

Appendix D

Project Specific Monitoring and Protection Conditions

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INTRODUCTION

Appendices D-1 to D-8 pertain to specific types of construction activities and identify conditions that shall be followed and measures that shall be taken and/or met when projects employ these activities or are constructed for these purposes. Appendices D9a and D9b provide sediment quality control/quality assurance plans for beach restoration or nourishment projects when conducted using offshore borrow areas or upland sand sources, respectively.

APPENDIX D-1

Projects that Include Sand Placement from Beach Nourishment, Sand Bypassing and Transfer, Primarily for Shore Protection

A. Marine Turtle Nesting

1. The Permittee shall submit documentation from the U.S. Fish and Wildlife Service (USFWS) that the proposed work will be covered under a Statewide Programmatic Biological Opinion or a Biological Opinion(s) (BO) issued for construction on this project site.
2. In the event that additional or different requirements from the permit conditions are specified in the U.S. Fish and Wildlife Service (FWS) Incidental Take Authorization and Biological Opinion, additional marine turtle protection conditions will be required and incorporated into the BMA specific conditions.
3. The Permittee shall conduct a pre-construction conference to review the specific conditions and monitoring requirements of this permit with the Permittee's contractors, the engineer of record, those responsible for turbidity monitoring, those responsible for protected species monitoring including the Marine Turtle Permit Holder, and staff representatives of the FWC and the JCP Compliance Officer (or designated alternate) prior to each construction event.
 - a. The Permittee shall provide written notification advising the participants of the agreed-upon date, time and location of the meeting, and also provide a meeting agenda and a teleconference number to the JCP Compliance Officer (JCPCCompliance@dep.state.fl.us) and the FWC Imperiled Species Management Section (MarineTurtle@MyFWC.com).
 - b. If the actual construction start date is different from the expected start date proposed during the preconstruction conference, at least 48 hours prior to the commencement of each dredging event, the Permittee shall ensure that notification is sent to the FWC indicating the actual start date and the expected completion date to MarineTurtle@MyFWC.com. The Permittee

shall also ensure that all contracted workers, observers and the Marine Turtle Permit Holder are provided a copy of all permit conditions.

4. Beach compatible fill must be sand that is similar to a native beach in the vicinity of the site that has not been affected by prior sand placement activity. The fill material must be similar in both coloration and grain size distribution to that native beach. Beach compatible fill is material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system. Fill material shall comply with FDEP requirements pursuant to the rule 62B-41.005(15), F.A.C., as presented in Table 3 of the main agreement. A Quality Control Plan shall be implemented pursuant to rule 62B-41.008(1) (k) 4.b., F.A.C.
5. Sand placement shall not occur during the period of peak sea turtle egg laying and egg hatching to reduce the possibility of sea turtle nest burial, crushing of eggs, or nest excavation. Such projects shall be started after October 31 and be completed before May 1st. During the May 1 through October 31 period, no construction equipment or pipes may be placed and/or stored on the beach.
6. The Permittee shall ensure that marine turtle nesting surveys are conducted as required in this authorization by personnel with a valid FWC Marine Turtle Permit covering all project activities as required by Chapter 68E-1, F.A.C.
7. The FWC-authorized Marine Turtle Permit Holder (MTPH) shall begin daily surveys Island-wide (across all zones) on March 1 or after the first documented leatherback crawl, whichever is earlier, and shall continue until October 15 or twelve days after the last emergence on the island (if approved by FWC) except where daily monitoring must continue for beach cleaning or ongoing construction. Nests remaining in the beach shall continue to be checked at least three times a week for post-construction monitoring after FWC has approved cessation of daily monitoring.
8. For sand placement projects occurring during the period from November 1 through November 30, daily early morning sea turtle nesting surveys shall be conducted 65 days prior to project initiation and continue through November 30, and eggs shall be relocated per the requirements listed. In the event FWC has approved the cessation of daily monitoring (e.g., no emergences for two weeks after last documented crawl), then late season monitoring shall not be required.
9. Nesting surveys and egg relocations shall only be conducted by persons with prior experience and training in these activities and who are duly authorized to conduct such activities through a valid permit issued by FWC pursuant to FAC 68E-1 in accordance with the following requirements.
 - a. Nesting surveys shall be conducted daily between sunrise and 9 a.m. Only those nests that may be affected by sand placement activities shall be relocated. Nest relocation shall not occur upon completion of sand placement.

- b. Nests requiring relocation shall be moved no later than 9 a.m. the morning following deposition to a nearby self-release beach site in a secure setting where artificial lighting will not interfere with hatchling orientation. Relocated nests shall be placed at least twenty feet apart along the length and width of the beach in settings that are not expected to experience daily inundation by high tides or known to routinely experience severe erosion and egg loss, predation, or subject to artificial lighting. Nest relocations in association with construction activities shall cease when construction activities no longer threaten nests.
 - c. Nests deposited within areas where construction activities have ceased or will not occur for 65 days or nests laid in the nourished berm prior to tilling shall be marked and left in situ unless other factors threaten the success of the nest.
 - i. The marine turtle permit holder shall install an on-beach marker at the nest site and a secondary marker at a point as far landward as possible to assure that future location of the nest will be possible should the on-beach marker be lost.
 - ii. A series of stakes and highly visible survey ribbon or string shall be installed to establish a 10-foot radius around the nest. No activity shall occur within this area nor will any activity occur that could result in impacts to the nest.
 - iii. No activity will occur within this area nor will any activities occur that could result in impacts to the nest. Nest sites shall be inspected daily to assure nest markers remain in place and the nest has not been disturbed by the project activity.
 - iv. Nest markings may be reduced once active construction, demobilization, and tilling is completed.
10. During the period from March 1 through April 30, daytime surveys shall be conducted for leatherback sea turtle nests beginning March 1. Nighttime surveys for leatherback sea turtles shall begin when the first leatherback crawl is recorded on Palm Beach Island or on beaches immediately north of Lake Worth Inlet or south of South Lake Worth Inlet in accordance with the following requirements.
- a. Nighttime surveys shall continue through April 30 or until completion of the project (whichever is earliest) or until completion of sand placement, demobilization, and tilling if work continues after May 1.
 - b. Nightly nesting surveys shall be conducted from 9 p.m. until 6 a.m. The project area shall be surveyed at 1- hour intervals (since leatherbacks require at least 1.5 hours to complete nesting, this will ensure all nesting leatherbacks are encountered) and eggs shall be relocated per the requirements listed.

