CONCEPT TO CONSTRUCTION

FSBPA 33rd Annual National Conference on Beach Preservation Technology

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Jacksonville District
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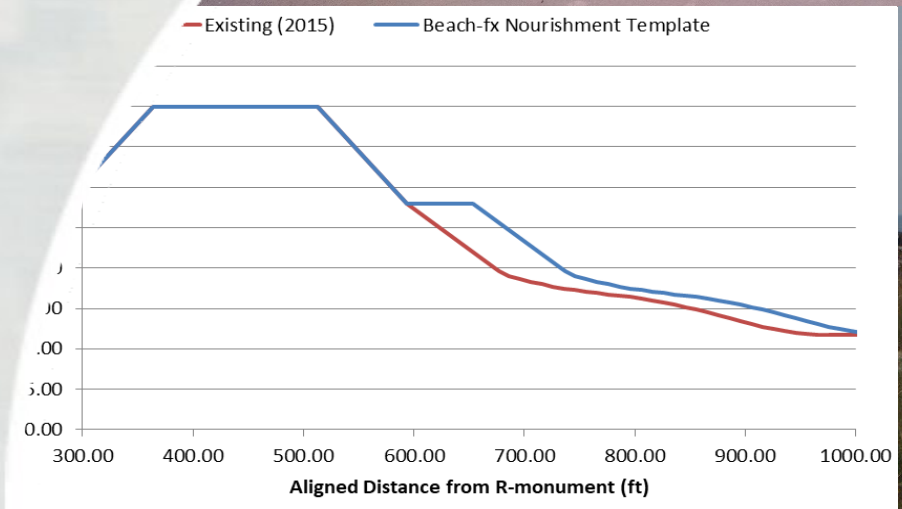

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OUTLINE

- Civil Works Process Overview
- Feasibility Phase
- Feasibility Level Design
- Design Implementation
- Project Example
- Conclusion

PROJECT DELIVERY PROCESS (SOMEWHAT) SIMPLIFIED

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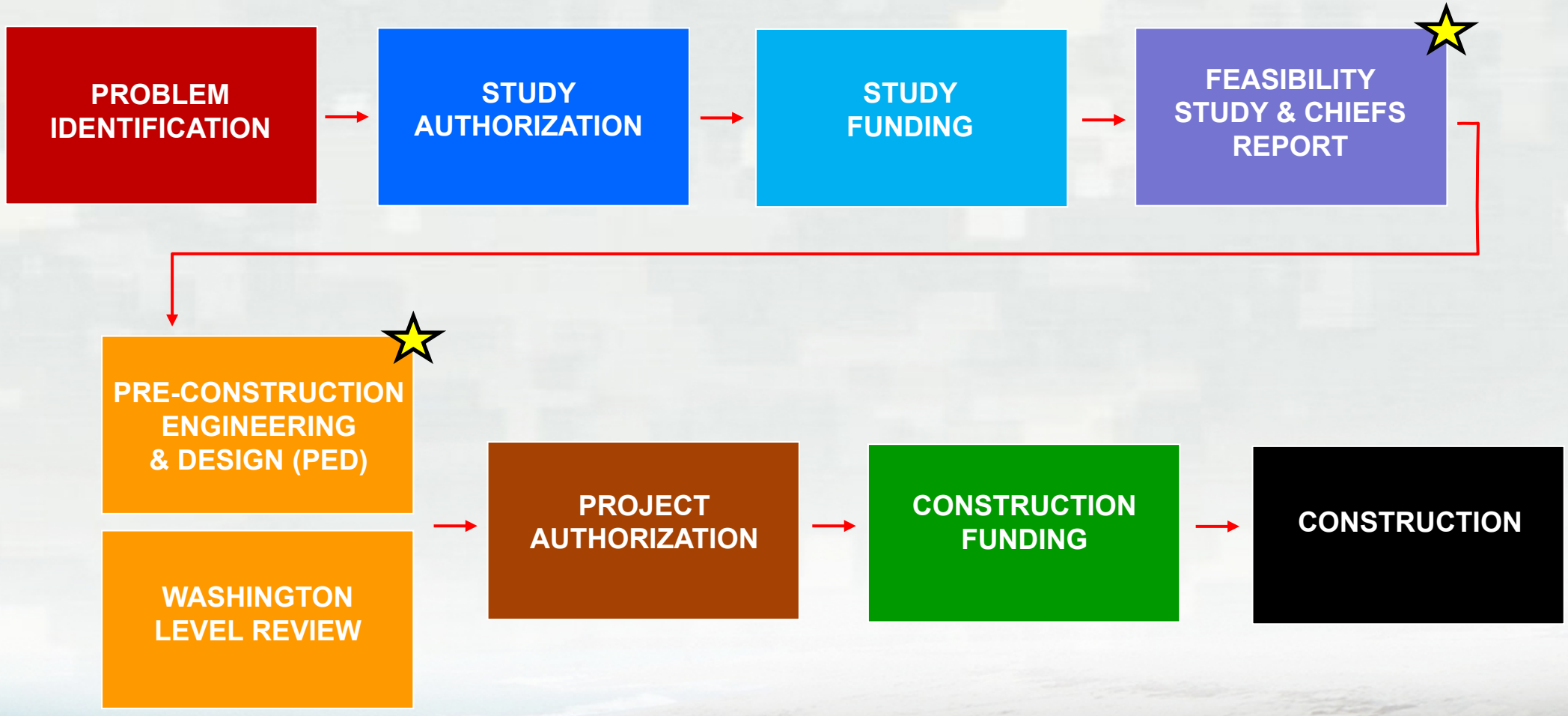

