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New York District

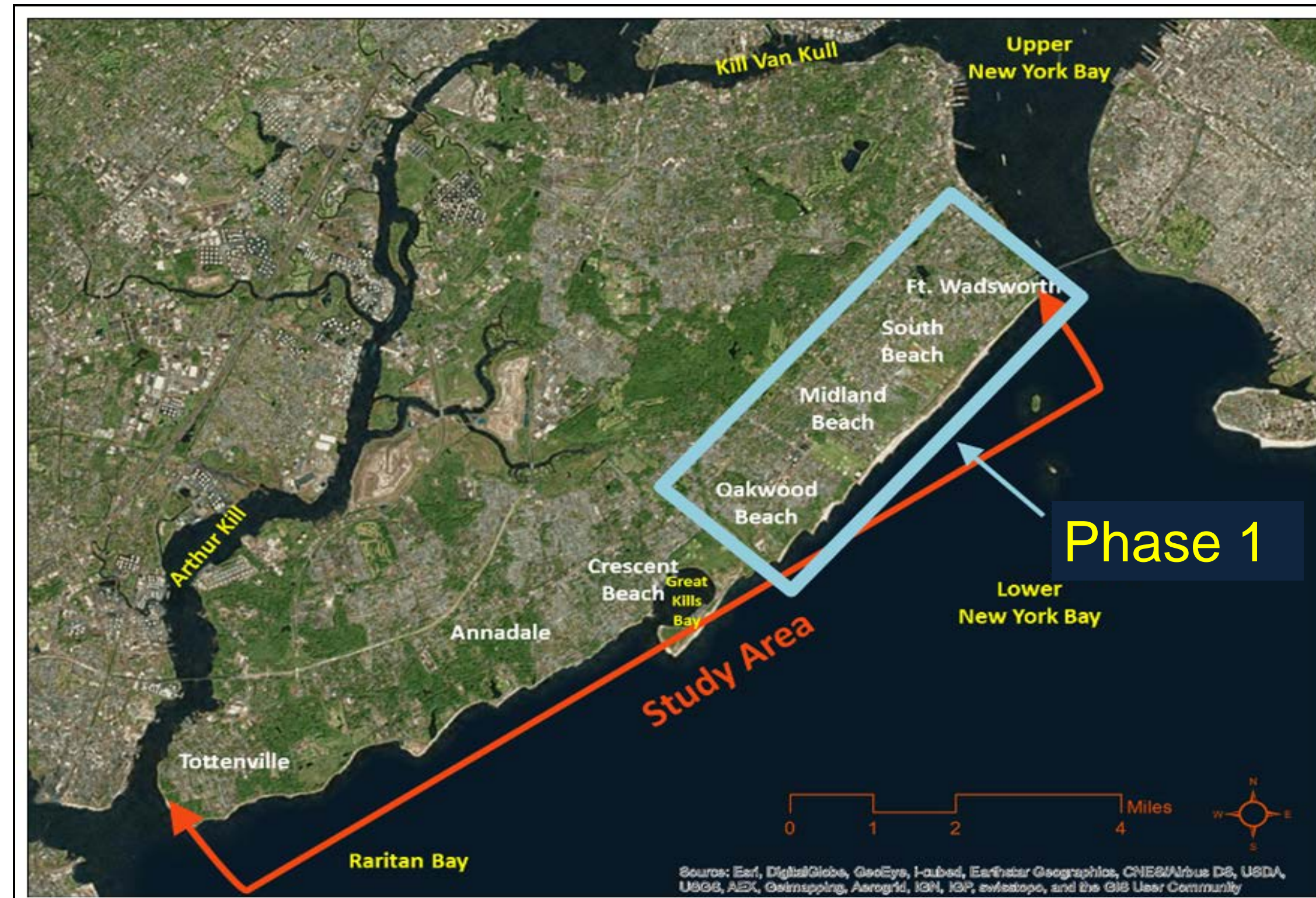
US Army Corps of Engineers
New York State Department of Environmental Conservation
City of New York



Department of
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PUBLIC INFORMATION MEETING

South Shore of Staten Island, Phase 1
Richmond County, New York, Coastal Storm Risk Management Project
**Hurricane Sandy Draft Feasibility Report
& Draft Environmental Impact Statement**



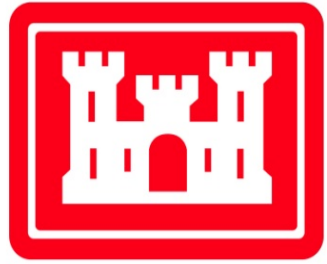
6:00 – 6:30

6:30 – 6:40

6:40 – 7:00

7:00 – 9:00

Welcome and Poster Board Viewing
Non-Federal Local Sponsor Remarks
US Army Corps of Engineers Presentation
Poster Board Session and Information Exchange



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New York State Department of Environmental Conservation
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PUBLIC INFORMATION MEETING

Meeting Purpose

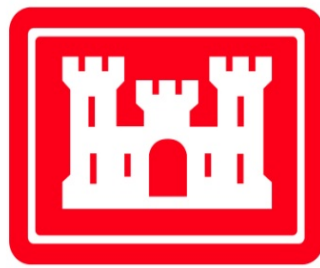
The National Environmental Policy Act (NEPA) provides for public involvement and ensures that public officials consider the environmental effects of proposed actions and alternatives in order to foster better decision-making. An Environmental Impact Statement (EIS) is required for any major federal action that may significantly affect the quality of the human environment. The purpose of this meeting is to provide key information contained in the Draft EIS to the public and to receive public comments on the Draft EIS.

The Draft Environmental Impact Statement is open for public comment through September 9, 2015.

Please address your comments to:

**US Army Corps of Engineers – New York District
Attn: Ms. Catherine Alcoba
26 Federal Plaza, Room 2151
New York, NY 10278
catherine.j.alcoba@usace.army.mil**

Public comment cards are available at this Information Meeting



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Problem Identification



Physical Setting:

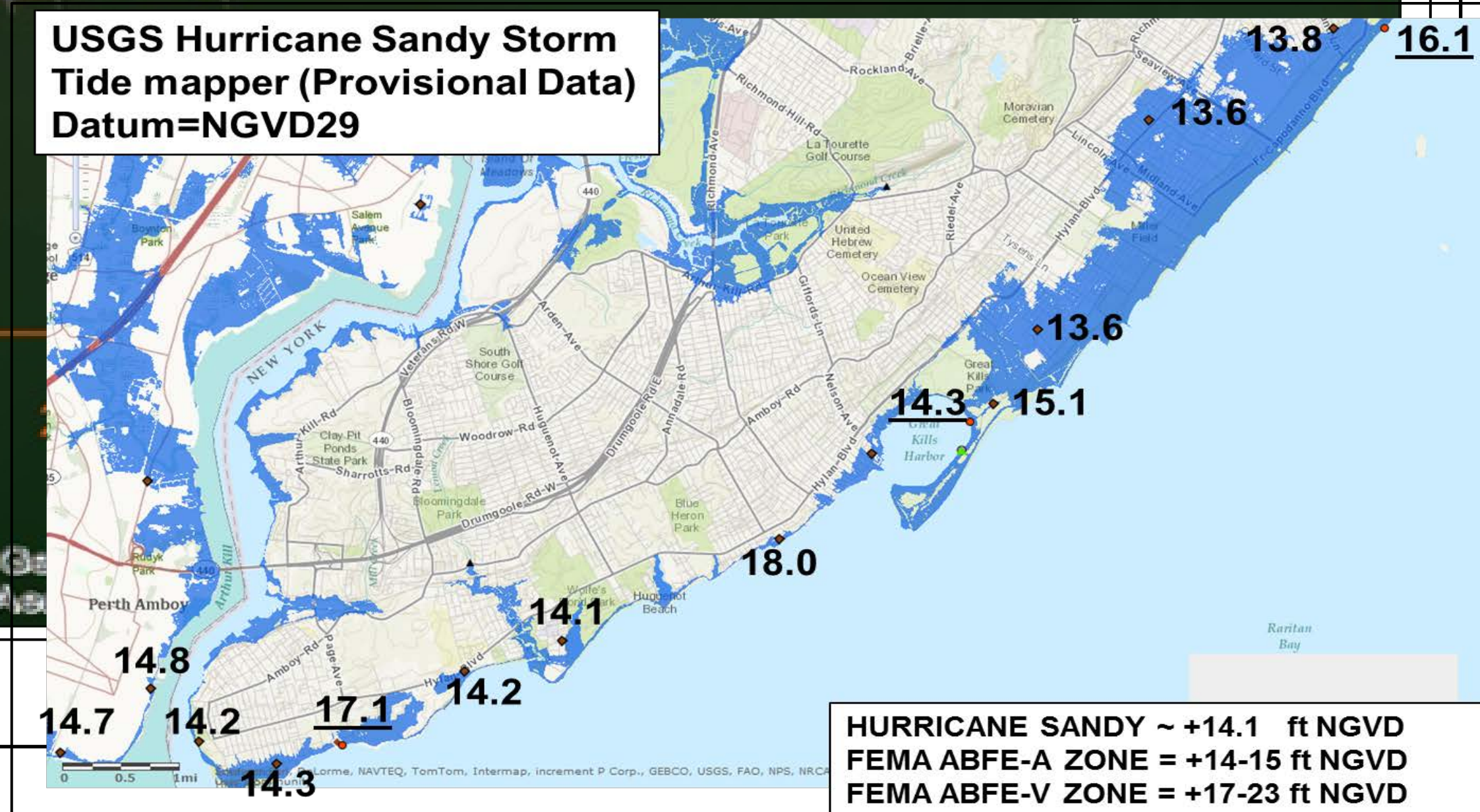
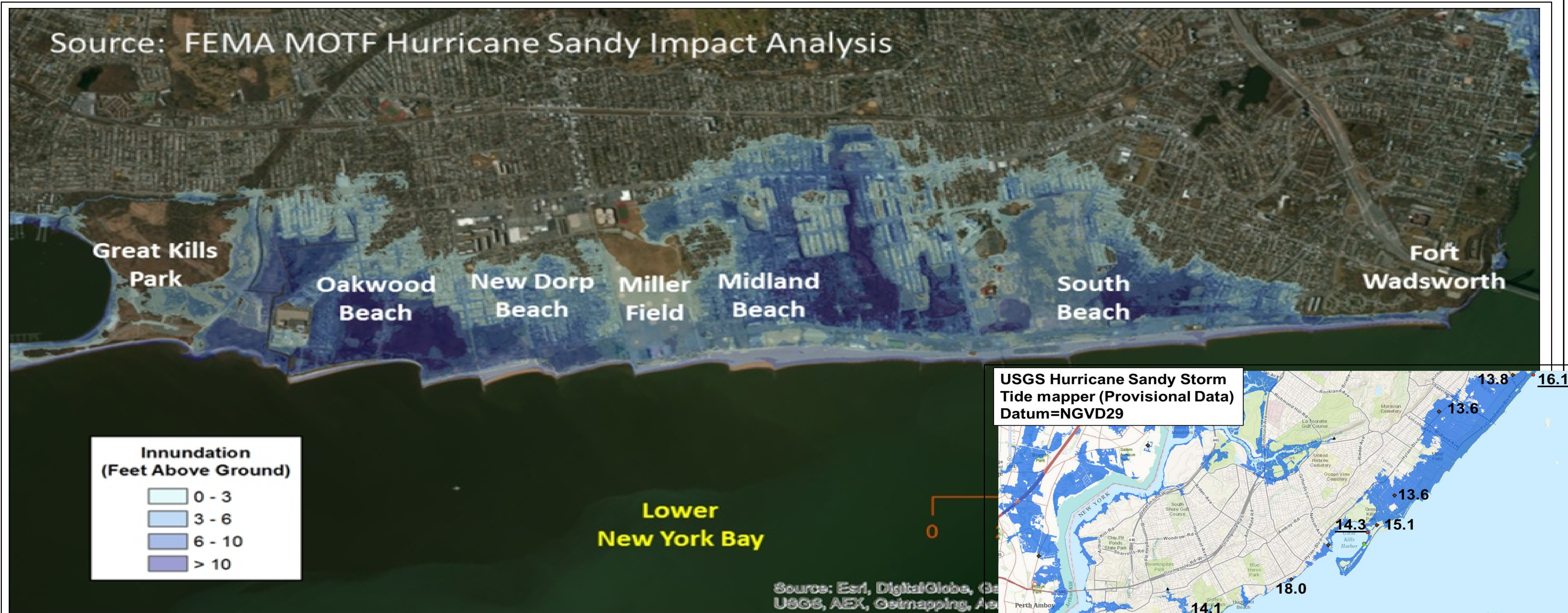
- Continued development and flooding of low-lying areas
- Flooding begins at approximately a “10-year coastal storm event” (approximately 8-10 feet National Geodetic Vertical Datum (NGVD) or sea level datum of 1929)

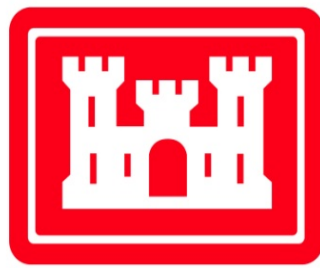
Risks:

- Approximately 7,300 structures and over 30,000 people are located within the study area
- Of these structures, approximately 4,700 (over 63%) lie within the 100-year floodplain

Hurricane Sandy Effects:

- Loss of life
- Hurricane Sandy was approximately a “150-year coastal storm event”
- Extensive damage in study area from flooding
- The water elevation, not including waves, peaked at approximately 13.6 NGVD





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Preliminary Screening of Alternatives



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The following tables describe the alternatives considered when selecting the plan. The preliminary screening shows the full array of measures considered. The detailed evaluation of alternatives shows the alternative plans that were evaluated further to arrive at the selected plan.