11. All derelict concrete, metal, and coastal armoring geotextile material and other debris shall be removed from the beach prior to any sand placement to the maximum extent possible. If debris removal activities take place during the peak sea turtle nesting season, the work shall be conducted during daylight hours only and shall not commence until completion of the sea turtle nesting survey each day.
12. Staging areas and temporary storage for construction equipment and pipes shall be located off the beach to the maximum extent practicable. Nighttime storage of construction equipment not in use shall be located off the beach.
 - a. If staging and storage areas off the beach are not possible, then additional marine turtle and shorebird protective measures shall be implemented, including restrictions on lighting. Such protective measures shall be determined in coordination with the Department and the FWC prior to beginning of construction and shall include but not be limited to encircling equipment left on the beach with plywood or other study containment methods as approved in writing by FWC.
 - b. All construction pipes in use on the beach shall be located as far landward as possible without compromising the integrity of the existing or reconstructed dune system. Pipes placed parallel to the dune shall be 5 to 10 feet away from the toe of the dune.
13. If it is necessary to extend construction pipes past a known shorebird nesting site, then those pipes shall be placed landward of the site before birds are active in that area. No pipe or sand shall be placed seaward of a shorebird nesting site during the shorebird nesting season. If such placement is not feasible for the project, the FWC's Regional Biologist shall be contacted for alternative measures. See contacts available at <https://myfwc.com/conservation/you-protect/conservation/wildlife/shorebirds/contacts/>.
14. Direct lighting of the beach and nearshore waters shall be limited to the immediate construction area and shall comply with safety requirements. Lighting on all equipment on the dredge and the beach shall be minimized through reduction, shielding, lowering, and appropriate placement to avoid excessive illumination of the water's surface and nesting beach while meeting all Coast Guard, Corps EM 385-1-1, and OSHA requirements. Light intensity of lighting equipment shall be reduced to the minimum standard required by OSHA for General Construction areas, in order not to misdirect sea turtles. Shields shall be affixed to the light housing and be large enough to block light from all lamps from being transmitted outside the construction area (Figure 1) or to the adjacent sea turtle nesting beach in line-of-sight of the dredge.