FEASIBILITY STUDY

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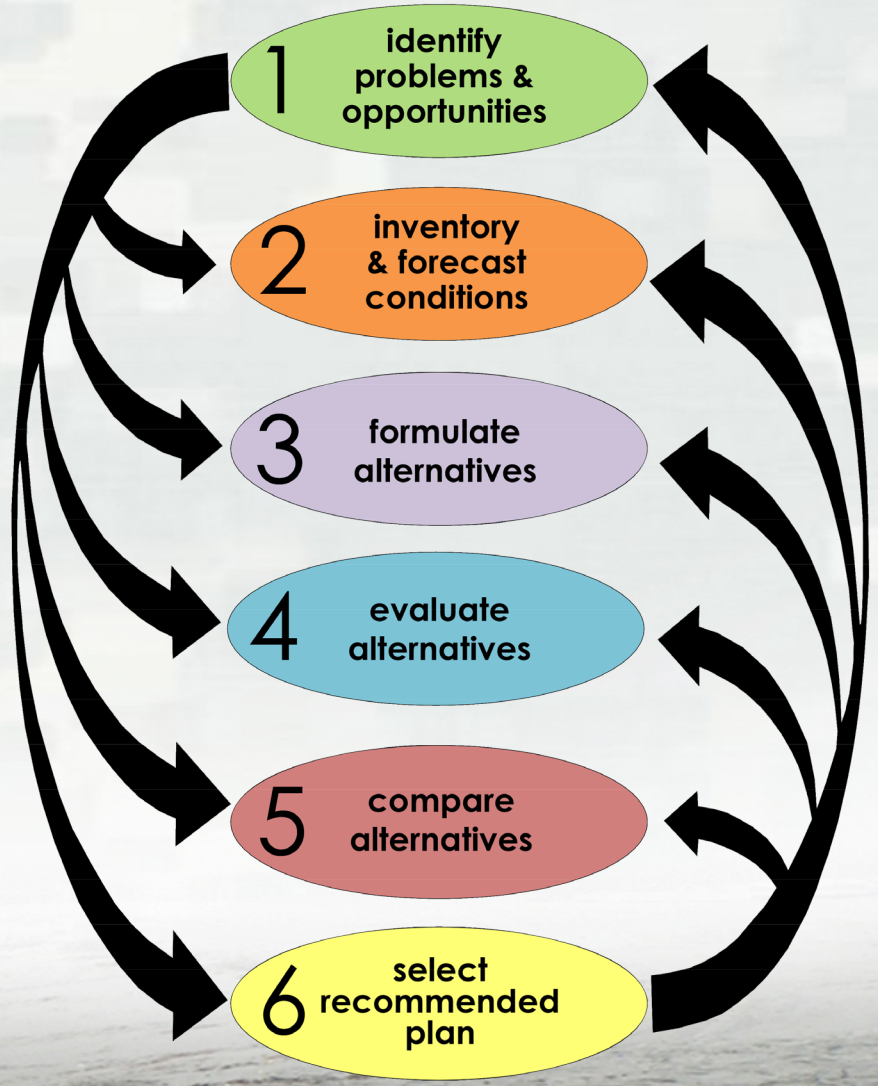
THE SIX STEP PLANNING PROCESS

