



**US Army Corps
of Engineers®**
New York District

Integrated Hurricane Sandy General Reevaluation Report and Environmental Impact Statement

Atlantic Coast of New York

**East Rockaway Inlet to
Rockaway Inlet and Jamaica Bay**

Sub Appendix A2-B: HFFRRF Phase 2 Projects

US Army Corps of Engineers



B. SUB-APPENDIX A2-B: HFFRRF PHASE 2 PROJECTS AND PROJECT MAPS

The table below list all Phase 2 projects on a reach by reach basis.

RPV = Rockaway Peninsula Vicinity

FCV = Fresh Creek Vicinity

NCV = Nassau County Vicinity

Subsequent pages display plan view maps of each of the Phase 2 projects.

Table B-1: Phase 2 Reach by Reach Project Data

Project Location	Reach-ID	Feature Type	Length (ft)	Approx. Ground Elevation	Design Elevation	Feature Top Elevation
Mid-Rockaway Backbay with NNBFs	RPV-081-a	Low Berm	278	4.0	7.8	8.0
	RPV-081-aa	Hybrid Berm	299	4.5	7.8	8.0
	RPV-081-b	Medium Berm	585	4.0	9.4	9.5
	RPV-081-c	Medium Berm	65	4.0	9.4	9.5
	RPV-081-d	Medium Berm	855	4.0	9.4	9.5
	RPV-081-e	Hybrid Berm	161	5.0	9.4	9.5
	RPV-081-f	Hybrid Berm	334	5.0	9.4	9.5
	RPV-082-a	Hybrid Berm	348	5.0	9.4	9.5
	RPV-082-b	Shallow Bulkhead	40	5.0	8.8	9.0
	RPV-082-c	Hybrid Berm	233	5.0	9.4	9.5
	RPV-082-d	Shallow Bulkhead	85	5.0	8.8	9.0
	RPV-082-e	Hybrid Berm	178	5.0	9.4	9.5
	RPV-082-f	Shallow Bulkhead Urb	192	5.0	8.8	9.0
	RPV-082-g	Medium Floodwall	203	5.0	7.8	8.0
	RPV-083-a	Road Ramp	53	5.0	7.8	8.0
	RPV-084-a	Medium Floodwall	275	5.0	7.8	9.5
	RPV-084-b	High Berm	81	7.0	12.4	12.5
	RPV-084-c	Medium Berm	560	6.5	11.0	11.5
	RPV-085-a	High Floodwall	664	5.0	11.0	11.5
	RPV-085-b	Low Berm	849	5.0	7.8	8.0
	RPV-085-c	Low Berm	69	5.0	7.8	8.0
	RPV-085-d	Low Berm	313	5.0	7.8	8.0
	RPV-091-a	Low Berm	653	6.0	9.5	9.5
	RPV-091-b	Low Berm	60	6.0	9.5	9.5
	RPV-091-c	Low Berm	366	6.0	9.5	9.5



Mid-
Rockaway
Backbay with
NNBFs

RPV-091-d	Low Floodwall	524	5.0	7.9	8.0
RPV-091-e	Road Ramp	40	5.0	7.9	8.0
RPV-091-f	Low Floodwall	622	5.0	7.9	8.0
RPV-091-g	Revetment	150	5.5	10.5	10.5
RPV-091-h	Revetment	26	5.5	10.5	10.5
RPV-091-i	Shallow Bulkhead	380	5.5	11.1	11.5
RPV-091-j	Revetment	538	5.5	10.5	10.5
RPV-092-a	Revetment	273	5.5	10.5	10.5
RPV-092-b	Deep Bulkhead	318	5.5	11.1	11.5
RPV-093-a	Low Berm	1415	5.0	7.8	8.0
RPV-093-b	Hybrid Berm	292	6.0	8.0	8.0
RPV-094-a	Shallow Bulkhead	176	5.5	9.5	10.0
RPV-094-b	Shallow Bulkhead	69	5.5	9.5	10.0
RPV-094-c	Shallow Bulkhead	716	5.5	9.5	10.0
RPV-094-d	Shallow Bulkhead Urb	146	5.5	9.5	10.0
RPV-094-e	Shallow Bulkhead Urb	54	5.5	9.5	10.0
RPV-094-f	Shallow Bulkhead	345	5.5	9.5	10.0
RPV-094-g	Shallow Bulkhead Urb	694	5.5	11.0	11.5
RPV-094-i	Shallow Bulkhead	119	5.5	11.0	11.5
RPV-094-j	Shallow Bulkhead	135	5.5	11.0	11.5
RPV-094-k	Medium Floodwall	118	4.0	11.5	11.5
RPV-095-a	Medium Berm	1138	7.0	12.4	12.5
RPV-096-a	High Floodwall	439	5.5	11.0	11.5
RPV-097-a	Deep Bulkhead	267	5.0	11.0	11.5
RPV-111-a	Low Floodwall	281	5.5	8.9	9.0
RPV-111-b	Low Floodwall	50	5.5	8.9	9.0
RPV-111-c	Low Floodwall	296	5.5	8.9	9.0
RPV-111-d	Low Floodwall	54	5.5	8.9	9.0
RPV-111-e	Low Floodwall	21	5.5	8.9	9.0
RPV-111-f	Deep Bulkhead	536	6.0	11.1	11.5
RPV-111-g	Low Floodwall	195	6.0	7.9	8.0
RPV-111-h	Road Ramp	37	6.0	7.9	8.0
RPV-111-i	Low Floodwall	820	6.0	7.9	8.0
RPV-111-j	Vehicular Gate	25	6.0	7.9	8.0
RPV-111-k	Low Floodwall	237	6.0	7.9	8.0
RPV-111-l	Road Ramp	34	6.0	7.9	8.0
RPV-111-m	Low Floodwall	67	6.0	11.1	11.5
RPV-111-n	Medium Floodwall	247	6.0	11.1	11.5
RPV-113-a	Road Ramp	33	6.0	7.9	8.0
RPV-113-b	Low Floodwall	303	6.0	7.9	8.0
RPV-113-c	Road Ramp	40	6.0	7.9	8.0
RPV-113-d	Low Floodwall	434	6.0	7.9	8.0



Mid-Rockaway Backbay with NNBFs	RPV-113-e	Road Ramp	44	6.0	7.9	8.0
	RPV-113-f	Low Floodwall	545	6.0	7.9	8.0
	RPV-121-b	Low Floodwall	125	5.0	7.8	8.0
	RPV-122-a	Road Ramp	31	5.0	7.8	8.0
	RPV-123-a	Low Floodwall	474	5.0	7.8	8.0
	RPV-123-b	Road Ramp	30	5.0	7.8	8.0
	RPV-123-c	Low Floodwall	185	5.0	7.8	8.0
	RPV-123-d	Road Ramp	40	5.0	7.8	8.0
	RPV-124-a	Low Floodwall	214	5.0	7.8	8.0
	RPV-124-b	Low Floodwall	16	5.0	7.8	8.0
	RPV-124-c	Low Floodwall	253	5.0	7.8	8.0
Motts Basin North	RPV-072-a	Low Floodwall	536	6.0	7.7	8.0
	RPV-072-b	Medium Floodwall	47	6.0	7.7	8.0
	RPV-072-c	Low Floodwall	105	6.0	7.7	8.0
Canarsie	FCV-067-a	Revetment	562	6.0	9.5	9.5
	FCV-067-b	Low Floodwall	612	6.0	8.0	8.0
	FCV-067-c	Low Floodwall	48	6.0	8.0	8.0
	FCV-067-d	Low Floodwall	751	6.0	8.0	8.0
	FCV-067-e	Low Floodwall	29	6.0	8.0	8.0
	FCV-067-f	Low Floodwall	266	6.0	8.0	8.0
	FCV-067-g	Revetment	238	6.0	9.4	9.5
	FCV-067-h	Revetment	52	6.0	9.4	9.5
	FCV-067-i	Revetment	234	6.0	9.4	9.5
Cedarhurst-Lawrence	NCV-010-a	Deep Bulkhead	286	4.0	9.7	10.0
	NCV-010-b	Deep Bulkhead	192	4.0	9.7	10.0
	NCV-010-c	Deep Bulkhead	57	4.0	9.7	10.0
	NCV-010-d	Deep Bulkhead	43	4.0	9.7	10.0
	NCV-010-e	Deep Bulkhead	385	4.0	9.7	10.0
	NCV-010-f	Medium Floodwall	23	5.5	9.7	10.0





Legend

Project Alignments (v20180717)

HFFRR-Feature

Low Floodwall

Revetment

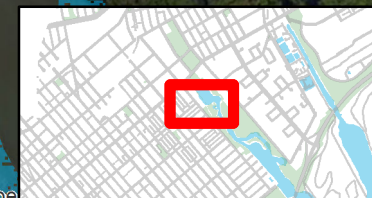
20% AEP (5yr RP) Flood Extents (2068)

City Street

Alley



The data displayed on this map illustrate the scale of potential flooding, not the exact location. The data do not account for future ground elevation, shoreline, or hydrological changes. Inundation was assumed to occur at a constant elevation above the NAVD83 Datum (i.e., bathym model) as indicated on the map. All low-lying areas, shaded in color, are assumed to be hydrologically connected. Actual flooding extents may vary due to the temporal characteristics of a coastal flooding event as well as the potential combined effects of rainfall run-off, back flow through existing stormwater infrastructure, and leakage.





Legend

Project Alignments (v20180717)

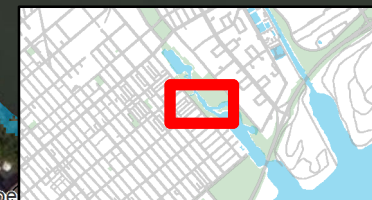
HFFRR-Feature

Low Floodwall

20% AEP (5yr RP) Flood Extents (2068)

City Street

Alley



0 40 80 160 240 320 Feet



Legend

Project Alignments (v20180717)

HFFRR-Feature

Low Floodwall

Revetment

20% AEP (5yr RP) Flood Extents (2068)

City Street



The data displayed on this map illustrate the scale of potential flooding, not the exact location, and do not account for future, ground elevation, shoreline, or hydrological changes. Inundation was assumed to occur at a constant elevation above the NAVD88 Datum (i.e., bathym model) as indicated on the map. All low-lying areas, shaded in color, are assumed to be hydrologically "connected". Actual flooding extents may vary due to the temporal characteristics of a coastal flooding event as well as the potential combined effects of rainfall run-off, back flow through existing stormwater infrastructure, and seepage.