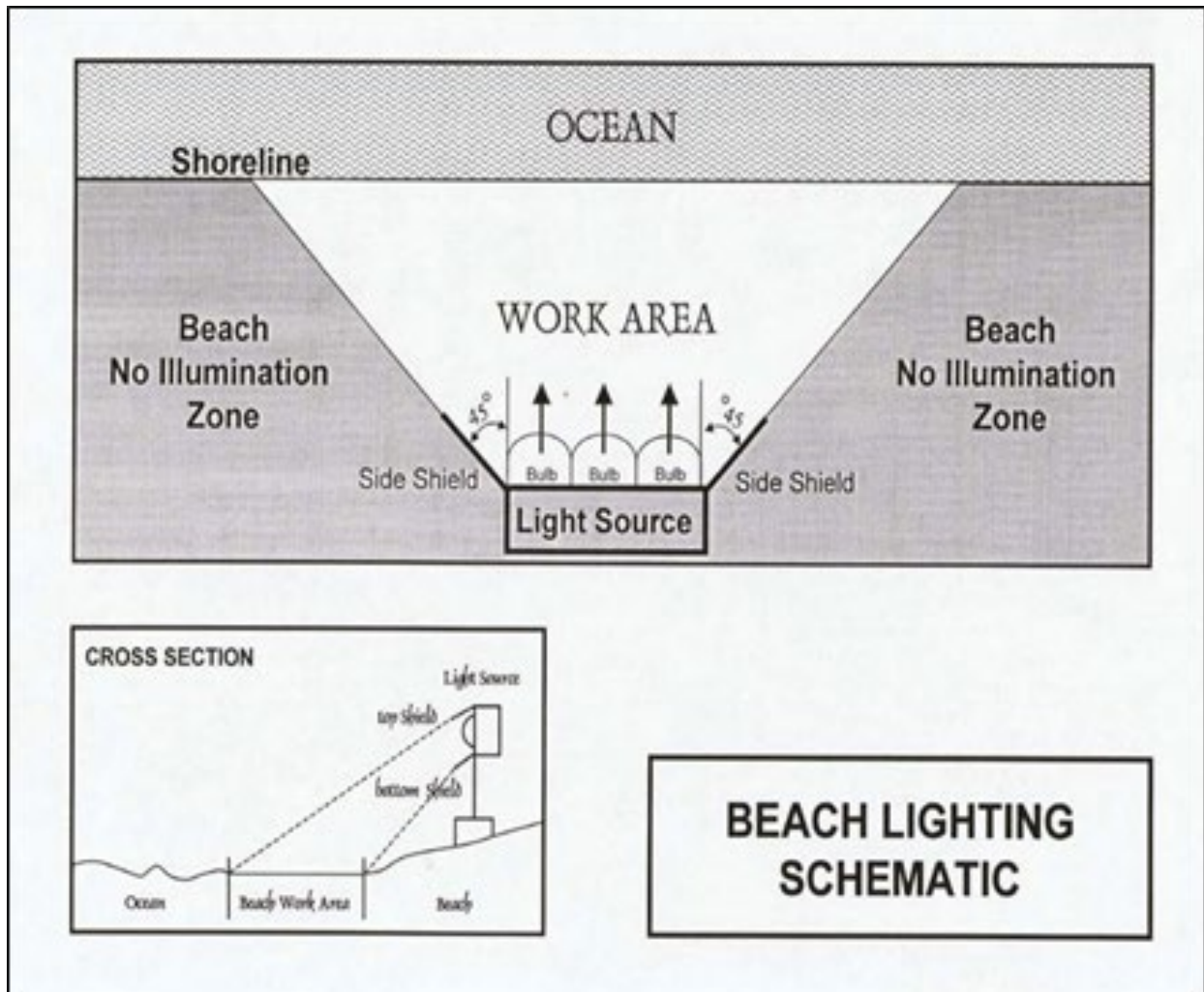


Figure 1. Beach lighting schematic.

15. During the period during early (March 1 through April 30) and late (November 1 through November 30) nesting season, the contractor shall not extend the beach fill more than 500 feet (or other agreed upon length) along the shoreline between dusk and dawn of the following day until the daily nesting survey has been completed and the beach cleared for fill advancement. An exception to this may occur if there is a permitted sea turtle surveyor present on-site to ensure no nesting and hatching sea turtles are present within the extended work area. If the 500 feet is not feasible for the project, an agreed upon distance will be decided on during the preconstruction meeting.
 - a. Once the beach has been cleared and the necessary nest relocations have been completed, the contractor will be allowed to proceed with the placement of fill during daylight hours until dusk at which time the 500-foot length (or other agreed upon length) limitation shall apply.
 - b. If any nesting turtles are sighted on the beach within the immediate construction area, activities shall cease immediately until the turtle has

returned to the water and the marine turtle permit holder responsible for nest monitoring has relocated the nest.

16. Lighting surveys shall be conducted on all Town beaches prior to March 1 (or May 1 if construction continues through April) of the first nesting season following nourishment and action taken to resolve lights visible from the beach and to ensure all beachfront structures comply with the Town of Palm Beach Lighting Ordinance.
 - a. A report summarizing all lights visible, using standard survey techniques for such surveys, shall be submitted to FWC by March 15. The report shall document all compliance and enforcement actions taken to resolve observed lights.
 - b. Additional lighting surveys shall be conducted monthly through August and results reported by the 15th of each month.
 - c. The Permittee shall submit a summary report of the surveys, including any actions taken, by December 31 of the year in which surveys are conducted.
 - d. After the annual report is completed, the Permittee shall arrange a meeting with the county or municipality, FWC, Corps, and the Service to discuss the survey report, as well as any documented sea turtle disorientations in or adjacent to the project area.
17. For the years after the first- year sand placement (out- year), compaction monitoring, tilling and escarpment monitoring are not required if placed material no longer remains on the dry beach. Compaction monitoring is not required if the beach is tilled immediately after placement and for three years following sand placement.
18. Compaction Sampling. If required, sand compaction shall be monitored in the area of sand placement immediately after completion of the nourishment event, and two weeks prior to the beginning of marine turtle nesting season, for three (3) subsequent years. The requirement for compaction monitoring may be eliminated if the placed sand is tilled, regardless of post- construction compaction levels. If the average value for any depth exceeds 500 pounds per square inch (psi) for any two or more adjacent stations, then that area shall be tilled prior to the beginning of marine turtle nesting season. If a few values exceeding 500 psi are present randomly within the project area, tilling will not be required. Compaction monitoring shall be in accordance with the following protocol.
 - a. Compaction sampling stations shall be located at 500-foot intervals along the project area. One station shall be at the seaward edge of the dune/bulkhead line (when material is placed in this area), and one station shall be midway between the dune line and the high-water line (normal wrack line).
 - b. At each station, the cone penetrometer shall be pushed to depths of 6, 12 and 18 inches three times (i.e., three replicates at each depth). Material may be removed from the hole if necessary, to ensure accurate readings of

successive levels of sediment. The penetrometer may need to be reset between pushes, especially if sediment layering exists. Layers of highly compact material may lie over less compact layers. Replicates shall be located as close to each other as possible, without interacting with the previous hole and/or disturbed sediments. The three replicate compaction values for each depth shall be averaged to produce final values for each depth at each station. Reports including all 18 values for each transect line, and the final 6 averaged compaction values, shall be submitted for review by DEP and FWC.

- c. If values exceeding 500 psi are distributed throughout the project area, but in no case do those values exist at two adjacent stations at the same depth, then the Permittee shall consult with the FWC to determine if tilling is required. A request for a tilling waiver based on these compaction values shall be submitted to the FWC at MarineTurtle@MyFWC.com.
19. Tilling Requirements. If tilling is performed, the area shall be tilled to a depth of 36 inches. Tilling shall be in accordance with the following protocol.
 - a. All tilling activity shall be completed prior to the marine turtle nesting season. If the project is completed during the marine turtle nesting season, tilling shall not be performed in areas where nests have been relocated to or left in place.
 - b. A relatively even surface, with no deep ruts or furrows, shall be created during tilling. To do this, chain-linked fencing or other material shall be dragged over those areas as necessary after tilling. Each pass of the tilling equipment shall be overlapped to allow thorough and even tilling.
 - c. Tilling shall occur landward of the wrack line and shall avoid all naturally vegetated areas that are at least 3 square feet in size, as well as any planted areas that have been authorized by the Department. A 3-foot-wide No-Tilling Buffer shall be maintained around vegetated areas. The slope between the mean high- water line and the mean low water line shall be maintained to approximate natural slopes.
20. Escarpment Surveys. Visual surveys for escarpments along the project area shall be made immediately after completion of sand placement, within 30 days prior to March 1 and weekly throughout the marine turtle season for three (3) subsequent years each year placed sand remains on the dry beach. Escarpment survey reporting and remediation shall be as follows.
 - a. Prior to marine turtle nesting season, escarpments that interfere with marine turtle nesting or that exceed 18 inches in height for a distance of at least 100 feet shall be leveled to the natural beach contour or the beach profile shall be reconfigured to minimize scarp formation. Any escarpment removal shall be reported relative to R-monument location to the FWC at MarineTurtle@MyFWC.com with a copy to the JCP Compliance Officer.