Structured approach to problem solving which provides a rational framework for sound decision making.



FEASIBILITY STUDY ANALYSIS

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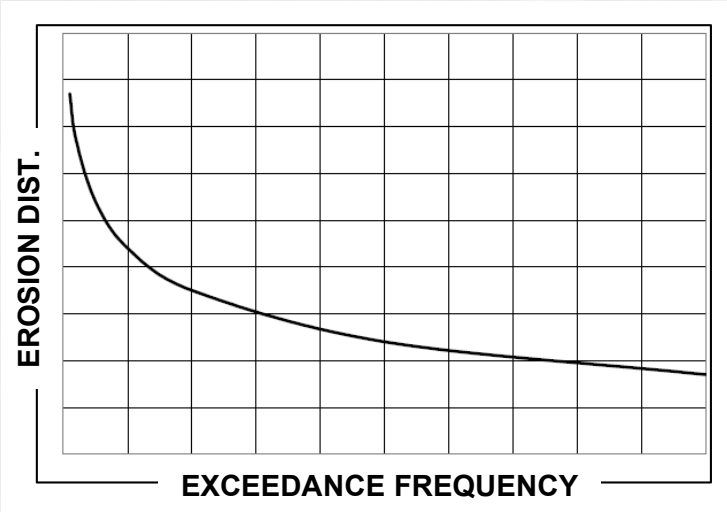
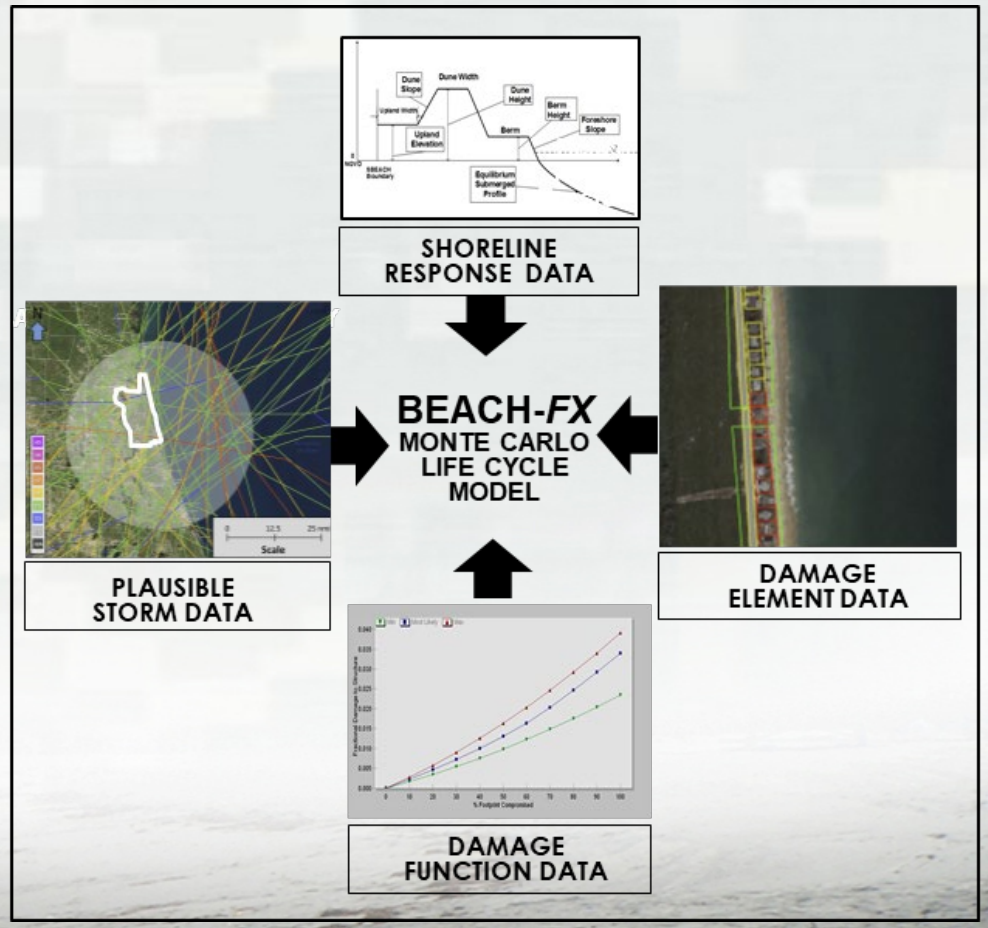
- **Objective:** Reduce coastal storm risk.
- **Policy:** Maximize economic benefits.
- **Method Change:** Frequency based approach to event based life-cycle framework.