Preliminary Screening Measures

No-Action

- No Federal actions would be taken to provide for coastal storm risk management

Structural

- Seawall/bulkhead
- Groins
- Setback floodwalls
- Raised road, ground surface, asphalt areas
- Onshore dune barrier (with buried seawall)
- Beach and dune fill with terminal groins

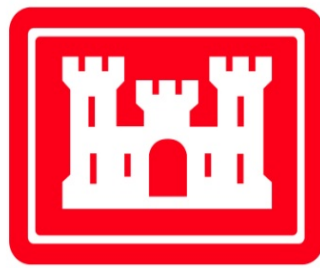
Non-Structural*

- Buyouts
- Zoning
- Evacuation
- Structure elevation
- Wet/Dry flood-proofing

Detailed Analysis of Alternatives

	Description	Screening Evaluation
Alternative #1	<ul style="list-style-type: none"> •Beachfill •Buried seawall/armored levee 	<ul style="list-style-type: none"> •High beachfill volume required (over 3.2 million cubic yards) •May disrupt present balance and stability of existing beachfront •Difficult to maintain design shoreline; substantial future sand nourishments •Beach may not maintain design dimensions when exposed to multiple design storm events
Alternative #2	<ul style="list-style-type: none"> •road raising •buried seawall/armored levee. •levees and floodwalls 	<ul style="list-style-type: none"> •Raising Father Capodanno has significant impacts
Alternative #3	<ul style="list-style-type: none"> •combination of road rising •promenade raising •a buried seawall/armored levee •levees and floodwalls 	<ul style="list-style-type: none"> •Raising Father Capodanno Boulevard has significant impacts
Alternative #4	<p>Alternative #4 included varying lengths of floodwalls, levees and a buried seawall/armored levee (with raised promenade)</p>	<p>Selected Plan – maximizes annual net benefits in accordance with USACE requirements for plan selection</p>

*All non-structural alternatives were determined to be not economically justified

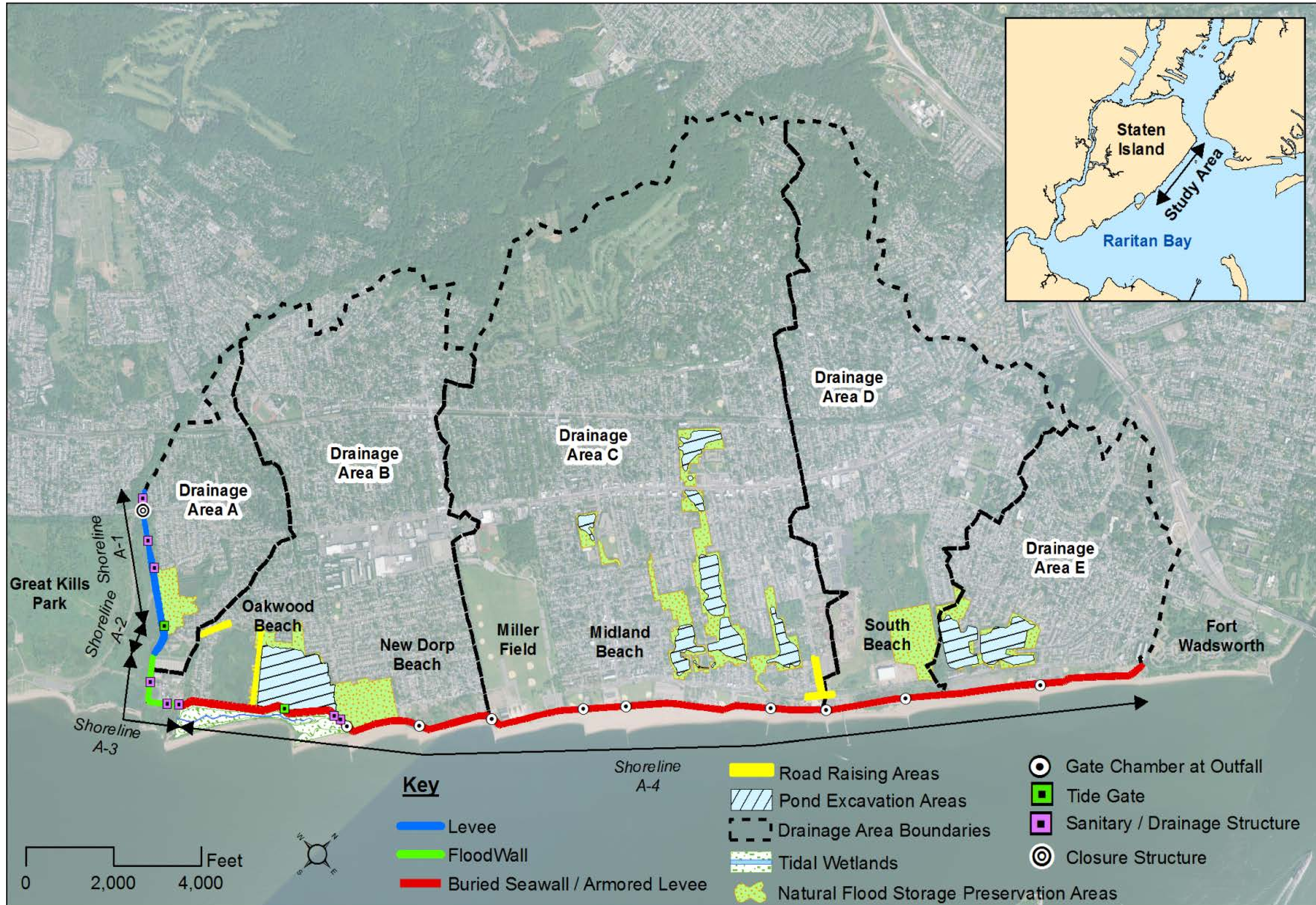


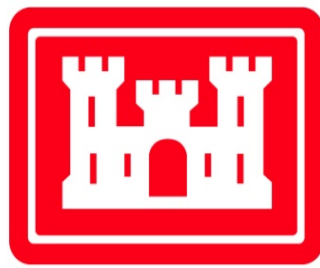
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Plan Overview



