Coastal Resilience Opportunities:

Ocean Outfall Maintenance Along the North Carolina Coast



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Our Presenters



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Problems



Phase 1- Data Needs

- Existing structure conditions
- Existing shoreline conditions
- Maintenance history
- Drainage system plans
- Geotech



Phase 1- Data Compilation



Phase 2- Design Considerations



1. Upland treatment

- Improves outlet water quality
- Resilient to dynamic coastlines
- May eliminate or shorten outfalls

2. Reconstruct in place

- Convenient construction option
- Easier permitting process
- Existing maintenance access

3. Offshore extensions

- Improves outlet water quality
- Large potential for maintenance reduction
- Improves beach aesthetics



1. Upland treatment

- Examples:
 - BMPs
 - Dune Infiltration Systems
 - Drainage system redesign
- Constraints:
 - Existing drainage system elevations
 - Groundwater table elevation
 - Beach slope
 - Easements
 - Additional periodic maintenance
 - Large drainage areas



2. Reconstruct in place

• Examples:

- Maintain current design, same material choices
- Maintain current design, new material choices
- Demolish sections within intertidal zone
- Constraints:
 - Least favorable water quality option
 - May increase local beach erosion at outlet
 - Least resilient option
 - No significant improvements to maintenance issues



3. Offshore extensions

- Examples:
 - Extend beyond depth of closure
 - Extend beyond intertidal zone
- Constraints:
 - Depth of closure is ~3,000' offshore
 - Seabed elevation can vary multiple feet annually
 - Most costly option
 - Submerged construction and maintenance



Phase 2- Extension Alternatives



Phase 2- Extension Alternatives



Phase 2- Feasibility Study Deliverables

The feasibility study provides NCDOT with...

- Preliminary structure recommendations and alternatives
- Cost estimates for recommendations and alternatives
- Outfall replacement priority matrix
- Site summaries and specific challenges
- Environmental and regulatory considerations





Funding Opportunity Preparation









Thank you

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