- b. Weekly surveys shall be collated monthly and submitted to marineturtle@myfwc.com by the first day of the following month. If weekly surveys during the marine turtle nesting season document escarpments that exceed 18 inches in height for a distance of at least 100 feet and have persisted for more than two weeks, the FWC shall be contacted at marineturtle@myfwc.com immediately to determine the appropriate action to be taken. The Permittee shall provide locations and measurements of the escarpments to the closest R- monument as well as the coordinates for the location of marine turtle nests located within 20 feet of the escarpments (latitude and longitude in decimal degrees), with photographs when possible.
- 21. Upon written notification by the DEP and FWC that the escarpment needs to be leveled, the Permittee shall level the escarpment. If nests are located nearby, to minimize impacts to any existing nest the Permittee shall also coordinate with the marine turtle permit holder prior to leveling the escarpments. An annual summary documenting weekly escarpment surveys (including dates, presence and height of escarpments) and any remediation actions taken shall be submitted electronically to the FWC (MarineTurtle@MyFWC.com) by December 31 of each year.
- 22. If compaction sampling, tilling or escarpment removal occurs during shorebird breeding season, the Shorebird Conditions (including surveys) included in this authorization shall be followed.
 - a. No heavy equipment shall operate, and no compaction sampling or tilling shall occur within 300 feet of any shorebird nest.
 - b. If flightless shorebird chicks are present within the work zone or equipment travel corridor, a Bird Monitor shall be present during the operation to ensure that no heavy equipment operates within 300 feet of the flightless young. It is the responsibility of the Permittee to ensure that their contractors avoid tilling, scarp removal or dune vegetation planting in areas where nesting birds are present.
- 23. If it is determined that escarpment leveling is required during the sea turtle or shorebird nesting or hatching season, the FWC will provide a brief written authorization that describes methods to be used to reduce the likelihood of impacting existing nests, chicks, or fledglings. An annual summary of escarpment surveys and actions taken shall be submitted to FWC.
- 24. Upon locating a dead or injured marine turtle adult, hatchling, or egg that may have been harmed or destroyed as a result of the project, the Permittee shall be responsible for notifying the marineturtle@myfwc.com. Care shall be taken in handling injured marine turtles or exposed eggs to ensure effective treatment or disposition, and in handling dead specimens to preserve biological materials for later analysis. If a marine turtle nest is excavated during construction activities, but not as part of the authorized nest relocation process outlined in these specific

- conditions, the permitted person responsible for egg relocation for the project shall be notified immediately so the eggs can be moved to a suitable relocation site.
25. The following variables shall be measured within each zone in accordance with the FWC Marine Turtle Management Conservation Guidelines.
 - a. All nesting emergences shall be counted and classified as to nesting decision (e.g., nest or non-nesting emergence or false crawl) per species;
 - b. The location of the nest across the profile (nest site choice) shall be measured (not estimated) relative to the landward and seaward edges of the berm (seawall or dune toe and wrack line) and any scarps in a total of 32 previously selected zones, 16 in the Treatment Zones and 16 in the Reference Zones;
 - c. Nest inventories shall be conducted for all nests according to the agreed upon sampling design within the 32 zones to document hatch and emergence success, including mortality amounts and sources (disorientation, inundation, wash out or erosion, predation). Nest inventories shall be conducted no sooner than three days after signs of first emergence or 70 days after date laid (80 days for leatherbacks).;
 - d. The fate of all marked nests shall be documented during daily surveys (overwashed, washed out, disoriented, predated);
 - e. In the event that nest markers are removed or washed out, all efforts shall be made by the MTPH or the contractor as specified by FWC to replace the markers timely but no later than five days after initial loss.
 26. Monitoring of nesting activity in the seasons following construction shall include daily surveys and any additional measures authorized by the FWC in accordance with the Cell-Wide monitoring plan. Electronic summaries of all crawl activity, nesting success rates, hatching success of all relocated nests, hatching success of nests within the monitored zones, dates of construction and names of all personnel involved in nest surveys and relocation activities in accordance with the electronic spreadsheet provided to the Marine Turtle Permit Holder shall be submitted to Marineturtle@myfwc.com . Data should be reported separately for the zones in the nourished areas and the zones surveyed outside the project area in accordance with the attached Table. All reports should be submitted by January 15 of the following year.

B. Dune Planting

1. All vegetation planting shall be designed and conducted to minimize impacts to sea turtles. Dune vegetation planting may occur during the sea turtle nesting season under the following conditions.
2. Daily early morning sea turtle nesting surveys (before 9 a.m.) shall be conducted during the period from March 1 through November 30. Nesting surveys shall only be conducted by personnel with prior experience and training in nesting surveys.

Surveyors shall have a valid FWC permit. Nesting surveys shall be conducted daily between sunrise and 9 a.m. (all times). No dune planting activity shall occur until after the daily turtle survey and nest conservation and protection efforts have been completed.

