

# Bogue Banks Coastal Storm Damage Reduction Feasibility Study

Wilmington District, Corps of Engineers

**Update to Carteret County**

April 11, 2012



# Meeting Purpose

- Present the status of the Feasibility study
- Provide an update on the technical progress to date
- Review interim analytical findings and potential recommendations
- Present the updated study schedule and budget to completion



# Brief Study Background and Present Status

- Feasibility Study was initiated in 2001
- Technical progress affected by shift in numerical modeling tool and associated complications, as well as funding flow over the years
- Beachfx model being applied to the study: model has been successfully calibrated and run – results are available
- Initial model runs have been completed and federal interest identified along almost the entire study reach based on storm damage benefits alone
- Team is in the process of refining the NED Plan in preparation for developing the Alternative Formulation Briefing Report



# Progress Made Since Last Update

Have completed 7 runs using the Beach-*fx* model (6 Alternatives + Existing Conditions)

## **Beach-*fx* Model**

A Monte-Carlo simulation model – accounts for risk and uncertainty of future events.

Multiple (ie, 300) iterations of a 50-year project life-cycle are run. Each iteration sees a different set of storms. Selection of storms is based on historical frequencies.

Model tracks shoreline profile and economic damages over the 50 year period of analysis.

Average 50 year damages over 300 iterations are reported.



# Progress Made Since Last Update

Alternatives run so far:

		Existing (2010 Profile)			MIN Plan			MED Plan			LARGER Plan		
SBEACH Reach	Economic Reaches	Dune Height	Dune Width	Berm Width	Dune Height	Dune Width	Berm Width	Dune Height	Dune Width	Berm Width	Dune Height	Dune Width	Berm Width
1	1-10	11	95	135	13	95	50	13	105	50	15	95	50
2	11-15	15	15	125	15	25	50	15	45	50	15	35	50
3	16-20	20	5	70	20	10	50	20	15	50	20	25	50
4	21-29	26	25	85	26	30	50	26	35	50	26	45	50
5	30-42	20	25	70	20	30	50	20	35	50	20	45	50
6	43-52	22	15	55	22	20	50	22	25	50	22	35	50
7	53-58	28	90	65	28	95	50	28	100	50	28	110	50
8	59-73	18	100	80	18	105	50	18	110	50	18	120	50
9	74-85	20	30	65	20	35	50	20	40	50	20	50	50
10	86-92	18	100	65	18	105	50	18	110	50	18	120	50
11	93-110	18	10	75	18	15	50	18	20	50	18	30	50
12	111-117	14	40	30	14	50	50	14	50	50	14	60	50

		MIN_BERM100 Plan			Berm50 Only Plan			Berm75 Only Plan*		
SBEACH Reach	Economic Reaches	Dune Height	Dune Width	Berm Width	Dune Height	Dune Width	Berm Width	Dune Height	Dune Width	Berm Width
1	1-10	13	95	100	11	95	50	11	95	75
2	11-15	15	25	100	15	15	50	15	15	75
3	16-20	20	10	100	20	5	50	20	5	75
4	21-29	26	30	100	26	25	50	26	25	75
5	30-42	20	30	100	20	25	50	20	25	75
6	43-52	22	20	100	22	15	50	22	15	75
7	53-58	28	95	100	28	90	50	28	90	75
8	59-73	18	105	100	18	100	50	18	100	75
9	74-85	20	35	100	20	30	50	20	30	75
10	86-92	18	105	100	18	100	50	18	100	75
11	93-110	18	15	100	18	10	50	18	10	75
12	111-117	14	50	100	14	40	50	14	40	75