Legend

Project Alignments

HFFRR-Feature

Low Floodwall

Medium Floodwall

20% AEP (5yr RP) Flood Extents (2068)

Nassau County

Nassau County Streets


City Street



The data displayed on this map illustrate the scale of potential flooding, not the exact location, and do not account for future, ground elevation, shoreline, or hydrological changes. Inundation was assumed to occur at a constant elevation above the NAVD88 Datum (i.e., bathtub model) as indicated on the map. All low-lying areas, shaded in color, are assumed to be hydrologically "connected". Actual flooding extents may vary due to the temporal characteristics of a coastal flooding event as well as the potential combined effects of rainfall run-off, back flow through existing stormwater infrastructure, and seepage.





Legend

 Proposed Pump Station Locations





NNBF Gains Areas


Planting


-  Scrub-shrub
-  Smooth Cordgrass

Project Alignments

HFFRR-Feature

-  Rock Sill
-  Low Berm
-  Medium Berm
-  Hybrid Berm

 20% AEP (5yr RP) Flood Extents (2068)

 City Street

 Railroad Track

Smooth Cordgrass
Excav = 0ft.
Fill = 1ft

Scrub-shrub
Excav = 2ft.
Fill = 0ft

RPV-081-aa
EL9.5ft

RPV-081-a
EL8ft

RPV-081-b
EL9.5ft

RPV-081-c
EL9.5ft

RPV-081-d
EL9.5ft

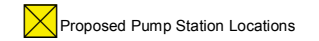
The data displayed on this map illustrate the scale of potential flooding, not the exact location, and do not account for future, ground elevation, shoreline, or hydrological changes. Inundation was assumed to occur at a constant elevation above the NAVD88 Datum (i.e., bathtub model) as indicated on the map. All low-lying areas, shaded in color, are assumed to be hydrologically "connected". Actual flooding extents may vary due to the temporal characteristics of a coastal flooding event as well as the potential combined effects of rainfall run-off, back flow through existing stormwater infrastructure, and seepage.



0 40 80 160 240 320 Feet



Legend



NNBF Gains Areas (20180717)

Planting

- Salt Meadow Hay
- Scrub-shrub
- Smooth Cordgrass

Project Alignments (v20180717)

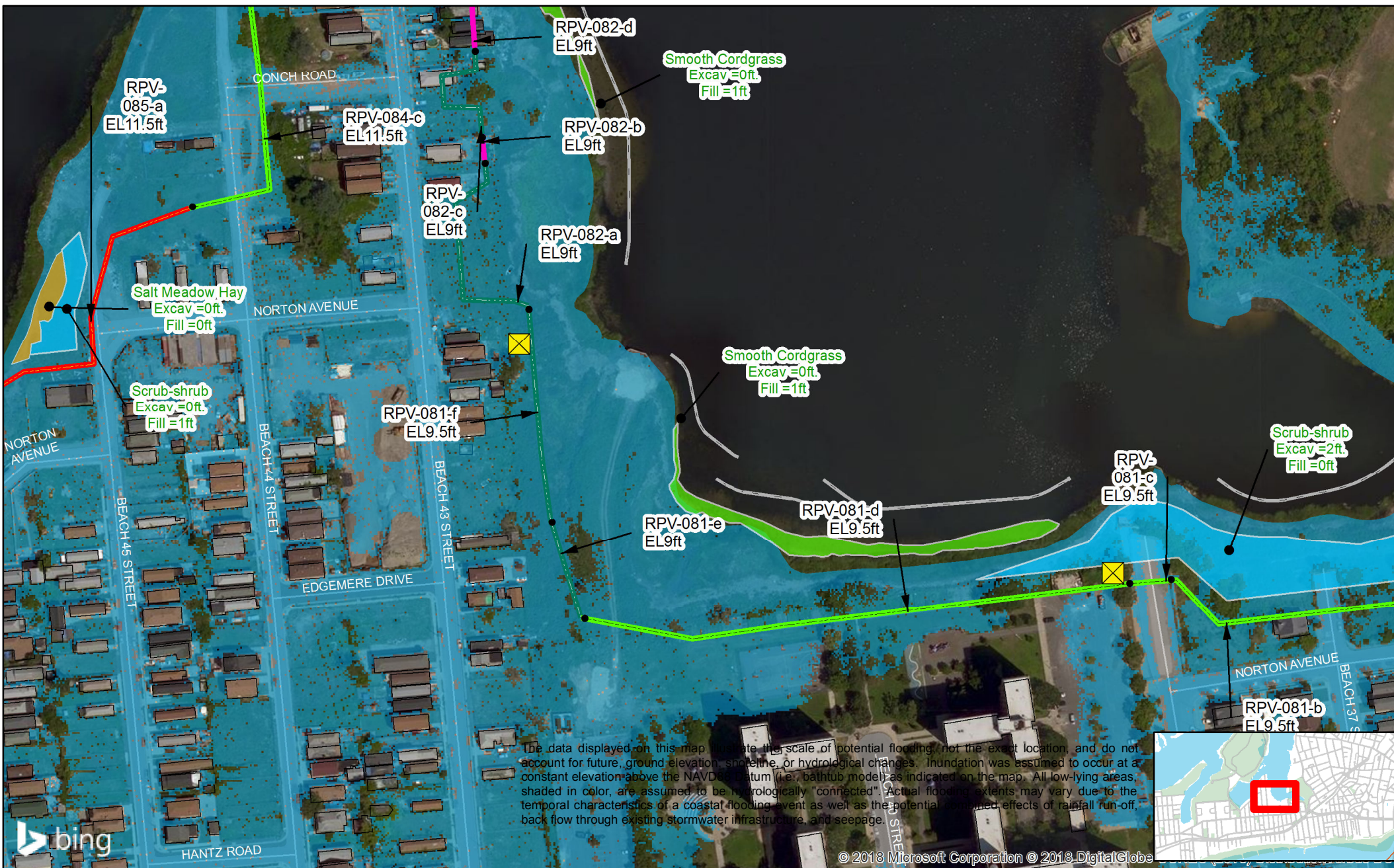
HFFRR-Feature

- Rock Sill
- High Floodwall
- Medium Berm
- Hybrid Berm
- Shallow Bulkhead

- 20% AEP (5yr RP) Flood Extents (2068)

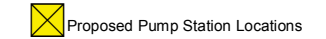
City Street

0 40 80 160 240 320 Feet





Legend



NNBF Gains Areas (20180717)

Planting

- Salt Meadow Hay
- Scrub-shrub
- Smooth Cordgrass

Project Alignments (v20180717)

HFFRR-Feature

- Rock Sill
- Medium Floodwall
- High Floodwall
- Medium Berm
- High Berm
- Hybrid Berm
- Shallow Bulkhead
- Shallow Bulkhead Urban
- Road Ramp
- 20% AEP (5yr RP) Flood Extents (2068)
- City Street
- Physical Non-Street Feature



The data displayed on this map illustrate the scale of potential flooding, not the exact location, and do not account for future, ground elevation, shoreline, or hydrological changes. Inundation was assumed to occur at a constant elevation above the NAVD83 Datum (i.e., bathtub model) as indicated on the map. All low-lying areas, shaded in color, are assumed to be hydrologically "connected". Actual flooding extents may vary due to the temporal characteristics of a coastal flooding event as well as the potential combined effects of rainfall, back flow through existing stormwater infrastructure, and seepage.



Legend

Proposed Pump Station Locations

NNBF Gains Areas (20180717)

Planting

Salt Meadow Hay
 Scrub-shrub

Project Alignments (v20180717)

HFFRR-Feature


Rock Sill
 High Floodwall
 Low Berm
 Hybrid Berm
 20% AEP (5yr RP) Flood Extents (2068)
City Street



The data displayed on this map illustrate the scale of potential flooding, not the exact location, and do not account for future, ground elevation, shoreline, or hydrological changes. Inundation was assumed to occur at a constant elevation above the NAVD88 datum (i.e., bathtub model) as indicated on the map. All low-lying areas shaded in color, are assumed to be hydrologically "connected". Actual flooding extents may vary due to the temporal characteristics of a coastal flooding event as well as the potential combined effects of rainfall run-off, back flow through existing stormwater infrastructure, and seepage.




Legend

 Proposed Pump Station Locations


NNBF Gains Areas (20180717)

Planting


 Salt Meadow Hay

Project Alignments (v20180717)