3. Any nests deposited in the dune planting area shall be left in place. The turtle permit holder shall install an on-beach marker at the nest site and a secondary marker at a point as far landward as possible to assure that future location of the nest will be possible should the on-beach marker be lost. A series of stakes and highly visible survey ribbon or string shall be installed to establish a 3-foot radius around the nest. No planting or other activity shall occur within this area nor will any activities be allowed that could result in impacts to the nest. Nest sites shall be inspected daily to assure nest markers remain in place and the nest has not been disturbed by the planting activity;
4. If a nest is disturbed or uncovered during planting activity, the contractor, Applicant, or the Applicant's contractors shall cease all work and immediately contact the project turtle permit holder. If a nest(s) cannot be safely avoided during planting, all activity within 10 feet of a nest shall be delayed until hatching and emerging success monitoring of the nest is completed;
5. All dune planting activities shall be conducted by hand and only during daylight hours;
6. All dune vegetation shall consist of coastal dune species native to Palm Beach Island. Vegetation shall be planted with an appropriate amount of fertilizer and antidesiccant material for the plant size;
7. No use of heavy equipment shall occur on the dunes or seaward for planting purposes. A lightweight (all-terrain type) vehicle, with tire pressures of 10 psi or less may be used for this purpose; and
8. In the event a sea turtle nest is excavated during construction activities, the project turtle permit holder responsible for egg relocation for the project shall be notified immediately so the eggs can be moved to a suitable relocation site.
9. Upon locating a dead or injured sea turtle adult, hatchling, or egg, that may have been harmed or destroyed as a direct or indirect result of the project, the permittee shall be responsible for notifying FWC Wildlife Alert at 1-888-404-FWCC (3922).
10. Care shall be taken in handling injured sea turtles, or eggs to ensure effective treatment or disposition, and in handling dead specimens to preserve biological materials in the best possible state for later analysis.

C.Fish and Wildlife Protection Conditions for Nesting Seabirds:

1.Nesting Seabird and Shorebird Protection Conditions:

Nesting seabird and shorebird (i.e. shorebird) surveys should be conducted by trained, dedicated individuals (Bird Monitor) with proven shorebird identification skills and avian survey experience. A list of candidate Bird Monitors with their

contact information, summary of qualifications including bird identification skills, and avian survey experience shall be provided to the DEP and FWC. This information will be submitted to the FWC Regional Species Biologist at (561) 625-5122 prior to any construction or hiring for shorebird surveys for revision and consultation. Bird Monitors shall use the following survey protocols:

- a. Bird Monitors shall review and become familiar with the general information, employ the data collection protocol, and implement data entry procedures outlined on the FWC's Florida Shorebird Database (FSD) website (www.FLShorebirdDatabase.org). An outline of data to be collected, including downloadable field data sheets, is available on the website.
- b. Breeding season varies by species. Most species have completed the breeding cycle by September 1, but flightless young may be present through September. For Palm Beach County's beaches, spoil islands & estuaries, nesting season is March 15 – September 1; for coastal beaches, nesting season is April 1- September 1.
Breeding season surveys shall begin on the first day of the breeding season or 10 days prior to project commencement (including surveying activities and other pre-construction presence on the site), whichever is later. Surveys shall be conducted through August 31st or until all breeding activity has concluded, whichever is later.
- c. Breeding season surveys shall be conducted in all potential beach-nesting bird habitats within the project boundaries that may be impacted by construction or pre-construction activities. One or more shorebird survey routes shall be established in the FSD website to cover these areas.
- d. During the pre-construction and construction phases of the project, surveys for detecting breeding activity and the presence of flightless chicks will be completed on a daily basis prior to movement of equipment, operation of vehicles, or other activities that could potentially disrupt breeding behavior or cause harm to the birds or their eggs or young.
- e. Surveys shall be conducted by walking the project area and visually surveying, for the presence of shorebirds exhibiting breeding behavior, shorebird chicks, or shorebird juveniles as outlined in the FSD Breeding Bird Protocol for Shorebirds and Seabirds. Use of binoculars is required.
If an ATV or other vehicle is needed to cover large project areas, operators will adhere to the FWC's Best Management Practices for Operating Vehicles on the Beach (<http://myfwc.com/conservation/you-serve/wildlife/beach-driving/>). Specifically, the vehicle must be operated at a speed <6 mph and when operating on beaches run at or below the high-tide line. The Bird Monitor will stop at no greater than 200-meter intervals to visually inspect for breeding activity.

- f. Once breeding is confirmed by the presence of a scrape, eggs, or young, the Bird Monitor will notify the FWC Regional Species Biologist at (561) 625-5122 within 24 hours. All breeding activity will be reported to the FSD website within one week of data collection.
2. Seabird and Shorebird Buffer Zones and Travel Corridor:
- Within the project area, the permittee shall establish a disturbance-free buffer zone around any location where shorebirds have been engaged in breeding behavior, including territory defense. A 300 ft-wide buffer is considered adequate based on published studies. However, a smaller, site-specific buffer may be implemented upon approval by the FWC Regional Species Biologist at (561) 625-5122 as needed. All sources of human disturbance (including pedestrians, pets, and vehicles) shall be prohibited in the buffer zone.
- a. The Bird Monitor shall keep breeding sites under sufficient surveillance to determine if birds appear agitated or disturbed by construction or other activities in adjacent areas. If birds do appear to be agitated or disturbed by these activities, then the width of the buffer zone shall be increased immediately to sufficient size to protect breeding birds.
 - b. Reasonable and traditional pedestrian access should not be blocked where breeding birds will tolerate pedestrian traffic. Pedestrian traffic may be tolerated when breeding was initiated within 300 feet of an established pathway. The permittee shall work with the FWC Regional Species Biologist to determine if pedestrian access can be accommodated without compromising nesting success.
 - c. Designated buffer zones shall be marked with posts, twine, and signs stating “Do Not Enter, Important Nesting Area” or similar language around the perimeter which includes the name and a phone number of the entity responsible for posting. Posts should not exceed 3’ in height once installed. Symbolic fencing (twine, string, or rope) should be placed between all posts (at least 2.5’ above the ground in sea turtle nesting habitat) and rendered clearly visible to pedestrians. If pedestrian pathways are approved by the FWC Regional Species Conservation Biologist within the 300-foot buffer zone, these should be clearly marked. The posting shall be maintained in good repair until breeding is completed or terminated. Although solitary nesters may leave the buffer zone with their chicks, the posted area continues to provide a potential refuge for the family until breeding is complete. Breeding is not considered to be completed until all chicks have fledged.
 - d. No construction activities, pedestrians, movement of vehicles, or stockpiling of equipment shall be allowed within the buffer area.
 - e. Travel corridors shall be designated and marked outside the buffer areas so as not to cause disturbance to breeding birds. Heavy equipment, other

