



Governor's Office of
Storm Recovery

SUMMARY REPORT



A RESILIENCY STATE OF MIND: LIVING WITH THE BAY RESILIENCY STRATEGY




Jason Hellendrung, ASLA, PLA
Jake Oldenburger, PE, CFM, ENV SP, LEED GA

complex world | CLEAR SOLUTIONS™

May 2018

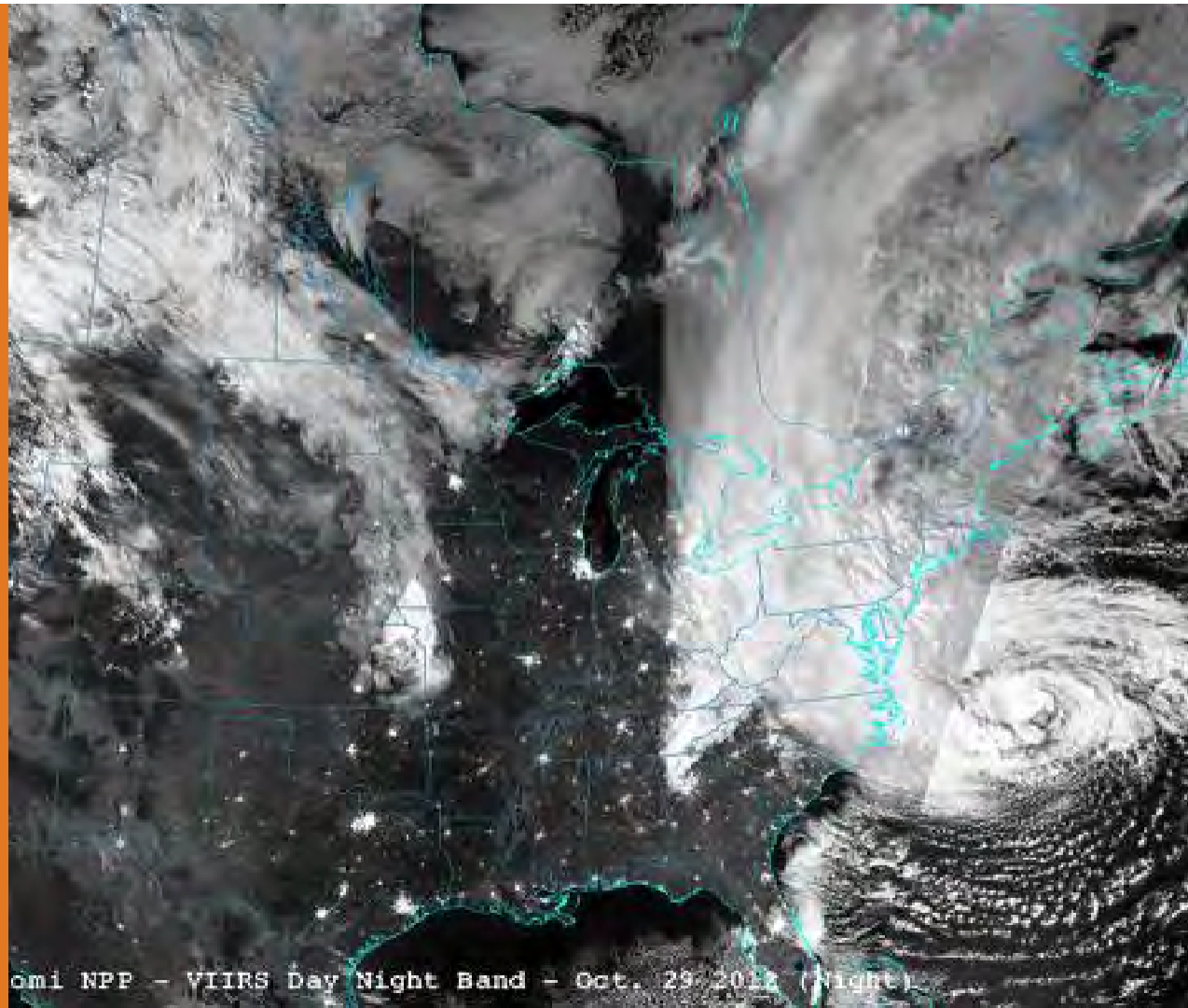
AGENDA

- 
- Introduction
 - Overview of Rebuild by Design
 - Program Goals
 - Public Outreach
 - Project Development
 - Project Prioritization

REBUILD BY DESIGN PROCESS

An Unprecedented Storm: Hurricane Sandy

- Impacted 24 states across the Mid-Atlantic and Northeast
- \$65.7 billion in damages and economic loss - second costliest storm in U.S. history
- Emergency & Major Disaster Declarations made in 13 states
- 650,000 homes damaged or destroyed



REBUILD BY DESIGN PROCESS

After Sandy: What We Know

Our communities remain vulnerable

The risks from climate change will persist and grow

We cannot simply rebuild what was there before; we have to rebuild better



REBUILD BY DESIGN PROCESS

Background

Dec 2012: President Obama signs Executive Order announcing the Hurricane Sandy Rebuilding Task Force

June 2013: Secretary Donovan announces Rebuild by Design:

- To address structural and environmental vulnerabilities that Hurricane Sandy exposed in Communities through out the region
- To develop fundable solutions to better protect residents from future climate events
- 10 International Teams were selected from 148 who applied

REBUILD BY DESIGN PROCESS

Timeline

148 International teams submit proposals; 10 are chosen

Research stage and development of design opportunities

HUD announces 10 proposals to move forward

Development of design solutions

HUD identifies winning design solutions and allocation of CDBG-DR to help implement

JUNE

2013

AUGUST

OCTOBER

DECEMBER

FEBRUARY

APRIL

2014

**Stage I:
Selection**

Stage II: Research

**Stage III:
Design**

**Stage IV:
Implementation**

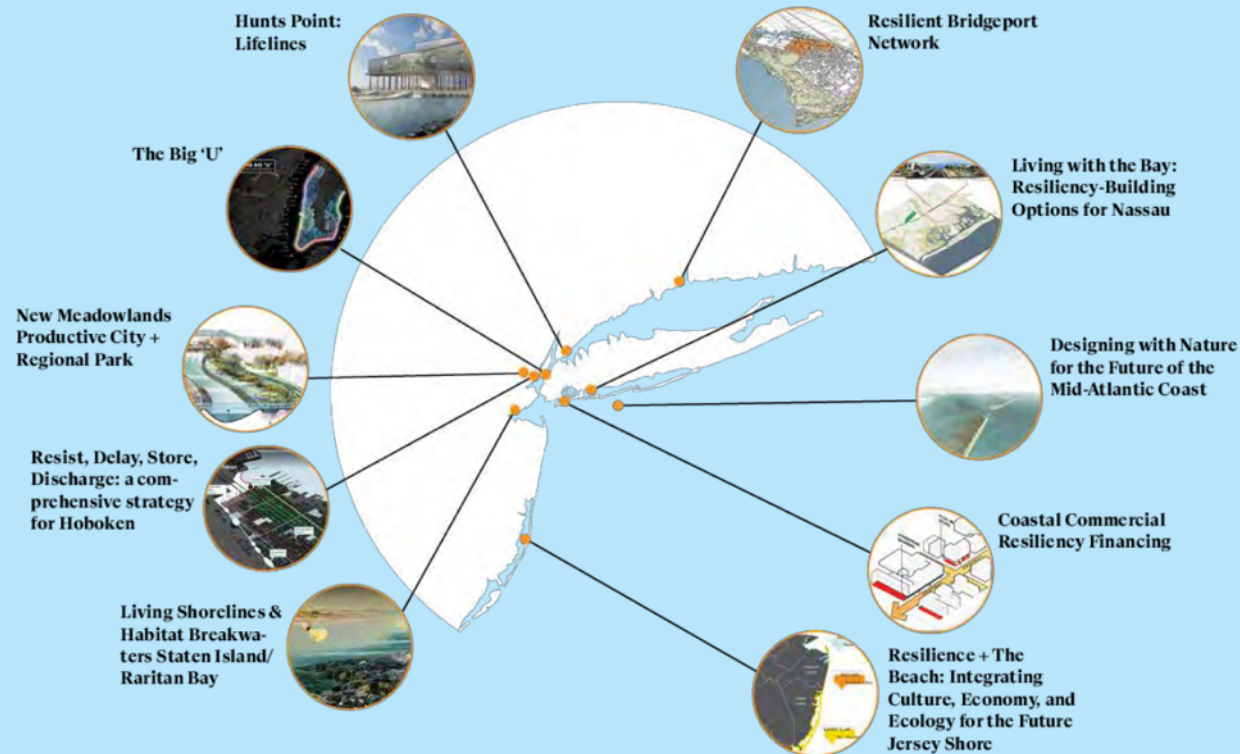
REBUILD BY DESIGN PROCESS

Selected Projects

One project was selected for each team

- City
- State
- Regional

All are chosen for their replicability in other localities.



