



U.S. Army Corps of Engineers  
Charleston District

# **APPENDIX I**

**CHARLESTON HARBOR POST 45  
BENEFICIAL USE OF DREDGED MATERIAL  
SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT**  
*CHARLESTON, SOUTH CAROLINA*

## **Spreadsheet of Alternatives and Interagency Received Input**

30 September 2016

Alternative #	Description of Use	Monitoring	Required Analyses	Construction Methods	Dredging Windows	Physical Characteristics
1a	Crab Bank-Put material on channel side to build island outward and possibly higher. height needs to be considered. could attenuate wave action	Commensurate with goals of project. Recovery monitoring. Annual topo/bathy surveys. Bird surveys. NMFS states that wetland recovery monitoring necessary if replanting is necessary.		replanting of any disturbed wetland vegetation. Planting should occur in growing season (mar-sept).	season might not be as critical for placement. Eastern end doesn't have any current nesting. Channel side of Bank is popular spot for shrimp baiting (starts in mid-Sept). DNR states that Atlantic and/or Shortnose sturgeon have been reported in this area.	try to match existing material. natural sorting would likely occur.
1b	Crab Bank-Build up south end (eroding more than north). shallow enough to not disturb birds. couple feet above high tide. would create more shallow sub-bottom habitat (good for EFH)	Commensurate with goals of project. Recovery monitoring. Annual topo/bathy surveys. Bird surveys. NMFS states that wetland recovery monitoring necessary if replanting is necessary.	use past aerial surveys at bird key as a proxy for height requirements. or use surveys of existing high ground and don't construct heigher.	OCRM gotten away from turbidity curtains. use the slack tides for peak placement. Planting should occur in growing season (mar-sept).Geotubes	eggs/chicks from april 1 through sept 30. Avoid this time. Popular spot for shrimp baiting (starting mid-Sept). NMFS stated fewer concerns with placement during oct-march. DNR states that Atlantic and/or Shortnose sturgeon have been reported in this area.	try to match existing material. natural sorting would likely occur.
1c	Crab Bank-Create/expand marsh habitat on Mt. Pleasant side of Bank	Commensurate with goals of project. Recovery monitoring. Annual topo/bathy surveys. Bird surveys. NMFS states that wetland recovery monitoring necessary if replanting is necessary.	determine ideal marsh height. DNR concerned with adversely impacting a larger area of vegetated saltmarsh on this side of the island. Dock owners along Mt.Pleasant channel might be concerned about transport.	containment using geotubes, rip rap (could be oyster habitat), marl. heavy equipment to grade material. Planting should occur in growing season (mar-sept).	season might not be as critical for placement. Eastern end doesn't have any current nesting. DNR states that Atlantic and/or Shortnose sturgeon have been reported in this area.	try to match existing material. finer material would be ok since it's marsh.
1d	Crab Bank-Build up on northwest side of Bank. couple feet above high tide. would create more shallow sub-bottom habitat (good for EFH)	Commensurate with goals of project.		containment of material during construction by geotubes or marl where possible.	eggs/chicks from april 1 through sept 30. Avoid this time. Popular spot for shrimp baiting (starting mid-Sept). Would be tighter on the nesting window. DNR states that Atlantic and/or Shortnose sturgeon have been reported in this area.	try to match existing material.
2a	Shute Folly-create/expand marsh on west side. Private land. MLW and below is public. extent of existing marsh makes this less of a priority. bird nesting in marshes, but not quality.	Commensurate with goals of project. vegetation surveys seasonally	determine ideal marsh height. DNR concerned with adversely impacting a larger area of vegetated saltmarsh on this side of the island. Businesses/industry in downtown Charleston could be concerned about sed transport.	containment of material during construction by geotubes or marl where possible. heavy equipment to grade material. Planting should occur in growing season (mar-sept).	Not as much bird nesting activity on this island. probably no construction window. DNR states that Atlantic and/or Shortnose sturgeon have been reported in this area.	try to match existing marsh
2b	Shute Folly-enlarge frontal sand dune portion of island. bird nesting in marshes. not quality. skimmers and oyster catchers like the shell hash	Commensurate with goals of project.		containment of material during construction by geotubes or marl where possible. heavy equipment to grade material.	Not as much bird nesting activity on this island. probably no construction window. DNR states that Atlantic and/or Shortnose sturgeon have been reported in this area.	try to match existing material.
3	ODMDS-create fish and hardbottom habitat berms using limestone and/or cooper marl (doubles as containment for sediment). modification to ODMDS will require new berm construction.	Commensurate with goals of project. sediment dispersion. fish counts. invert recruitment.	dimensions. NMFS would support creation of fish habitat pending material, placement methods, timing and location are suitable	hopper dumps	turtle season	hard material. coquina, marl, limestone