**BUILDING STRONG®**

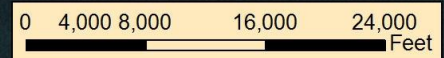
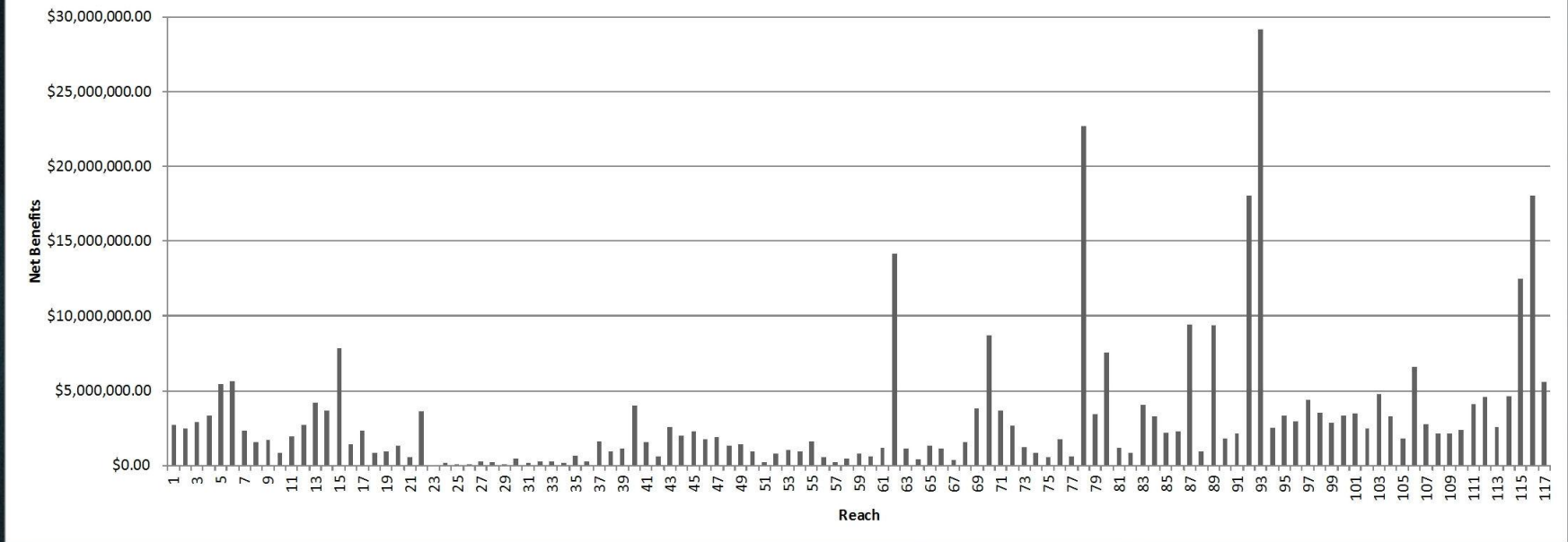
\*Results Not Included in Presentation

# Future Without Project Condition Damages

## (Total Damages Over 50 years)



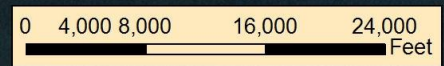
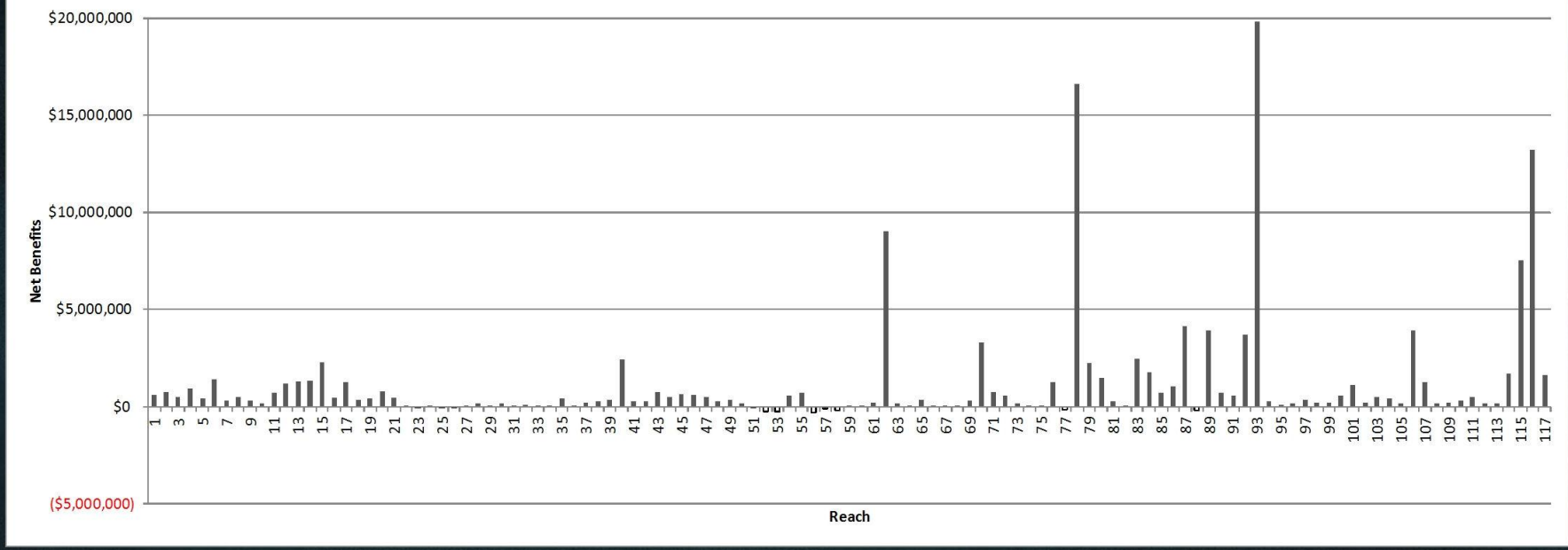
Future Without Project Damages for Economic Reaches 1-117 (Sbeach Reaches 1-12)