vehicles, or pedestrians may transit past breeding areas in these corridors. However, other activities such as stopping or turning shall be prohibited within the designated travel corridors adjacent to the breeding site. When flightless chicks are present within or adjacent to travel corridors, movement of vehicles shall be accompanied by the Bird Monitor who will ensure no chicks are in the path of the moving vehicle and no tracks capable of trapping flightless chicks result.

- f. To discourage nesting within the travel corridor, it is recommended that the Permittee maintain some activity within these corridors on a daily basis, without disturbing any nesting shorebirds documented on site or interfering with sea turtle nesting, especially when those corridors are established prior to commencement of construction.
- g. Passive methods to modify breeding site suitability in upland placement areas shall be limited to flooding or flagging of potential breeding sites prior to the start of breeding, or by other appropriate measures that have been approved by the FWC Regional Species Biologist. The Bird Monitor shall survey these areas prior to flooding or flagging.

3. Seabird and Shorebird Notification:

If shorebird breeding occurs within the project area, a bulletin board will be placed and maintained in the construction staging area with the location map of the construction site showing the bird breeding areas and a warning, clearly visible, stating that “NESTING BIRDS ARE PROTECTED BY LAW INCLUDING THE FLORIDA ENDANGERED AND THREATENED SPECIES ACT AND THE STATE and FEDERAL MIGRATORY BIRD ACTS”.

D. Sediment Quality

- 1. Sediment quality shall be assessed as outlined in the offshore or upland Sediment QA/QC plan (attached Appendix D-1). Any occurrences of placement of material not in compliance with the Plan shall be handled according to the protocols set forth in the Sediment QA/QC plans. The sediment testing result shall be submitted to FDEP within 90 days following the completion of beach construction.

The Sediment QC/QA plan, adherence to which is required by this permit, includes the following:

- a. If during construction, the Permittee or Engineer determines that the beach fill material does not comply with the sediment compliance specifications (Table 3; main BMA agreement), measures shall be taken to avoid further placement of noncompliant fill, and the sediment inspection results shall be reported to the Department.
- b. The Permittee shall submit post-construction sediment testing results and an analysis report as outlined in the Sediment QC/QA plan to the

Department within 90 days following beach construction. The sediment testing results shall be certified by a P.E. or P.G. from the testing laboratory. A summary table of the sediment samples and test results for the sediment compliance parameters as outlined in Table 1 of the Sediment QC/QA plan shall accompany the complete set of laboratory testing results. A statement of how the placed fill material compares to the sediment analysis and volume calculations from the geotechnical investigation shall be included in the sediment testing results report.

- c. A post-remediation report containing the site map, sediment analysis, and volume of noncompliant fill material removed and replaced shall be submitted to the Department within 7 days following completion of remediation activities.

E. Physical Monitoring

The annual cell-wide physical monitoring of the beach and offshore topography and bathymetry shall be used for the project-specific monitoring typically conducted in areas not covered by a beach management agreement with the Department. Construction contract-related surveys prior to construction and following completion of construction shall be used in the physical monitoring reporting to the extent practical and desired by the project engineer.

F. Impacts to hardbottom habitats and their associated communities are prohibited.

APPENDIX D-2

Dredging Activities

- A. Any activities associated with the US Army Corps of Engineers Maintenance Dredging of Lake Worth Inlet shall abide by all permit conditions and requirements of Permit # 0216012-001-JC.
- B. Manatee Conditions: To reduce the risk to manatees from dredging, vessel or barge operation, and construction or demolition of structures in the water:
1. All personnel associated with the project will be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with, and injury to, manatees. All construction personnel will be advised that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
 2. All vessels associated with the construction project will operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
 3. Siltation or turbidity barriers will be made of material, in which manatees cannot become entangled, will be properly secured, and will be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
 4. All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
 5. Observers must be on site during all in-water activities and will advise personnel to cease operation upon sighting a manatee within 50 feet of any in-water construction activity. Movement of a work barge or other associated vessels should not be performed after sunset, when the possibility of spotting manatees is negligible.
 6. Any collision with or injury to a manatee will be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Vero Beach (1-772-562-3909) and to FWC at ImperiledSpecies@myFWC.com by the next business day.
 7. Temporary signs concerning manatees shall be posted prior to and during all in-water project activities. All signs are to be removed upon completion of the project.

Temporary signs that have already been approved for this use by the FWC must be used. One sign which reads Caution: Boaters must be posted. A second sign measuring at least 8 ½" by 11" explaining the requirements for "Idle Speed/No Wake" and the shutdown of in-water operations must be posted in a location prominently visible to all personnel engaged in water-related activities. An example of these signs and where they can be obtained can be found at MyFWC.com/manatee. Questions concerning these signs can be sent to ImperiledSpecies@myFWC.com.