HFFRR-Feature

 Rock Sill


 Low Floodwall


 Low Berm


 Shallow Bulkhead


 Revetment

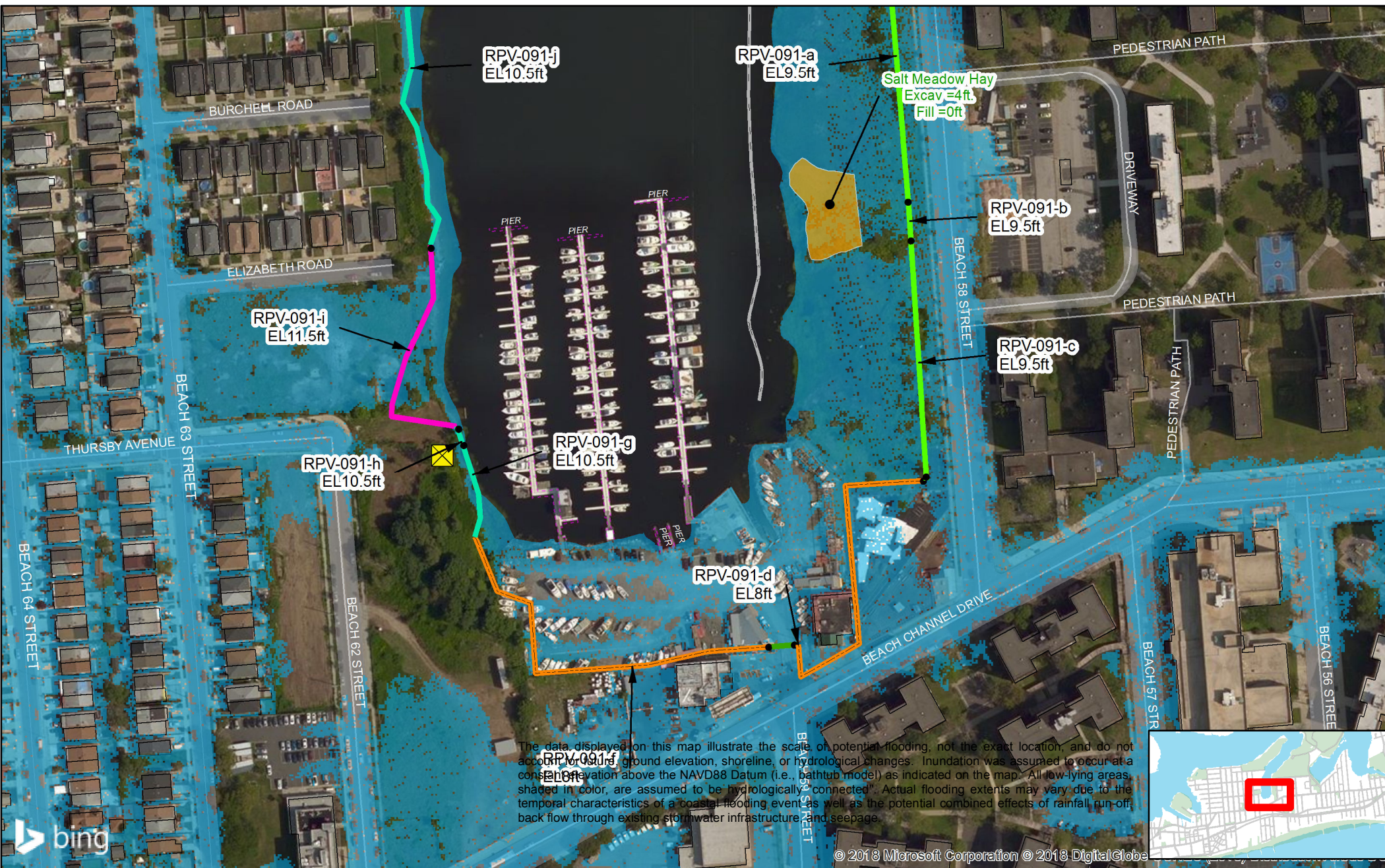
 Road Ramp

 20% AEP (5yr RP) Flood Extents (2068)

 City Street

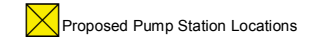
 Private Street; 6, V

 Physical Non-Street Feature





Legend



NNBF Gains Areas (20180717)

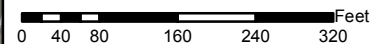
Planting

- Canopy Tree
- Smooth Cordgrass

Project Alignments (v20180717)


HFFRR-Feature

- Rock Sill
- Low Berm
- Deep Bulkhead
- Revetment
- 20% AEP (5yr RP) Flood Extents (2068)
- City Street
- Private Street; 6, V








Legend

 Proposed Pump Station Locations

NNBF Gains Areas (20180717)


Planting


-  Canopy Tree
-  Salt Meadow Hay
-  Smooth Cordgrass


Project Alignments (v20180717)

HFFRR-Feature

-  Rock Sill
-  Low Berm
-  Hybrid Berm
-  Shallow Bulkhead
-  Shallow Bulkhead Urban
-  Revetment

 20% AEP (5yr RP) Flood Extents (2068)


 City Street

 Private Street; 6, V









Legend

 Proposed Pump Station Locations

NNBF Gains Areas


Planting


-  Canopy Tree
-  Salt Meadow Hay
-  Scrub-shrub
-  Smooth Cordgrass


Project Alignments

HFRR-Feature

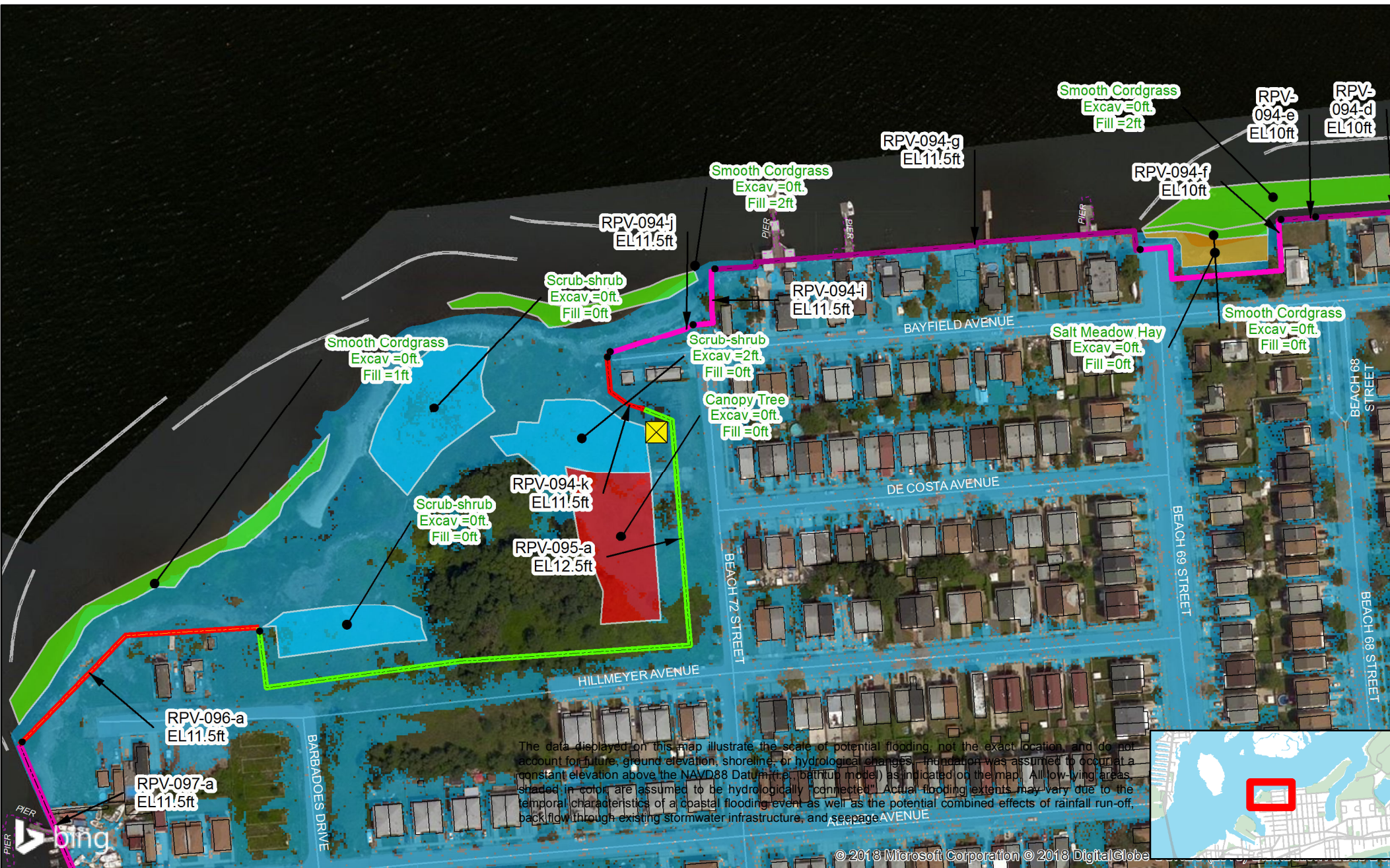
-  Rock Sill
-  Medium Floodwall
-  High Floodwall
-  Medium Berm
-  Deep Bulkhead
-  Shallow Bulkhead
-  Shallow Bulkhead Urban

 20% AEP (5yr RP) Flood Extents (2068)

 City Street

 Physical Non-Street Feature

 Alley





Legend

NNBF Gains Areas

Planting

Smooth Cordgrass

Project Alignments

HFFRR-Feature

Rock Sill

Low Floodwall

High Floodwall

Medium Berm

Deep Bulkhead

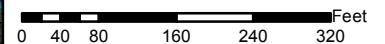
Road Ramp

20% AEP (5yr RP) Flood Extents (2068)

City Street

Physical Non-Street Feature

Alley





Legend

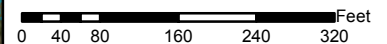
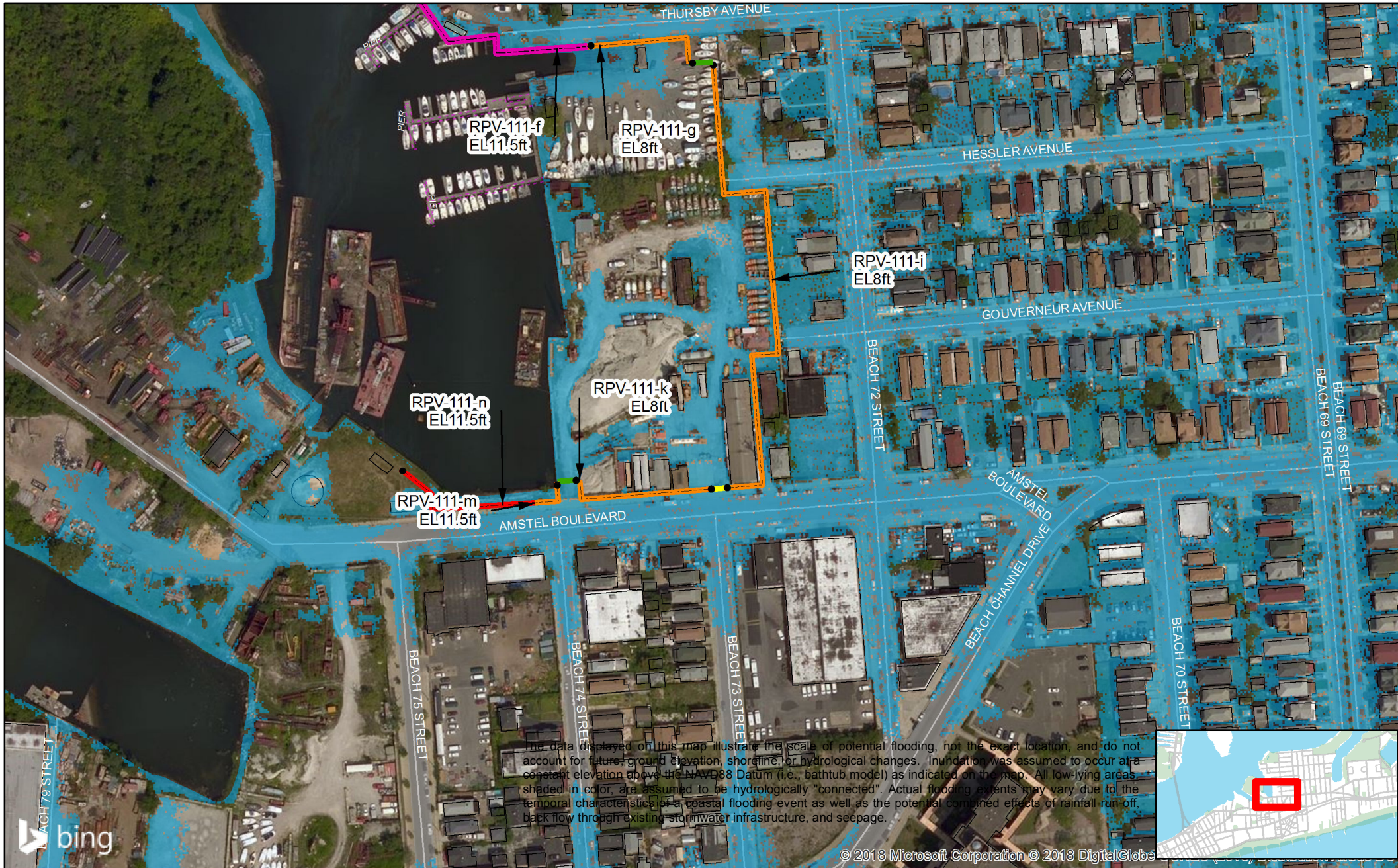
Project Alignments