Frequency Based Approach (traditional method)



Event Based Life-Cycle Framework (current method)



FEASIBILITY LEVEL DESIGN

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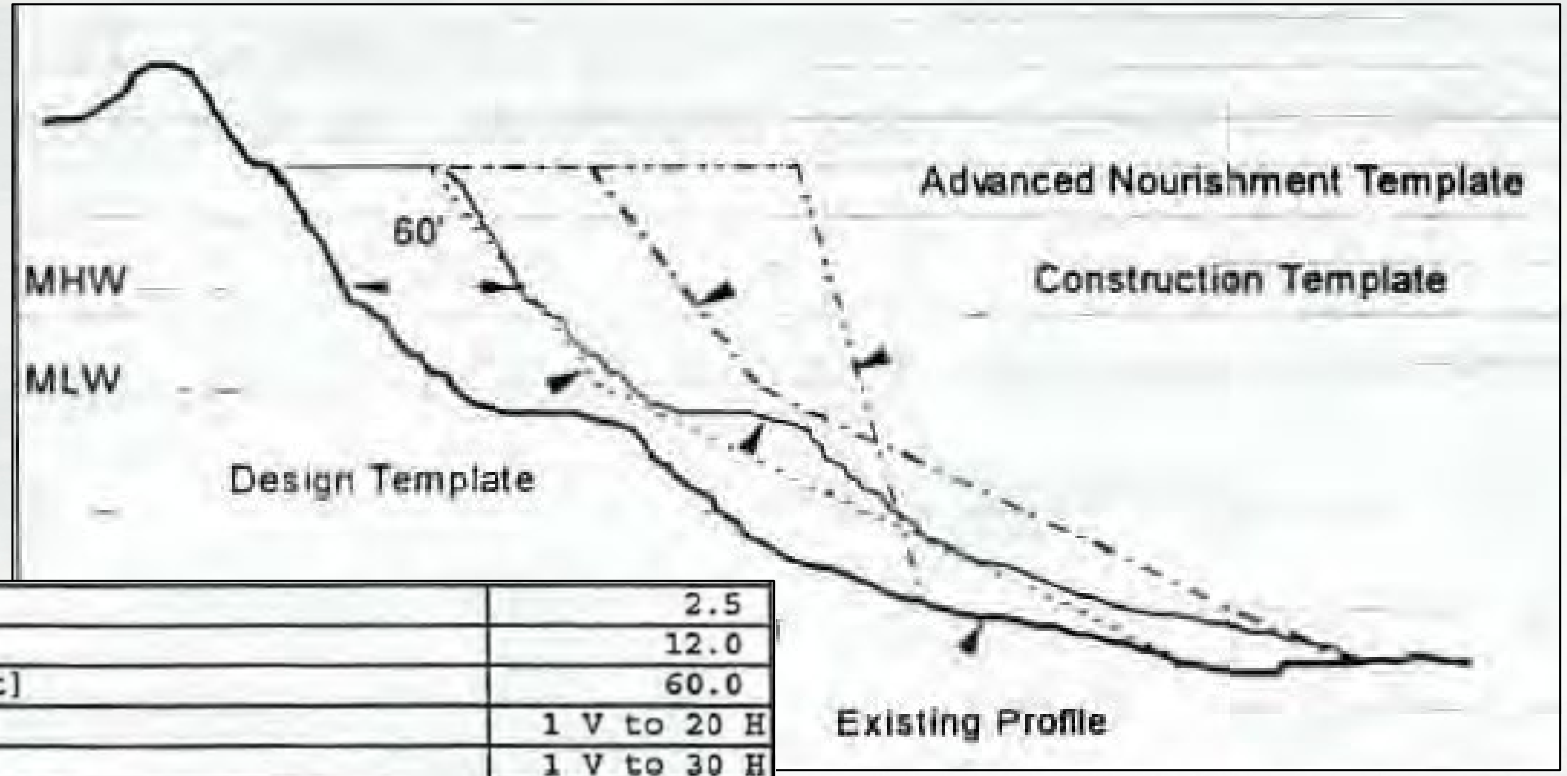
Frequency Based Approach (traditional method)