**SEDIMENT
FLOW**

Sand Engine

**SMART
BARRIER**

North Park

ECO-EDGE

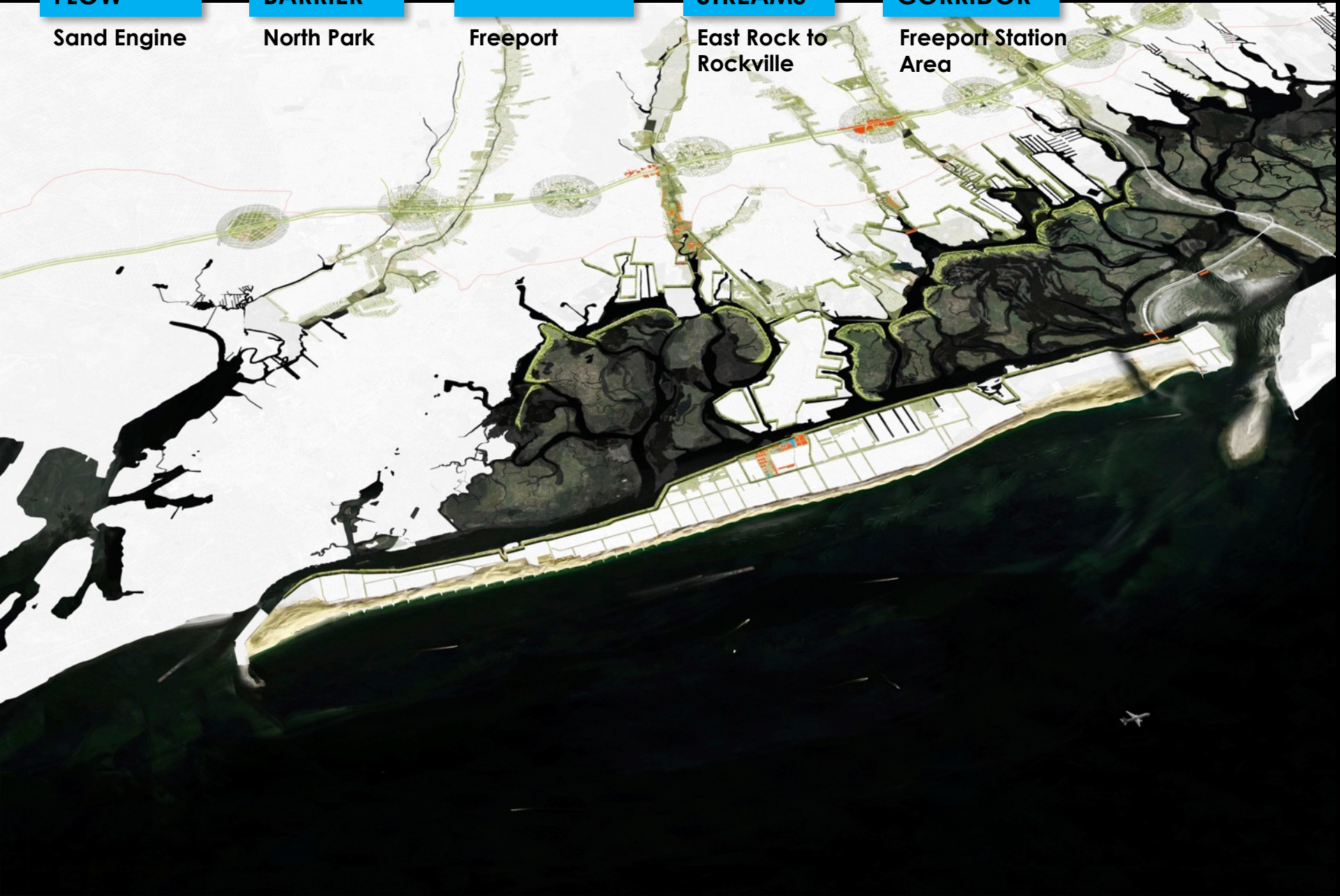
Freeport

**SLOW
STREAMS**

East Rock to
Rockville

**GREEN
CORRIDOR**

Freeport Station
Area

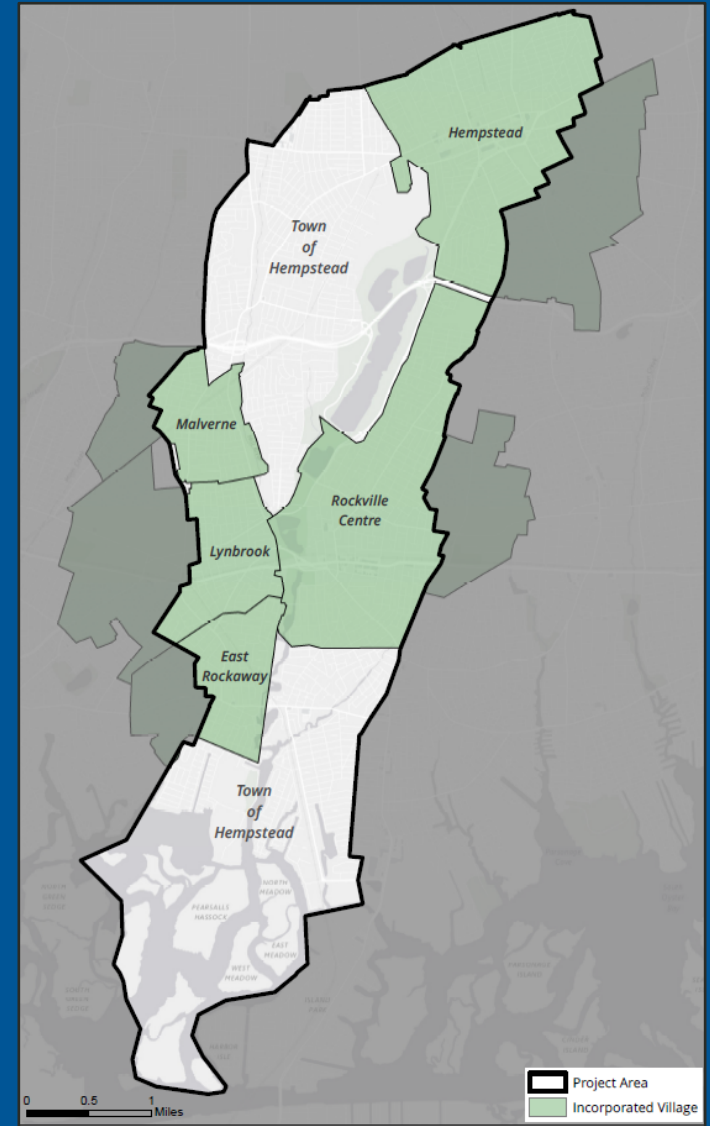
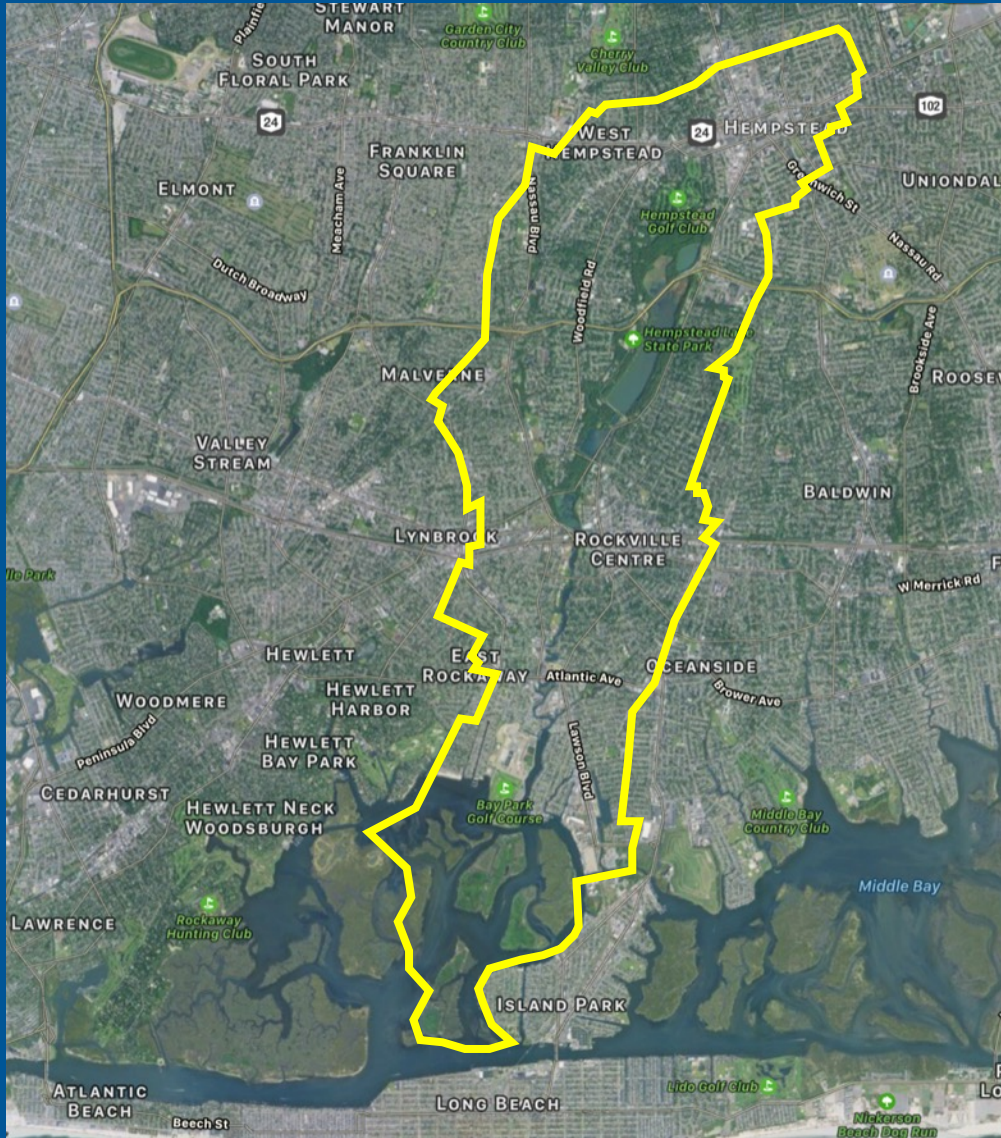


