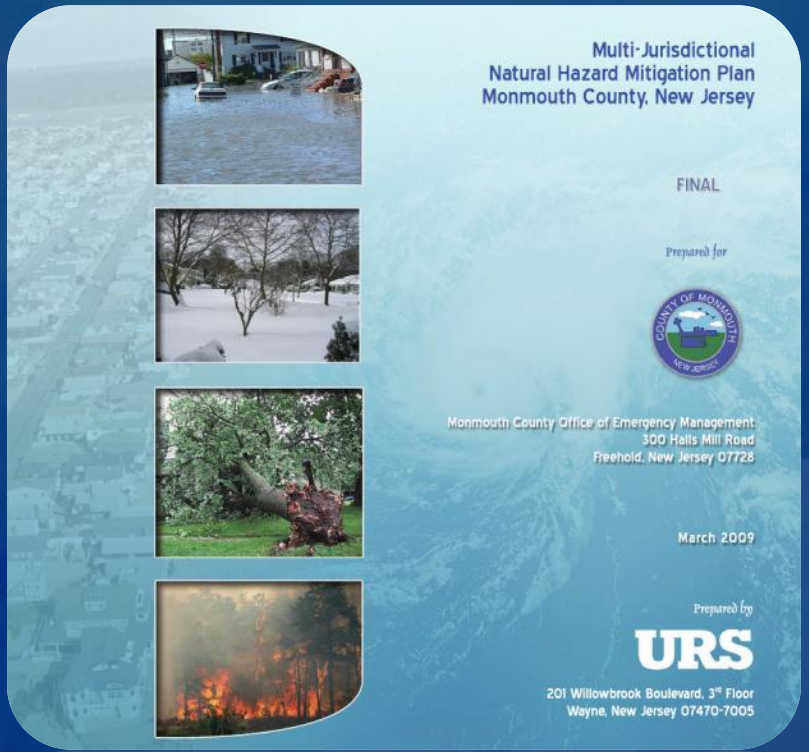
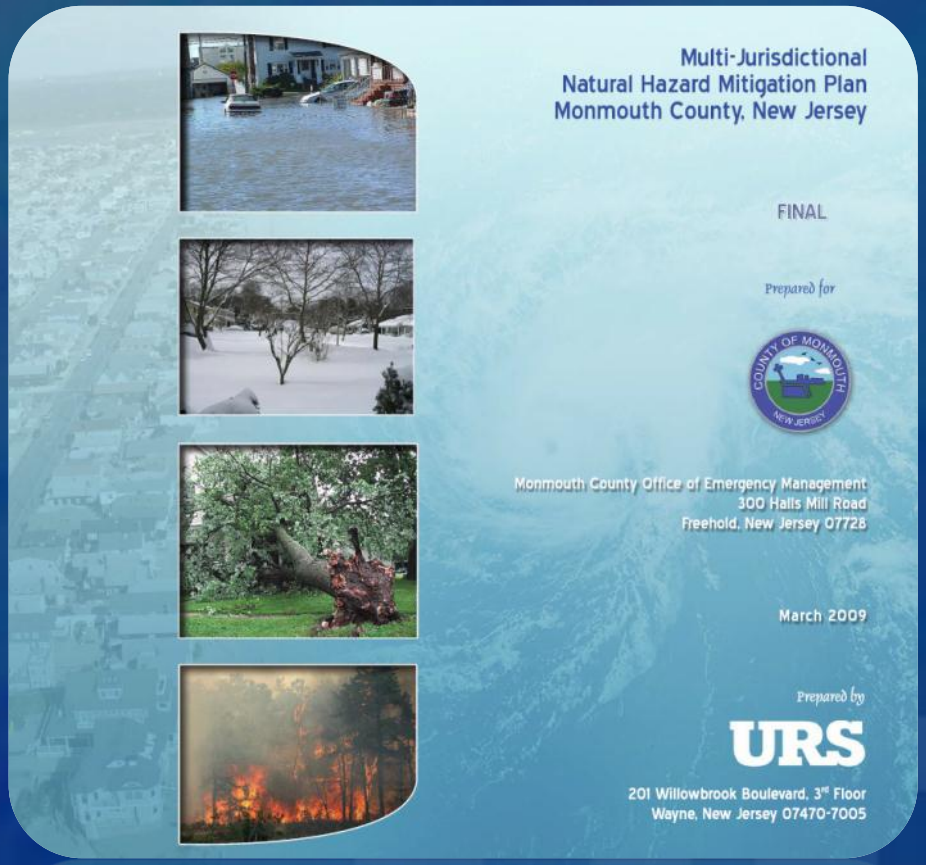
Monmouth County Multi-Jurisdictional Hazard Mitigation Plan Update

Core Planning Group Meeting #2
September 28, 2012
10:00 am
Monmouth County Fire Academy



Opening Remarks



Today's Agenda

- Welcome and Opening Remarks
- Natural Hazards and Monmouth County
  What are the hazards? What is at stake?
- Incentives to Participate
- Viable Projects for Your Municipality based on Past Experiences
  What are the problems? What are the solutions?
- Food for Thought: What are other communities doing?
- Questions and Answers
- Closing Remarks
- Adjourn

Working toward disaster resistance…..

- …is easy?
- …can be accomplished quickly?
- …requires limited resources?

Hazard mitigation…..

…requires the commitment of limited resources

- staff members
- their time
- local funding

…..but…..

Over the long term, it will cost more if we don’t.

2009 Plan Estimates of Average Annual Damages

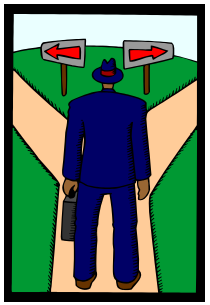
• Extreme wind	$ 0.5 M
• Hurricane and tropical storm	$ 12.5 M
• Riverine flood	$ 14.5 M
• Storm surge	$129.0 M

….and the list goes on for other hazards….

Question:
Will these estimates go up? down? remain the same?

"…each locality controls the character of its disasters…the decisions they make today will determine future losses."

- Dennis Mileti, University of Colorado at Boulder, "Disasters by Design"



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Natural Hazards and Monmouth County - *What are the hazards?*

List of hazards identified as significant for the plan update

=

List of hazards identified as significant for initial plan development

Natural Hazards and Monmouth County - *What are the hazards?*

CPG concurrence with findings by a show of hands

Natural Hazards and Monmouth County - *What are the hazards?*

Summary Results of the Hazard Identification and Evaluation Process

ATMOSPHERIC

- ☐ Avalanche
- ☑ Extreme Temperatures
- ☑ Extreme Wind
- ☐ Hailstorm
- ☑ Hurricane and Tropical Storm
- ☑ Lightning
- ☑ Nor'easter
- ☑ Tornado
- ☑ Winter Storm

HYDROLOGIC

- ☑ Coastal Erosion
- ☑ Dam Failure
- ☑ Drought
- ☑ Flood
- ☑ Storm Surge
- ☑ Wave Action

GEOLOGIC

- ☑ Earthquake
- ☐ Expansive Soils
- ☑ Landslide
- ☐ Land Subsidence
- ☐ Tsunami
- ☐ Volcano

OTHER

- ☑ Wildfire

☑ = Hazard considered significant enough for further evaluation through Monmouth County's multi-jurisdictional hazard risk assessment.

Note: Tsunamis will be addressed briefly in the context of the flood hazard discussion.

Natural Hazards and Monmouth County - *What is at stake?*

Flooding

- More than half of all federal disaster declarations for Monmouth County have involved flooding.

- NCDC and SHELDUS report that:
  - Monmouth County has been affected by 96 flood events between April 1993 and December 2011.
  - These events in total caused an estimated $79.8M in property damages.

Natural Hazards and Monmouth County - *What is at stake?*

Flooding

- New Jersey is:
  - 5th in the country in terms of NFIP Payouts (1/78-3/11)

    LA: $16,041,923,827
    TX: $5,475,442,711
    FL: $3,602,905,854
    MS: $2,867,988,741
    NJ: $970,512,663

  - 4th in the country in terms of total # Repetitive Loss Properties

    LA: 23,758
    TX: 15,956
    FL: 13,511
    NJ: 12,089

Natural Hazards and Monmouth County - *What is at stake?*

Flooding

- From 1972-2012, NFIP policy holders (>22,000) in Monmouth County have incurred 9,603 losses totaling $109,494,629 in paid claims

- Real cost is likely to be even more (unpaid claims, uninsured losses)

Natural Hazards and Monmouth County - *What is at stake?*

Flooding

- Repetitive Loss Property:
  - two or more claims
  - of more than $1,000 each
  - in any rolling 10-year window since 1978

