do you identify Minority and Low Income populations?
A: These are defined by the U.S. Census Bureau.

Q: Why is Hispanic and Minority population separated?
A: Hispanic populations represents an ethnicity and can consist of multiple races.

Q: Are the elderly also going to be evaluated for this project?
A: Yes, the elderly will be evaluated since they are particularly vulnerable to the adverse impacts from flooding.

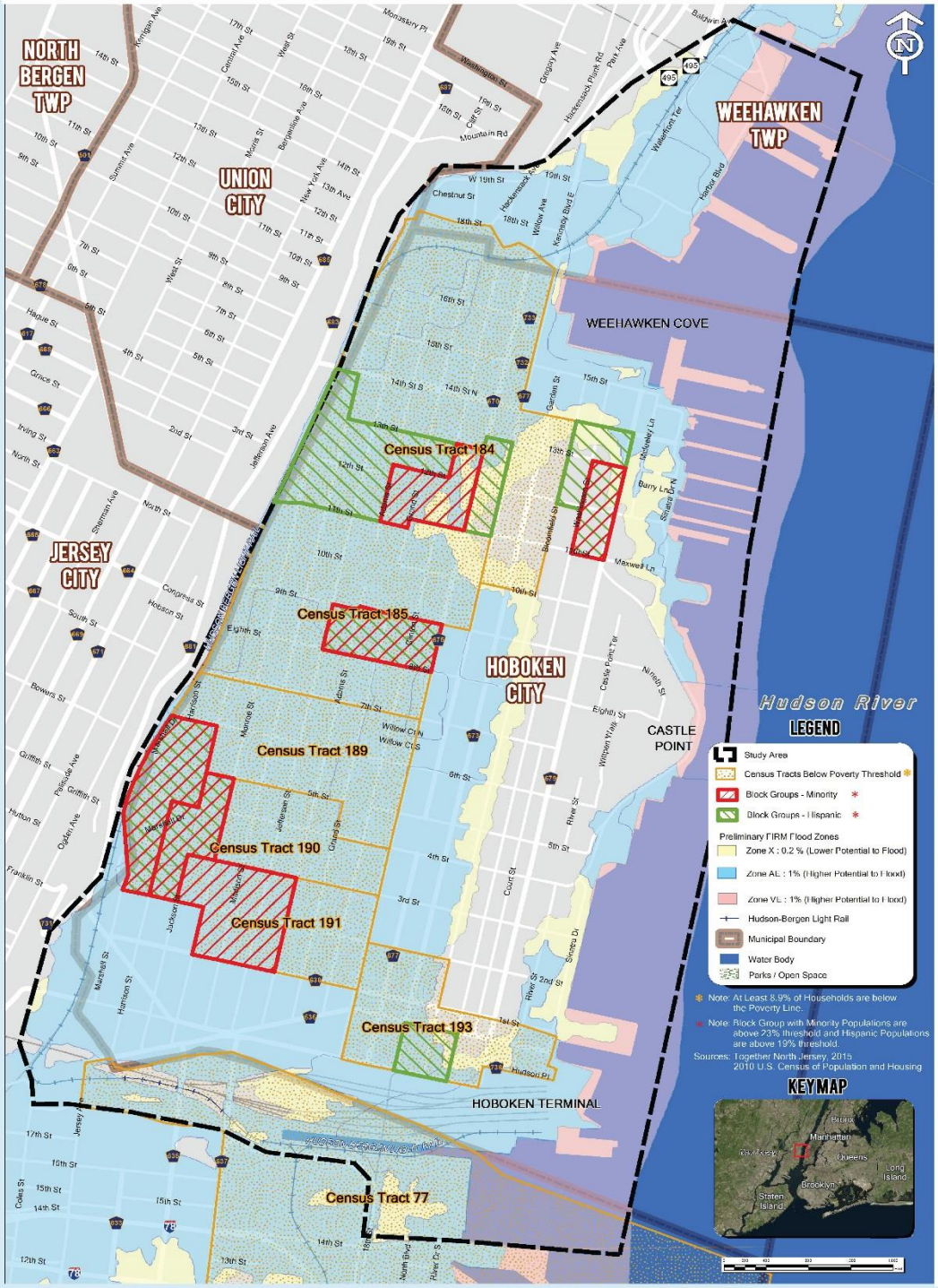
Flooding at Hoboken Housing Authority
Source: Hoboken Housing Authority

Flooding at Hoboken Housing Authority
Source: Hoboken Housing Authority

Flooding near Hoboken Housing Authority
Source: Hoboken Housing Authority

Hoboken Housing Authority
Source: Hoboken Housing Authority

Hoboken Housing Authority
Source: Hoboken Housing Authority



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