LIVING WITH THE BAY LOCATION (LWTB)

The LWTB program is located in southwest Nassau County on the south side of Long Island

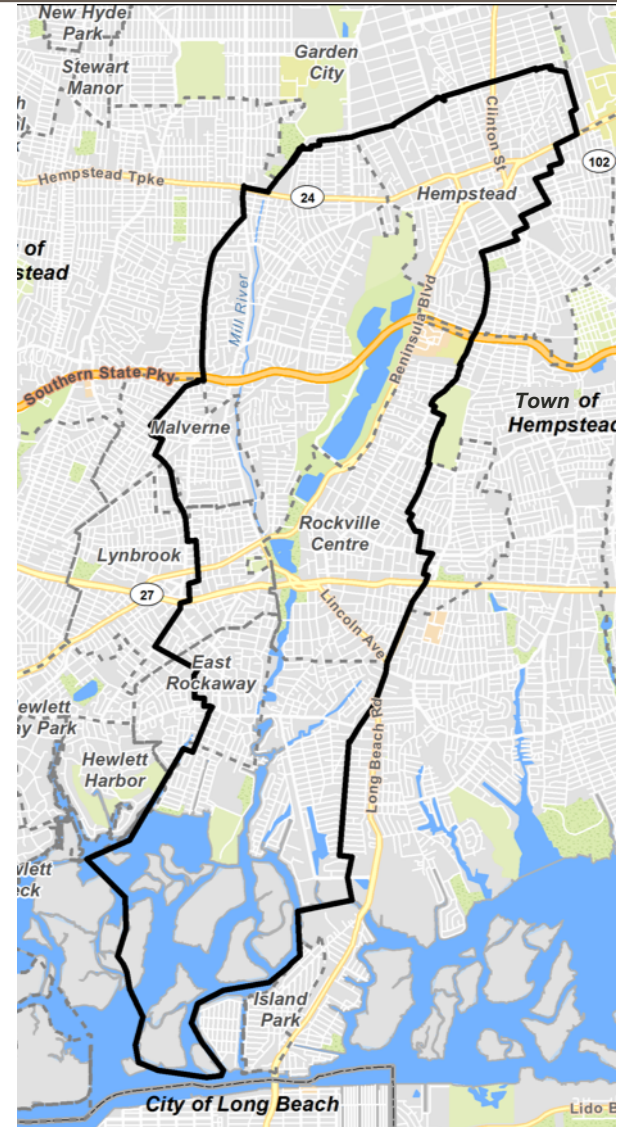


LWTB PROGRAM AREA



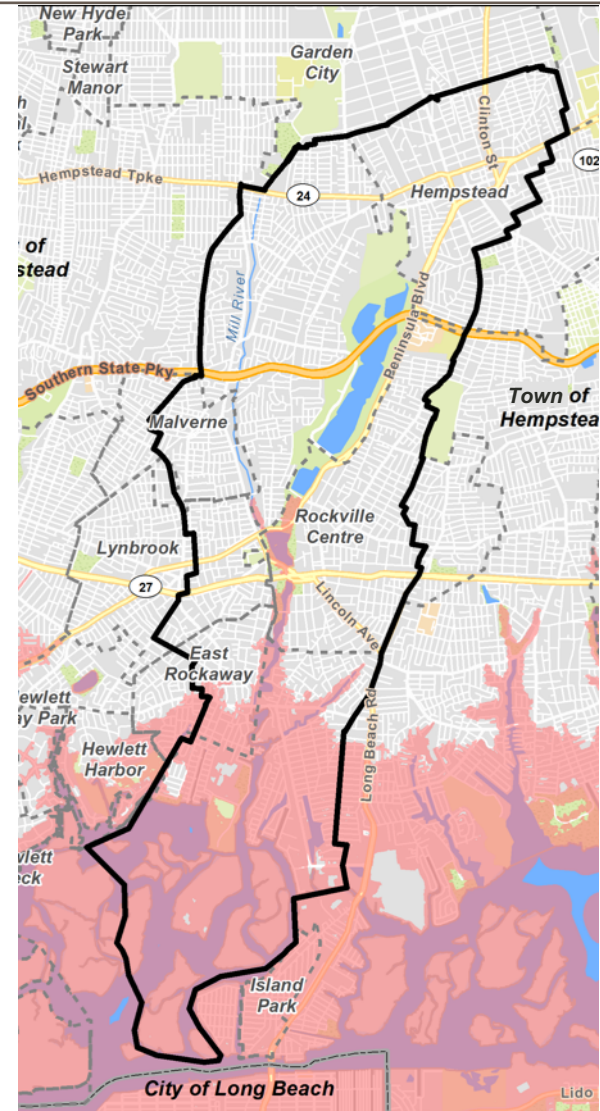
LWTB PROGRAM AREA

- 10,000 Acres
- 28,400 Parcels



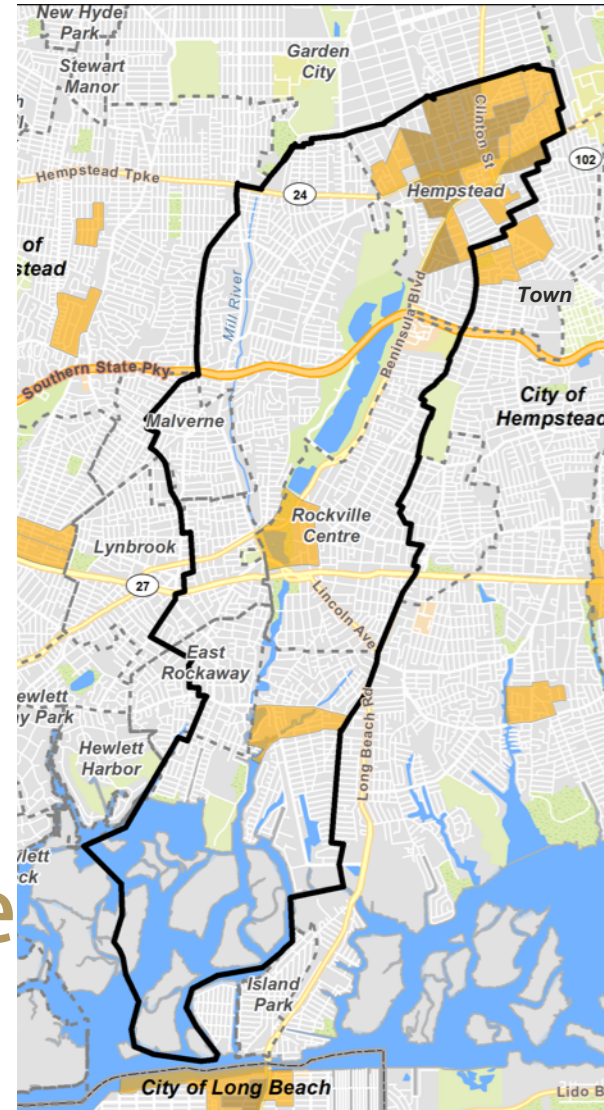
LWTB PROGRAM AREA

- 10,000 Acres
- 28,400 Parcels
- Sandy Impact:
 - 2,500 Acres
 - 4,100 Parcels (80% Residential)



LWTB PROGRAM AREA

- 10,000 Acres
- 28,400 Parcels
- Sandy Impact:
 - 2,500 Acres
 - 4,100 Parcels (80% Residential)
- Low-Moderate Income Areas



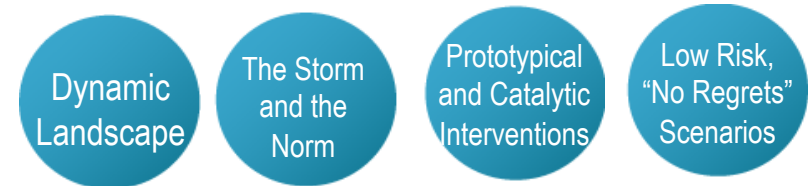
THREE-WAY BALANCING ACT



HUD-Funded CDBG Program National Objectives



Rebuild by Design Objectives



Living with the Bay Design Submittal Objectives

HOW AND WHY LWTB EVOLVED

Original RBD Application	Reality	Resiliency Strategy
<ul style="list-style-type: none">• Large Area• Broad Program• Public Rights of Way• Operation & Maintenance	<p>Local Municipal Input</p> <p>Refined Program</p>	<p>Real Street</p>