Natural Hazards and Monmouth County - *What is at stake?*

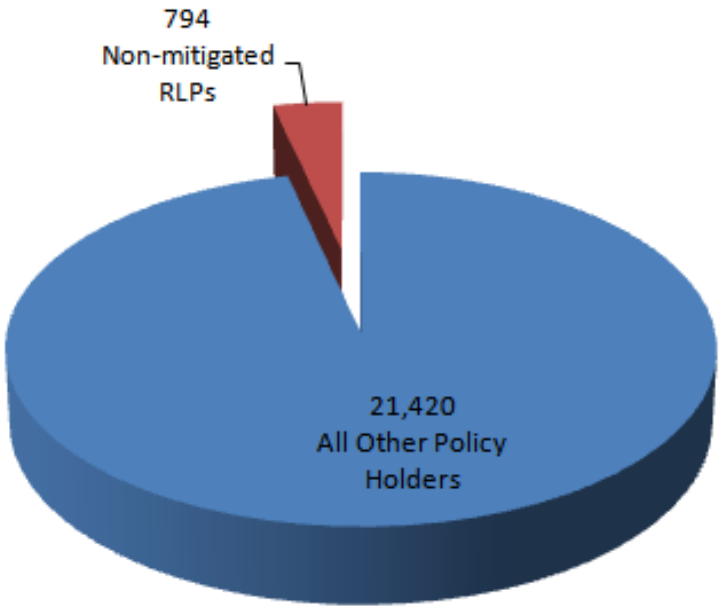
Flooding

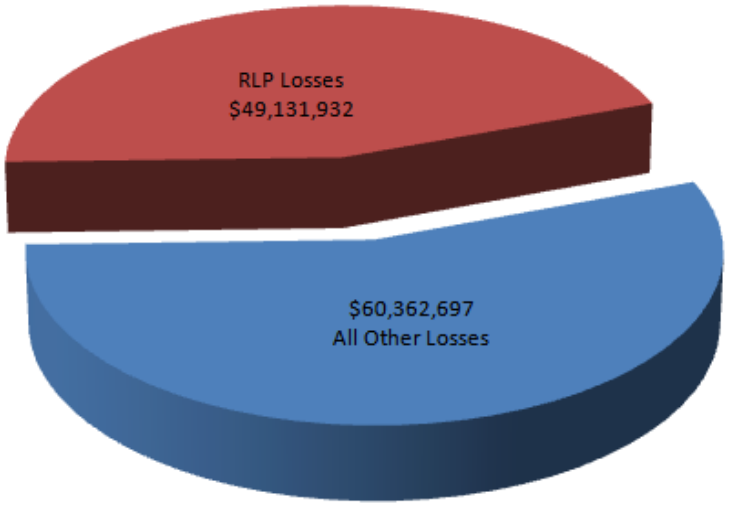
- As of May 31, 2012 Monmouth County has:
  - 22,214 NFIP policies with $109,494,629 paid claims
  - 794 RLPs[1] with $49,131,932 paid claims

[1] an additional 27 are mitigated RLPs

Natural Hazards and Monmouth County - *What is at stake?*

Flooding





4% of NFIP insured properties contribute to 45% of losses

Natural Hazards and Monmouth County - *What is at stake?*

Flooding

- Since May 2008:
  - The total value of all claims paid county-wide has increased by **42%** ($76.8M in 2008 to $109.5M in 2012)
  - The total value of all claims paid to RLPs has increased by **64%** ($30M in 2008 to $49.1M in 2012)

	A	B	U	V	W	X	Y
1	State Name	Community Name	Tot Building Paym	Tot Contents Paym	Losses	Total Paid	Average Pay
2	NEW JERSEY	KEYPORT, BOROUGH OF	535,112.49	219,101.71	4	754,214.20	188,553.55
3	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	374,784.82	236,606.21	3	611,391.03	203,797.01
4	NEW JERSEY	KEYPORT, BOROUGH OF	425,875.07	154,584.51	20	580,459.58	29,022.98
5	NEW JERSEY	KEYPORT, BOROUGH OF	334,395.08	210,695.99	5	545,091.07	109,018.21
6	NEW JERSEY	SPRING LAKE, BOROUGH OF	435,000.00	110,000.00	2	545,000.00	272,500.00
7	NEW JERSEY	SEA BRIGHT, BOROUGH OF	501,329.21	0.00	7	501,329.21	71,618.46
8	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	486,407.55	14,224.41	9	500,631.96	55,625.77
9	NEW JERSEY	SEA BRIGHT, BOROUGH OF	310,560.87	152,790.15	10	463,351.02	46,335.10
10	NEW JERSEY	SEA BRIGHT, BOROUGH OF	407,246.20	40,500.00	4	447,746.20	111,936.55
11	NEW JERSEY	SEA BRIGHT, BOROUGH OF	415,833.37	0.00	2	415,833.37	207,916.69
12	NEW JERSEY	ABERDEEN, TOWNSHIP OF	85,546.55	322,174.38	11	407,720.93	37,065.54
13	NEW JERSEY	SEA BRIGHT, BOROUGH OF	357,786.42	8,294.75	3	366,081.17	122,027.06
14	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	288,075.54	57,578.81	5	345,654.35	69,130.87
15	NEW JERSEY	UNION BEACH, BOROUGH OF	270,653.24	67,497.29	4	338,150.53	84,537.63
16	NEW JERSEY	SEA BRIGHT, BOROUGH OF	221,312.02	93,663.49	3	314,975.51	104,991.84
17	NEW JERSEY	LONG BRANCH, CITY OF	241,429.01	68,277.32	5	309,706.33	61,941.27
18	NEW JERSEY	SEA BRIGHT,			4	276,212.66	69,053.17
19	NEW JERSEY	MONMOUTH			4	272,507.72	68,126.93
20	NEW JERSEY	MONMOUTH			3	268,692.19	89,564.06
21	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	262,610.31	0.00	2	262,610.31	131,305.16
22	NEW JERSEY	SPRING LAKE, BOROUGH OF	232,701.73	29,600.00	3	262,301.73	87,433.91
23	NEW JERSEY	LITTLE SILVER, BOROUGH OF	192,891.71	66,159.50	2	259,051.21	129,525.61
24	NEW JERSEY	OCEANPORT, BOROUGH OF	208,004.12	46,300.00	2	254,304.12	127,152.06
25	NEW JERSEY	LONG BRANCH, CITY OF	247,821.00	0.00	4	247,821.00	61,955.25
26	NEW JERSEY	RUMSON, BOROUGH OF	181,582.07	65,818.94	6	247,401.01	41,233.50
27	NEW JERSEY	LITTLE SILVER, BOROUGH OF	186,840.00	60,000.00	2	246,840.00	123,420.00
28	NEW JERSEY	OCEANPORT, BOROUGH OF	208,965.33	33,414.84	5	242,380.17	48,476.03
29	NEW JERSEY	OCEAN, TOWNSHIP OF	162,894.95	78,825.01	4	241,719.96	60,429.99
30	NEW JERSEY	COLTS NECK, TOWNSHIP OF	218,571.43	20,858.10	3	239,429.53	79,809.84
31	NEW JERSEY	SPRING LAKE, BOROUGH OF	197,348.26	35,207.75	3	232,556.01	77,518.67
32	NEW JERSEY	OCEAN, TOWNSHIP OF	143,772.64	85,816.83	7	229,589.47	32,798.50
33	NEW JERSEY	LONG BRANCH, CITY OF	228,145.00	0.00	4	228,145.00	57,036.25
34	NEW JERSEY	SPRING LAKE, BOROUGH OF	155,115.21	62,873.18	2	217,988.39	108,994.20
35	NEW JERSEY	LONG BRANCH, CITY OF	214,139.44	0.00	2	214,139.44	107,069.72
36	NEW JERSEY	RUMSON, BOROUGH OF	178,074.38	30,764.78	4	208,839.16	52,209.79
37	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	201,348.32	4,431.48	5	205,779.80	41,155.96
38	NEW JERSEY	RUMSON, BOROUGH OF	204,368.24	0.00	3	204,368.24	68,122.75
39	NEW JERSEY	SPRING LAKE, BOROUGH OF	137,771.70	63,057.29	2	200,828.99	100,414.50

