



Technical Standards for Beach Fill Projects 15A NCAC 07H. 0312

April 26, 2017 Ken Richardson CRC Meeting – Manteo, NC



Sediment Criteria: Review

• Rule Adopted: CRC adopted & with an original effective date of February 1, 2007.

- Goal: ensure that sand used for beach nourishment is compatible with existing sand on the beach.
- **To Reach the Goal Define Compatibility:** *requires sediment analysis of both the existing beach and potential borrow sites.*
 - Grain Size
 - Composition



Sediment Criteria: Process Overview

- •#1 Characterize Native Beach Sediment
- #2 Characterize Borrow Area Sediment
- #3 Determine Sediment Compatibility
- #4 Excavation and Placement of Sediment



#1 Native Beach Characterization



#2 Finding Sand Sources

Multibeam (swath) vs. Single-beam Seafloor Imaging



http://www.sgsurveys.ae/projects3.html







Leadline Surveys

Single Beam Echo Sounder Surveys

Multibeam Full Bottom Coverage



#2 Finding Sand Sources



#3 Sediment Type: Compatibility



#4 Excavation & Sediment Placement





"You just know it when you see it"

- Effective August 1, 2014
- Balance between minimizing risks of incompatible sediment and ensuring that rules are not overly burdensome or expensive for permittees.
- DCM solicited input on the implementation of the rule from coastal engineers, geologists, and local beach project managers.
- At July 2013 meeting, CRC approved the following three changes.



1) Allow single-beam bathymetry with adequate line spacing rather than requiring 100% coverage with swath bathymetry for borrow sites.

<u>Point</u>

-Reduce costs (multibeam equipment is ~15% more expensive to run than single-beam).

Counter-Point

-For cost increase, applicant gets more certainty about the resource.
-Swath allows backscatter data to be collected at the same time (don't need to collect sidescan later).
-Single-beam requires more time on the water, which increases costs.



2) Allow more flexibility in vibracore plans, especially for smaller borrow areas.



Pre-2014 Amendment

$$\frac{1 \text{ core}}{23 \text{ acres}} = \frac{5 \text{ cores}}{x \text{ acres}}$$

Therefore, x = 23 * 5 = 115 acres

Post-2014Amendment



3) Expanded the <u>granular</u> fraction "native + 5%" criteria to 10% to allow slightly more coarsesand sediment to be placed on the beach.



- Was established by calculating the standard deviation of the granular grain size category on native NC beaches.
- "Fine" fraction and "gravel" fraction are primary concern.



2014 Amendments: Cost Savings

- \$2,713 per vibracore
 - Drilling, retrieving, and analyzing

Bogue Banks Estimated Project Cost Savings

For two small offshore borrow areas, each about 140 acres in size:

- Pre-Amendments: 20 cores required @ \$2,713 each: \$54,260
- Post-Amendments: 10 cores required @ \$2,713 each: \$27,130
- One-Time Vibracore Cost Savings for this Project:



\$27,130

*based on August 2013 fiscal analysis for 15A NCAC 07H.0312 amendments

Sediment Criteria: 2017 Rule Development Proposal

DCM Staff Proposal: Amend sediment criteria rules to remove sampling protocol, and allow project engineers and geologist to design sampling protocol to characterize native beach and the compatibility of borrow site sediment. This proposal would keep existing standards for the various grain sizes.