LWTB PROGRAM GOALS



Increase
Community
Resiliency

Resilience - *Increase community resilience with respect to sea level rise and extreme weather events.*



Preserve
Quality of Life

Quality of Life - *Preserve quality of life in the communities during natural disasters, emergency events, and tidal inundation.*



Restore
Environmental
Health

Environmental Improvements - *Restore the environmental health and water quality in the watershed and surface waters.*



Create and
Improve Public
Waterfront
Access

Waterfront Access - *Create and improve public access to the waterfront - lakes, river, and bay.*



Provide
Educational
Opportunities

Public Education - *Provide opportunities to educate the Public on the multiple benefits of integrated water management and on safely integrating with shared resources.*



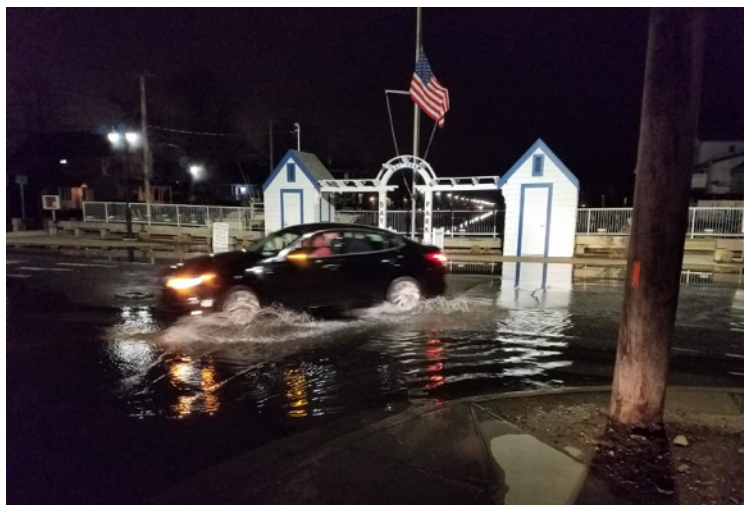
Increase
Community
Resiliency

Increase Community Resiliency





Preserve Quality of Life





Restore Environmental Health



Create and Improve Public Waterfront Access



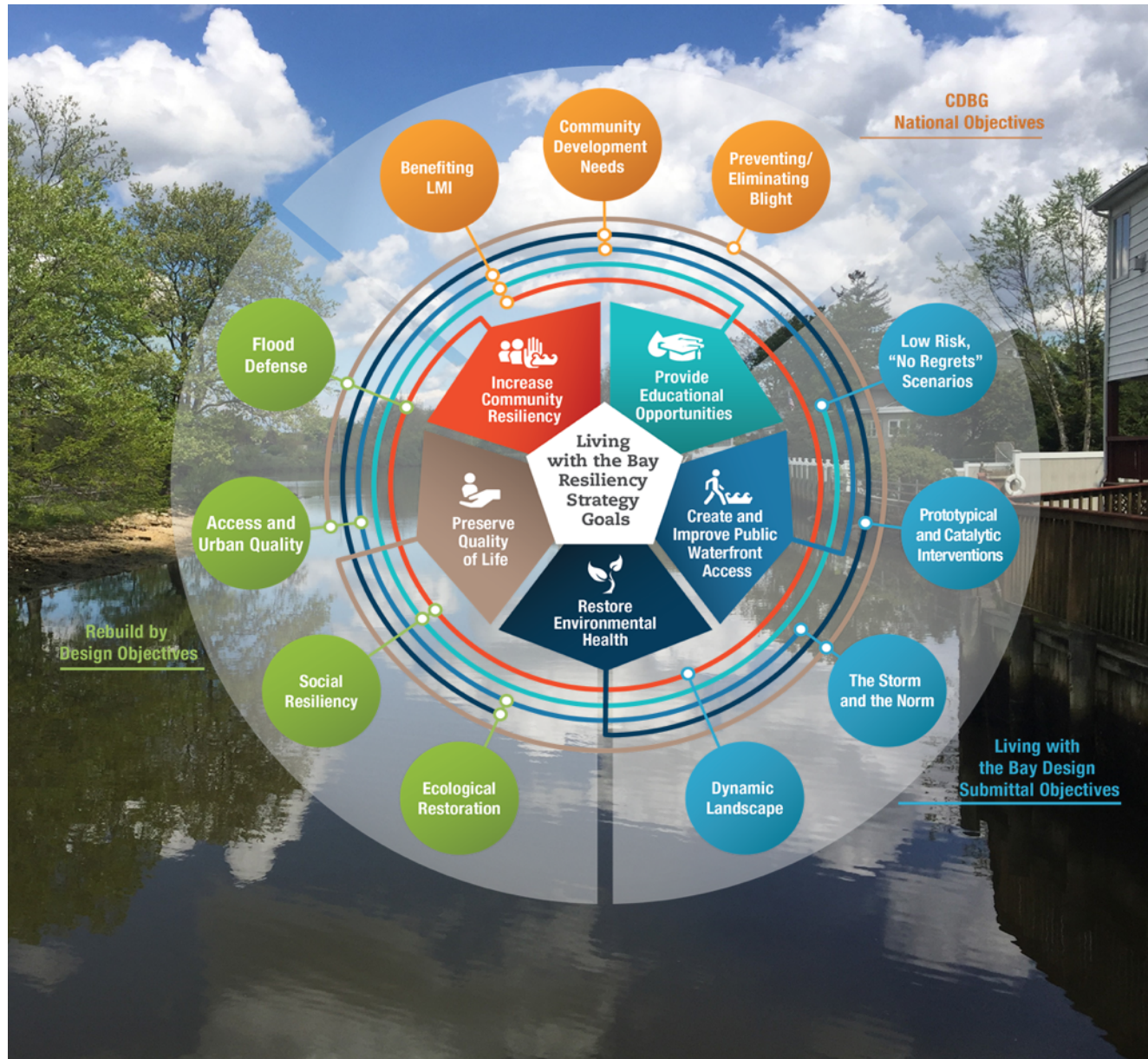


Provide
Educational
Opportunities

Provide Educational Opportunities



CONNECTING OBJECTIVES



Citizens Advisory Committee (CAC)

Citizens Advisory Committee (CAC) Members

Amy Wolf	James Loglisci	Linda Marshall
Andrew Miller	Jay T. Korth	Raymond Pagano
Arthur Mattson	Jim Ruocco	Shelley Brazley
Brien Weiner	Joseph Forgione*	Thomas Rozakis
Daniel Horn	Joseph Landesberg	Brian Schwagerl
David Stern*	Justin Corbo	Lauren Hill
Gregory Rinn	Leslie Price	Daniel Caracciolo

* Co-Chair



Technical Advisory Committee (TAC)