Average total paid = $61,954

Sheet1 Sheet2 Sheet3

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2	NEW JERSEY	KEYPORT, BOROUGH OF	425,875.07	154,584.51	20.00	580,459.58	29,022.98
3	NEW JERSEY	ABERDEEN, TOWNSHIP OF	85,546.55	322,174.38	11.00	407,720.93	37,065.54
4	NEW JERSEY	SEA BRIGHT, BOROUGH OF	310,560.87	152,790.15	10.00	463,351.02	46,335.10
5	NEW JERSEY	SEA BRIGHT, BOROUGH OF	149,268.76	39,442.54	10.00	188,711.30	18,871.13
6	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	486,407.55	14,224.41	9.00	500,631.96	55,625.77
7	NEW JERSEY	KEYPORT, BOROUGH OF	42,345.43	105,530.65	9.00	147,876.08	16,430.68
8	NEW JERSEY	HAZLET, TOWNSHIP OF	117,493.75	30,000.80	9.00	147,494.55	16,388.28
9	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	187,016.77	0.00	8.00	187,016.77	23,377.10
10	NEW JERSEY	MANASQUAN, BOROUGH OF	33,424.05	16,255.88	8.00	49,679.93	6,209.99
11	NEW JERSEY	SEA BRIGHT, BOROUGH OF	501,329.21	0.00	7.00	501,329.21	71,618.46
12	NEW JERSEY	OCEAN, TOWNSHIP OF	143,772.64	85,816.83	7.00	229,589.47	32,798.50
13	NEW JERSEY	UNION BEACH, BOROUGH OF	140,294.86	44,721.61	7.00	185,016.47	26,430.92
14	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	156,691.79	18,596.00	7.00	175,287.79	25,041.11
15	NEW JERSEY	LONG BRANCH, CITY OF	151,061.70	20,393.66	7.00	171,455.36	24,493.62
16	NEW JERSEY	OCEAN, TOWNSHIP OF	124,746.20	44,416.57	7.00	169,162.77	24,166.11
17	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	109,485.14	25,939.39	7.00	135,424.53	19,346.36
18	NEW JERSEY	RUMSON, BOROUGH OF	181,582.07	65,818.94	6.00	247,401.01	41,233.50
19	NEW JERSEY	NEPTUNE, TOWNSH			6.00	183,460.90	30,576.82
20	NEW JERSEY	SEA BRIGHT, BOROU			6.00	158,624.99	26,437.50
21	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	143,277.24	4,680.67	6.00	147,957.91	24,659.65
22	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	122,076.02	0.00	6.00	122,076.02	20,346.00
23	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	102,773.10	17,514.69	6.00	120,287.79	20,047.97
24	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	62,323.28	31,837.25	6.00	94,160.53	15,693.42
25	NEW JERSEY	UNION BEACH, BOROUGH OF	57,566.83	30,334.40	6.00	87,901.23	14,650.21
26	NEW JERSEY	OCEANPORT, BOROUGH OF	64,086.37	17,845.00	6.00	81,931.37	13,655.23
27	NEW JERSEY	LONG BRANCH, CITY OF	66,544.48	3,108.00	6.00	69,652.48	11,608.75
28	NEW JERSEY	SEA BRIGHT, BOROUGH OF	17,305.22	10,591.07	6.00	27,896.29	4,649.38
29	NEW JERSEY	KEYPORT, BOROUGH OF	334,395.08	210,695.99	5.00	545,091.07	109,018.21
30	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	288,075.54	57,578.81	5.00	345,654.35	69,130.87
31	NEW JERSEY	LONG BRANCH, CITY OF	241,429.01	68,277.32	5.00	309,706.33	61,941.27
32	NEW JERSEY	OCEANPORT, BOROUGH OF	208,965.33	33,414.84	5.00	242,380.17	48,476.03
33	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	201,348.32	4,431.48	5.00	205,779.80	41,155.96
34	NEW JERSEY	SEA BRIGHT, BOROUGH OF	145,176.00	0.00	5.00	145,176.00	29,035.20
35	NEW JERSEY	OCEAN, TOWNSHIP OF	103,450.70	41,385.74	5.00	144,836.44	28,967.29
36	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	75,772.23	40,806.95	5.00	116,579.18	23,315.84
37	NEW JERSEY	UNION BEACH, BOROUGH OF	99,835.16	6,879.37	5.00	106,714.53	21,342.91
38	NEW JERSEY	SEA BRIGHT, BOROUGH OF	91,408.47	7,769.42	5.00	99,177.89	19,835.58
39	NEW JERSEY	MONMOUTH BEACH, BOROUGH OF	76,380.31	16,482.37	5.00	92,862.68	18,572.54

Average total losses = 2.81

WHAT ARE THE ODDS OF BEING FLOODED?

The term "100-year flood" has caused much confusion for people not familiar with statistics. Another way to look at flood risk is to think of the odds that a 100-year flood will happen sometime during the life of a 30-year mortgage—a 26% chance for a structure located in the SFHA.

Chance of Flooding over a Period of Years

Time Period	Flood Size 10-year	25-year	50-year	100-year
1 year	10%	4%	2%	1%
10 years	65%	34%	18%	10%
20 years	88%	56%	33%	18%
30 years	96%	71%	45%	26%
50 years	99%	87%	64%	39%

Even these numbers do not convey the true flood risk because they focus on the larger, less frequent, floods. If a house is low enough, it may be subject to the 10- or 25-year flood. During a 30-year mortgage, it may have a 26% chance of being hit by the 100-year flood, but the odds are 96% (nearly guaranteed) that it will be hit by a 10-year flood. Compare those odds to the only 1-2% chance that the house will catch fire during the same 30-year mortgage.

Natural Hazards and Monmouth County - *What is at stake?*

Flooding

- The assessed value alone of property in Monmouth County's 100-year floodplain is roughly $3 billion.

Natural Hazards and Monmouth County - *What is at stake?*

Wind

- Monmouth County is located in a climate region that is highly susceptible to numerous types of extreme wind events including:
    - severe thunderstorms,
    - hurricanes,
    - tropical storms,
    - nor'easters, and
    - severe winter storms.

Natural Hazards and Monmouth County - *What is at stake?*

Wind

- 267 significant wind events for Monmouth County between October 1968 and December 2011.
- These events have resulted in recorded estimates of 7 deaths, 98 injuries and more than $34 million in property damage.

Natural Hazards and Monmouth County - *What is at stake?*

Tornados

- NCDC and SHELDUS report 9 tornado events in Monmouth County between August 1952 and December 2011.
- These events have resulted in no recorded deaths or injuries but have caused $1.5 million in property damage with the most severe being an F2 that struck northern Manalapan and extreme southwest Marlboro Townships in May 2001.

Natural Hazards and Monmouth County - *What is at stake?*

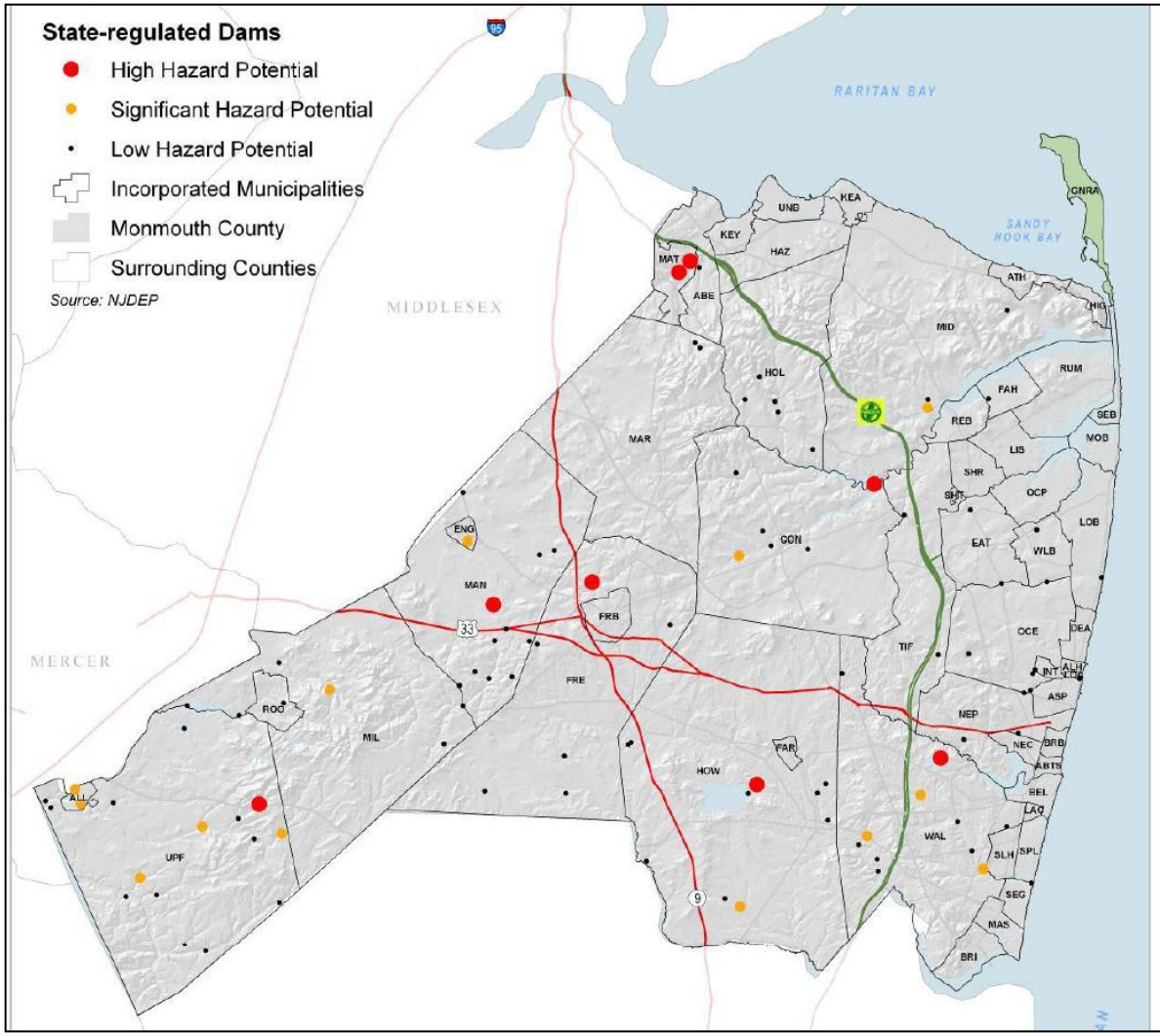
Dam Failure

- **High hazard** - failure may cause probably loss of life or extensive property damage
- **Significant hazard** – failure may cause significant damage to property, but loss of life not anticipated
- **Low hazard** – failure may cause loss of the dam itself, but property damage and loss of life not anticipated

Natural Hazards and Monmouth County - *What is at stake?*

Dam Failure

- 106 dams
  - 9 high hazard[1]
  - 3 significant hazard
  - 84 low hazard



[1] of which 3 are major dams

Natural Hazards and Monmouth County - *What is at stake?*

Dam Failure

- Overall probabilities are relatively low due to routine inspection, repair & maintenance
- However – they do happen

DAM MESS

A portion of Hubbard Avenue, in the River Plaza section of Middletown collapsed from the surge of water that came through with when the Shadow Lake dam burst during Hurricane Irene.Credit Monmouth County

Natural Hazards and Monmouth County - *What is at stake?*

Dam Failure

- October 2005 – Heavy rains, minor dam failures
  - Dams failed at Spring Lake, Mill Pond, Deal Lake, Wreck Pond
  - >1,000 people evacuated
  - States of emergency declared
  - In Wall Township, the cost of repairing the Wreck Pond Dam alone was estimated at $4.2 million.