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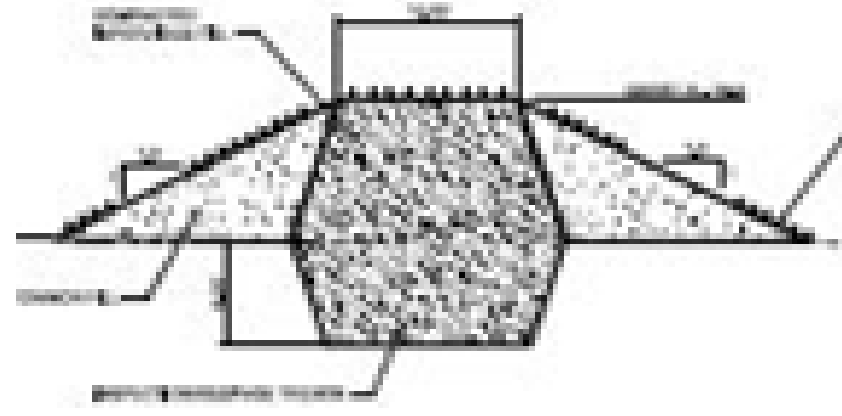
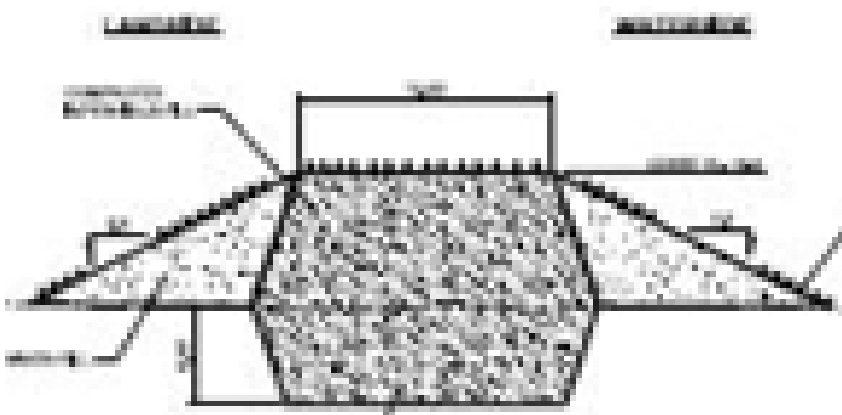
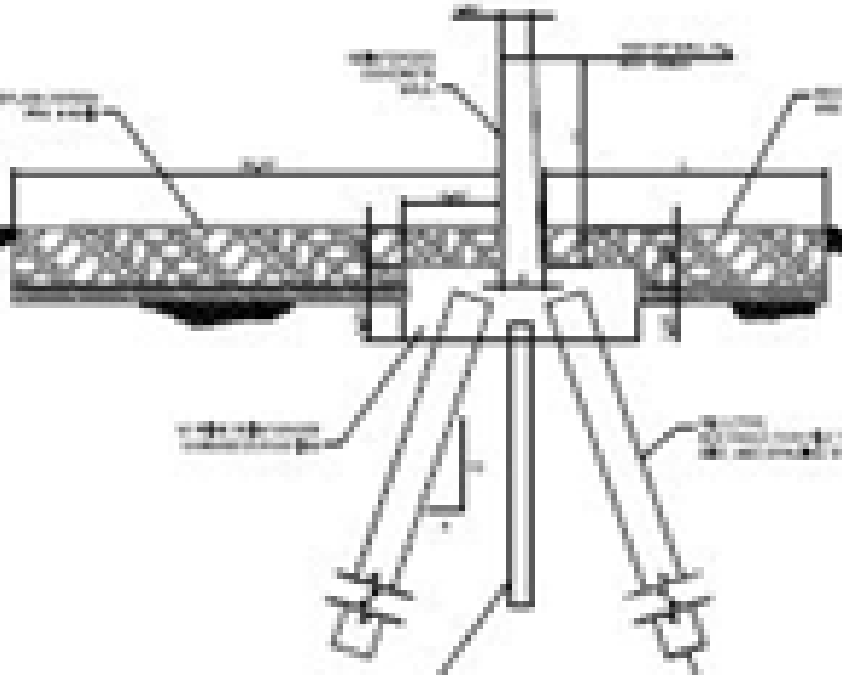
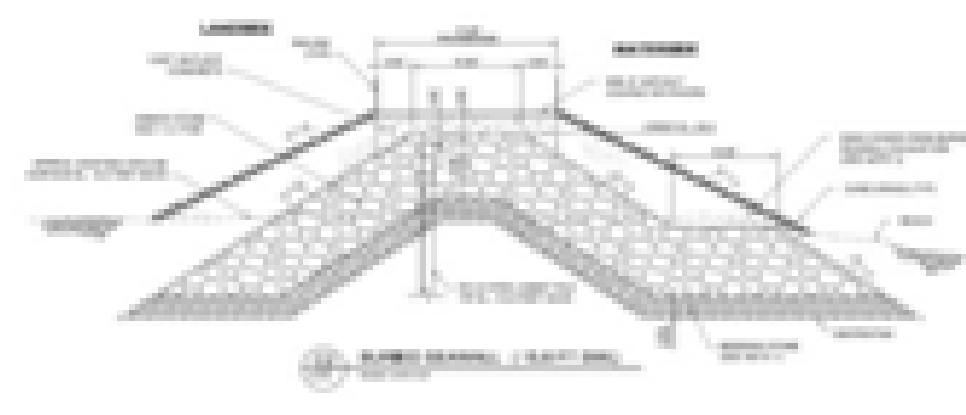
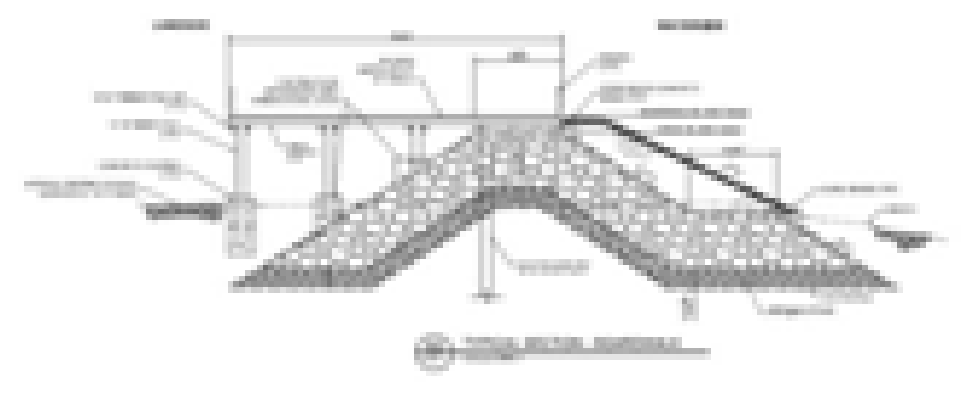