4	Bird nesting island-off tip of inland emergent part of south jetty. 2.5 acre minimum. Location proposed by Nathan Dias	Would be comensurate with the goals of the island creation. annual topo/bathy surveys. seasonal bird surveys. Could be part of inspection of completed works.	Hydro and sediment fate modeling. Cultural/hard bottom study. sediment grain size. Chemical results are important (goal tocreate nesting habitat). Sandy material generally not a problem.	would require containment (i.e., rip rap, clumps of marl, geotubes).	windows would be more fisheries driven (migratory patterns). Not necessarily a mandatory requirement. DNR states that Atlantic and/or Shortnose sturgeon have been reported in this area. Hardbottom analysis may dictate. juvenile turtles affinity towards jetties.	Was recommended to use mostly sand (% was not defined). Does not have to beach "beach quality"
5	offshore fish and wave attenuation berm. could use clumps of cooper marl or could be same material as would go to Morris Island. NMFS suggested modeling after the Mobile mound (Gulf Coast).	Commensurate with goals of project.	hardbottom/cultural. NMFS supports creation of fish habitat pending material, placement methods, timing and location are suitable	could need some containment depending on the type of material.	turtle season	as long as not all fines probably could vary from rock to marl to predominately sand.
6	Folly Beach borrow sites-dumping sandy material into borrow areas.	sediment cores	focus on the current sediment characteristics. NMFS identifies this would cause impact to the borrow area.	hopper placement. build it up to a mound and let natural sorting play out.	turtle season	90%ish sands
7a	Marsh creation-location off NE end of Cummings Point (just an example).	vegetation monitoring. elevation surveys	detailed analysis of required elevation. use buckets to monitor the output. DNR/DHEC doesn't favor one habitat over another. would take a lot of surveying.	Jet spraying technique. done in Savannah NWR at abercorn creek. elevation for vegetation is critical. planting could facilitate quicker vegetation establishment.	Do the work outside of the growing season. marsh comes back within 2 growing seasons.	mostly fines some sand.
7b	Drum Island-Marsh creation on NE side near myers bend.	Commensurate with goals of project.	detailed analysis of required elevation. use buckets to monitor the output. DNR/DHEC doesn't favor one habitat over another. would take a lot of surveying.	Jet spraying technique. done in Savannah NWR at abercorn creek. elevation for vegetation is critical. planting could facilitate quicker vegetation establishment.	anytime. DNR states that Atlantic and/or Shortnose sturgeon have been reported in this area.	mostly fines some sand.
7c	Fringing marsh along disposal areas. Acts as buffer to wave/wake action. Protection to dikes	Commensurate with goals of project. Annual vegetation surveys.	detailed analysis of required elevation. DNR/DHEC doesn't favor one habitat over another. would take a lot of surveying.	containment of material. rip rap, geotubes, use any marl from dredging. Fill in with loose/fine material from another area.	any time	mostly fines some sand.
8	Eroding dike on AIWW behind Breech Inlet. use material to build up the dike. provide shoreline protection. Too far from project. Not discussed further.					
9a	ft sumter shoreline protection	Commensurate with goals of project.	not discussed	not discussed	not discussed. Likely none. DNR states that Atlantic and/or Shortnose sturgeon have been reported in this area.	not discussed
9b						
9v						
10	Morris Island lighthouse	Commensurate with goals of project.	not discussed	not discussed	not discussed. Likely related to turtles.	not discussed
11	use the material as soil and sell it	none	Organic content. detailed physical results by depth	would need onshore staging area	none	silt/clay/sand content. probably want the rich organic material on the surface.
12	Create oyster reefs with dredged rock and place along select locations within the harbor					
5	Morris Island beach placement-standards for sediment grain size may not be as stringent.	similar to existing beach projects. NMFS has concerns about nearshore placement and monitoring would be needed.	Turtles should be considered but nesting not prominent on the island.	could pump from a hopper with material from outer portions of entrance channel. Cost would be higher than ocean disposal.	Turtle season should be avoided with use of a hopper.	beach compatible to some extent. 90% will likely not happen from the nav channel.
6	Nearshore placement off Morris Island.	NMFS has concerns over nearshore placement. Pre and post monitoring of infaunal communities would be needed. Recovery rate analysis hasn't been done before to NMFS knowledge.	Optimize placement distance offshore. Too far and never migrate to beach. Hardbottom and cultural studies. T&E issues. NMFS suggests extensive analysis-address invert/infauna recovery	Pipeline across the south jetty. Could use a hopper dredge and move it close to beach and dump it. shallower hopper better (NMFS stated closer the placement occurs to the beach, the better)	Winter would be more preferable.	silt content was a problem in SHEP. material will be allowed to naturally sort.