Natural Hazards and Monmouth County - *What is at stake?*

Storm Surge

- Storm surge during events including:
  - hurricanes
  - tropical storms
  - nor'easters
- Likely affects of climate change
  - more frequent events
  - larger area of impact (higher water levels)
- New development → more exposure (buildings, people, infrastructure)

Natural Hazards and Monmouth County - *What is at stake?*

Storm Surge

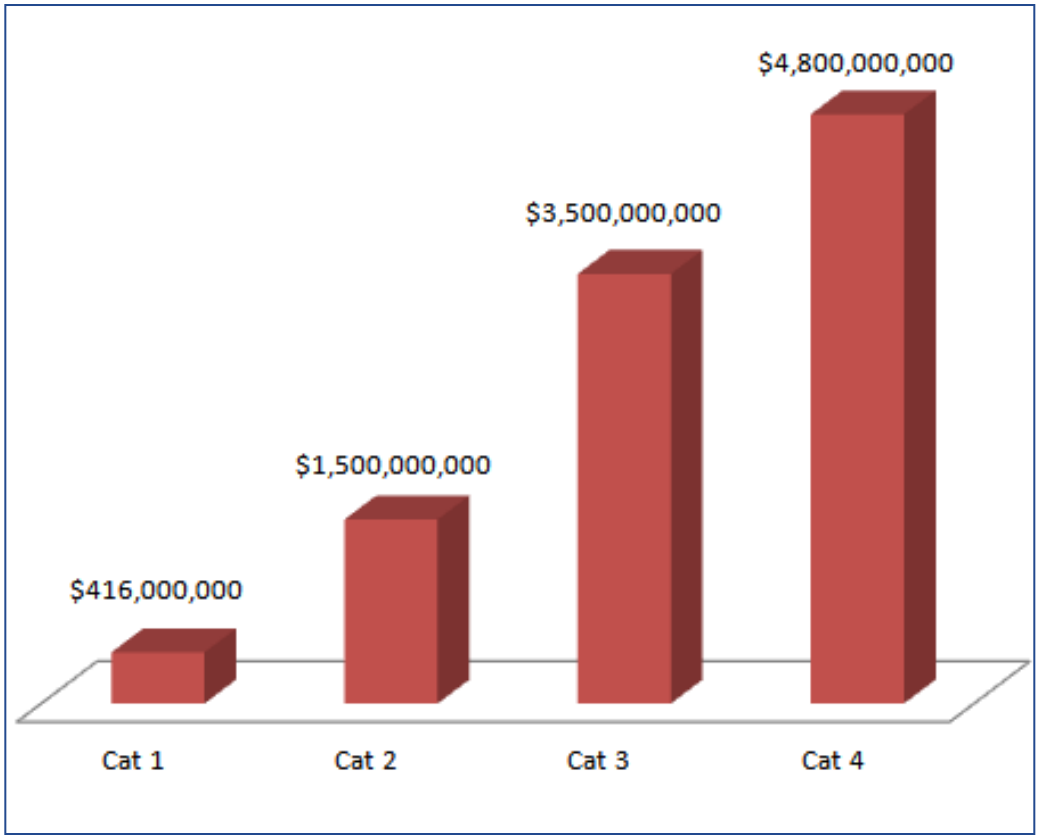
- "Ash Wednesday Storm" 1962 – through 5 high tides!
- 1992 Nor'easter
- February 2006 - $900,000 in damages in Monmouth County (as recorded by NOAA NCDC)
- Irene

….and many more….

Natural Hazards and Monmouth County - *What is at stake?*

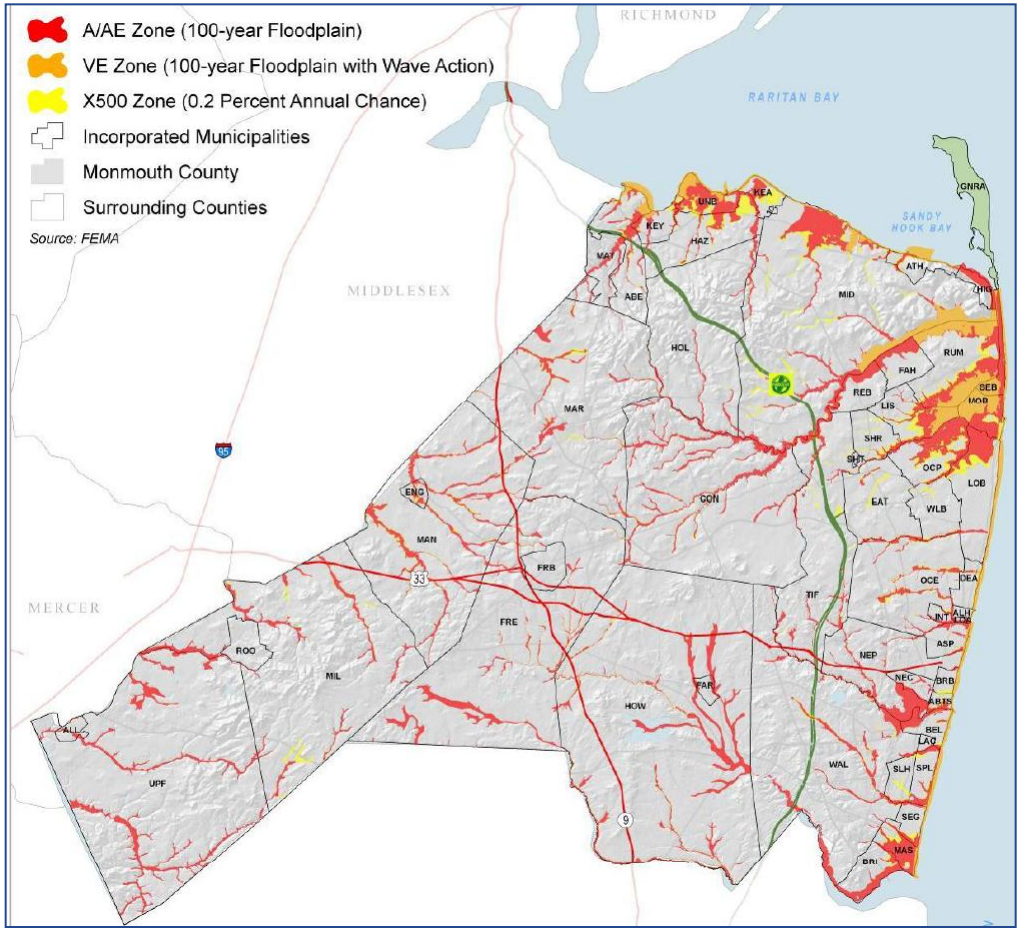
Storm Surge

- HAZUS estimated potential losses from Category 1, 2, 3 and 4 storm surge events – Monmouth County