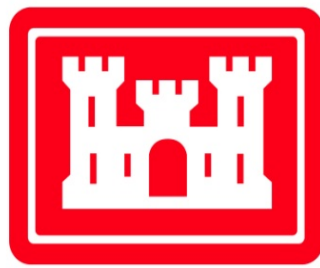


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Plan Elements



Line of Protection								
Reach	Type	Length	Crest Elevation	Depth	Slope	Materials	Typical Section View	Features
A-1	Levee	2,800 lf.	18 ft. NGVD 1929 or 16.9 ft. NAVD 1988	10 ft. wide at crest	2.5:1.0 (H:V)	compacted impervious fill		The compact impervious fill will extend at least 6 feet below the existing grade to prevent seepage, a closure structure will be constructed along Hylan Boulevard.
A-2	Levee	600 lf.	18 ft. NGVD 1929 or 16.9 ft. NAVD 1988	15 ft. wide at crest	2.5:1.0 (H:V)	compacted impervious fill		The compact impervious fill will extend at least 6 feet below the existing grade to prevent seepage.
A-3	Floodwall	1,800 lf.	20.5 ft. NGVD 1929 or 19.4 ft. NAVD 1988	1.5 ft. wide at crest	vertical	reinforced concrete T- Wall on piles		A vertical steel sheet pile wall will be included below the wall to prevent seepage.
A-4	Buried Seawall / Armored Levee/tidal wetland	9,300 lf.	20.5 ft. NGVD 1929 or 19.4 ft. NAVD 1988	10 ft. wide at crest	1.5:1.0 (H:V)	3-ton armor stone		A vertical steel sheet pile wall will be incorporated to prevent seepage. A 17 ft. wide promenade will be constructed on top of the crest of the buried seawall/armored levee. Tidal wetland will help attenuate wave energy and reduce erosion. It also provides biological habitat value.
A-4	Buried Seawall / Armored Levee	13,400 lf.	20.5 ft. NGVD 1929 or 19.4 ft. NAVD 1988	10 ft. wide at crest	1.5:1.0 (H:V)	3-ton armor stone		A vertical steel sheet pile wall will be incorporated to prevent seepage. A 38 ft. wide pile supported boardwalk will be constructed on top of the crest of the buried seawall/armored levee.



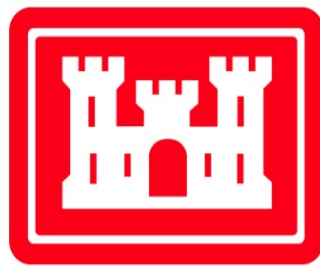
Interior Drainage Plan Elements

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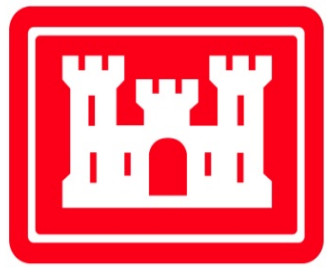
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Plan Elements



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Interior Drainage					
Interior Drainage Area	Natural Storage	Excavated Pond	Tide Gate	Outlets	Road Raising
Area A	17.19 acres	X	22.75 ft. by 18 ft. NGVD 1929 (or 16.9 ft. NAVD 1988) by 16 ft. (LxHxD) with 3 @ 5 ft. by 5 ft. sluice gates, wingwalls, and pre-engineered bridge	2 new sluice gate structures (2 ft. by 2ft.) & 2 intermediate pipe outlets with flap gates	X
Area B	86.41 acres	1 Pond (46 acres) with 94,200 c.y. of excavation to 2.75 ft and NGVD 1929 (1.3ft. NAVD 1988)	22.75 ft. by 20.5 ft. NGVD 1929 (or 19.4 ft. NAVD 1988) by 16 ft. (LxHxD) with 3 @ 5 ft. by 5 ft. sluice gates, wingwalls, and pre-engineered bridge	New gate chambers at Ebbits St., New Dorp Ln., Tysens Ln. outfalls	1,730 lf. by 30 ft. of Kissam Ave. to 7.1 ft. NGVD 1929 (6 ft. NAVD 1988). An average raising height of 3 ft. 630 lf. by 60 ft. of Mill Rd. to 7.1 ft. NGVD 1929 (6 ft. NAVD 88). An average raising height of 1 ft.
Area C	120.44 acres	7 Ponds (100.51 acres), 377,200 c.y. of excavation to an invert of 2 ft. NGVD 1929 (0.9 ft. NAVD 1988)	X	New gate chambers at Greely Ave., Midland Ave., Naughton Ave., Seaview Ave. outfalls	820 lf. by 90 ft. of Seaview Ave to 10 ft. NGVD 1929 (8.9 ft. NAVD 1988). An average raising height of 1 ft. 300 lf. by 60 ft. of Father Capodanno Blvd. to 10 ft. NGVD 1929 (8.9 ft. NAVD 1988). An average raising height of 1 ft.
Area D	30.76 acres	X	X	New gate chamber at Quintard Street outfall	X
Area E	46.7 acres	2 Ponds (34 acres), 222,720 c.y. of excavation to an invert of 2 ft. NGVD 1929 (0.9 ft. NAVD 1988)	X	New gate chambers at Sand Lane, Quincy Ave. outfall	X

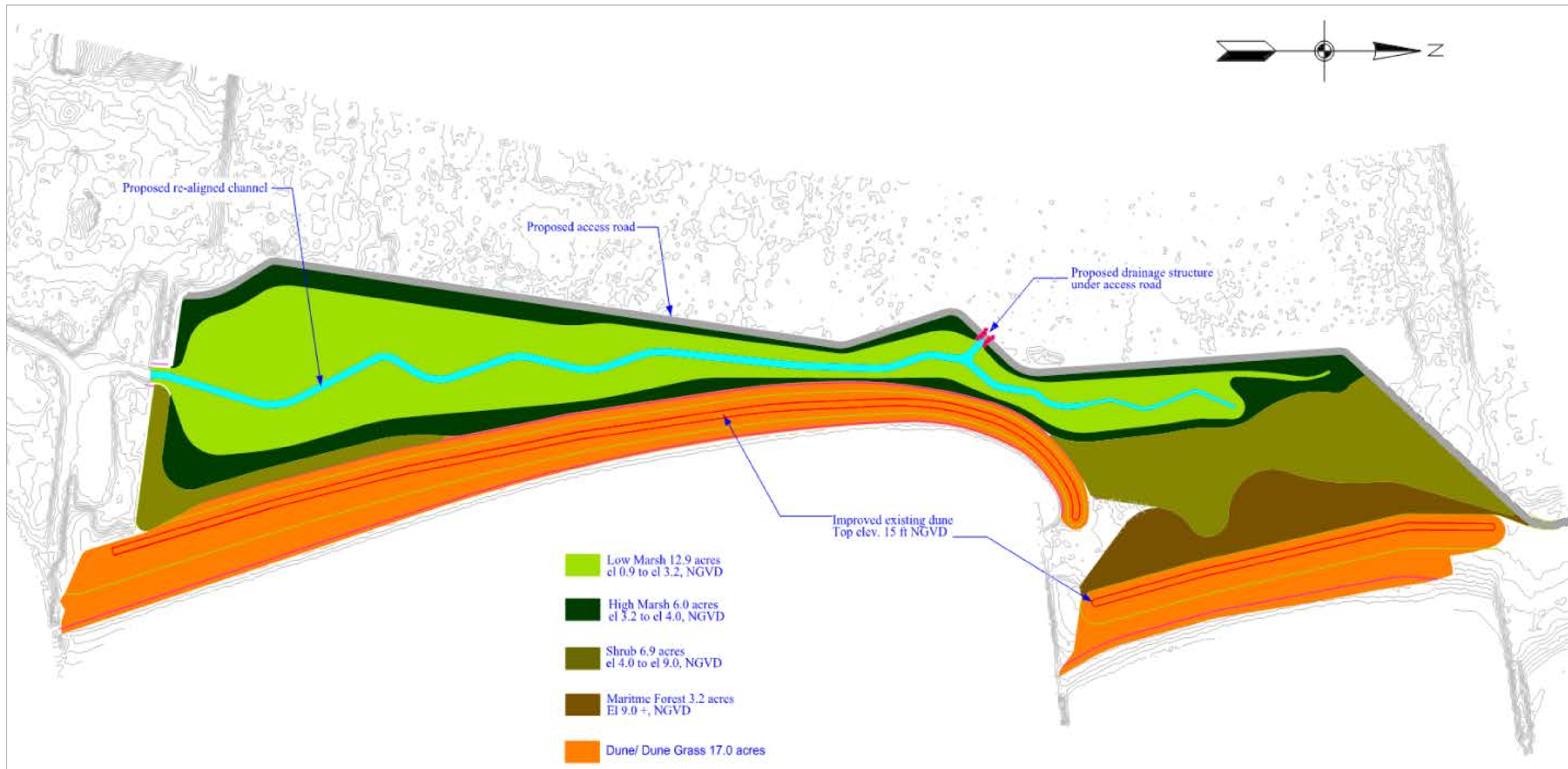


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Tidal Wetlands Typical Plan Feature – Oakwood Beach