# Scoping Run (Net Benefits of MIN Plan – does not include recreation benefits)



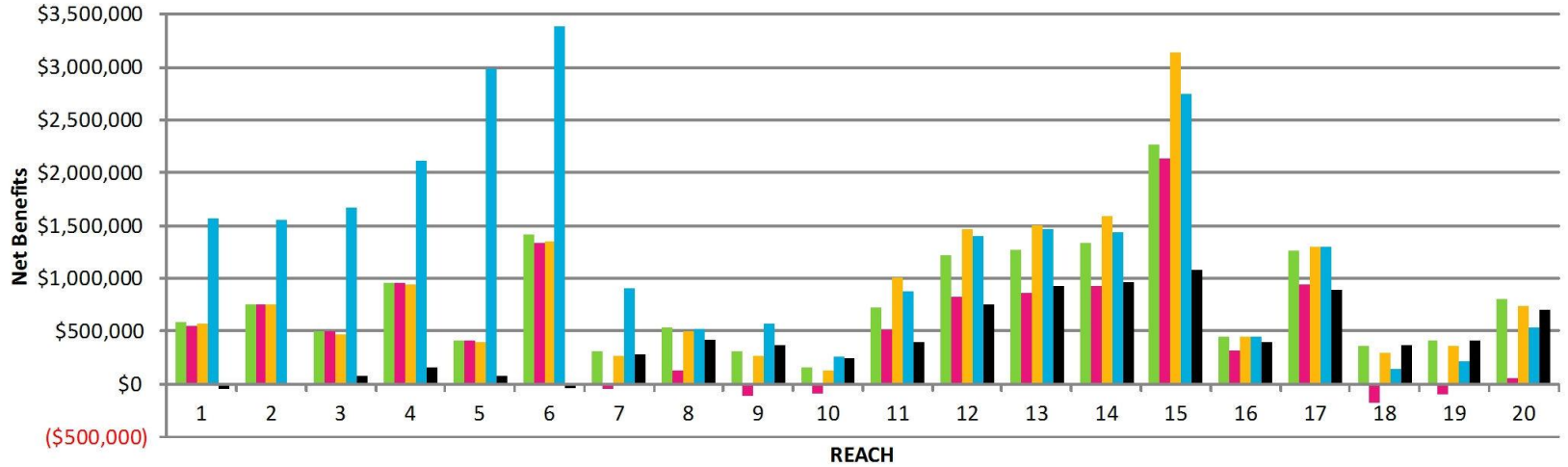
Minimum Plan Net Benefits for Economic Reaches 1-117 (Sbeach Reaches 1-12)



# Comparison of Net Benefits from Various Alternatives (Reaches 1-20)



**Net Benefits for Economic Reaches 1-20 (Sbeach Reaches 1, 2, and 3)**



■ Min Plan Net Benefits 
 ■ Min Berm 100 Net Benefits 
 ■ Medium Plan Net Benefits 
 ■ Larger Plan Net Benefits 
 ■ Existing Dune w/50' Berm