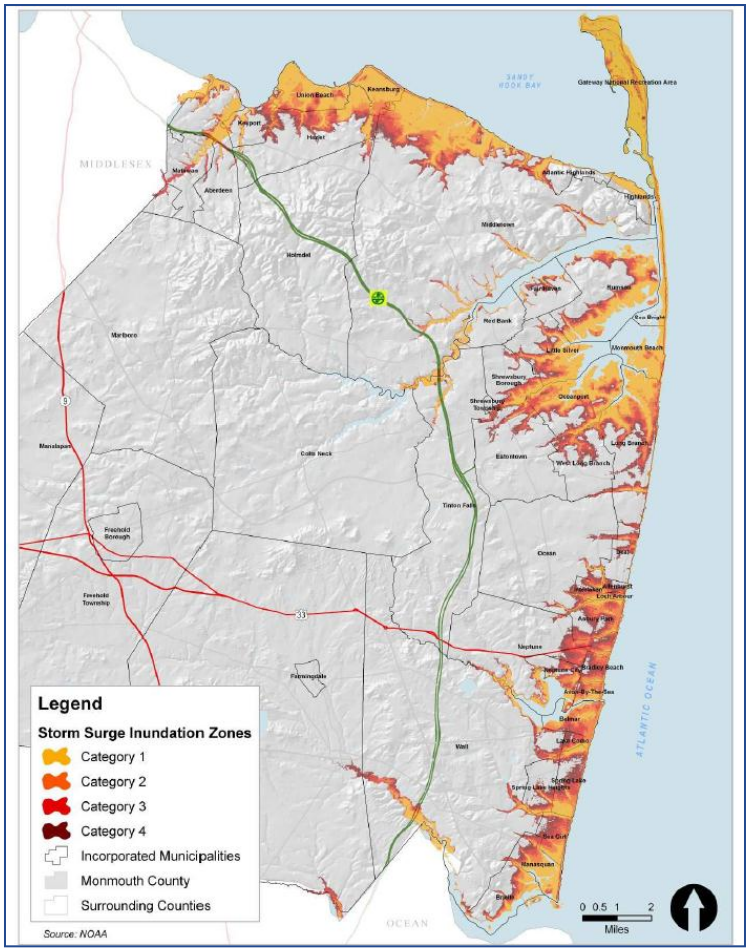


Natural Hazards and Monmouth County - *What is at stake?*

Flooding



Storm Surge



Natural Hazards and Monmouth County - *What is at stake?*

Coastal Erosion

- "Ash Wednesday Storm" 1962
- 1992 Nor'easter
- ..and many more…

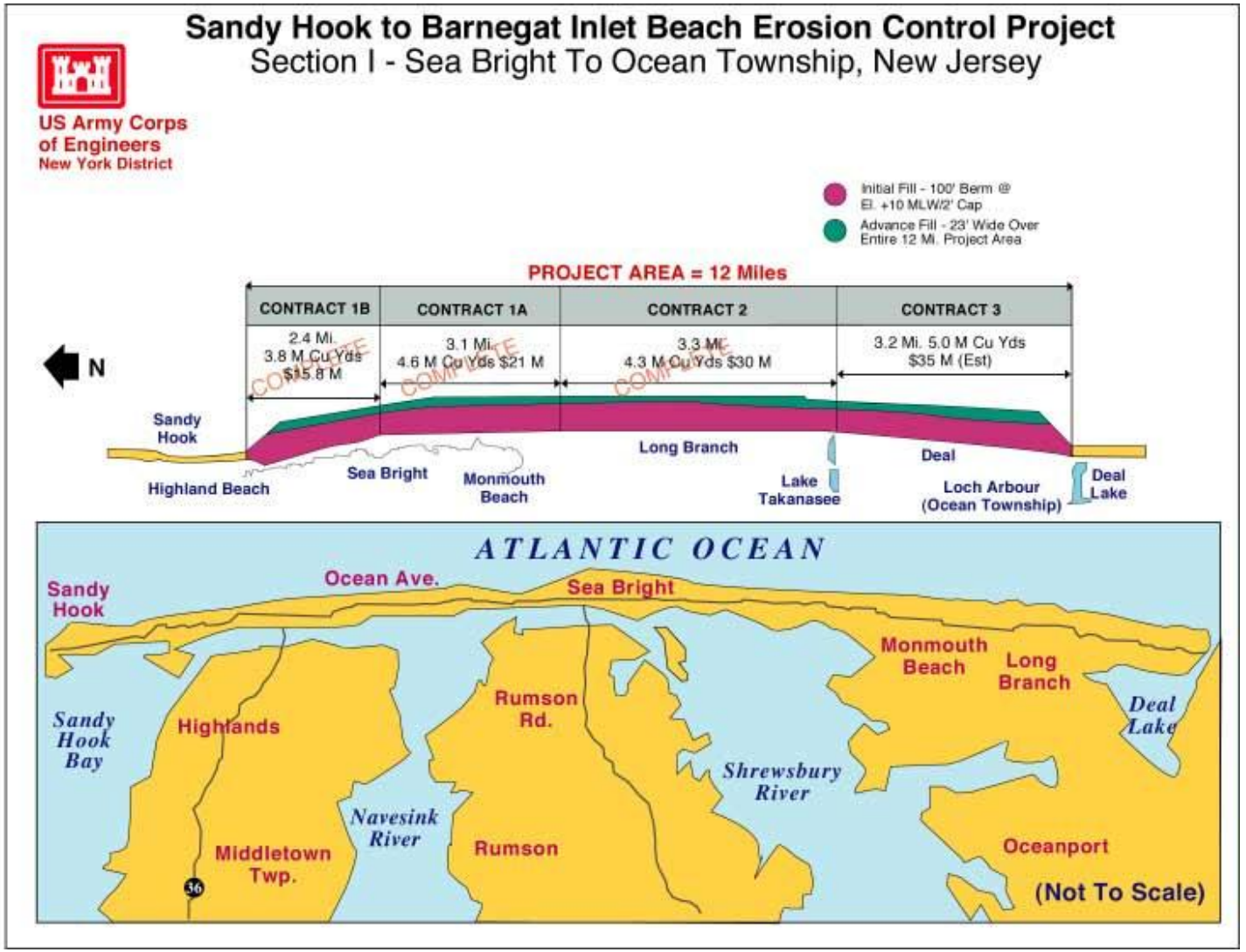
Natural Hazards and Monmouth County - *What is at stake?*

Coastal Erosion

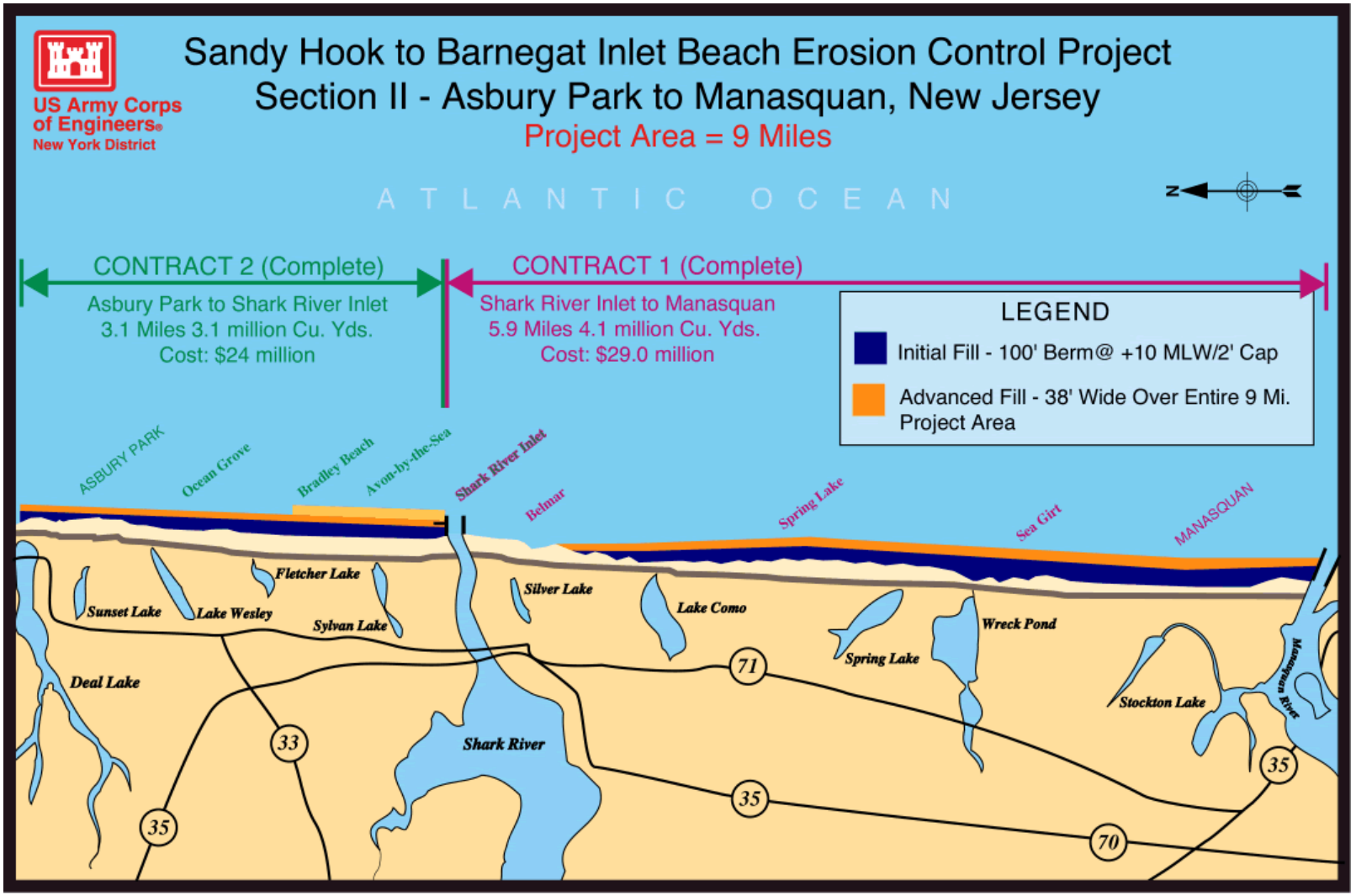
USACE Project - Sandy Hook to Barnegat Inlet, NJ

- Covers 21 miles of shoreline
- Largest beach nourishment project ever undertaken by the USACE
- Largest beachfill project, in terms of volume, in the world.
- The highly populated communities from the Town of Sea Bright to the Manasquan Inlet in Monmouth County, continually experience serious beach erosion. In 1962, the Ash Wednesday Storm caused $56 million in damages (1992 price level).

Natural Hazards and Monmouth County - *What is at stake?*



Natural Hazards and Monmouth County - *What is at stake?*



Sea Bright Sect 2 (00102)

Map Not To Scale

Natural Hazards and Monmouth County - *What is at stake?*

Sand being pumped onto Monmouth Beach (note dredge in background); USACE renourishment. December 2011