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Proposed project features along the coastline include:

- Approx 46 acres of tidal wetlands on the seaward side of proposed buried seawall.
- Includes approx 10.1 acres of maritime forest/scrub-shrub habitat to be planted along the front of revetment.
- 12.9 acres of low marsh and 6 acres of high marsh of living shoreline are proposed in the shallow waters adjacent to existing beachfront.
- 17 acres of proposed planted dune grass.
- In addition to attenuating wave energy and erosion prevention, these features include multiple habitats systems for environmental enhancements, as well as public benefits to Oakwood Beach area.



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Project Renderings



**Existing Boardwalk
South Beach Area looking South**



**Buried Seawall with New Boardwalk
South Beach Area looking South**



**Existing Boardwalk
South Beach Area looking North**



**Buried Seawall with New Boardwalk
South Beach Area looking North**



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Project Renderings



**Existing Promenade
Midland Beach Area looking North**



**Buried Seawall with new Boardwalk
Midland Beach Area looking North**



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Project Renderings



Miller Army Air Field with WWII Fire Tower: Existing conditions (left) and rendering with project (right).



Miller Army Air Field and Elm Tree Light : Existing conditions (left) and rendering with project (right).



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Environmental Considerations



Impacts Considered

Geology, Topography, Soils, Water Quality, Vegetation and Wetlands, Wildlife, Threatened and Endangered Species, Socioeconomics and Environmental Justice, Cultural Resources, Land Use and Zoning, Recreation, Aesthetics, Coastal Zone Management, Hazardous, Toxic and Radioactive Material, Transportation, Air Quality and Noise

Benefits and Adverse Impacts Avoided/Minimized

Water Quality: Water quality in the watershed will be improved because interior drainage that will control/contain storm water runoff. Surface water habitats will be created/enhanced.

Wetlands: 10.9 acres of freshwater wetlands lost and 46 acres of tidal wetlands constructed. Net result: positive impact on wetlands.

Vegetation (upland): Removal of invasive species and subsequent replanting with native vegetation.

Wildlife: Improved habitats could benefit wildlife, including avian and water dependent species.

Recreation: Maintain, protect, and preserve existing parks and other recreational facilities.

Land Use and Zoning: Will not conflict with local zoning, displace existing uses, or result in new residential/commercial development.

Cultural Resources: No effect to Fort Wadsworth Historic District (NRHP-listed).

Unavoidable, Minimal & Temporary Adverse Impacts

Geology, Topography, Soils: Minimal impacts, will disturb 243 acres (51 acres LOP, 188 acres excavated ponds and 4 acres road raisings) on Bluebelt lands, City or state parklands, National Park Service land, and some private land.

Vegetation: Minor tree clearing and site grading required.

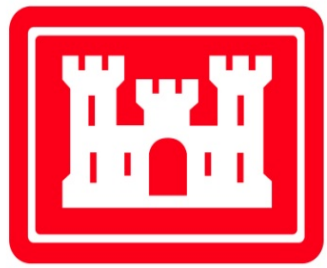
Wildlife: Potential for temporary disturbance of wildlife habitats.

Noise and Air Quality: Short-term noise and dust impacts.

Cultural Resources: Potential effects on National Register of Historic Places (NRHP)-listed Miller Army Airfield Historic District (including Elm Tree Light and concrete apron). Demolition of World War II fire tower (adverse effect if determined NRHP eligible). Coordinating with NPS to minimize and/or mitigate.

Recreation: Temporary impacts to several baseball fields and one soccer field at Miller Field. To the extent practicable, beach access will be maintained during construction. Parking areas may be temporarily closed to public.

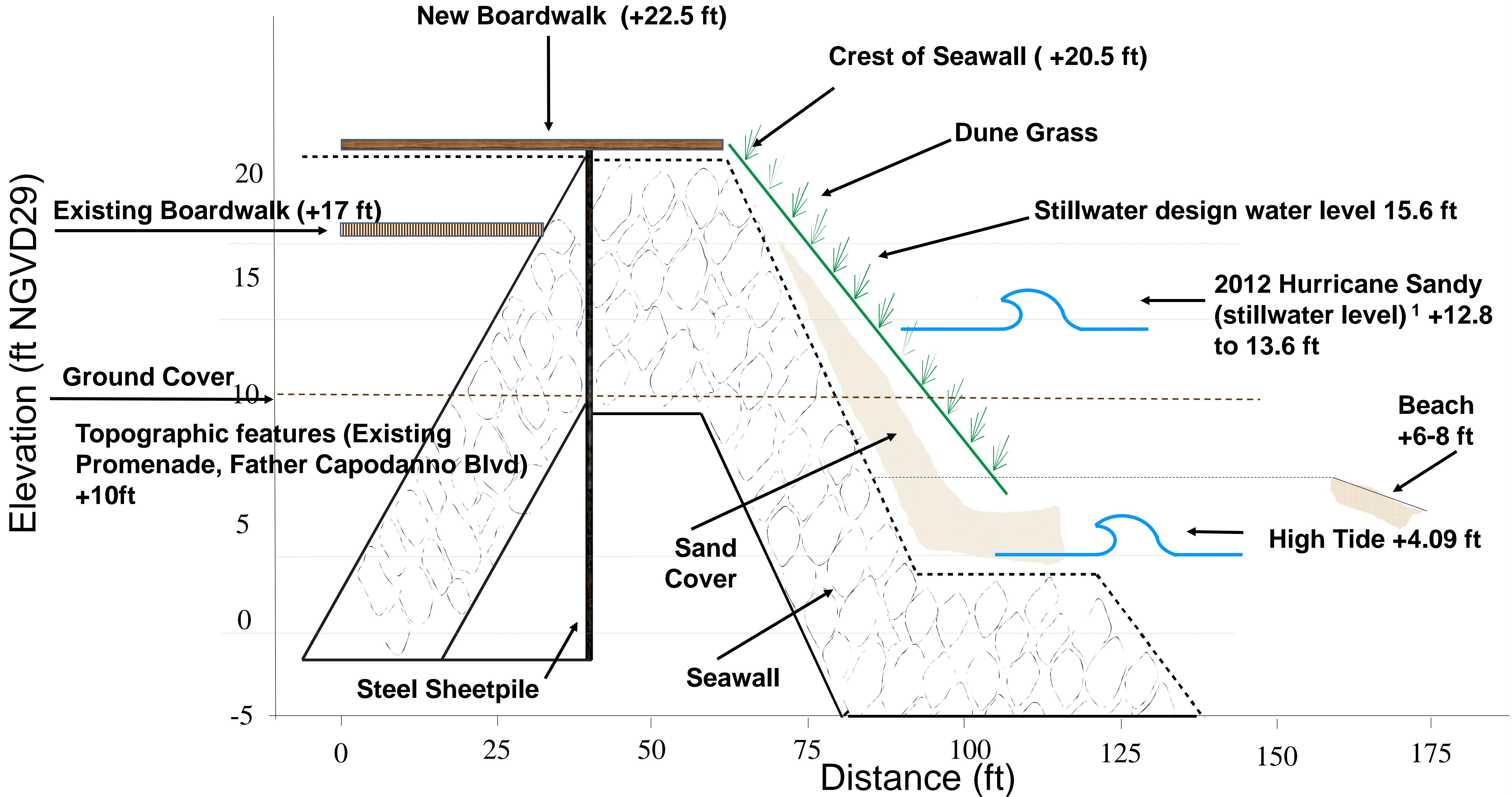
Transportation: Temporarily increased traffic because of equipment. Expected road closures or detours to accommodate road raisings and utility system work.