HFFRR-Feature

- Low Floodwall
- Medium Floodwall
- Deep Bulkhead
- Vehicular Gate
- Road Ramp


20% AEP (5yr RP) Flood Extents (2068)

- City Street
- Physical Non-Street Feature






Legend


 Proposed Pump Station Locations


Project Alignments


HFFRR-Feature

 Low Floodwall


 Medium Floodwall


 Road Ramp

 20% AEP (5yr RP) Flood Extents (2068)


 City Street

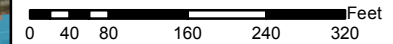
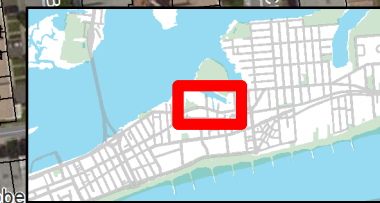
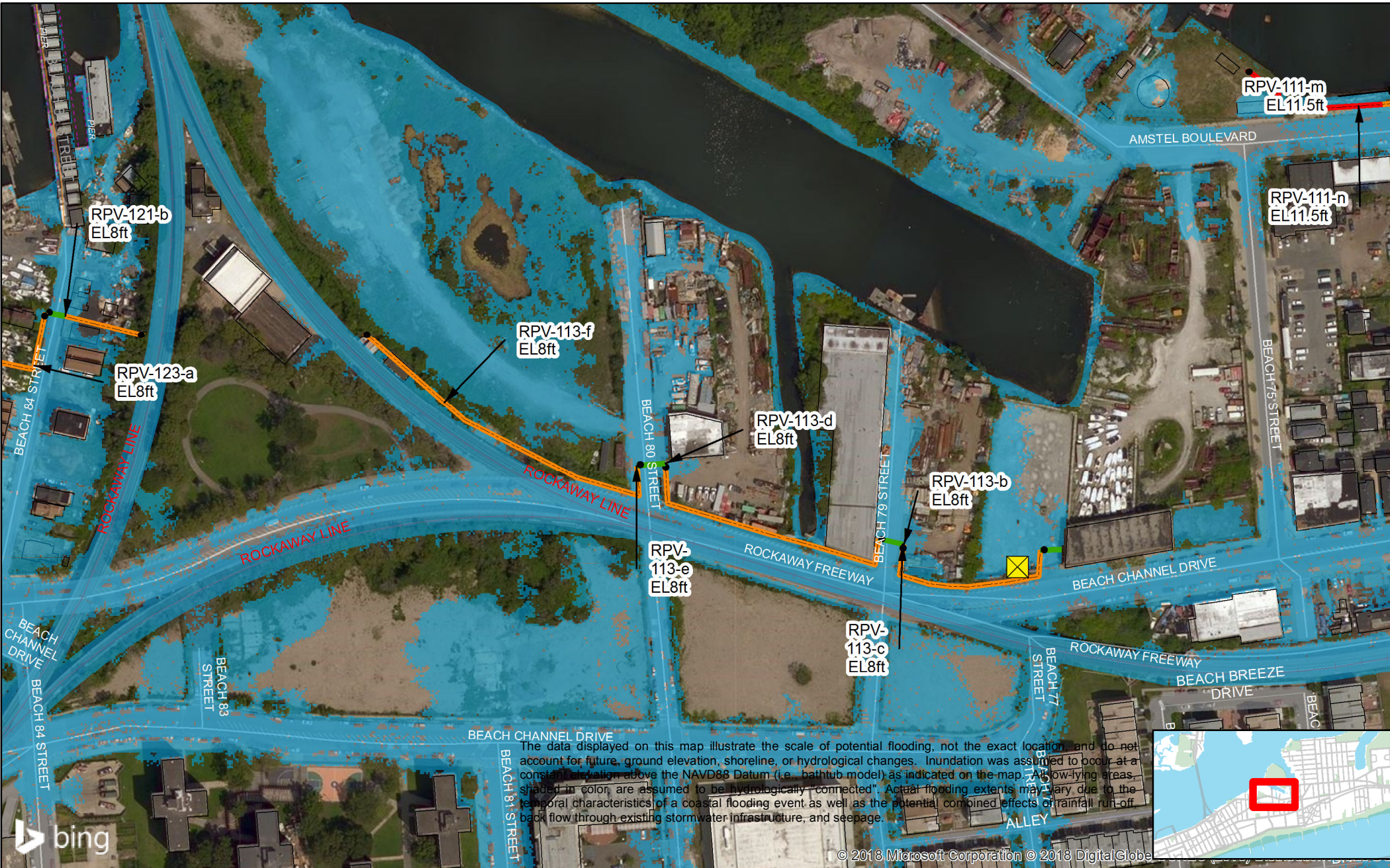
 Railroad Track

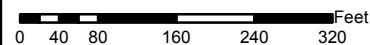
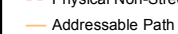
 Private Street; 6, V

 Physical Non-Street Feature

 Alley


 Addressable Path









Legend


 Proposed Pump Station Locations

Project Alignments (v20180717)

HFFRR-Feature

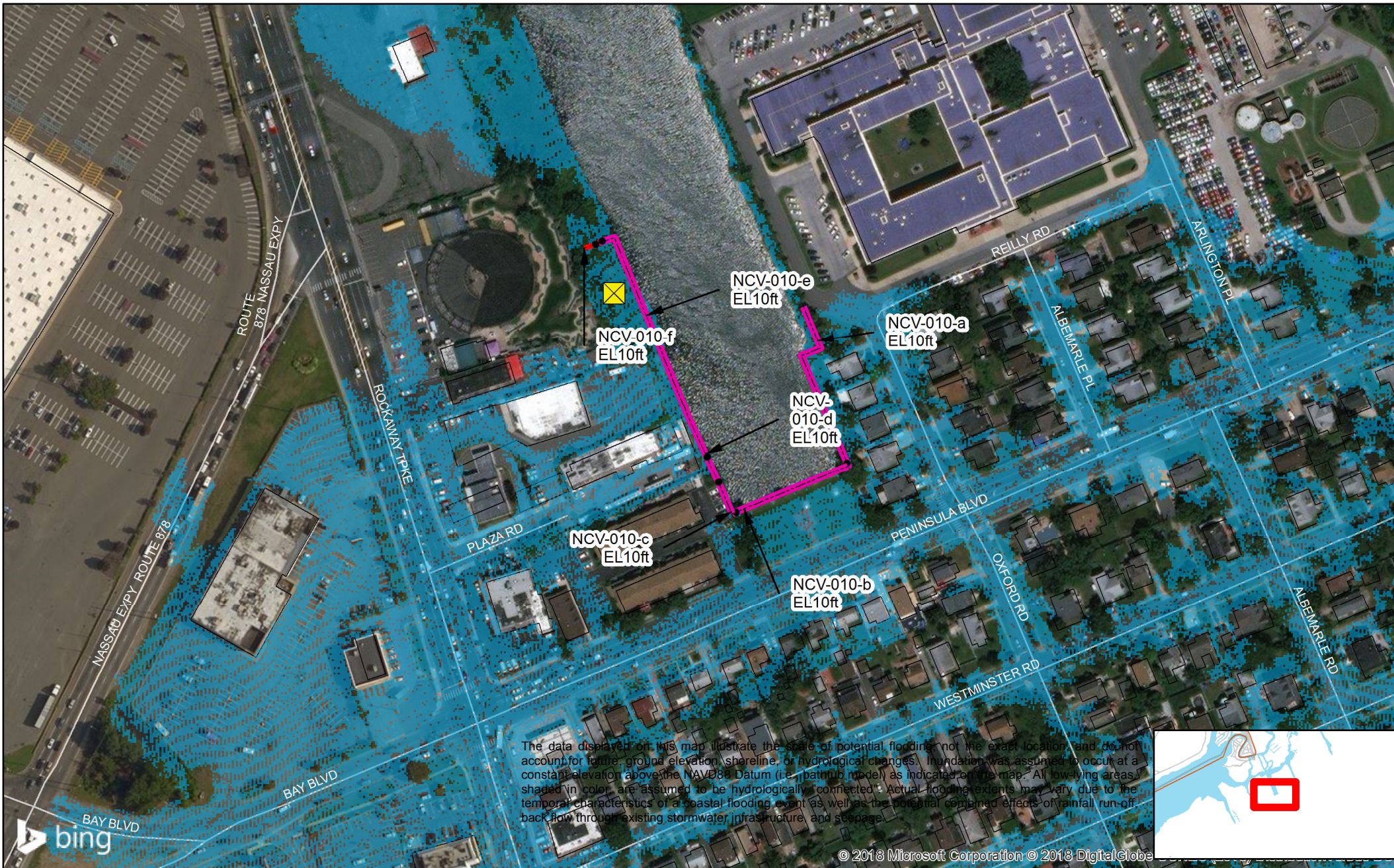
 Medium Floodwall

 Deep Bulkhead

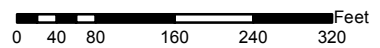
 20% AEP (5yr RP) Flood Extents (2068)