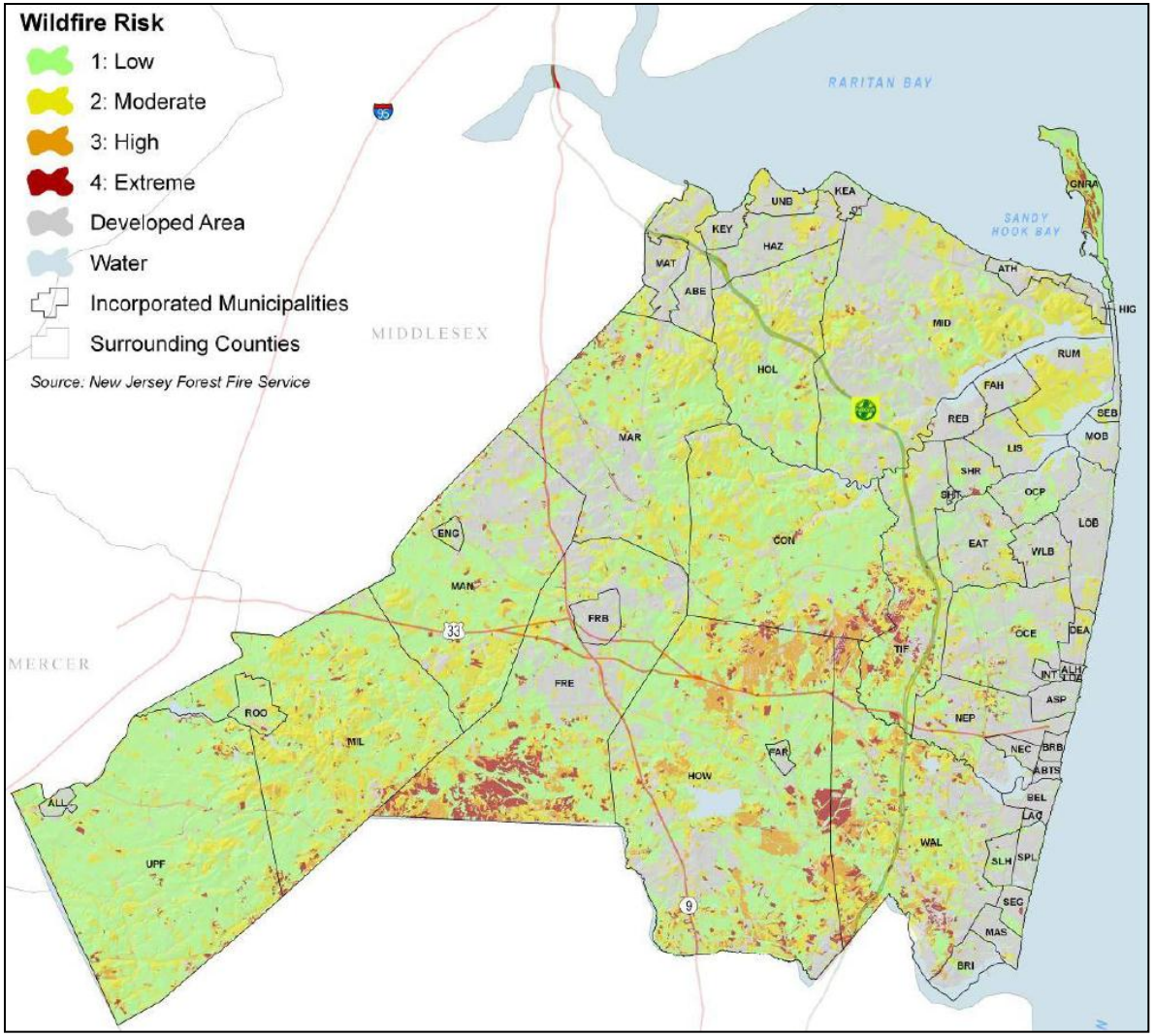
Natural Hazards and Monmouth County - *What is at stake?*

Wildfires

- According to New Jersey Forest Fire Service records, Monmouth County experienced 512 wildfire incidents that burned 353 acres between 1993 and 2003.
- Average of 51 wildfire events per year
  - Average of about 0.7 acres each or 35 acres per year

Natural Hazards and Monmouth County - *What is at stake?*

- All municipalities except Loch Arbour and Shrewsbury have mapped wildfire hazard areas.
- About 2% of the value of improved property is located in Moderate or Extreme wildfire hazard areas



Natural Hazards and Monmouth County - *What is at stake?*

Notable Events

Howell, 1977

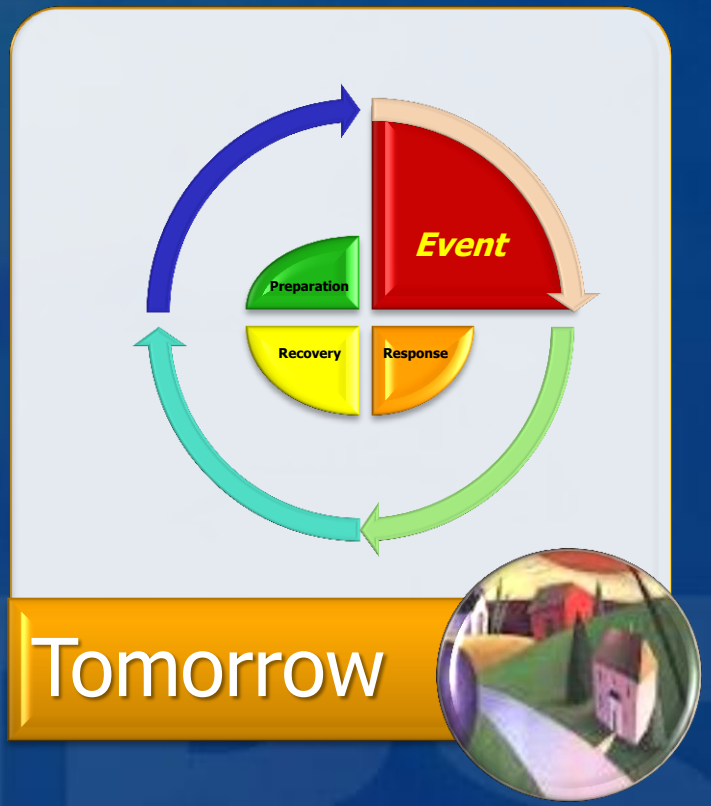
- 300 acres
- Yellowbrook Rd./Rte. 33

Port Monmouth, 2002

- 200 acres
- Main St./Broadway/Park Ave.

Incentives to Participate
Benefits of Participating

- Goal:
  - More sustainable and disaster-resistant communities
  - Implement projects that will gradually, but steadily, lessen the impacts associated with hazard events
  - ~~Disaster~~ → Event



Incentives to Participate
Programs that can be Accessed by Having an Approved Plan

- Programs and Federal Share
  - HMGP 75%
  - PDM 75%
  - FMA 75%
  - RFC 100%
  - SRL 90%

Incentives to Participate
Typically Eligible Project Types

Elevation of Structures

Incentives to Participate
Typically Eligible Project Types

Elevation of Structures

Incentives to Participate
Typically Eligible Project Types

Property Acquisitions

Elevation of Utilities

Incentives to Participate
Typically Eligible Project Types

Wind Retrofits – Storm Shutters

Incentives to Participate
Typically Eligible Project Types

Minor Flood Reduction

FEMA 361 Safe Rooms

Soil Stabilization

Incentives to Participate
State Plan Goals, Ranking System

www.state.nj.us/njoem/programs/mitigation_plan2012.html

5.2.2. State Hazard Mitigation Goals and Objectives

The State endorses five goals and objectives and the Repetitive Loss strategy as stated below:

1. To protect life through	○ Improved warning and emergency communications systems ○ Effectively address hazard mitigation issues, laws and regulations ○ Reduce the impacts of hazards on vulnerable populations ○ Strengthen State and local building code enforcement
2. To protect property through	○ Protect critical State and non-state owned facilities and assets ○ Reduce repetitive losses (as specifically addressed below) ○ Implement hazard mitigation policies to protect the environment
3. To increase public preparedness through	○ Improved public awareness of natural hazards and the risks they pose ○ Improved hazard Information data bases and maps and increase accessibility to those resources ○ Enhanced community outreach and training emergency responders
4. Develop and maintain an understanding of risks from natural hazards through	○ Review and incorporate hazard information developed at the local level into the Plan ○ Increased development of local mitigation planning ○ Incorporate new FEMA guidance, rules and regulations into the Plan ○ Update the Plan from lessons learned on the national level
5. Enhance capabilities to make New Jersey less vulnerable to hazards through	○ Monitor the progress of on-going mitigation activities by state agencies ○ Provide current information on incentives for mitigation planning and actio ○ Encourage the formation of partnerships to leverage and share mitigation resources ○ Ensure continuity of critical operations of government and commerce

In addition to the stated mitigation goals and incorporated throughout the strategy to accomplish the State goals, New Jersey will use a three prong approach:

1. Recognize flooding as the major disaster threat facing the state and use acquisition between a voluntary seller and a public agency as the primary means to accomplish all of the goals and objectives (with additional Repetitive Loss Strategy information below).
2. Offer, as a secondary means of accomplishing the state goals, assistance in the elevation of homes where or when acquisition is not an option.
3. Work with both county and municipal governments that have an approved local mitigation plan and those whose plans are nearing completion to develop sound and beneficial projects to alleviate the impacts of all natural disasters, not limited to flooding alone.

Figure 6.4.2-1
Sample New Jersey State Mitigation Project Priority Score Sheet

General Application Information	Points	Score
Is this project *specifically identified* in the All Hazards Plan?	50	
OR – Is this a *generic* type of project identified in the applicants plan?	30	
Was the local plan FEMA *prior approved* to the declaration (for HMGP)?	10	
Is the project i*n the declared disaster* area (for HMGP)?	20	
Is the project in a *CRS* community?	20	
Specific Application Information		
Is the project a mitigation measure that best fits within an overall plan for development and/or hazard mitigation in the disaster area, community or State?	20	
Is the measure that, if not taken, will have a detrimental impact on the applicant, such as potential loss of life, loss of essential services, damage to critical facilities, or economic hardship on the community or state?	20	
Does the mitigation measure have the greatest potential impact on reducing further disaster losses?	20	
Has the mitigation measure been designed to accomplish multiple objectives including damage reduction, environmental enhancement and economic recovery?	20	
Environmental		
Is the project *eligible* for a Categorical Exclusion (CATEX)?	5	
Is the project an All Hazards *Plan update* project (no Benefit/Cost required)?	5	
Is the project a *planning* project (no Benefit/Cost required)?	5	
Has a Benefit/Cost analysis showing a benefit great than 1 been submitted	5	
Has a "*weak*" Benefit/Cost study been provided (no back up-no documentation)?	- 5	
Is a Benefit/Cost *analysis* required but not provided?	- 10	
Has an *engineering* study been provided – score on a scale of 1-20?	20	
State Strategy		
Is the structure on the *Severe Repetitive Loss* list?	50	
Is the structure on the *Repetitive Loss* list?	30	
Is the structure *within a floodplain*?	5	
Is the project an *elevation*?	10	
Is the project an *acquisition*	10	
Is the project *flood water management?*	7	
Is the project a *retrofit* project?	5	
Is the project a *warning and information* systems project?	5	
Total Points Scored		

Viable Projects for Your Municipality Based On Past Experiences

What are the problems?