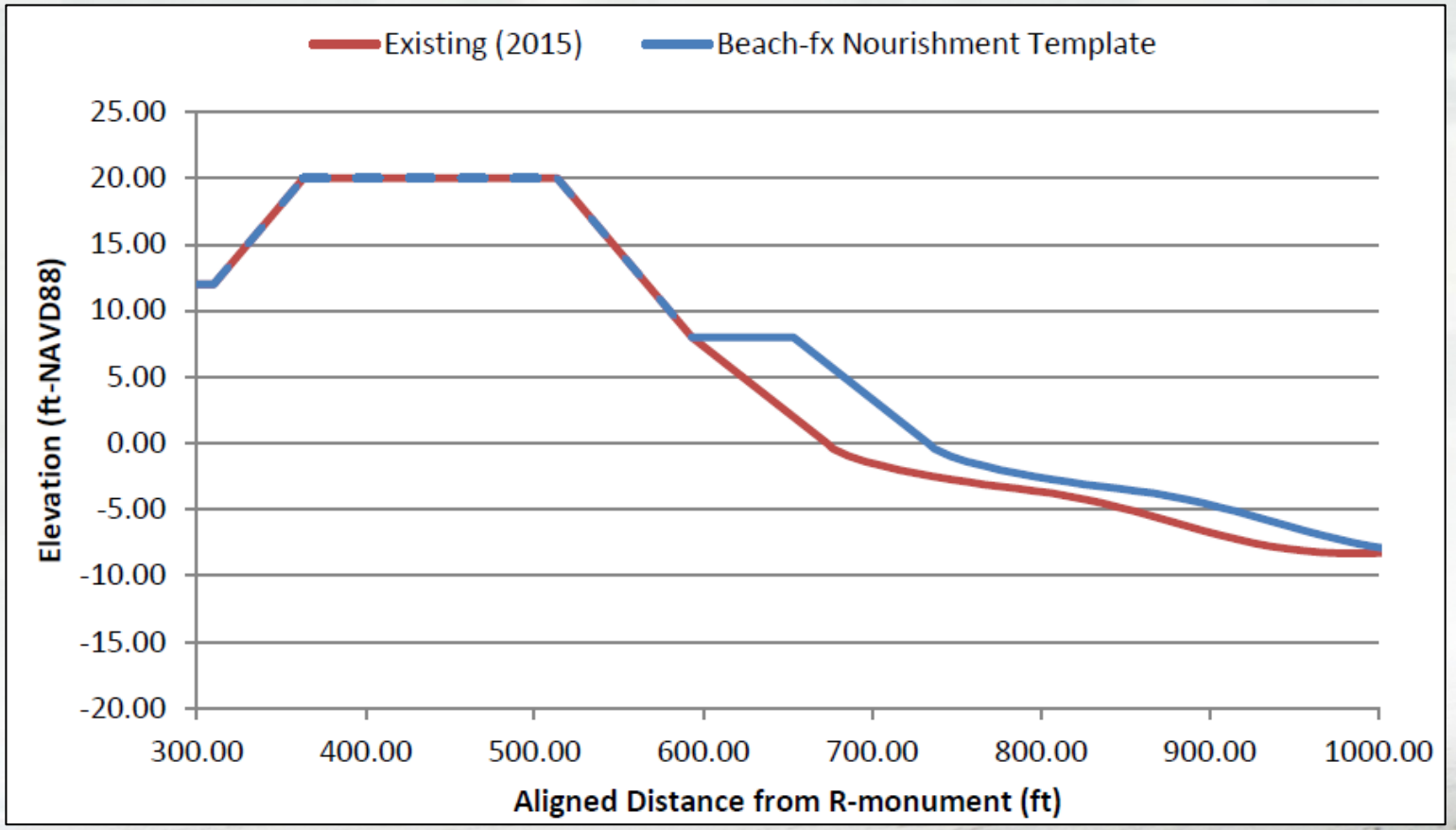
- Only erosion damages prevented.
- Benefits assume a static design template remains in place.
- Annual shoreline retreat assumed to be independent of storms and is applied based on the historic erosion rate.