Technical Advisory Committee (TAC) Members

Town of Hempstead

Village of Lynbrook

Village of Malverne

Village of Hempstead

Village of Rockville Centre

Village of East Rockaway

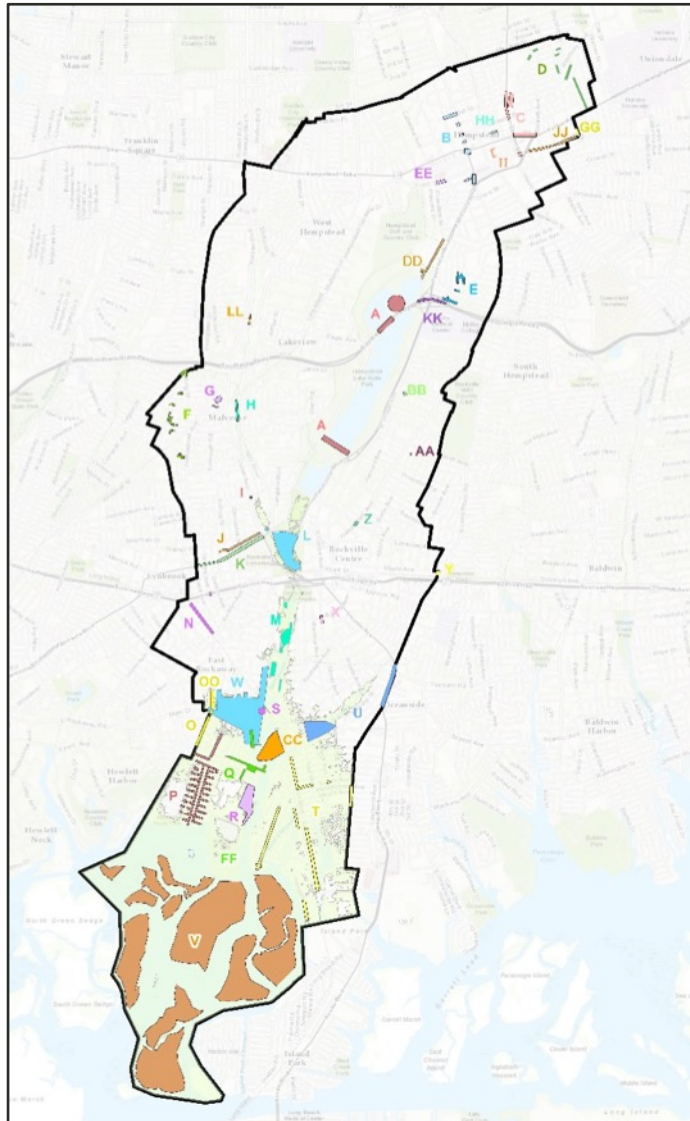
Nassau County



LWTB TYPES OF PROBLEMS



PROBLEM AREAS TO PROJECTS

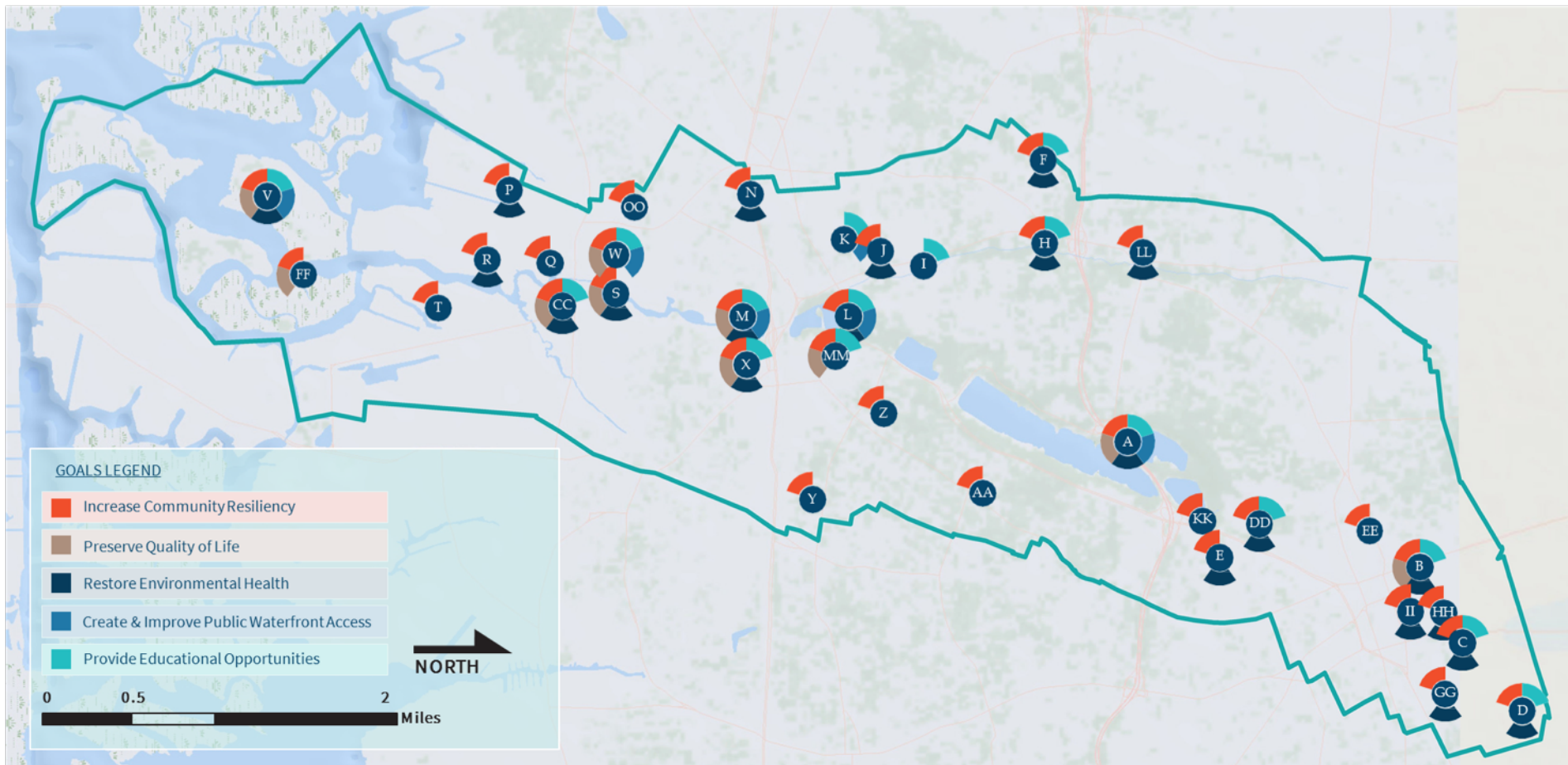


PROPOSED STAKEHOLDER PROJECTS* LIVING WITH THE BAY MARCH 2017 TETRA TECH														DRAFT	
ID#	Project ID#	Initiative/Project Location	Problem Type	Municipal Location	WSP Responsibility	PA Length (km)	PA Label	JAN Area	Existing Use	Problem Summary (to your own words)	Structure Flooding	# of Structures	Degree of Flooding in Street Profile	Estimate Area (acres)	Estimate Summary
17	A	Northwoodford	Water Quality	Town of Hopedale	WSP/PA	23.82	4100	N/A	Open Water	Not a concern as subject to heavy flooding and debris. No structure within reach and all customers are safe. Water seeping through basement walls may be a concern for some.	no	0	N/A		Local flooding within area and no structure through flooding. No structure within reach.
18		Stoney Creek	Water Quality			23.82	4100	N/A	Structure	The structure is not a concern as it is not a structure. The structure is not a concern as it is not a structure.	no	0			The structure is not a concern as it is not a structure. The structure is not a concern as it is not a structure.
19		Lake Hopedale Dam	Water Quality			23.82	4100	N/A	Part	The dam is not a concern as it is not a structure. The dam is not a concern as it is not a structure.	no	0			All the structures are removed and the structure is not a concern as it is not a structure.
20		Greenway, Community and Waterfront Access & Recreation	Public Access and Environmental Education							The dam is not a concern as it is not a structure. The dam is not a concern as it is not a structure.	no	0			All the structures are removed and the structure is not a concern as it is not a structure.
21	AA	Stoney Creek and Village CL Intersection	Water Quality	WSP/PA	WSP/PA	23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
22	B	Stoney Creek and Village CL Intersection	Water Quality	WSP/PA	WSP/PA	23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
23		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
24		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
25		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
26		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
27		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
28	C	Stoney Creek and Village CL Intersection	Water Quality	WSP/PA	WSP/PA	23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
29		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
30		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
31		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
32	D	Stoney Creek and Village CL Intersection	Water Quality	WSP/PA	WSP/PA	23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
33		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
34		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.
35		Stoney Creek and Village CL Intersection	Water Quality			23.82	4100	N/A	Street	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.	no	0	1.5	1.7	The intersection is not a concern as it is not a structure. The intersection is not a concern as it is not a structure.

90+ Problem Areas → 35 Projects

[illegible][illegible]

PROJECT GOALS

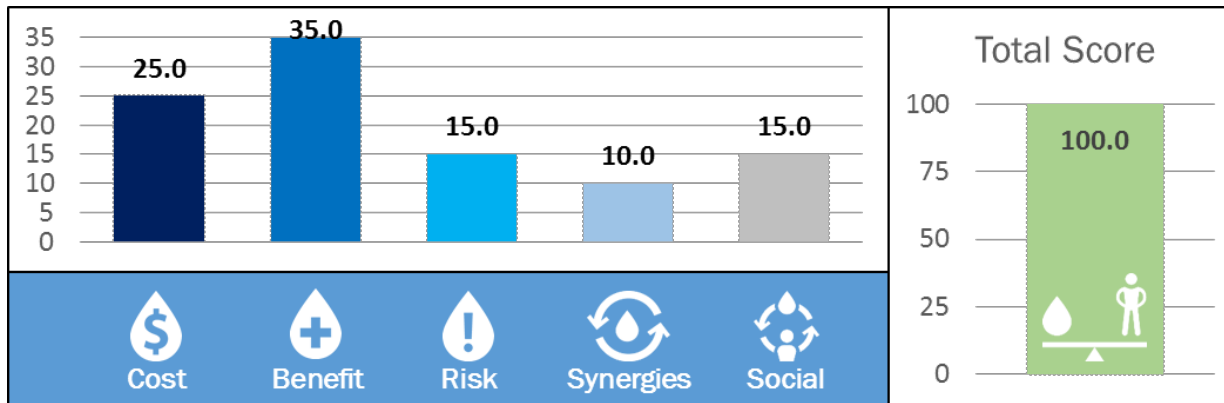
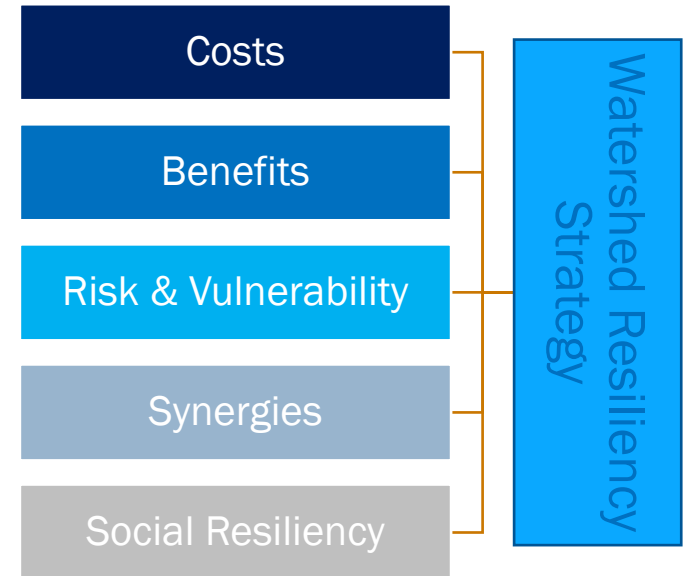
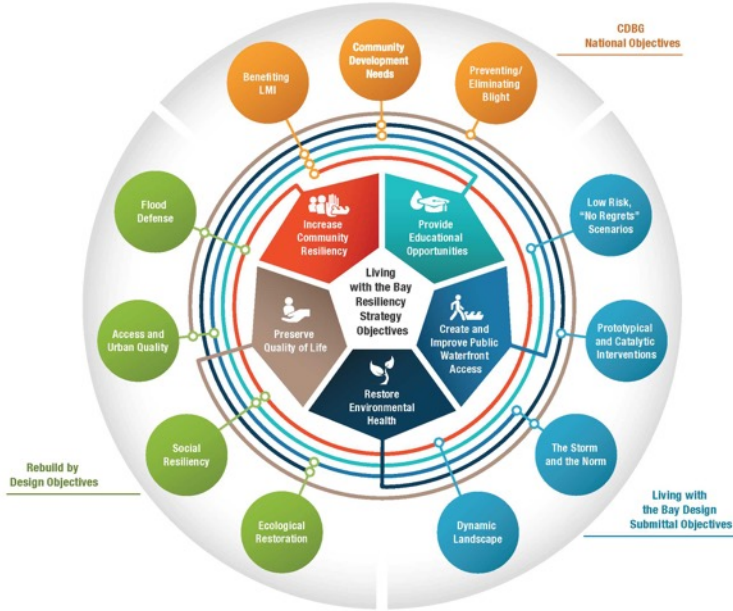