Group discussion:
What happened during Hurricane Irene? during other events?

- What happened? Were these things expected? In expected locations? Were any impacts unanticipated, or with unanticipated consequences?
- Was the problem simply repaired to pre-disaster conditions, or was it mitigated?
- Did Irene highlight any areas in need of immediate attention (mitigation)?

Hurricane Irene

Hurricane Irene

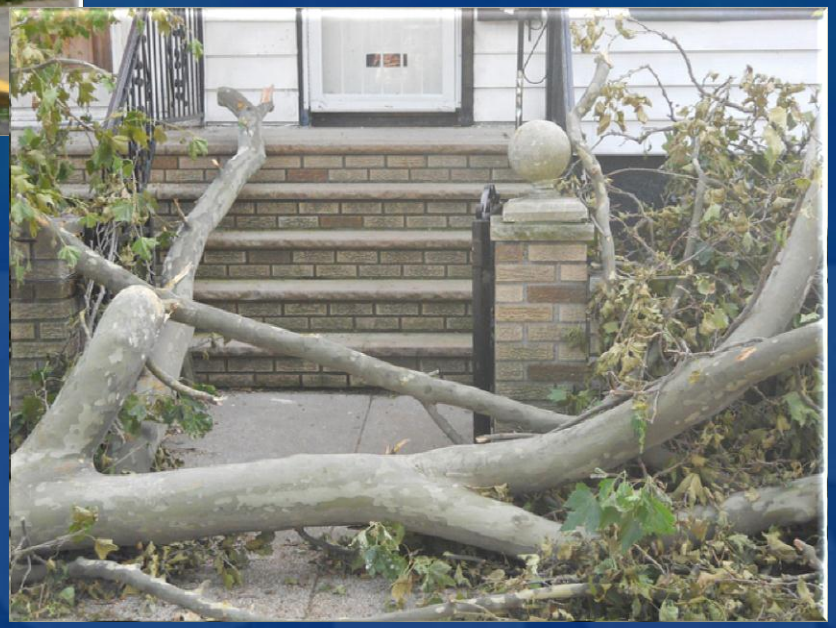
Hurricane Irene

Hurricane Irene

Hurricane Irene

Hurricane Irene

Hurricane Irene



Hurricane Irene

Hurricane Irene

Hurricane Irene

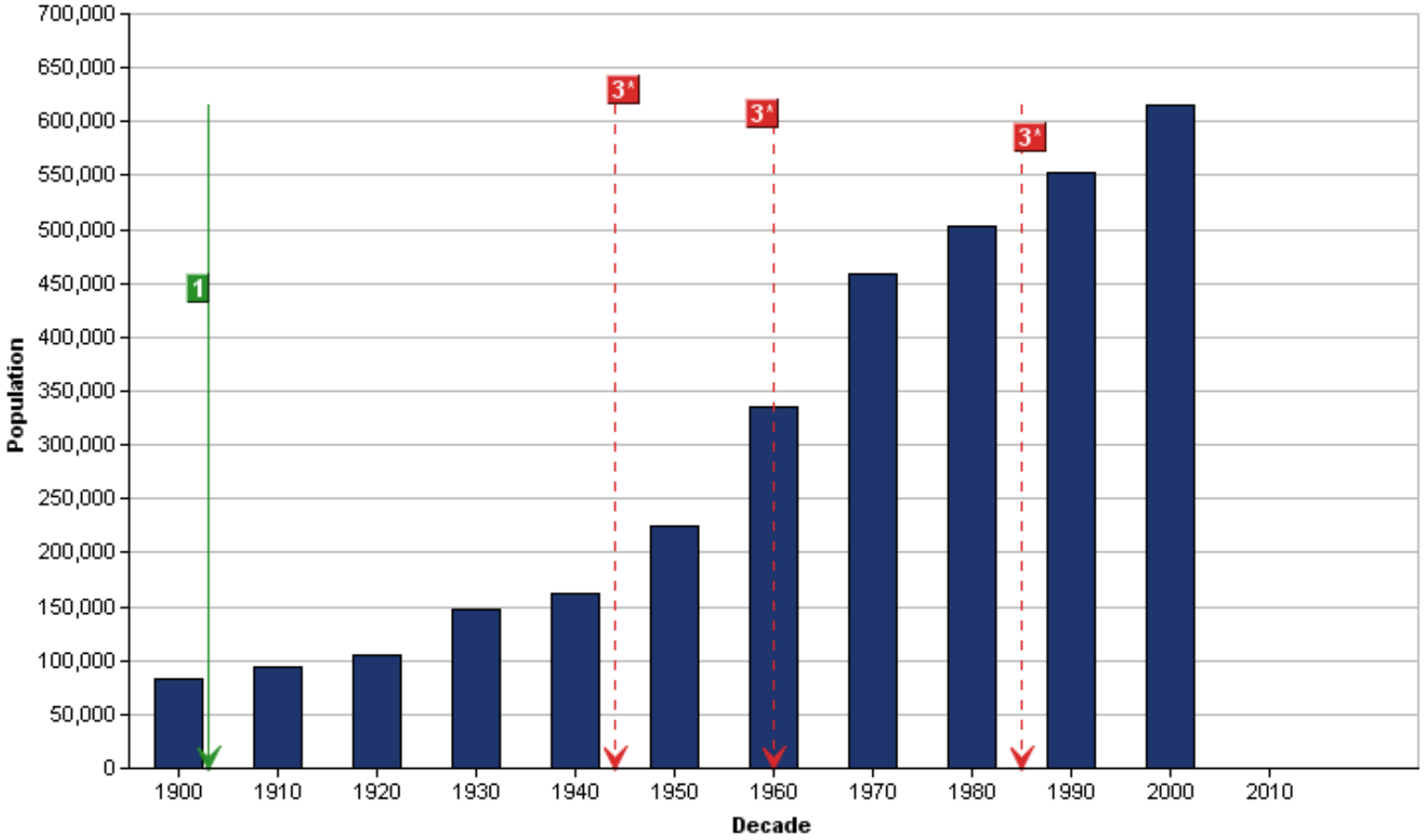
Hurricane Irene

Hurricane Irene

Shelly Banjo for The Wall Street Journal

A boy rode his bike across a flooded street in Spring Lake, N.J. The nearby Wreck Pond had flooded after Irene had blown out of the area, affecting about 200 homes.

Hurricane Strikes vs Population for Monmouth, New Jersey



Legend

- X — Hurricane Category 1-2
- X — Hurricane Category 3-5
- X* — Storm moving faster than 30 m.p.h.
- Direct Strike
- Indirect Strike
- Conventional Landfall Storm (Moving from water to land)
- Exiting or Inland Storm (Moving from land to water)

Viable Projects for Your Municipality Based On Past Experiences

What are the problems?

Group discussion:
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Viable Projects for Your Municipality Based On Past Experiences

What are the solutions?

Group discussion:
What are some possible solutions to the problems previously discussed?

Viable Projects for Your Municipality Based On Past Experiences

What are the solutions?

General types of actions….

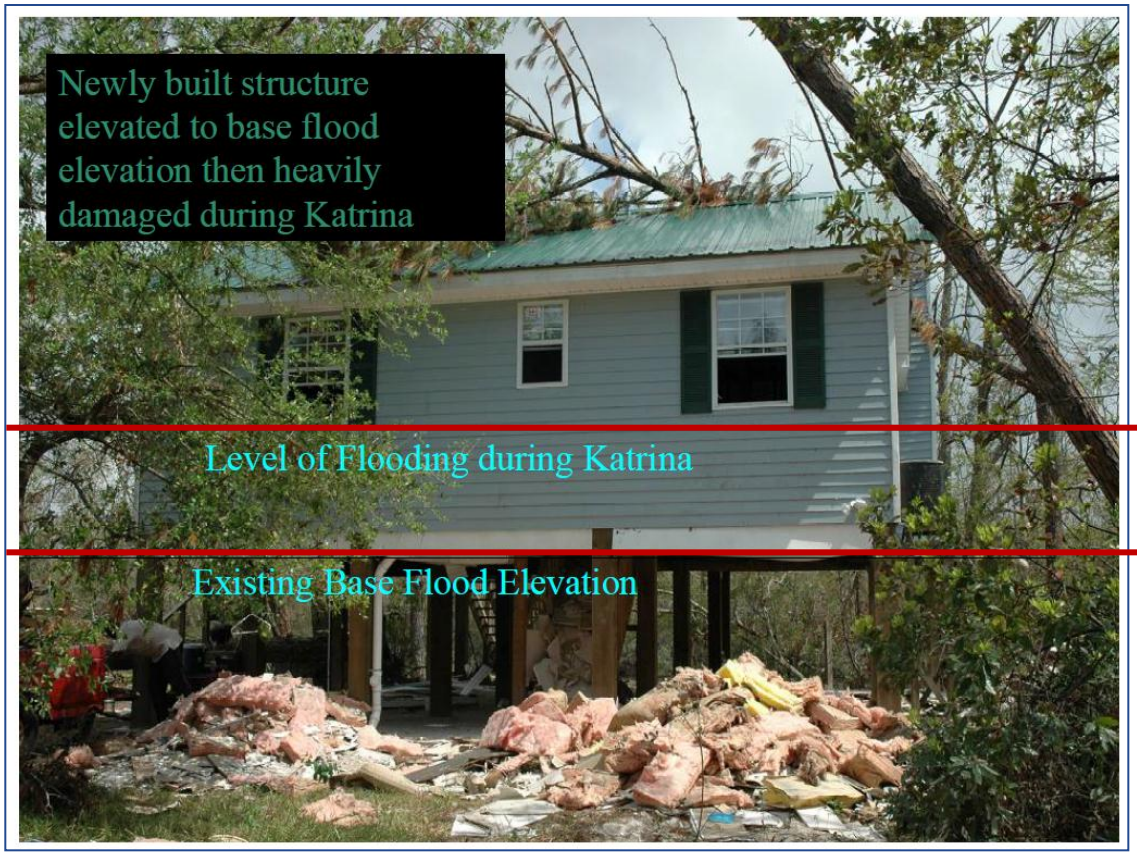
- Dedication of currently undeveloped hazard area lands as open space
- Acquisition of hazardprone buildings
- Elevation of floodprone buildings
- Wet/dry floodproofing
- Land use controls
- Habitat restoration and enhancement (beaches, dunes, wetlands, streams, riparian buffers)
- Drainage system improvements
- Road raisings
- Erosion management (dune plantings, rip rap protection, bulkheading)
- Development restrictions for high hazard areas
- More rational development and redevelopment in the future
- More restrictive construction standards