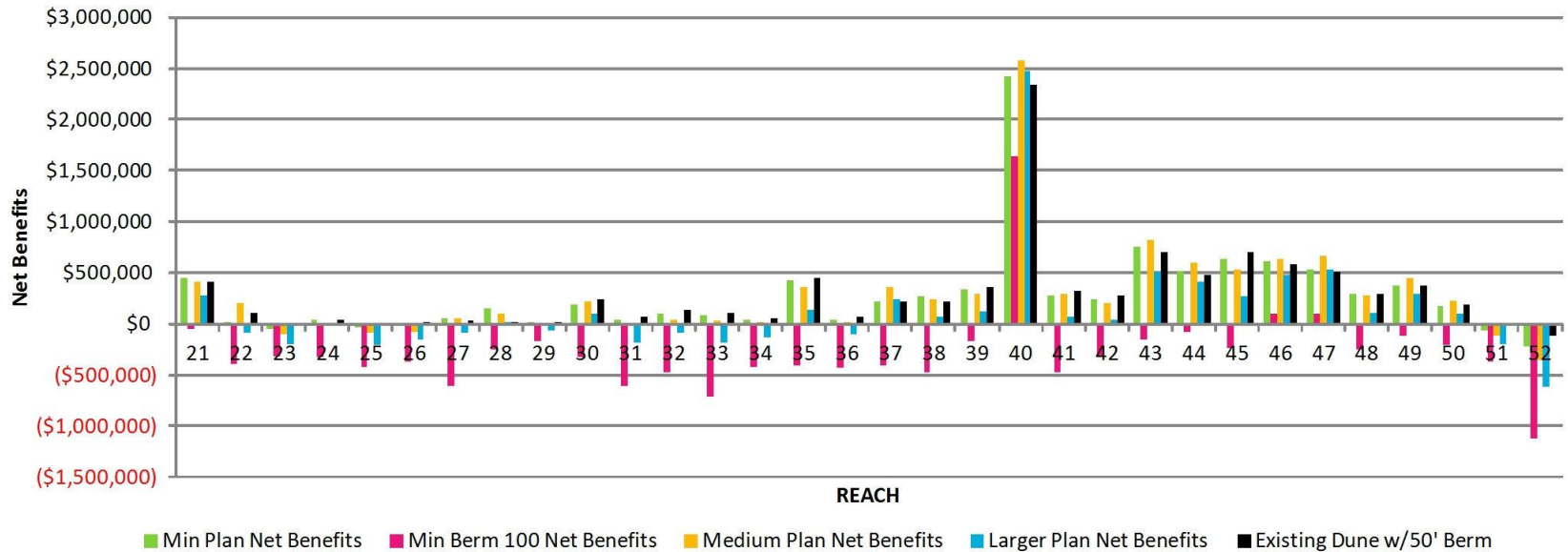




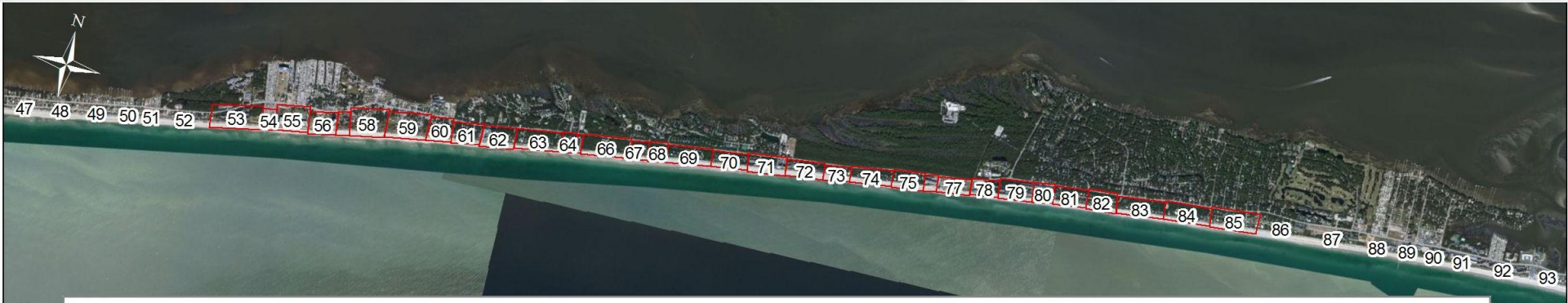
# Comparison of Net Benefits from Various Alternatives (Reaches 21-52)