Nassau County Streets

Nassau County Streets



0 40 80 160 240 320 Feet





Legend

Project Alignments

HFFRR-Feature

Low Floodwall

PLTBrooklyn

OwnType

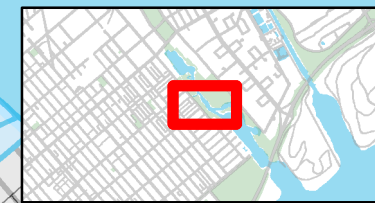
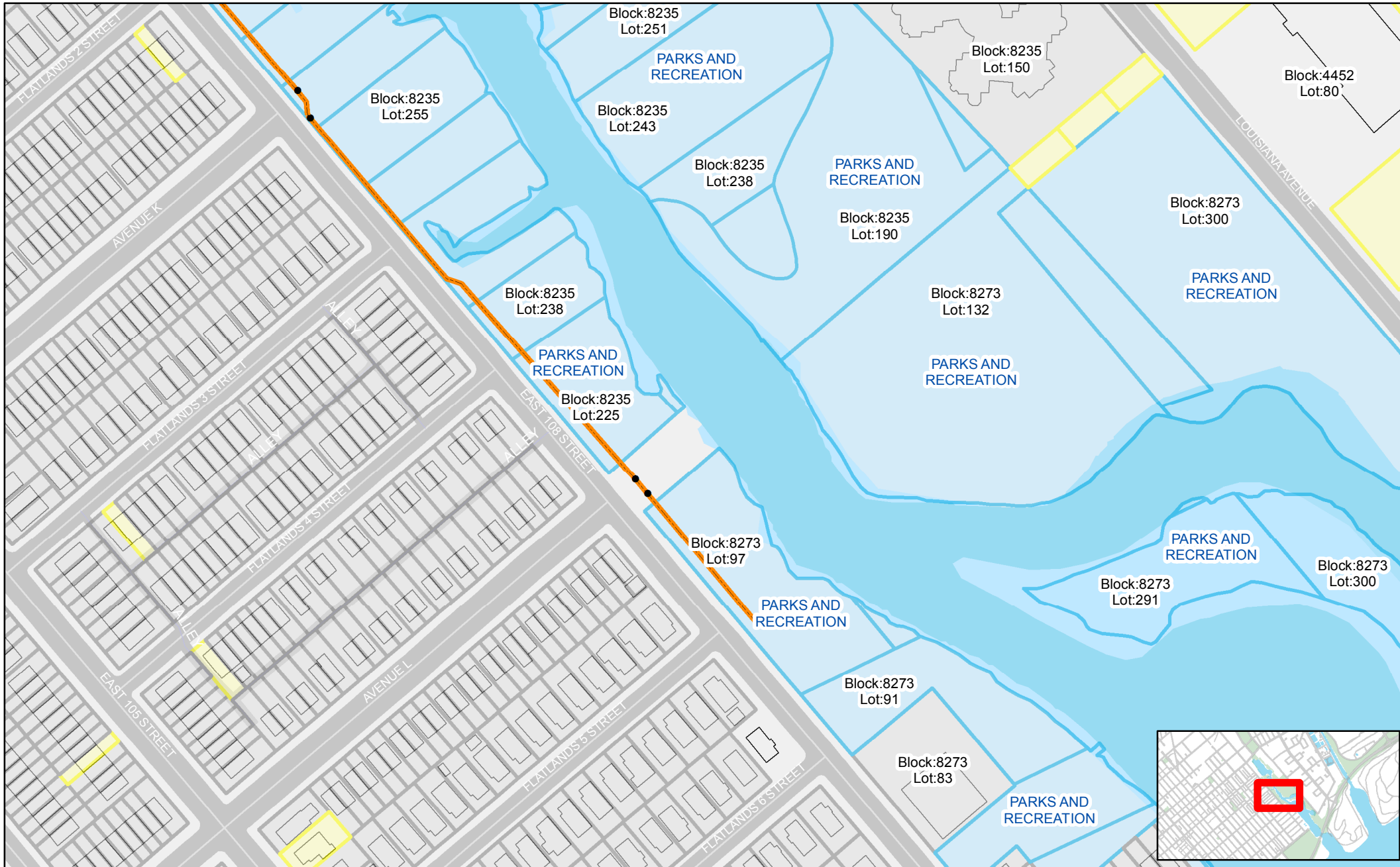
City

Private

City Street

Alley

0 40 80 160 240 320 Feet





Legend

Project Alignments

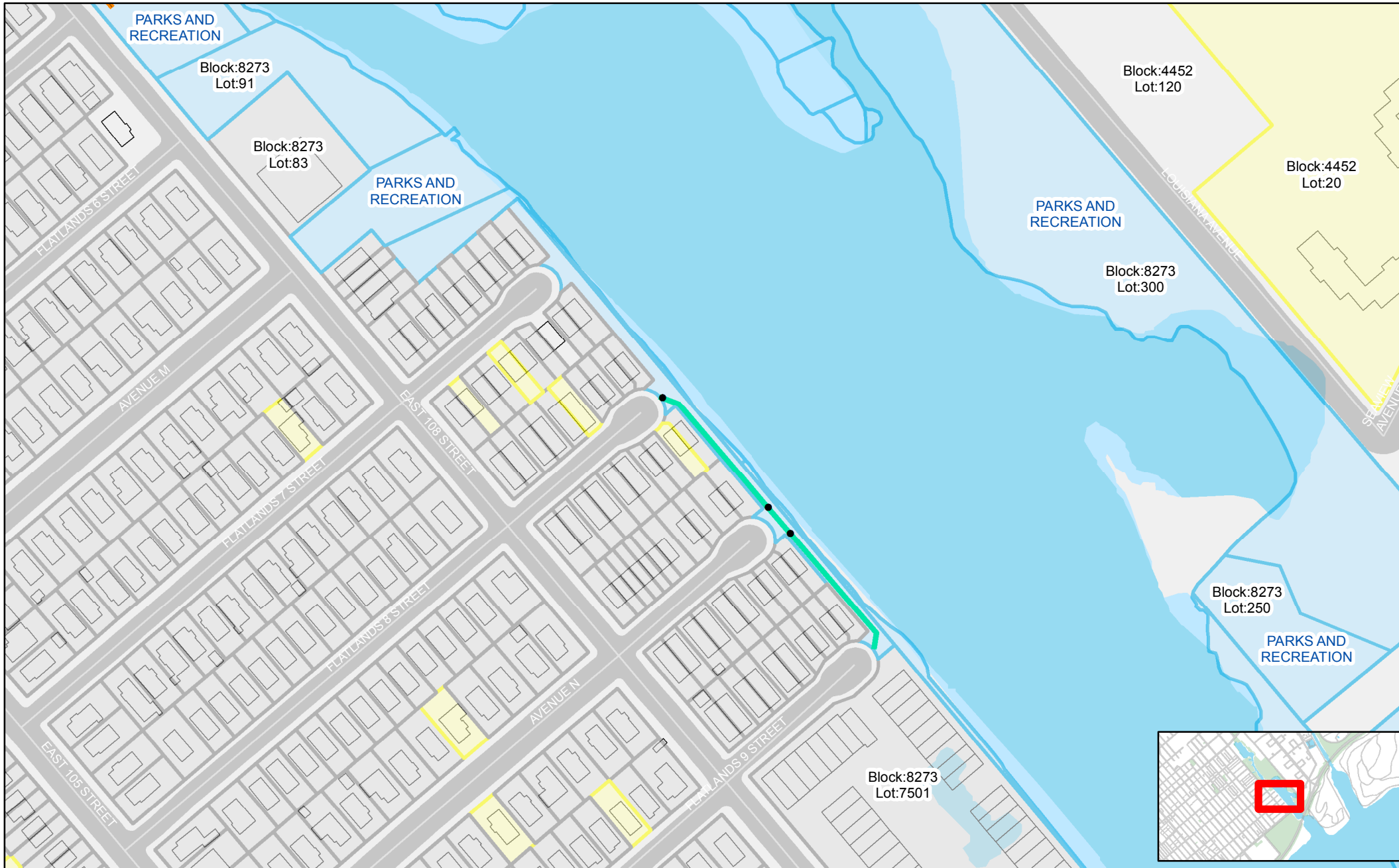
- HFFRR-Feature
- Low Floodwall
 - Revetment

PLTBrooklyn

OwnType

- City
- Private
- City Street

0 40 80 160 240 320 Feet





Motts Basin N

4 B



Legend

Project Alignments

- HFFRR-Feature**
- Low Floodwall
 - Medium Floodwall

PLTQueens

OwnType


- City
- Nassau County Streets
- City Street
- Work Area
- Perpetual Easement

0 40 80 160 240 320 Feet







Legend

 Proposed Pump Station Locations





NNBF Gains Areas (20180717)

Planting

-  Scrub-shrub
-  Smooth Cordgrass

Project Alignments (v20180717)

HFFRR-Feature

-  Rock Sill
-  Low Berm
-  Medium Berm
-  Hybrid Berm

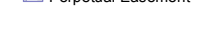
PLTQueens

OwnType

-  City
-  Private
-  City Street
-  Railroad Track
-  Work Area Easement
-  Perpetual Easement


0 40 80 160 240 320 Feet










Legend

 Proposed Pump Station Locations










NNBF Gains Areas

Planting

-  Salt Meadow Hay
-  Scrub-shrub
-  Smooth Cordgrass



Project Alignments

HFFRR-Feature

-  Rock Sill
-  Medium Floodwall
-  High Floodwall
-  Medium Berm
-  High Berm
-  Hybrid Berm
-  Shallow Bulkhead
-  Shallow Bulkhead Urban
-  Road Ramp

PLTQueens

OwnType

-  City
-  Private
-  City Street
-  Physical Non-Street Feature
-  Work Area
-  Perpetual Easement

0 40 80 160 240 320 Feet

Block:15980
Lot:2

PARKS AND
RECREATION

CONCH ROAD

BEACH 43 STREET

Block:15961
Lot:110

NORTON AVENUE

Block:15966
Lot:36

Block:15960
Lot:60

NYC
HOUSING
AUTHORITY







Legend

 Proposed Pump Station Locations





NNBF Gains Areas (20180717)