Viable Projects for Your Municipality Based On Past Experiences

What are the solutions?

Keep in mind…..

- Hazards are not necessarily static
- Their boundaries are not guaranteed; their degree of severity can change over time (i.e., flooding – climate change, development pressures)

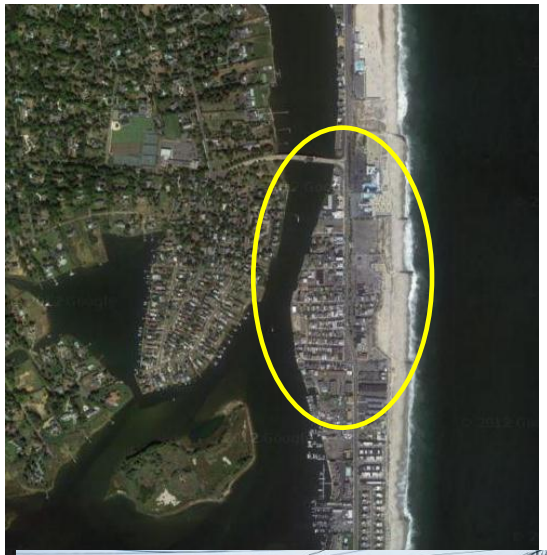


Viable Projects for Your Municipality Based On Past Experiences

What are the solutions?

Group discussion:
What are some possible solutions to the problems previously discussed?

Food for Thought
What are other communities doing?
IN MONMOUTH COUNTY



Borough of Sea Bright: Ongoing Mitigation Efforts

- Borough in NFIP since 1976
- 1,154 NFIP policies, $15M losses
- 140 repetitive loss properties contributing $9.5M in losses
- Sandy Hook – Barnegat Inlet BEC Project provides oceanfront protection
- Downtown area still at risk of flooding from Shrewsbury River

- US Army Corps of Engineers Project: plan formulation ongoing
- Structural solutions viable but not locally favored
- Focus on multiple structure retrofits
- Meanwhile: at least one residence has been the subject of a successful FEMA grant application for elevation since 2009

Food for Thought
What are other communities doing?
OTHER FEMA REGION 2 COASTAL AREAS

Atlantic City – Venice Park Bulkhead Project

- City participating in NFIP since 1971
- 8,234 NFIP policies, $16.4M losses[1]
- 272 repetitive loss properties contributing $7.2M in losses[1]
- CRS Community (Class 9, 5% discount on flood insurance premiums)

- Venice Park – repetitive loss area
  - Island contains 1 school + 43 RLPs
  - Problems: erosion and tidal flooding
  - Bulkheads to protect clusters of properties with high average annual losses (143 protected)
  - CRDA funding

[1] year 2005

Food for Thought
What are other communities doing?
OTHER FEMA REGION 2 COASTAL AREAS

Freeport, NY – Structure Elevations & Road Raisings

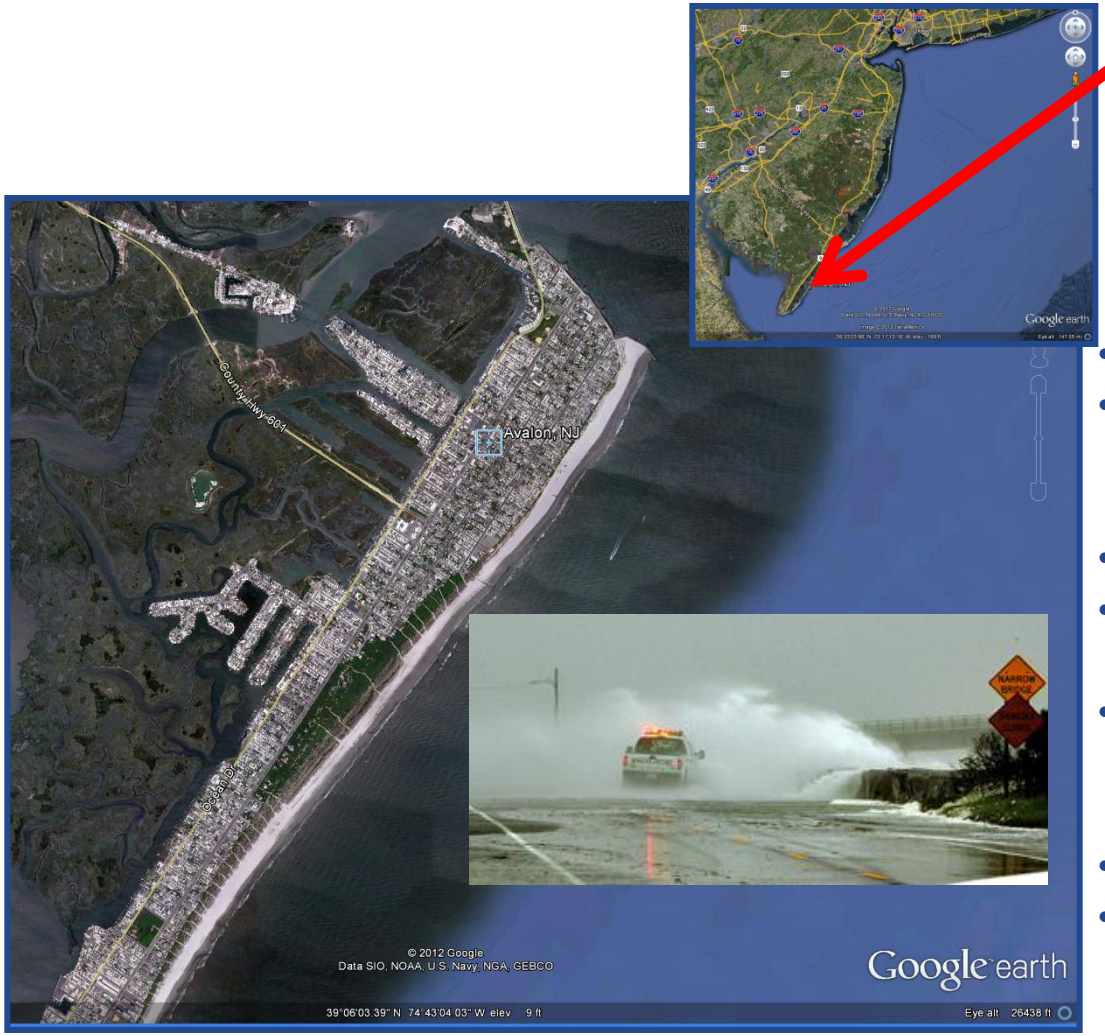
- Long Island coastal back bay community
- 2,631NFIP policies, $10.1M losses[1]
- 285 repetitive loss properties contributing $7.7M in losses[1]
- CRS Community (Class 8, 10% discount on flood insurance premiums)
- Various FEMA programs - Structure elevations and road raisings

[1] year 2005

Food for Thought

What are other communities doing?

OTHER FEMA REGION 2 COASTAL AREAS



Avalon, NJ – Backflow Valves, Pump Stations, Bulkhead Improvements

- Barrier island community
- Resident population is about 2,000 but swells to around 40,000 in summer
- 4,845 NFIP policies, $7.7M losses[1]
- 141 repetitive loss properties contributing $5.4M in losses[1]
- CRS Community (Class 6, 20% discount on flood insurance premiums)
- Coastal and bay flooding
- Various FEMA programs and local funds for backflow valves, pump stations, and bulkhead improvements as well as an elevated dune system

[1] year 2006

Closing Thoughts

- Hazard mitigation is….a big commitment
  - people
  - time
  - money

- The benefits far outweigh the costs of inaction

- Will we mitigate everywhere in every municipality from every hazard?
  - No, not right away. Probably not ever. But we are challenged to take the sometimes difficult steps that lead in the right direction.

Closing Thoughts

"You can do anything if you work at it *a little at a time*."

-Nicholas A. Curto, Sr.

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