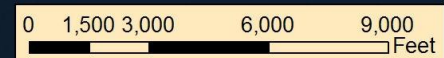
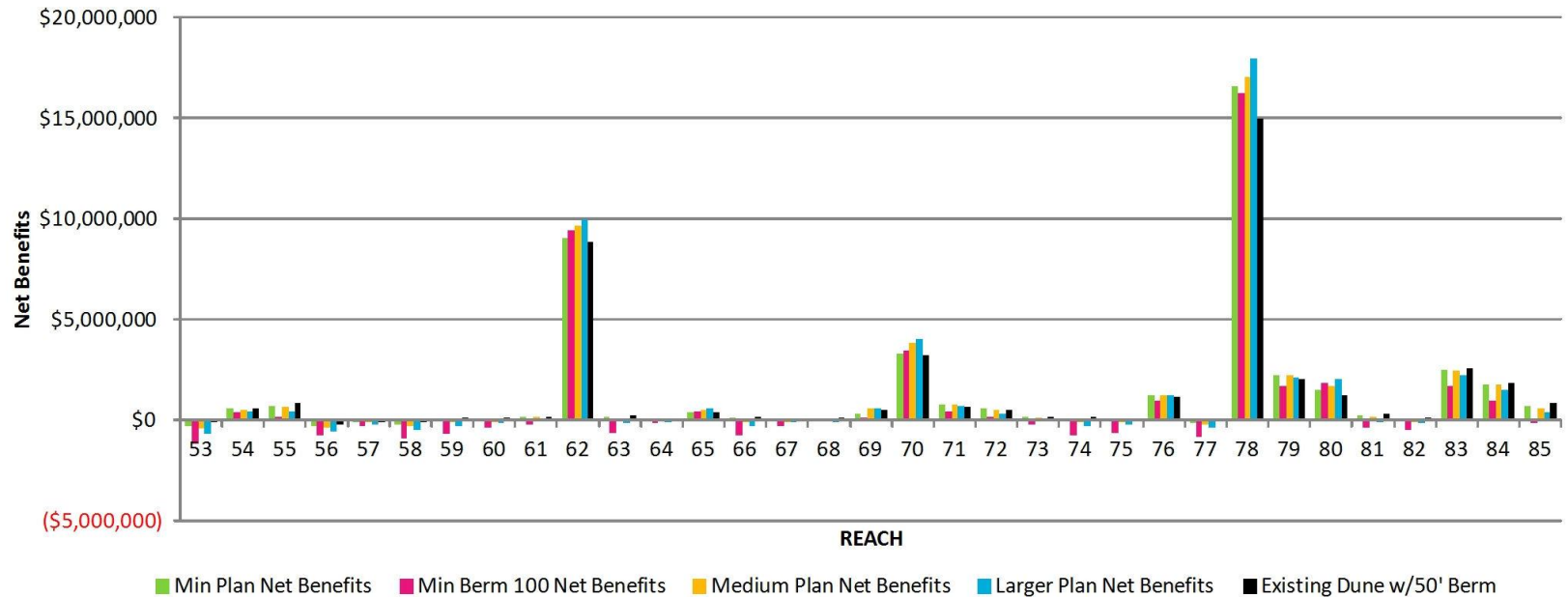
**Net Benefits for Economic Reaches 21-52 (Sbeach Reaches 4, 5, and 6)**