Planting

 Salt Meadow Hay
 Scrub-shrub





Project Alignments (v20180717)

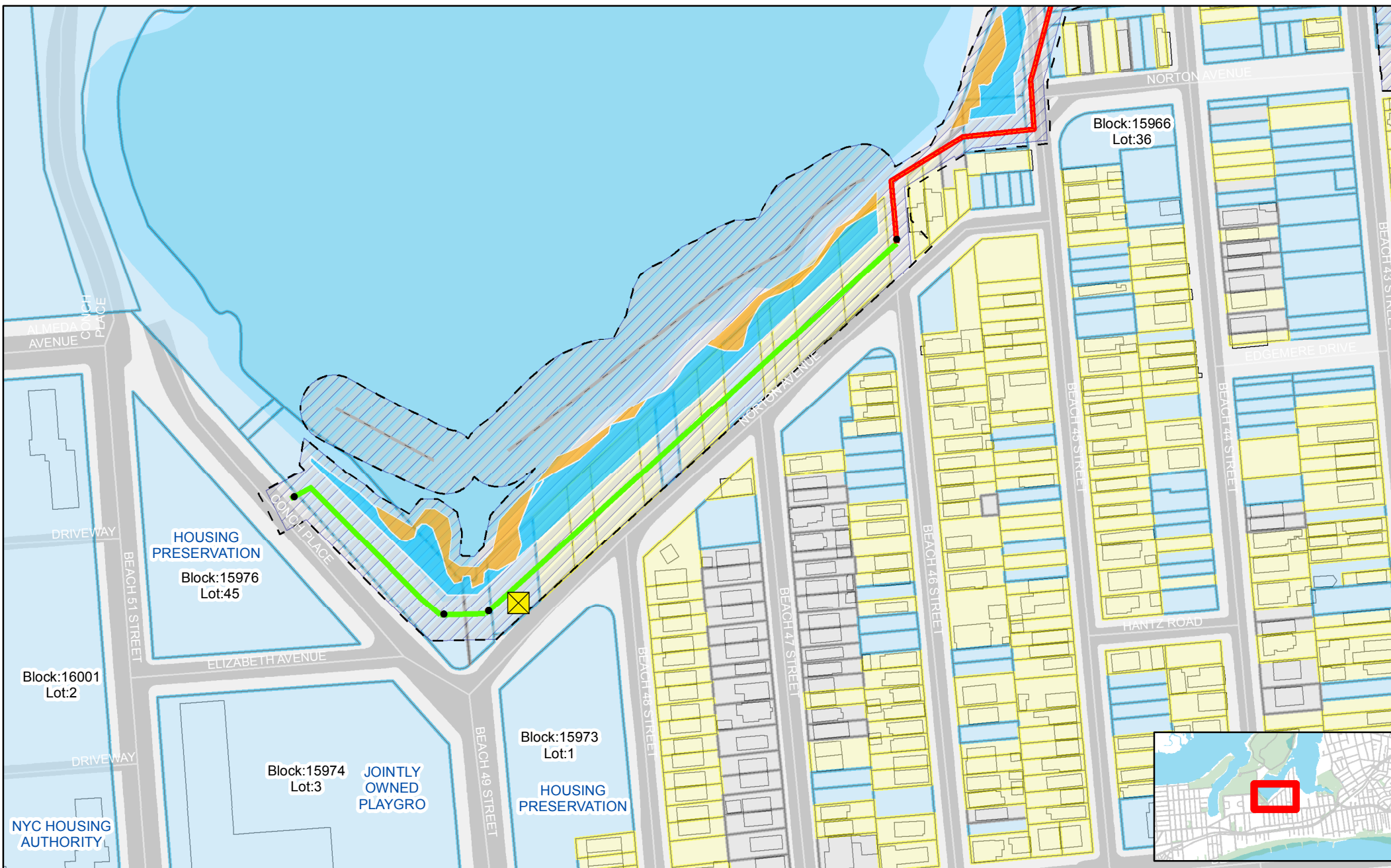
HFFRR-Feature

 Rock Sill
 High Floodwall
 Low Berm
 Hybrid Berm

PLTQueens

OwnType


 City
 Private
City Street
 Work Area Easement
 Perpetual Easement



0 40 80 160 240 320 Feet




Legend

 Proposed Pump Station Locations

NNBF Gains Areas (20180717)