C. Marine Turtle and Smalltooth Sawfish Construction Conditions

1. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with marine turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.
2. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing sea turtles or smalltooth sawfish, which are protected under the Endangered Species Act of 1973.
3. Siltation barriers shall be made of material in which a sea turtle or smalltooth sawfish cannot become entangled, be properly secured, and be regularly monitored to avoid protected species entrapment. Barriers may not block sea turtle or smalltooth sawfish entry to or exit from designated critical habitat without prior agreement from the National Marine Fisheries Service's Protected Resources Division, St. Petersburg, Florida.
4. All vessels associated with the construction project shall operate at "no wake/idle" speeds at all times while in the construction area and while in water depths where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will preferentially follow deep-water routes (e.g., marked channels) whenever possible.
5. If a marine turtle or smalltooth sawfish is seen within 100 yards of the active daily construction/dredging operation or vessel movement, all appropriate precautions shall be implemented to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a sea turtle or smalltooth sawfish. Operation of any mechanical construction equipment shall cease immediately if a marine turtle or smalltooth sawfish is seen within a 50-ft radius of the equipment. Activities may not resume until the protected species has departed the project area of its own volition.
6. Any collision with and/or injury to a marine turtle or smalltooth sawfish shall be reported immediately to the National Marine Fisheries Service's Protected Resources Division (727-824-5312) and the local authorized sea turtle stranding/rescue organization.

7. Any special construction conditions, required of your specific project, outside these general conditions, if applicable, will be addressed in the primary consultation.

D. Physical Monitoring Conditions

1. Bathymetric surveys of the borrow area(s) shall be conducted within 90 days prior to commencement of construction, and within 60 days following completion of construction of the project concurrently with the beach and offshore surveys required above. A prior design survey of the borrow area may be submitted for the pre-construction survey if site conditions have not changed since the design survey was conducted. Changed site conditions would typically be due to previous use of the borrow area since the design survey was conducted in conjunction with the geotechnical investigation of the site.
2. Survey grid lines across the borrow area(s) shall be spaced to provide sufficient detail for accurate volumetric calculations but spaced not more than a maximum of 500 feet apart, and shall extend a minimum of 500 feet beyond the boundaries of the borrow site. In all other aspects, work activities and deliverables shall be consistent with the *BBCS Monitoring Standards for Beach Erosion Control Projects, Section 01200*.

E. Projects that Include Hopper or Cutter Head Dredging

1. In the event a hopper dredge is utilized, the following requirements shall be met in addition to the Terms and Conditions of the most recent NMFS Regional Biological Opinion for work in the Atlantic Ocean (2020 South Atlantic (Regional Biological Opinion for Dredging and Material Placement Activities in the Southeast United States (2020 SARBO) SERO-2019-03111)).
 - a. Protected Species Observer (Observer): Handling of sea turtles captured during hopper dredging projects shall be conducted only by persons with prior experience and training in these activities and who is duly authorized to conduct such activities through a valid permit issued by the Florida Fish and Wildlife Conservation Commission (FWC), pursuant to Florida Administrative Code Rule 68E-1.
 - b. *Dredging Pumps*: Standard operating procedure shall be that dredging pumps shall be disengaged by the operator when the dragheads are not firmly on the bottom or the cutterhead is not embedded in the sediment, to prevent impingement or entrainment of sea turtles within the water column.
 - i. Pumps will be disengaged when lowering dragheads to the bottom to start dredging, turning, or lifting dragheads off the bottom at the completion of dredging. Hopper dredges may utilize a bypass or other system that would allow pumps to remain engaged but result in no suction passing through the draghead. This dredge modification (when employed) is commonly referred to as a turtle

- bypass valve. This precaution is especially important during the cleanup phase of dredging operations.
- ii. Pumping water through the dragheads is not allowed while maneuvering or during travel to/from the disposal or pumpout area. The dredge operator will ensure the draghead is embedded in sediment when pumps are operational, to the maximum extent practicable.
- iii. All waterport or other openings on the hopper dredge are required to be screened to prevent ESA-listed species from entering the dredge.
- c. *Sea Turtle Deflecting Draghead*: A state-of-the-art rigid deflector draghead must be used on all hopper dredges at all times of the year.
- d. Screening: In the event screening is used on the draghead or the outflow, the FWC-authorized observer shall inspect the draghead screens after every load to verify that no listed species are impinged on the screening.
- e. Bed Leveling: Bed-levelers will be of a design that produces a sand wave in front of the leading face of the bed-leveling device such that it disturbs sea turtles off the sea/channel floor bottom.
 - i. All support structures must be welded to prevent impingement or “pinch points” for passing ESA-listed species.
 - ii. The bed-leveler will be slowly lowered to the sea/channel bottom and the depth of the bed-leveler adjusted constantly to meet required depth and to compensate for tidal fluctuations.
 - iii. The bed-leveler will be towed/pushed along the bottom no faster than needed to move the material at the sea/channel bottom (approximately 1-2 knots).
- f. The Sea Turtle Stranding and Salvage Network (STSSN) shall be notified at SeaTurtleStranding@MyFWC.com of the start-up and completion of hopper dredging operations.
- g. Relocation trawling may be implemented at any time during dredging but shall be undertaken at all projects where any of the following two conditions are met; however, other ongoing projects not meeting these conditions are not required to conduct relocation trawling:
 - (1) Two or more turtles are taken in a 24-hour period in the project.
 - (2) Four or more turtles are taken in the project.

The permittee shall e-mail weekly reports to the Imperiled Species Management section at mtp@myfwc.com Friday each week that relocation trawling is conducted in Florida water. These reports shall include: the species and number of turtles captured in Florida waters, general health, and release information. A summary of all turtles captured in Florida waters, including all measurements, the latitude and longitude (in decimal degrees)

of captures and tow start-stop points, and times for the start-stop points of the tows, including those tows on which no turtles are captured shall be submitted to the ISM by January 15 of the following year.