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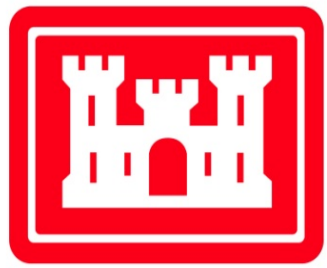


Buried Seawall Cross-Section (Fort Wadsworth to Miller Field Reach)



¹ When wave effects are considered, the total water levels during Hurricane Sandy (waves plus storm surge) is approximately 3-4 feet higher.

Note: Wave heights not drawn to scale. Hurricane Sandy water levels are average of 5 USGS gage readings in the SSSI Phase I project area (7/8/15).

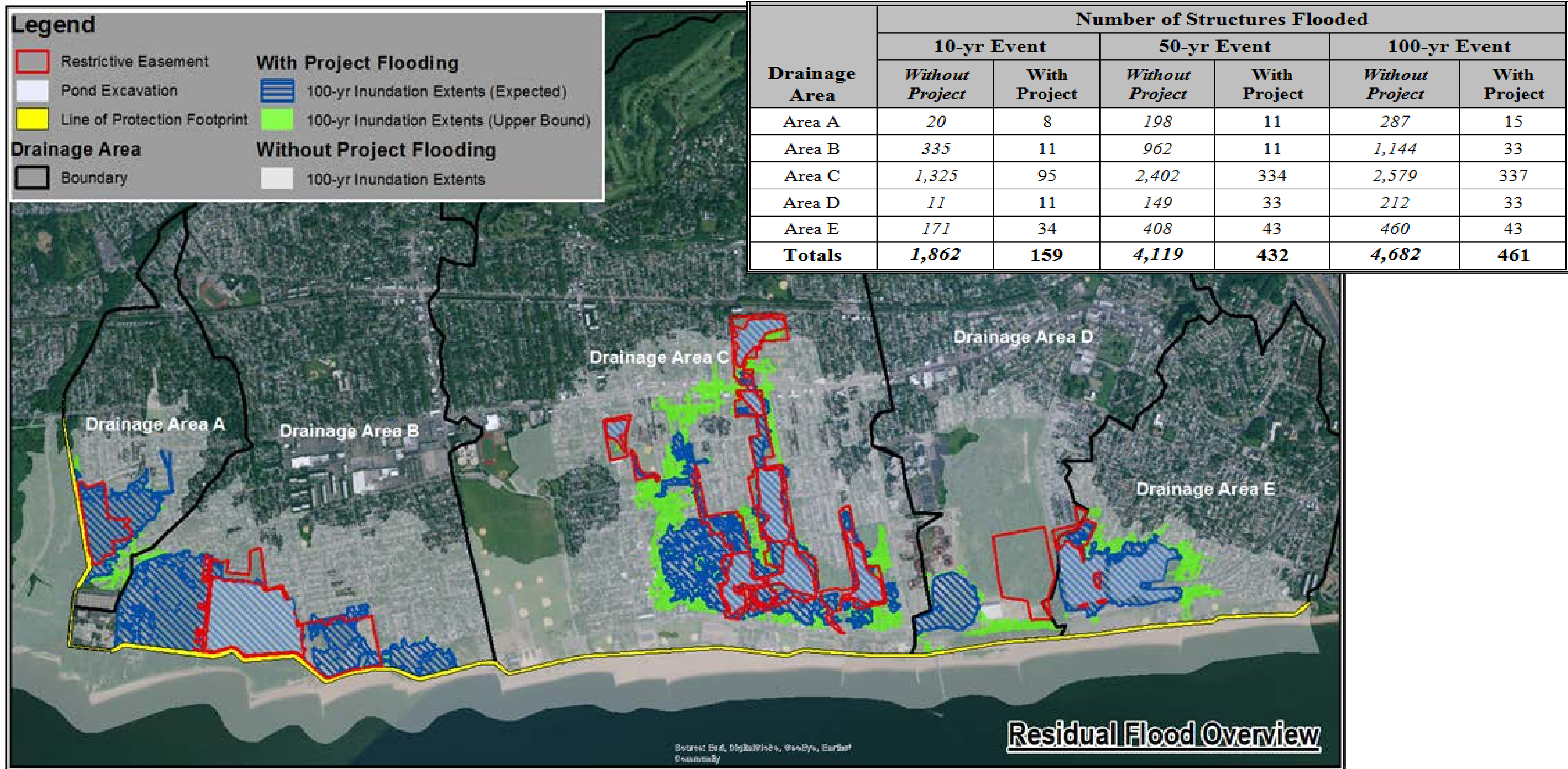


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Project Performance



- Project is estimated to reduce damages by \$27 million annually but will not eliminate all flooding
- Rainfall events will continue to cause damage from interior run-off even with project in place; especially low-lying areas
- In rare occurrence, if still water exceeds 15.6 ft NGVD (approximately 0.3% annual chance or ~300 year storm) ocean surge could overtop line of protection flooding the study area
- **Residents must continue to follow NYC evacuation protocols**





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Non-Federal Sponsor Responsibilities



The United States Army Corps of Engineers is responsible for the planning, design and implementation of the project in coordination/cooperation with the non-federal sponsor.