Planting


 Salt Meadow Hay


Project Alignments

HFFRR-Feature


 Rock Sill

 Low Floodwall

 Low Berm

 Shallow Bulkhead

 Revetment

 Road Ramp


PLTQueens


OwnType


 City


 Federal


 Private

 City Street

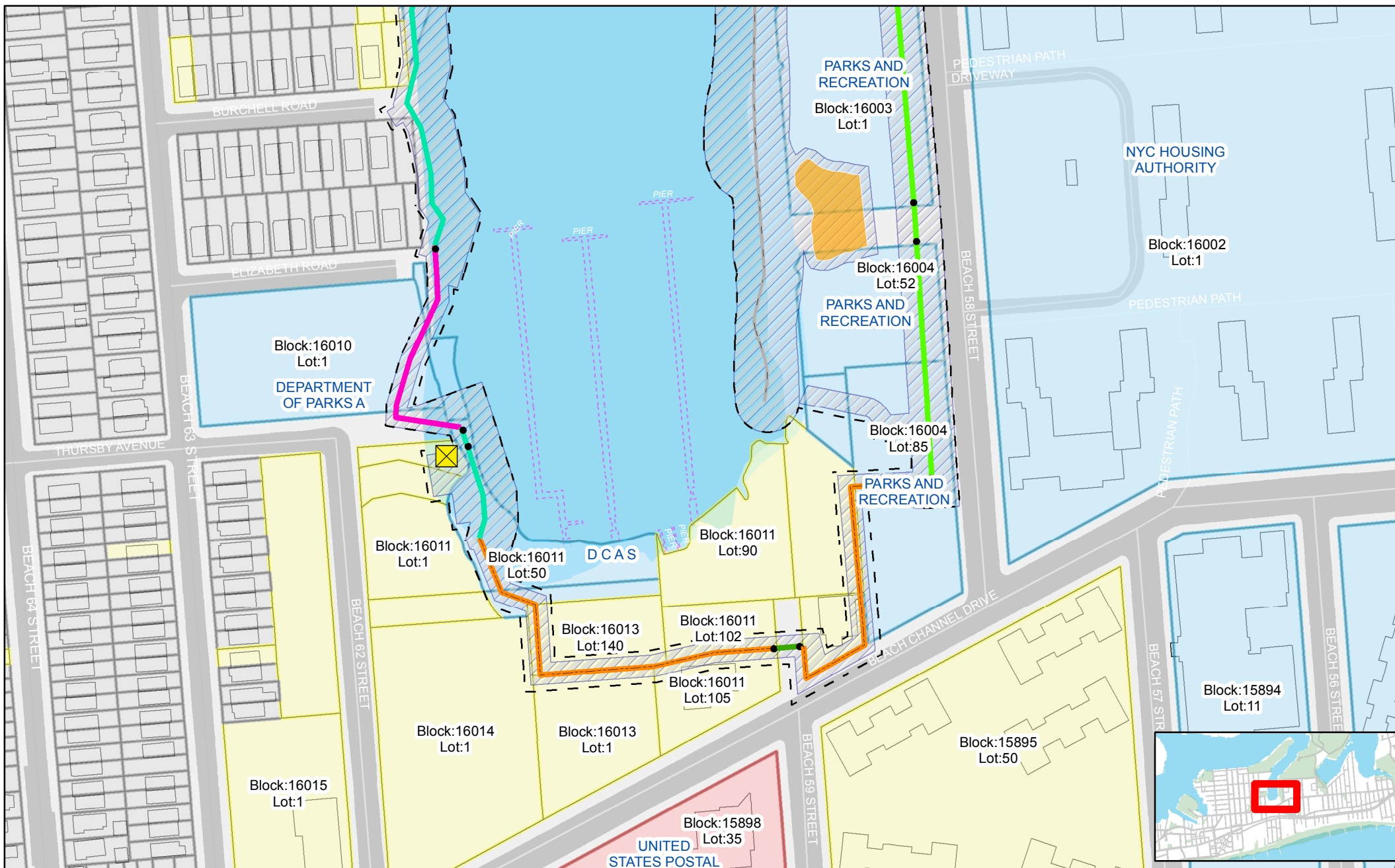
 Private Street; 6, V

 Physical Non-Street Feature

 Work Area Easement


 Perpetual Easement

0 40 80 160 240 320 Feet







Legend

 Proposed Pump Station Locations

NNBF Gains Areas

Planting

-  Canopy Tree
-  Smooth Cordgrass

Project Alignments

HFFRR-Feature

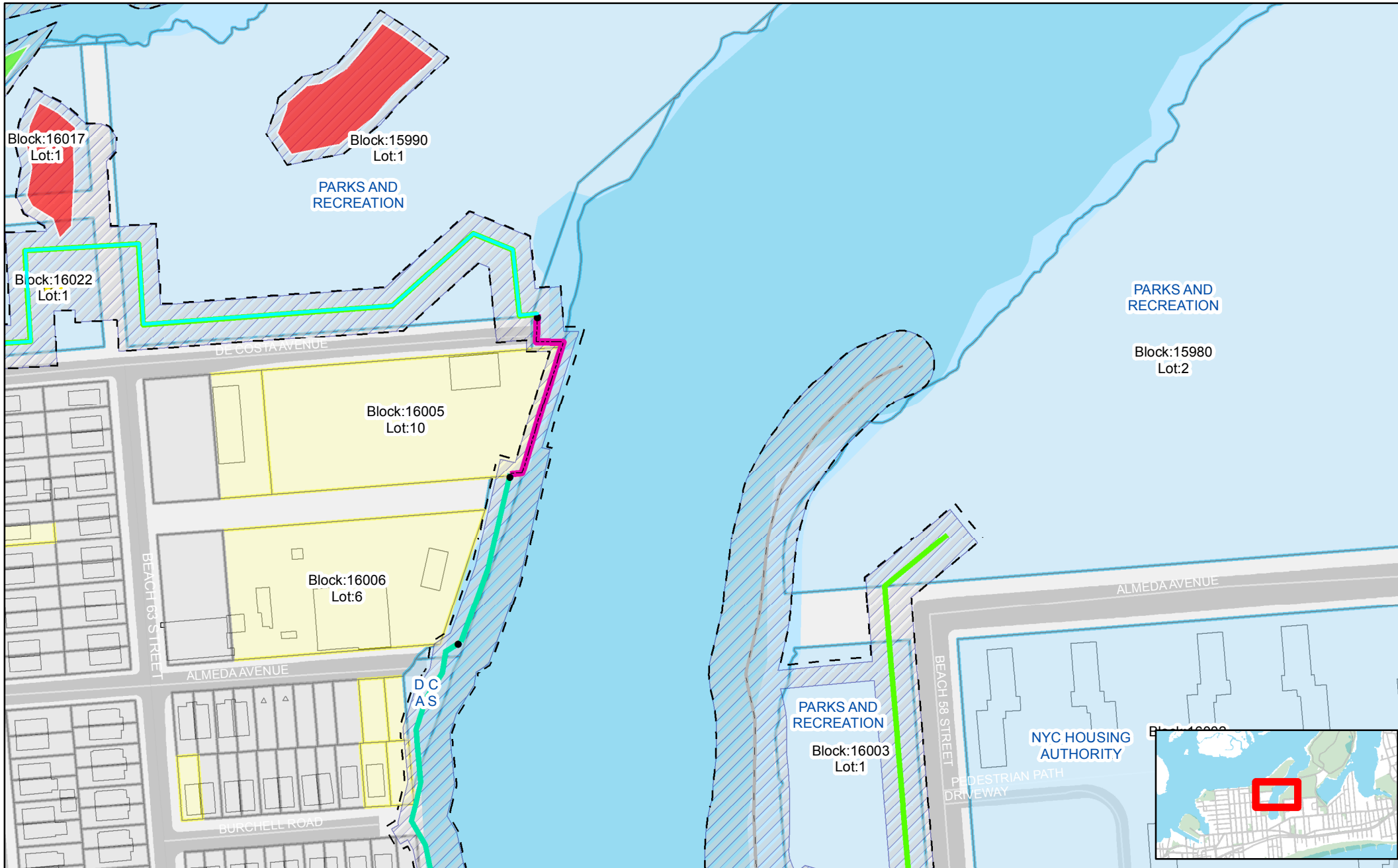
-  Rock Sill
-  Low Berm
-  Deep Bulkhead
-  Revetment

PLTQueens

OwnType


-  City
-  Private
-  City Street
-  Private Street; 6, V
-  Work Area Easement
-  Perpetual Easement

0 40 80 160 240 320 Feet








Legend

 Proposed Pump Station Locations



NNBF Gains Areas

Planting

-  Canopy Tree
-  Salt Meadow Hay
-  Smooth Cordgrass

Project Alignments

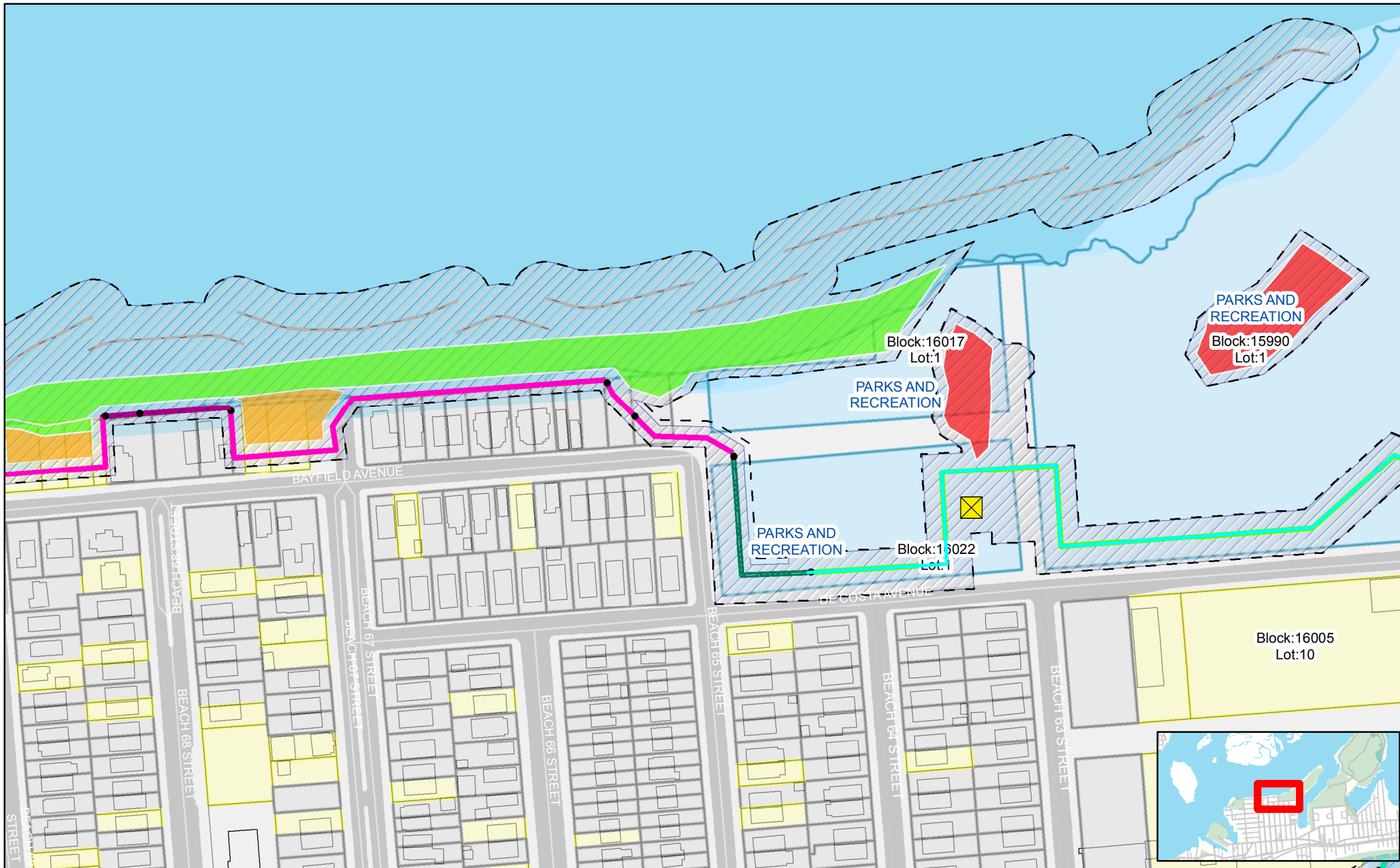
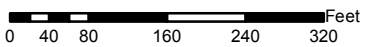
HFFRR-Feature

-  Rock Sill
-  Low Berm
-  Hybrid Berm
-  Shallow Bulkhead
-  Shallow Bulkhead Urban
-  Revetment

PLTQueens


OwnType

-  City
-  Private
-  City Street
-  Private Street; 6, V
-  Work Area
-  Perpetual Easement









Legend

 Proposed Pump Station Locations






NNBF Gains Areas (20180717)

Planting

-  Canopy Tree
-  Salt Meadow Hay
-  Scrub-shrub
-  Smooth Cordgrass




Project Alignments (v20180717)

HFFRR-Feature

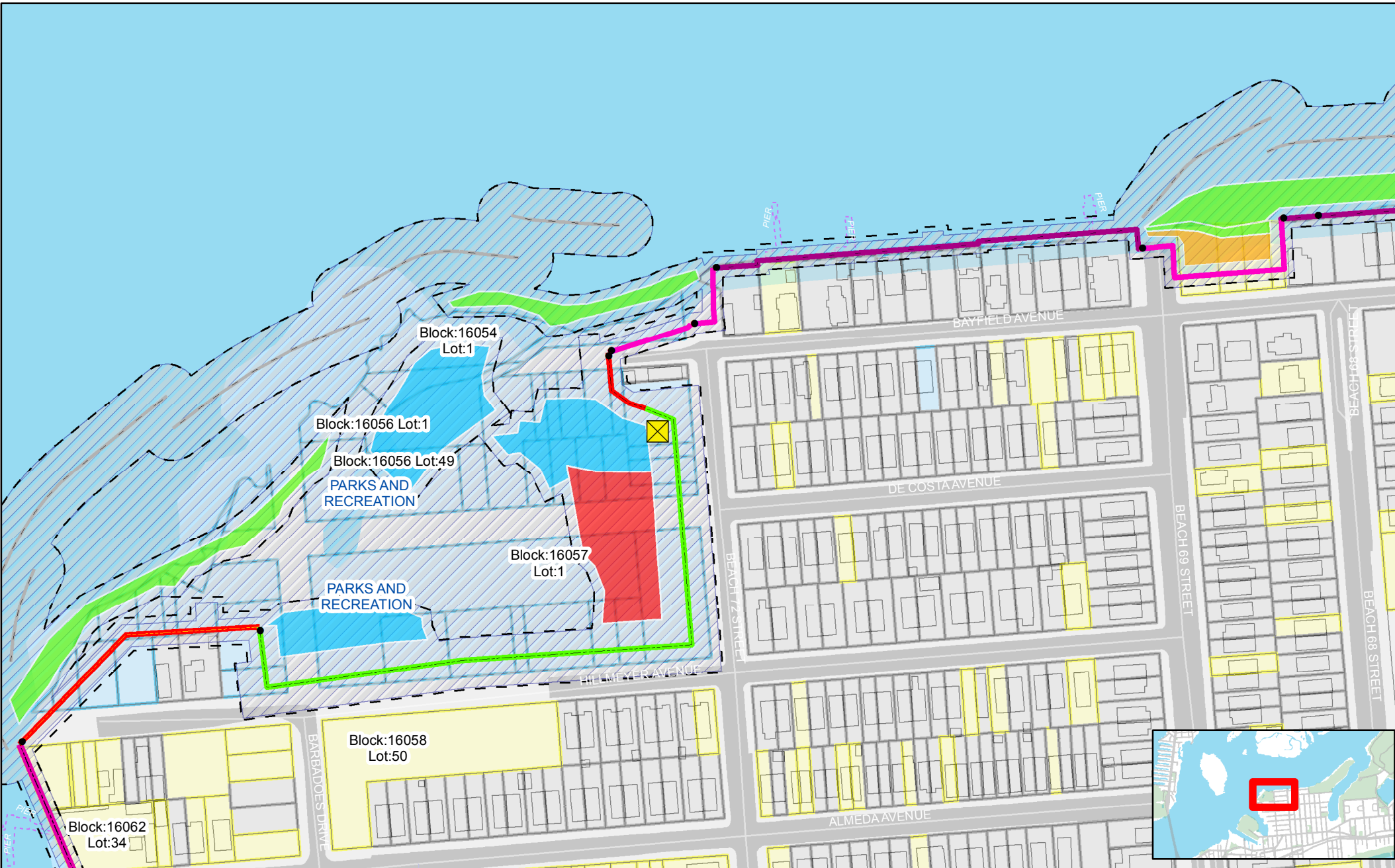
-  Rock Sill
-  Medium Floodwall
-  High Floodwall
-  Medium Berm
-  Deep Bulkhead
-  Shallow Bulkhead
-  Shallow Bulkhead Urban