# Comparison of Net Benefits from Various Alternatives (Reaches 53-85)



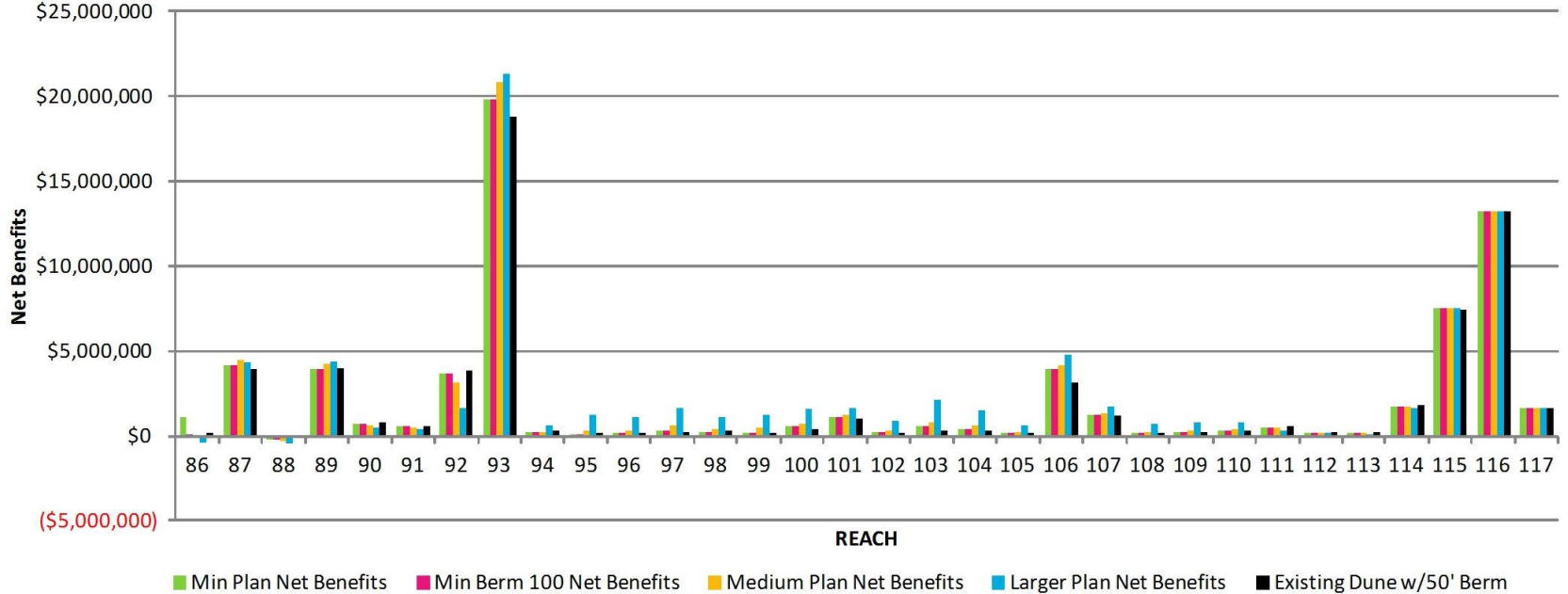
**Net Benefits for Economic Reaches 53-85 (Sbeach Reaches 7, 8, and 9)**



# Comparison of Net Benefits from Various Alternatives (Reaches 86-117)



**Net Benefits for Economic Reaches 86-117 (Sbeach Reaches 10, 11, and 12)**



# Identifying the “NED” Plan

The **NED** Plan will likely be some combination of the plans that have already been run (mix and match the alternative results, within reason, to identify the one that maximizes the net benefits overall).

**Exception:** Near the inlets, the maximum benefits are seen with the largest plan run so far. Even larger plans need to be run so that we can “bracket” the results.

**Other refinements, once NED plan is identified:** Update costs, calculate recreation benefits, incorporate plan form rates, optimize number of years between renourishments.



# Study Schedule to Completion

Complete analyses and prepare Alternative Formulation Briefing (AFB) Report	Apr/May 2012
Transmit AFB Report to Higher Headquarters	July 2012
Hold AFB Conference	Nov 2012*
Initiate Public Review and IEPR of Draft Report and EIS	Oct 2013*
Division Engineer's Notice (Final Report and EIS)	April 2014
Civil Works Review Board	June 2014
Chief's Report to ASA(CW)	Oct 2014
ASA(CW) transmits Chief's Report to OMB	Dec 2014

\* Potential opp for schedule acceleration



# Funding Requirements

Updated Study Cost Estimate w/IEPR: \$6,106,556

Funds Received Through FY11:

\$2,733,278 Federal

\$2,498,450 non-Federal

(\$5,231,728 Total)

Funds Needed to Complete:

FY12 \$235,000 non-Federal

FY13/14 \$445,000 Federal

\$195,000 non-Federal

Total Remaining non-Federal Funding Requirements: \$430,000