= \$878M*

***\$723M identified for
1 of the 36 projects**

Program = \$125M

THE NEED TO PRIORITIZE PROJECTS



PRIORITIZATION FRAMEWORK

Increase
Community
Resiliency (Tidal
Inundation and
Extreme Storms)

Living with the Bay Resiliency Strategy Objectives

Preserve Quality
of Life (Flooding)

Restore
Environmental
Health

Create and
Improve Public
Waterfront Access

Provide
Educational
Opportunities

Costs

Benefits

Risk Reduction

Synergies

Social Resiliency

Social Resiliency

PRIORITIZATION BREAKDOWN



Category	Metric	Category Weight	Maximum Score
	Total Costs	100%	25
	Total Costs	100%	25
	Flood Reduction	45%	15.75
	Water Quality	30%	10.50
	Ecosystem/Habitat	25%	8.75
Total Benefits		100%	35
	Health and Safety	40%	6
	Reduced Flooding Risk	40%	6
	Future Adaptability	20%	3
Total Risk and Vulnerability		100%	15
	Program Synergies	30%	3
	Municipal Dependencies	30%	3
	Critical Infrastructure	20%	2
	Leveraged Funds	20%	2
Total Synergies		100%	10
	Improved Quality of Life	33%	5
	Cultural Heritage Preservation	33%	5
	Education Opportunities	33%	5
Total Social Resiliency		100%	15

100

PRIORITIZATION RANKING

PRIORITIZATION RANKING BREAKDOWN

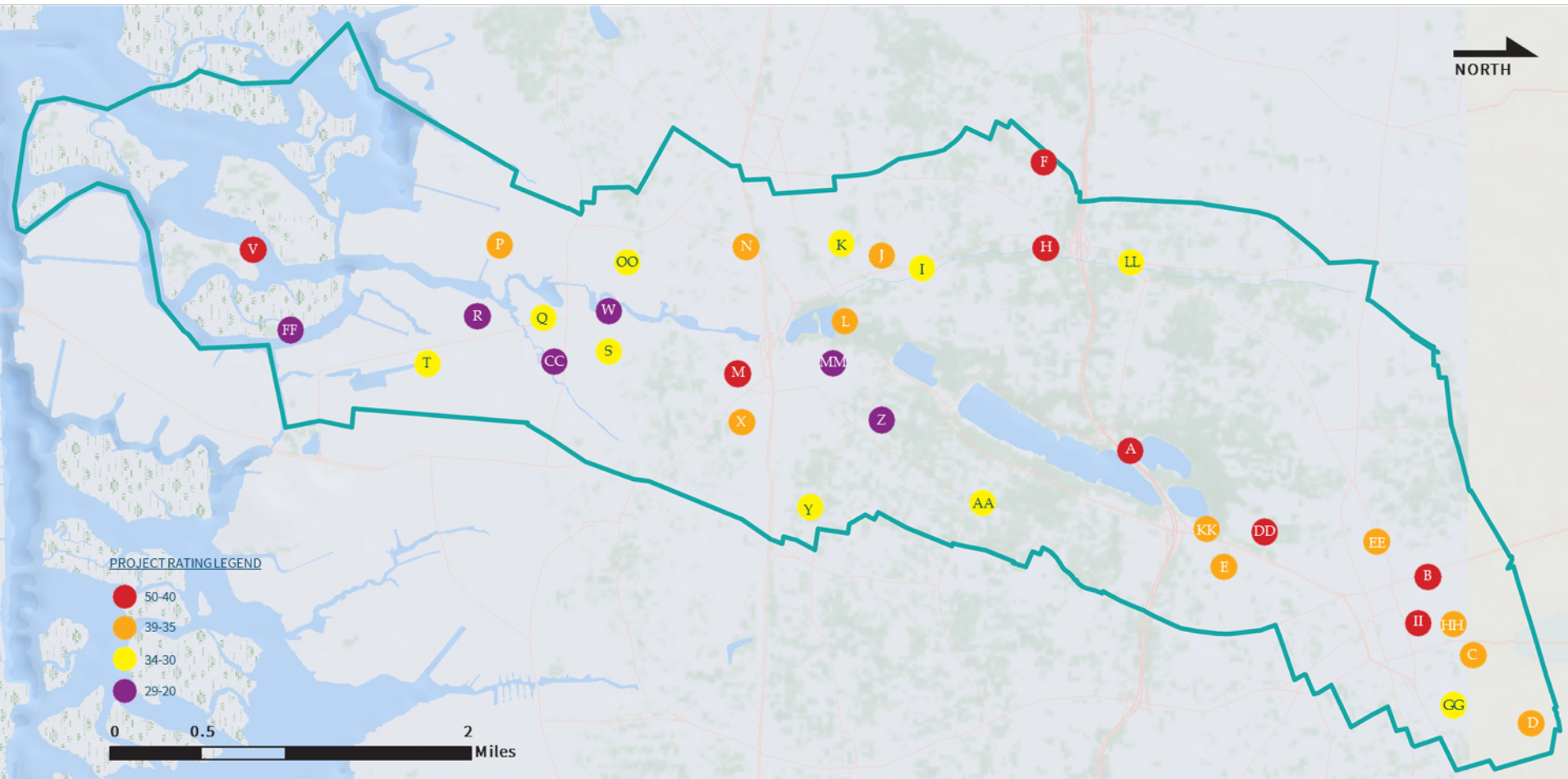
ID	PROJECTNAME	Costs	Benefits	Risk & Vulnerability	Synergies	Social Resilient	Total Project Rating
V	Coastal Marsh Restoration	0.0	32.4	8.2	3.3	6.6	50.5
B	Horsebrook Drain West Branch Recharge Basin	7.0	25.3	11.4	1.9	0.8	46.4
DD	Hempstead High School Creek Restoration	23.9	7.4	2.2	5.7	5.8	45.0
II	Cooper Square	19.8	14.7	2.3	6.1	0.0	42.9
M	East Rockaway High School/Lister Park	10.3	13.8	6.0	4.9	7.8	42.8
H	Malverne High School	18.0	11.3	2.1	4.8	6.2	42.4
F	Malverne Green Streets	12.1	19.6	3.8	5.3	0.4	41.2
A	Hempstead Lake State Park	0.0	13.6	11.3	5.3	10.7	40.9
L	Smith Pond	12.8	9.1	4.7	5.7	7.4	39.7
C	Hempstead Housing Authority	20.0	8.2	7.2	3.6	0.2	39.2
N	Forest Avenue	22.5	4.9	4.8	6.1	0.4	38.7
P	East Boulevard and West Boulevard	18.8	6.2	6.3	5.4	2.0	38.7
E	Southwest Village of Hempstead Suspended Pavement Green Streets	5.0	22.1	6.1	5.3	0.0	38.5
X	S Centre Avenue Bioretention Green Street	24.5	1.6	2.7	6.1	3.5	38.4
EE	Covert Street	24.5	0.6	5.7	6.8	0.0	37.6
KK	Southern State Parkway Ramp	23.8	3.9	3.4	6.1	0.0	37.2
HH	Nichols Court	24.0	1.3	2.5	6.1	0.0	37.2
J	Lynbrook Recharge Basin	24.7	4.2	3.9	3.6	0.0	37.2
D	Northeast Village of Hempstead	4.1	21.9	6.8	2.5	0.0	35.3

PRIORITIZATION RANKING BREAKDOWN (CONTINUED)