PLTQueens

OwnType

-  City
-  Private
-  City Street
-  Physical Non-Street Feature
-  Alley
-  Work Area Easement
-  Perpetual Easement

0 40 80 160 240 320 Feet





Legend

NNBF Gains Areas (20180717)

Planting

Smooth Cordgrass

Project Alignments (v20180717)

HFFRR-Feature

- Rock Sill
- Low Floodwall
- High Floodwall
- Medium Berm
- Deep Bulkhead
- Road Ramp

PLTQueens

OwnType

- City
- Private
- City Street
- Physical Non-Street Feature
- Alley
- Work Area Easement
- Perpetual Easement

Block:16075
Lot:1

PARKS AND
RECREATION

Block:16058
Lot:50

Block:16062
Lot:34

Block:16063
Lot:1

Block:16063
Lot:27

Block:16065
Lot:1

Block:16065
Lot:75

Block:16065
Lot:13

Block:16066
Lot:1

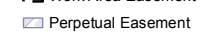
Block:16066
Lot:57

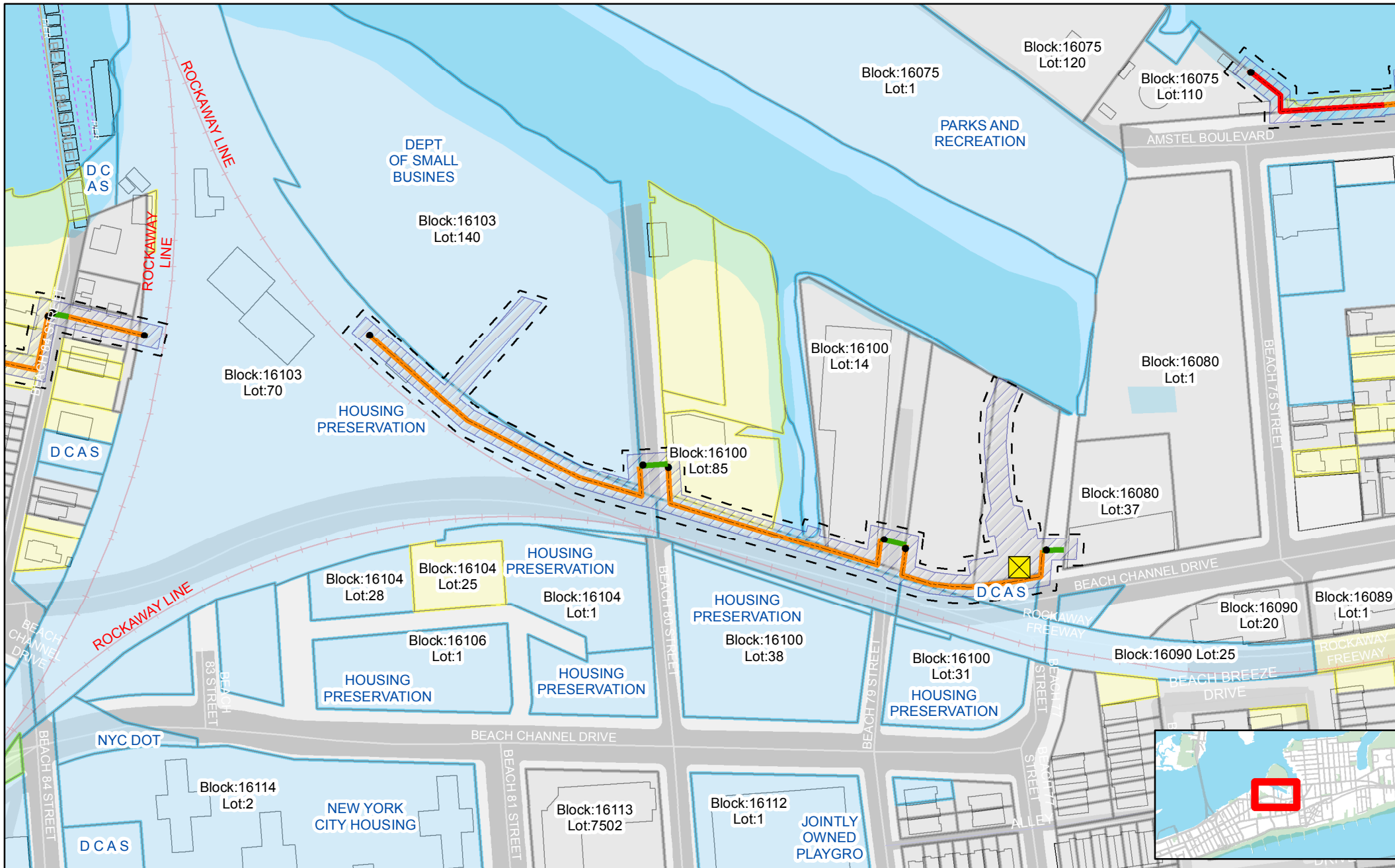
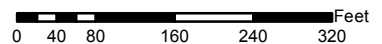
Block:16067
Lot:1

Block:16069
Lot:12




0 40 80 160 240 320 Feet









Legend

 Proposed Pump Station Locations

Project Alignments (v20180717)

HFFRR-Feature

 Low Floodwall

 Road Ramp


PLTQueens


OwnType


 City


 Private


 State


 City Street

 Railroad Track

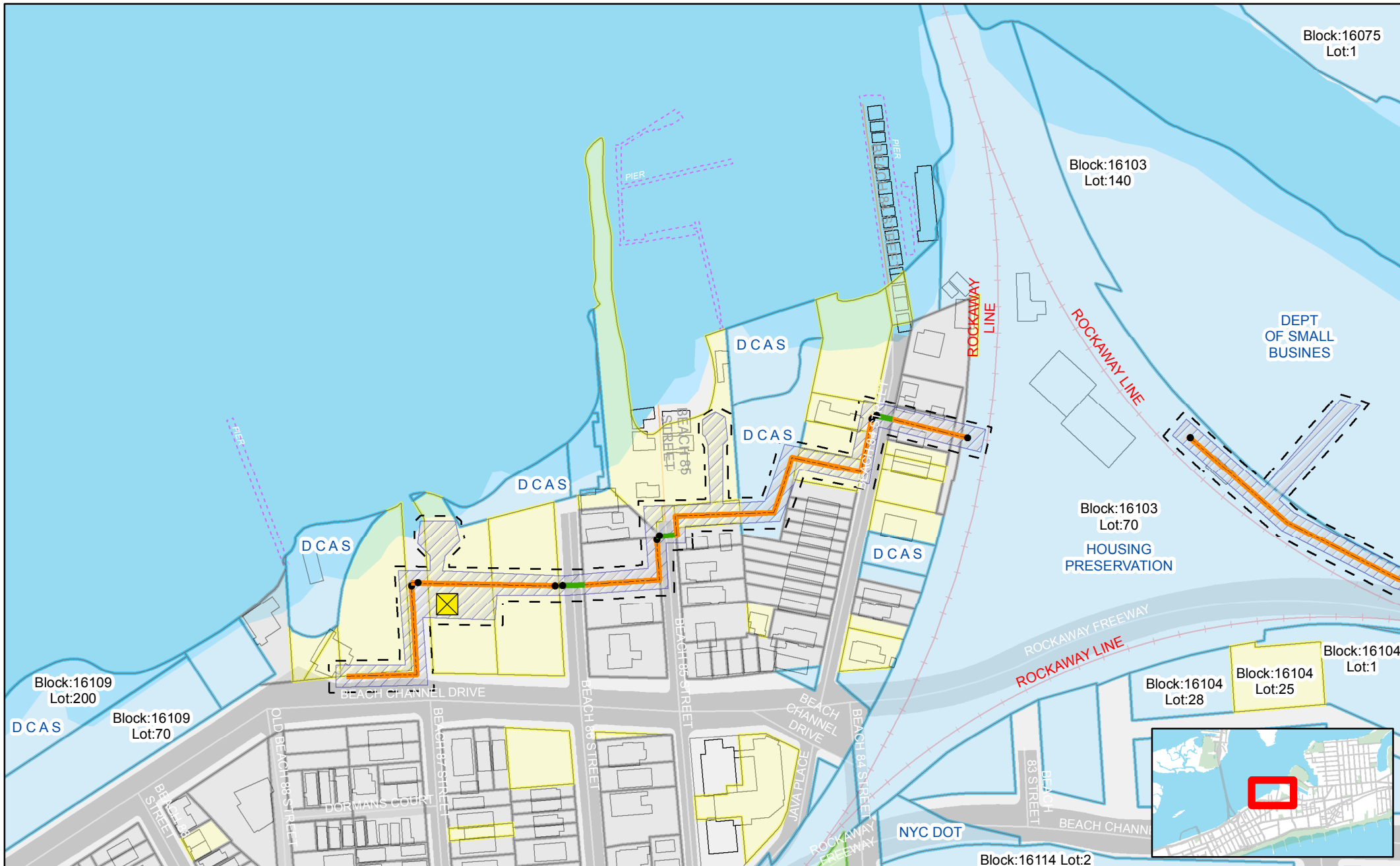
 Physical Non-Street Feature

 Addressable Path

 Work Area Easement

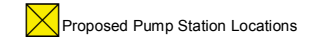
 Perpetual Easement

0 40 80 160 240 320 Feet





Legend



Project Alignments

HFFRR-Feature

- Medium Floodwall
- Deep Bulkhead

Nassau County Streets

Nassau County Streets

Work Area Easement

Perpetual Easement

0 40 80 160 240 320 Feet