Project Length [mi]	2.5
Berm Crest Elevation [ft]	12.0
MHW Shoreline Extension [ft]	60.0
Foreshore Slope	1 V to 20 H
Nearshore Slope	1 V to 30 H
Background Erosion Rate [cy/yr]	261,000
Post-placement Erosion Rate [cy/yr]	325,000
Nourishment Interval [yr]	5
Volume of Advance Nourishments [cy]	1,625,000
Volume of Design Fill [cy]	1,748,000
Volume of Initial Fill [cy]	3,373,000

Event Based Life-Cycle Framework (current method)

- Single nourishment template.
- Erosion, wave attack, and flood damages prevented.
- Benefits primarily based on volume in place at a given time rather than a static template.
- Variability in nourishment frequency and volume needs over time.
- Inclusion of dunes.
- Flexibility to adapt construction design to meet the intent of the project.



FEASIBILITY LEVEL DESIGN

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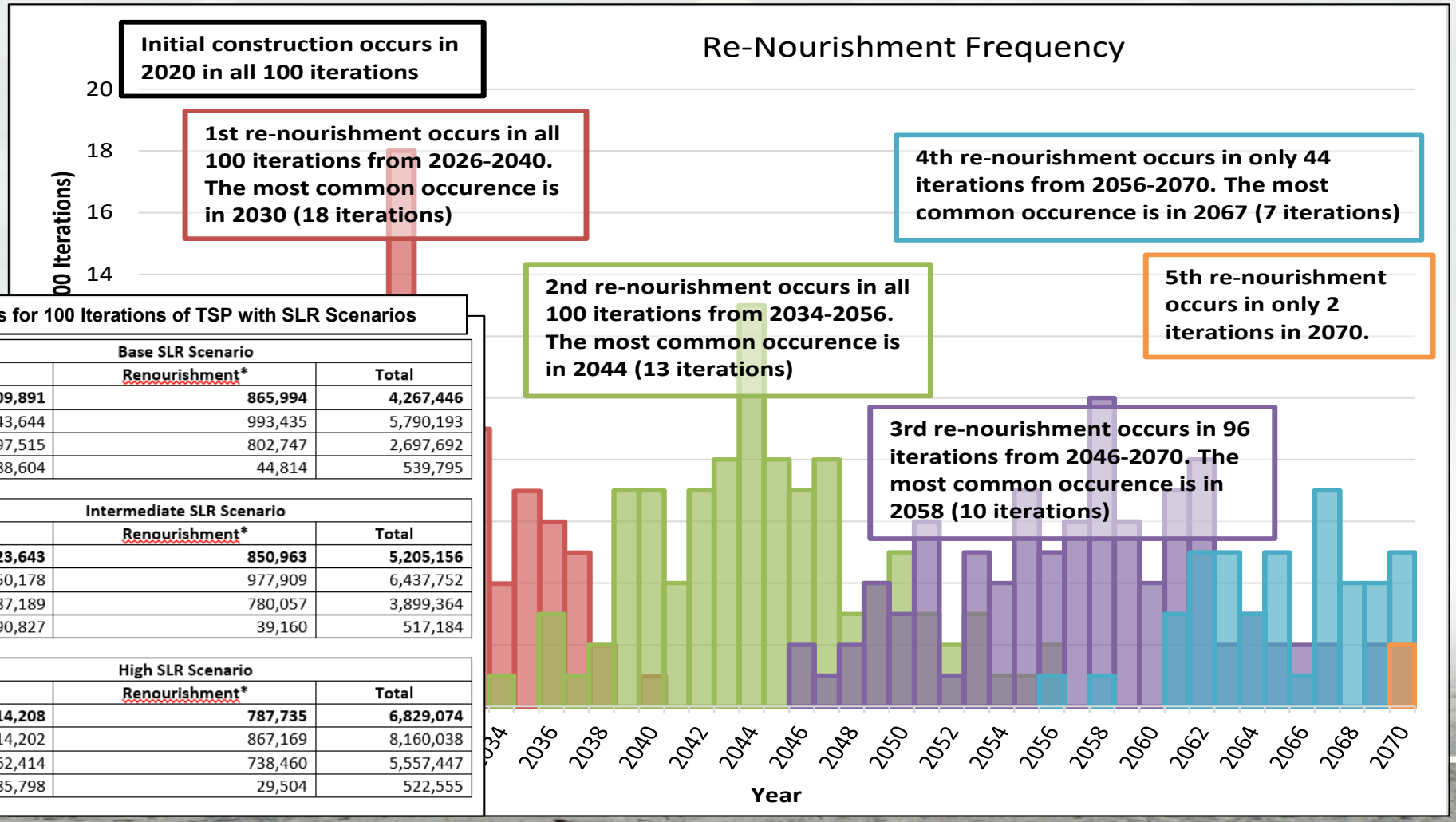
Event Based Life-Cycle Framework (current method)

Variability in nourishment frequency and volume needs over time.



Beach-fx Volume Statistics for 100 Iterations of TSP with SLR Scenarios

Volume Statistic	Base SLR Scenario		
	Initial	Renourishment*	Total
Average (cy)	**1,309,891**	**865,994**	**4,267,446**
Max (cy)	1,843,644	993,435	5,790,193
Min (cy)	997,515	802,747	2,697,692
Std. Dev. (cy)	188,604	44,814	539,795

*Average interval 12 years

Volume Statistic	Intermediate SLR Scenario		
	Initial	Renourishment*	Total
Average (cy)	**1,423,643**	**850,963**	**5,205,156**
Max (cy)	1,950,178	977,909	6,437,752
Min (cy)	1,087,189	780,057	3,899,364
Std. Dev. (cy)	190,827	39,160	517,184

*Average interval 10 years

Volume Statistic	High SLR Scenario		
	Initial	Renourishment*	Total
Average (cy)	**1,614,208**	**787,735**	**6,829,074**
Max (cy)	2,114,202	867,169	8,160,038
Min (cy)	1,262,414	738,460	5,557,447
Std. Dev. (cy)	185,798	29,504	522,555