ID	PROJECTNAME	Costs	Benefits	Risk & Vulnerability	Synergies	Social Resilient	Total Project Rating
GG	Hendrickson Avenue	24.0	1.9	3.0	4.8	0.0	33.9
I	Lakeview Avenue	24.0	0.0	2.4	4.9	0.0	32.9
OO	Waldo Avenue	24.8	1.2	3.9	3.0	0.0	32.9
AA	Beverly Road	24.5	1.6	2.9	3.6	0.0	32.6
K	Peninsula Boulevard Greenway	24.3	0.0	2.4	4.3	0.0	32.6
Y	Maple Avenue and Long Beach Road Intersection	24.3	0.1	2.7	5.2	0.0	32.3
LL	Halls Pond Study	24.5	0.0	2.5	4.9	0.0	31.9
Q	Williamson Street	22.5	3.4	4.4	1.3	0.0	31.6
T	Lawson Boulevard	11.8	9.5	7.1	2.4	0.0	30.8
S	East Rockaway Long Island Railroad Station	23.5	1.2	1.7	3.6	0.0	30.4
R	Bay County Park	23.6	1.1	2.5	1.4	0.0	29.6
FF	Mill River Storm Surge Barrier	0.0	15.8	10.2	3.5	0.0	29.5
MM	Greenway	10.2	0.0	2.0	4.3	0.0	27.2
W	East Rockaway Downtown Study	24.5	0.0	0.0	0.0	0.0	24.5
Z	Lakeview Avenue and Hempstead Avenue Intersection	15.0	0.8	2.6	5.4	0.0	23.8
CC	Marina Pointe Marsh Restoration	11.4	4.6	2.1	2.5	0.0	22.4

The prioritization framework is intended to identify a collection of transformative projects that increase the resiliency of the Mill River corridor. Numerical scores for each metric category were developed (a detailed discussion on category weighting is included in Objective #6 document under separate cover) rather than tangible values such as dollars. Each of the categories was formed so that a higher score indicates a positive, preferred element of the project. No negative scores are included in the prioritization framework.

PRIORITIZATION RANKING



LIVING WITH THE BAY



THANK YOU



Governor's Office of
Storm Recovery

SUMMARY REPORT



A RESILIENCY STATE OF MIND: LIVING WITH THE BAY RESILIENCY STRATEGY



<https://stormrecovery.ny.gov/living-bay>

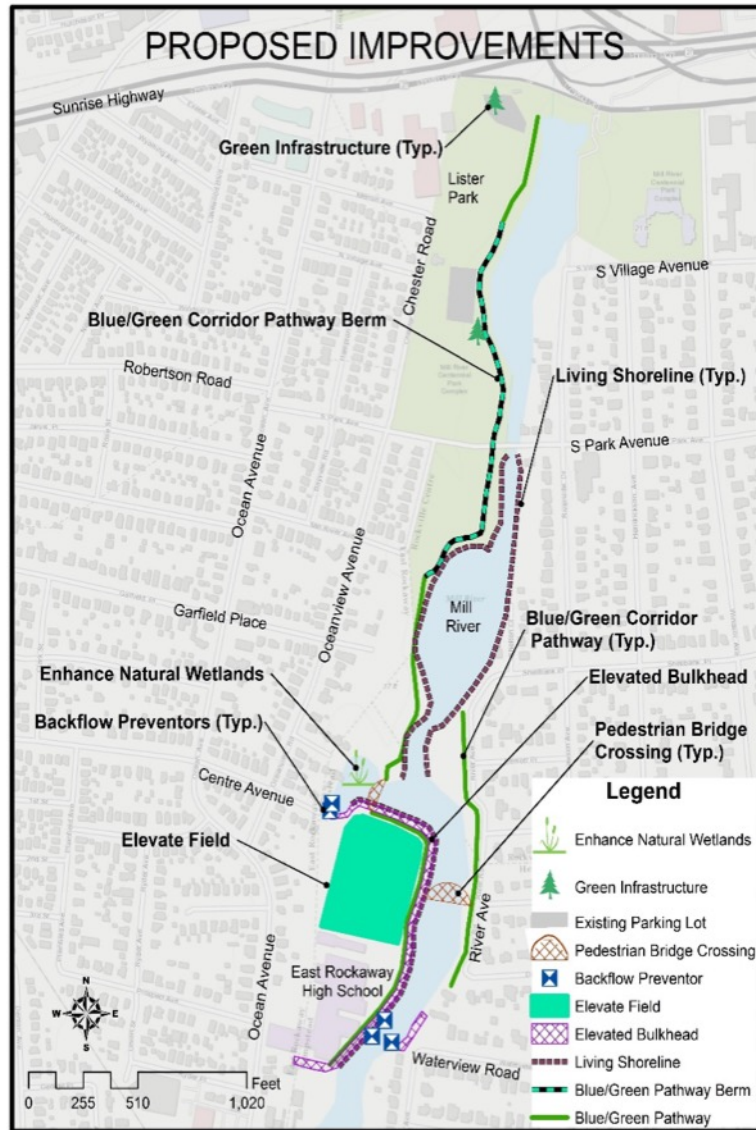
Jason Hellendrung, ASLA, PLA
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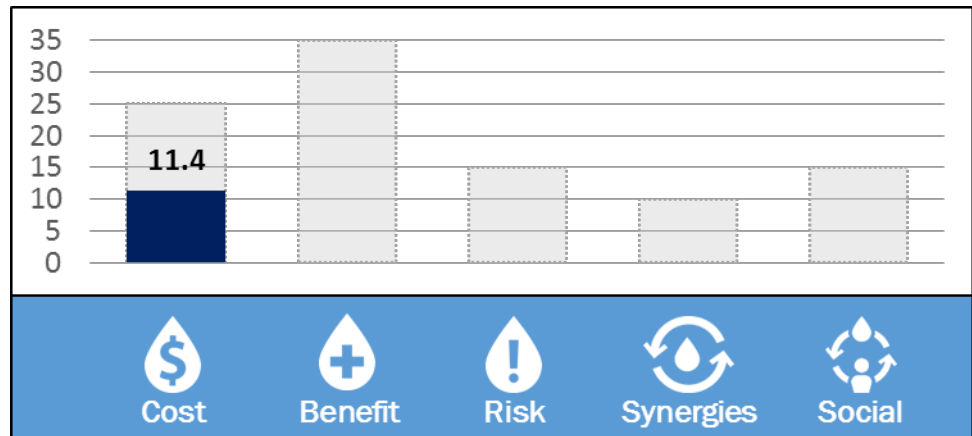
May 2018

COSTS

Estimated Cost = \$12,200,000



Cost Category	Values	Weight	Score
Rating 0%	\$ -	1.00	25.0
Rating 10%	\$ 250,000	0.95	23.8
Rating 20%	\$ 500,000	0.90	22.5
Rating 30%	\$ 1,000,000	0.80	20.0
Rating 40%	\$ 2,500,000	0.70	17.5
Rating 50%	\$ 5,000,000	0.60	15.0
Rating 60%	\$ 10,000,000	0.50	12.5
Rating 70%	\$ 15,000,000	0.40	10.0
Rating 80%	\$ 20,000,000	0.30	7.5
Rating 90%	\$ 30,000,000	0.20	5.0
Rating 100%	\$ 50,000,000	0.10	2.5

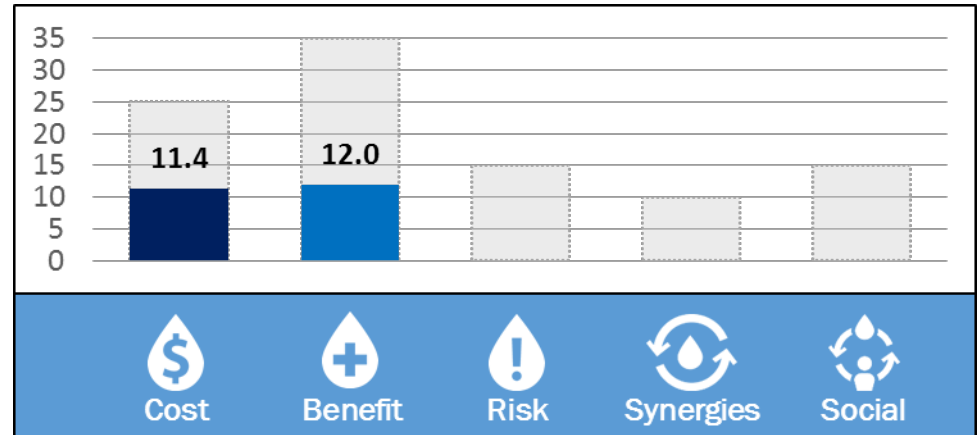


BENEFITS



BENEFITS SUBCATEGORIES	Weight	Score
Flood Reduction Benefits	40.0%	14.0
Water Quality Benefits	30.0%	10.5
Ecosystem/Habitat Benefits	30.0%	10.5

Benefit Categories	Values
Flood Reduction Benefits	\$ 1,217,638
Water Quality Benefits	7
Ecosystem/Habitat Benefits	0.7 acres