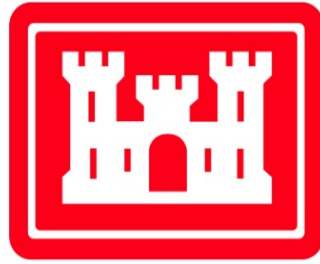
➤ **Project Sponsorship:**

• **New York State Department of Environmental Conservation (NYSDEC) in partnership with:**

- **New York City Department of Environmental Protection (NYCDEP)**
- **New York City Department of Parks and Recreation (NYCDPR)**

➤ **Cost Apportionment - *all costs are based on a fiscal year 2015 Price Level***

- **Total Project Investment Cost - \$578,926,000**
 - **Cost shared 65% Federal: \$376,301,900**
 - **Cost shared 35% non-Federal: \$202,624,100**
- **Operation, Maintenance, Rehabilitation, Replacement and Repairs – 100% non-Federal responsibility**



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Schedule



Final Draft Report/DEIS Release for public review Release for Corps HQ review	Jun 2015
Public information meeting	Aug 2015
End of Public Comment Period on DEIS	9 Sept 2015
Final EIS/Record of Decision (ROD)	Dec 2015
Prepare Plans & Specifications	Sep 2016
Construction Funds Agreement	Oct 2016
Acquire Real Estate	Spring 2018
Construction Start	Spring 2018
Construction Completion	thru 2021

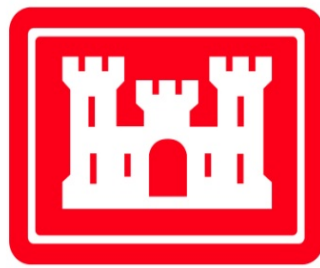


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Handouts



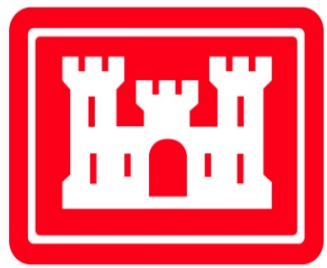
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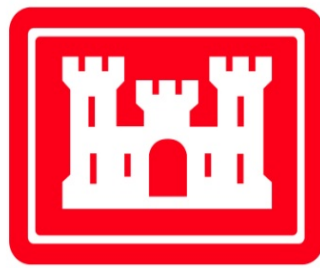
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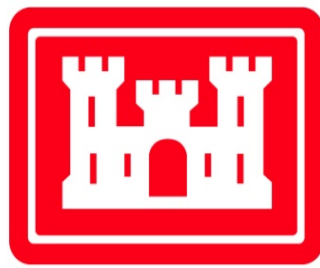
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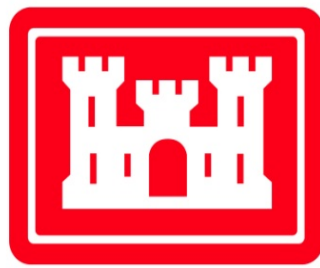
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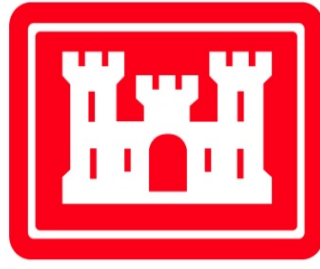
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Plan Components-handout



- Study area is 3 square miles
 - 4,682* structures impacted by a 100-year flood event
- * Floodwater above lowest adjacent grade of structure during 100 year event at base year

Line of Protection

Split into four engineering reaches based on differing design sections

- Reach A-1
 - Earthen Levee, 2,800 feet in length
 - 18 ft NGVD 1929 crest elevation (16.9 ft NAVD 1988)
 - 10 ft wide at crest, 2.5:1.0 (H:V) slope
 - Made of compacted impervious fill
- Reach A-2
 - Earthen Levee; 600 feet in length
 - 18 ft NGVD 1929 crest elevation (16.9 ft NAVD 1988)
 - 15 ft wide at crest, 2.5:1.0 (H:V) slope
 - Made of compacted impervious fill
- Reach A-3
 - Vertical Floodwall; 1,800 feet in length
 - 20.5 ft NGVD 1929 crest elevation (19.4 ft NAVD 1988)
 - 1.5 ft wide at crest, Vertical
 - Made of reinforced concrete R-Wall on piles
- Reach A-4
 - 9,300 lf Buried Seawall/Armored Levee/tidal wetland
 - 20.5 ft NGVD 1929 crest elevation (19.4 ft NAVD 1988)
 - 10ft wide at crest, 1.5:1.0 (H:V) slope
 - Made of 3-ton armor stone
 - Public access
- Reach A-4
 - 13,400 lf Buried Seawall/Armored Levee
 - 20.5 ft NGVD 1929 crest elevation (19.4 ft NAVD 1988)
 - 10ft wide at crest, 1.5:1.0 (H:V) slope
 - Made of 3-ton armor stone
 - Public access

Interior Drainage

- Area A
 - 17.19 acres of natural storage
 - No excavation
 - Tide Gate - 22.75 ft. by 18 ft. NGVD 1929 by 16 ft. (LxHxD) with 3 @ 5 ft. by 5 ft. sluice gates, wingwalls, and pre-engineered bridge
 - Outlets - 2 new sluice gate structures (2 ft. by 2ft.) & 2 intermediate pipe outlets with flap gates
 - No road raising
- Area B
 - 86.41 acres of natural storage
 - Excavate 1 pond (46 acres) with 94,200 c.y. of excavation to 2.75 ft and NGVD 1929
 - Tide Gate - 22.75 ft. by 20.5 ft. NGVD 1929 by 16 ft. (LxHxD) with 3 @ 5 ft. by 5 ft. sluice gates, wingwalls, and pre-engineered bridge
 - Outlets - New gate chambers at Ebbits St., New Dorp Ln., Tysens Ln. outfalls
 - Road raising - 1,730 lf. by 30 ft. of Kissam Ave. to 7.1 ft. NGVD 1929 (6 ft. NAVD 1988). An average raising height of 3 ft. 630 lf. by 60 ft. of Mill Rd. to 7.1 ft. NGVD 1929 (6 ft. NAVD 88). An average raising height of 1 ft.
- Area C
 - 120.44 acres of natural storage
 - Excavate 7 Ponds (100.51 acres), 377,200 c.y. of excavation to an invert of 2 ft. NGVD 1929
 - No Tide Gates
 - Outlets - New gate chambers at Greely Ave., Midland Ave., Naughton Ave., Seaview Ave. outfalls
 - Road raising - 820 lf. by 90 ft. of Seaview Ave to 10 ft. NGVD 1929. An average raising height of 1 ft. 300 lf. by 60 ft. of Father Capodanno Blvd. to 10 ft. NGVD 1929 .An average raising height of 1 ft.
- Area D
 - 30.76 acres of natural storage
 - No excavation
 - No Tide Gates
 - Outlets - New gate chamber at Quintard Street outfall
 - No road raising
- Area E
 - 46.7 acres of natural storage
 - Excavate 2 Ponds (34 acres), 222,720 c.y. of excavation to an invert of 2 ft. NGVD 1929
 - No Tide Gates
 - Outlets - New gate chambers at Sand Lane, Quincy Ave. outfall
 - No road raising