*Average interval 7 years

DESIGN IMPLEMENTATION - PED PHASE

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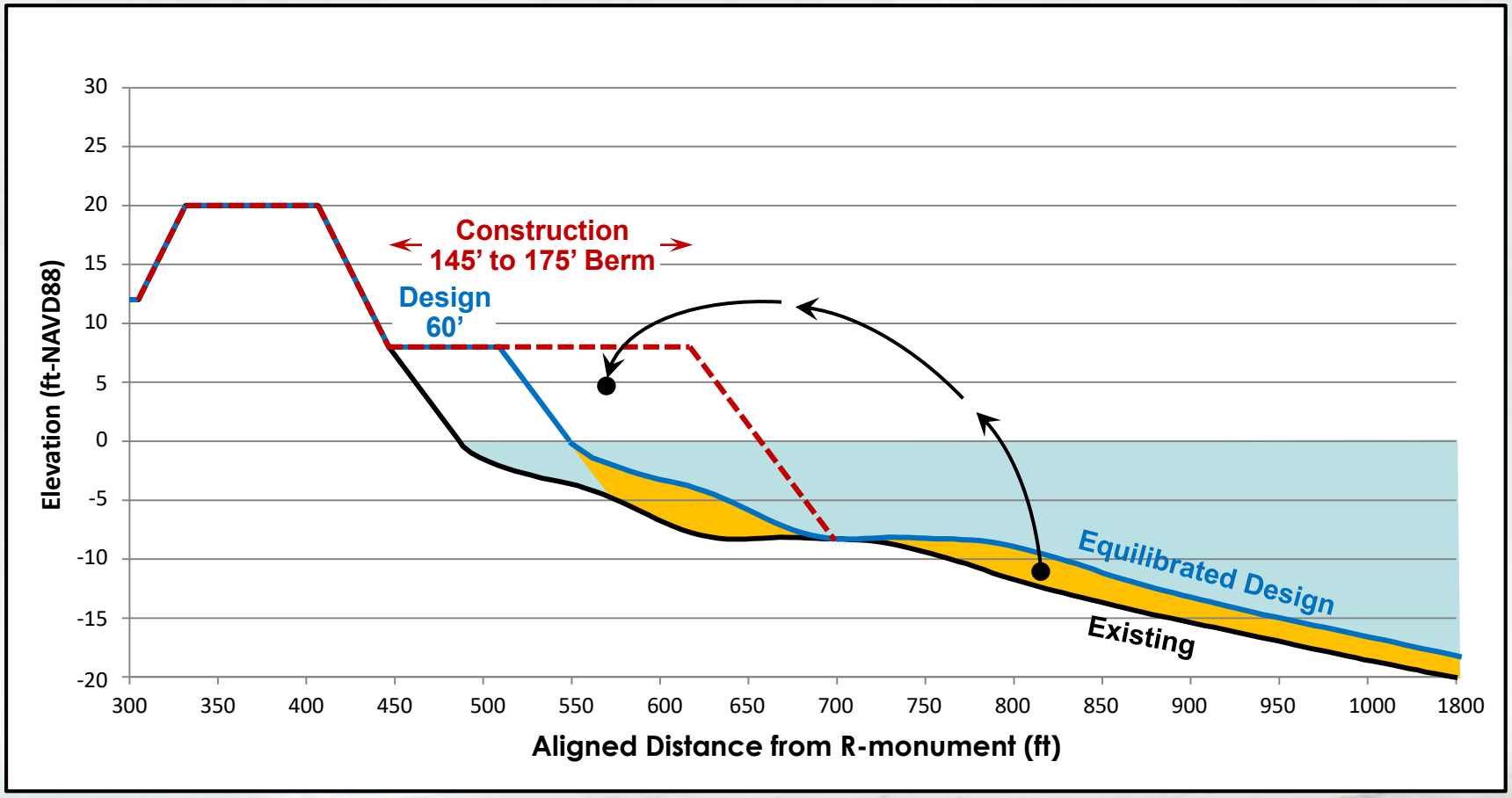

CONCLUSION

- **Benefits and Challenges**
- **Thank you!**

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