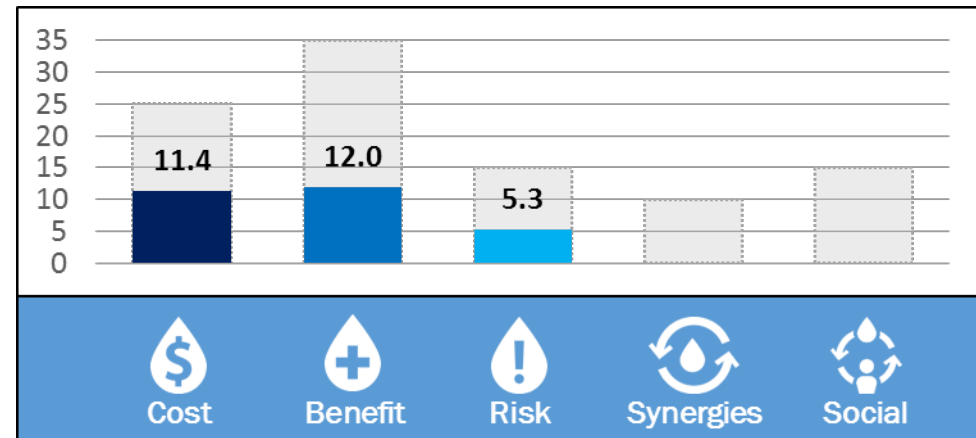
RISKS AND VULNERABILITY



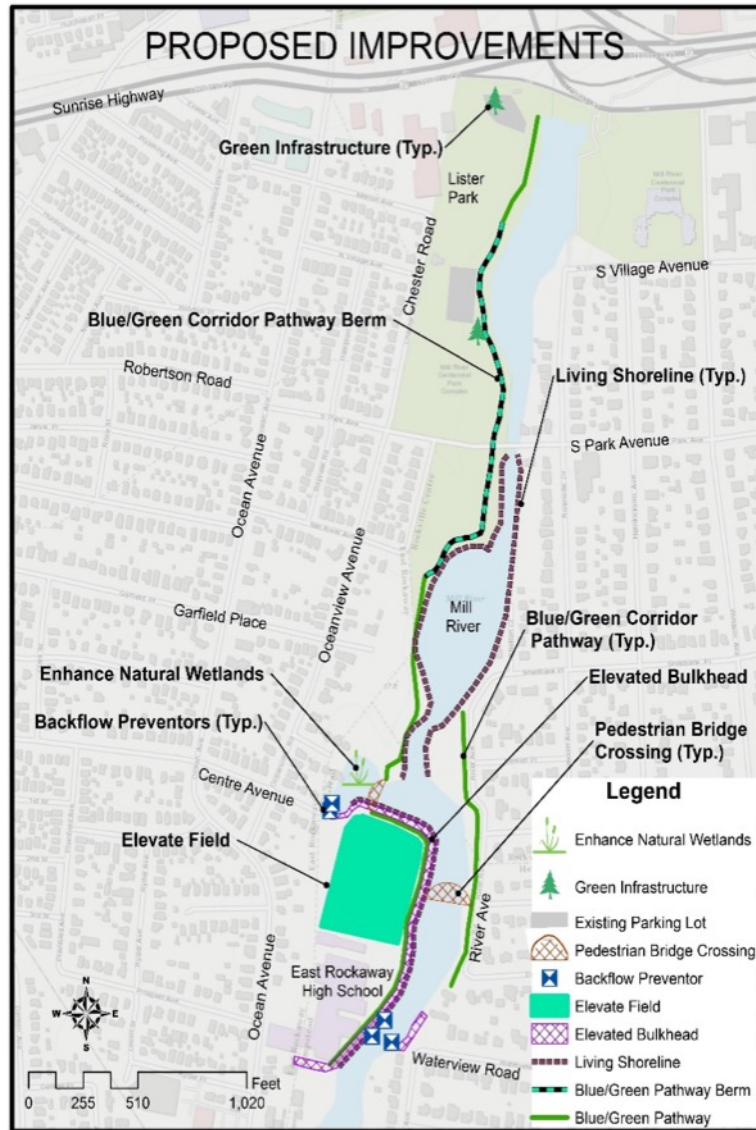
	Values
Health and Safety Score	0.9
Reduced Risk Score	1.2
Adaptability Score	3.2

Adaptability Score: Ranking of 1-10

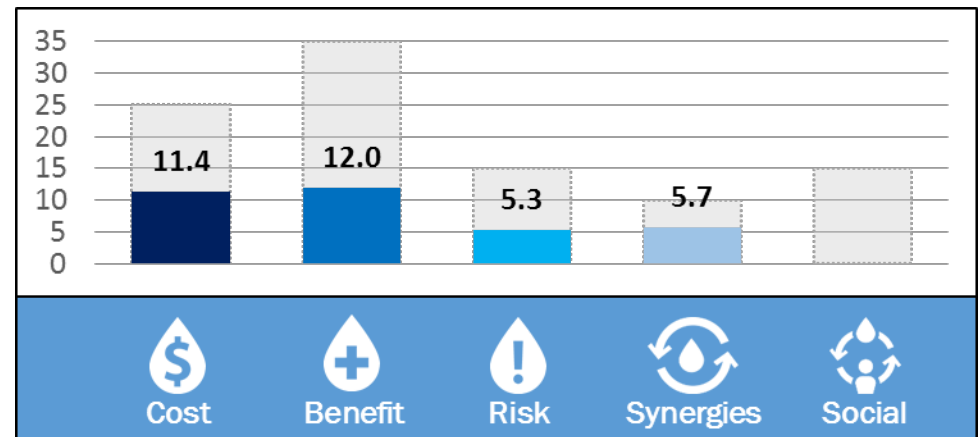
Vulnerability of Projects to Future Changes	6
Reliability on Other Projects for Viability	6



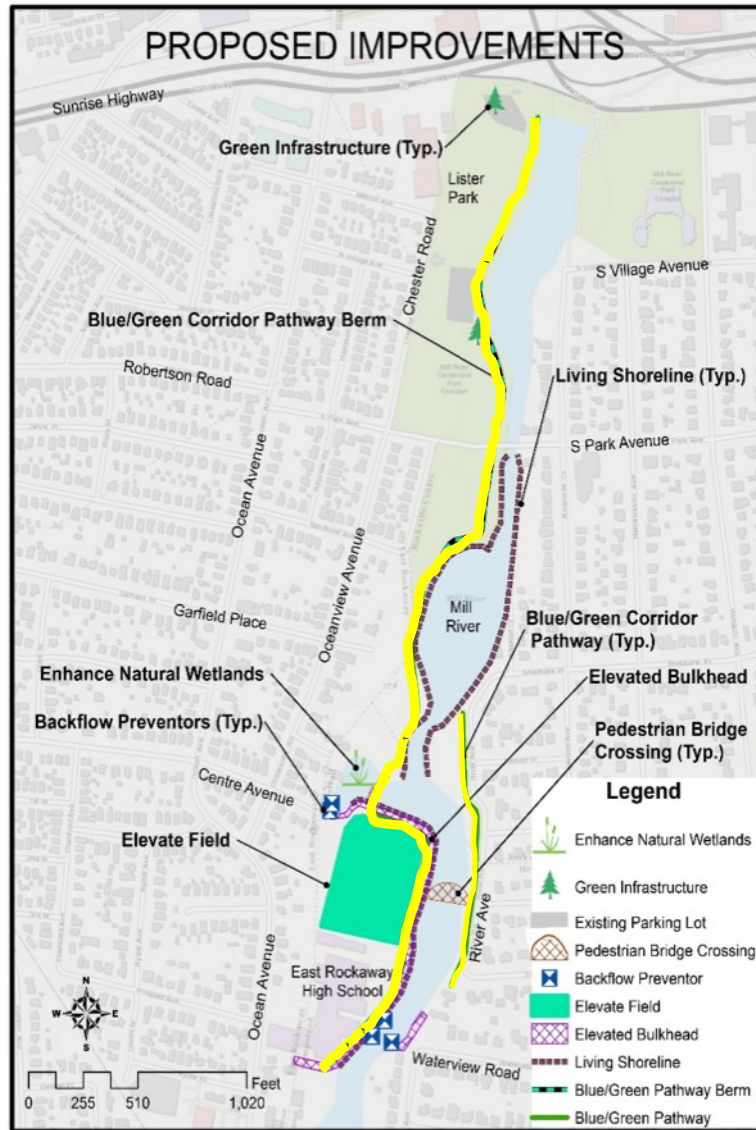
SYNERGIES



	No.	Category Description	Values
Synergy	1	Reduction in O&M to Existing Public Resources/Utilities	Med
	2	Provides Co-Benefits to Other Existing Plans or Strategies	Yes
Depend- ency	1	Implementation Would Require Interjurisdictional Coord.	Yes
	2	Implementation Would Require Add'l O&M Efforts or Costs	Med
Critical Infra.	1	Indirect Impacts on Critical Infrastructure	Yes
	2	If Yes, Approximate Number of Critical Facilities Within Project Area	1 to 5
Leverage Funds	1	Likelihood of Access to Additional Funding Sources or Combining with Other Opportunities to Increase Cost Effectiveness	Possible



SOCIAL RESILIENCY



New Points of Waterfront Access Created / Improved	Yes
Accessibility to Water Resources	Yes
Increase in Number of Recreation Opportunities	Yes
Enhancement to Existing Recreation Opportunities	Yes
Creation of New Educational Opportunities	Yes