APPENDIX D-3

Projects that Include Construction of New Groins

In accordance with Section 161.041(5), F.S., no construction that could result in take of threatened and marine turtles shall begin until the federal incidental take authorization is issued in accordance with the federal Endangered Species Act. In the event that additional or different requirements from the permit conditions are specified in the U.S. Fish and Wildlife Service (FWS) Incidental Take Authorization and Biological Opinion, additional marine turtle protection conditions will be required and incorporated into the BMA specific conditions. No relocation of marine turtle nests shall occur unless specifically authorized by the Florida Fish & Wildlife Conservation Commission (FWC) in a permit issued pursuant to Florida Statute 379.2431(1) and Florida Administrative Code Rule 68E-1.

APPENDIX D-4

Projects that Include Groin or Jetty Repair or Replacement

A. Marine Turtle Nesting

1. Groin or jetty repair or replacement projects shall be started after October 31 and be completed before May 1.
2. For groin or jetty repair or replacement projects conducted during the early (March 1 through April 30) and/or late (November 1 through November 30) sea turtle nesting season:
 - a. A barrier (e.g., hay bales, silt screens) sufficient to prevent adult and hatchling sea turtles from accessing the project site shall be installed in a 100-foot buffer around the perimeter of the project site. The barrier shall be placed parallel to shore, at mean high water (MHW), as close to the groin or jetty as feasible, particularly during the period from sunset to sunrise.
 - b. On-beach access to the construction site shall be restricted to the wet sand below MHW to the maximum extent possible. Travel corridors on the beach to the MHWL shall be delineated. If the project is conducted during the early (March 1 through April 30) and/or late (November 1 through November 30) sea turtle nesting season, daily morning surveys shall be conducted within the travel corridor. If nests are laid within the travel corridor, the travel corridor must be re-routed to avoid the nest. If re-routing is not possible, these nests shall be relocated per the requirements listed.
 - c. Staging areas for construction equipment shall be located off the beach to the maximum extent possible.
 - d. No construction shall be conducted at night.
 - e. Daily early morning surveys for sea turtle nests shall be required as outlined below. All nests laid in the vicinity of the project area shall be marked for avoidance per the requirements specified below:
 - i. Nesting surveys and nest marking shall only be conducted by persons with prior experience and training in these activities and who are authorized to conduct such activities through a valid permit issued by FWC, pursuant to FAC 68E-1. Nesting surveys shall be conducted daily between sunrise and 9 a.m. The contractor shall not initiate work until daily notice has been received from the sea turtle permit holder that the morning survey has been completed. Surveys shall be performed in such a manner so as to ensure that construction activity does not occur in any location prior to completion of the necessary sea turtle protection measures.
 - ii. Nests deposited within the project area and access areas shall be left in place and marked for avoidance unless other factors threaten the

success of the nest (nest laid below debris line marking the typical high tide, erosion). The turtle permit holder shall install an on-beach marker at the nest site and a secondary marker at a point as far landward as possible to assure that future location of the nest will be possible should the on-beach marker be lost. The actual location of the clutch will be determined, and nests will be marked. A series of stakes and highly visible survey ribbon or string shall be installed to establish a 10-foot radius around the nest. No activity shall occur within this area nor will any activity occur that could result in impacts to the nest. Nest sites shall be inspected daily to assure nest markers remain in place and that the nest has not been disturbed by the project activity. Nest relocation is only allowed if nests laid within the travel corridor (beach access to MHWL) cannot be rerouted to avoid the nest.

3. To the maximum extent possible within the travel corridor, all ruts shall be filled or leveled to the natural beach profile prior to completion of daily construction.
4. Exterior lighting shall not be permanently installed in association with the project. Temporary lighting of the construction area during the sea turtle nesting season shall be reduced to the minimum standard required by OSHA for general construction areas. Lighting on all equipment including offshore equipment shall be minimized through reduction, shielding, lowering, and appropriate placement to avoid excessive illumination of the water's surface and nesting beach while meeting all Coast Guard and OSHA requirements. Light intensity of lighting equipment shall be reduced to the minimum standard required by OSHA for general construction areas, in order not to misdirect sea turtles. Shields shall be affixed to the light housing and be large enough to block light from all lamps from being transmitted outside the construction area (Figure 1 above).
5. If entrapment of sea turtle hatchlings occurs in the groin or jetty system during construction, the Participant shall contact the DEP compliance officer (JCPcompliance@dep.state.fl.us) and FWC (marineturtle@myfwc.com) immediately.

B. Physical Monitoring

The annual cell-wide physical monitoring of the beach and offshore topography and bathymetry shall be used for the project-specific monitoring typically conducted in areas not covered by a beach management agreement with the Department. Construction contract-related surveys prior to construction and following completion of construction shall be used in the physical monitoring reporting to the extent practical and desired by the project engineer.

APPENDIX D-5

Dune Restoration

A. General Conditions

1. All dune restoration work shall occur outside the marine turtle nesting season, March 1 through October 31, unless the U.S. Fish and Wildlife Service has authorized incidental take for dune restoration to proceed during marine turtle nesting season. A pre-construction conference shall be held at the site between the contractor, the owner or authorized agent, and a staff representative of the Department prior to the initiation of any work. Contact your staff representative at (850) 488-7708 for an appointment. Work shall not commence until the Department determines that the project may proceed in conformance with the Beach Management Agreement, Section 161.053, Florida Statutes and Chapter 62B-33, Florida Administrative Code.
2. At the pre-construction conference, sand samples for proposed fill placement shall be available for inspection for projects greater than 600 cubic yards, and for approval for projects less than 600 cubic yards. All fill material shall be beach quality sand (see Table 3; main BMA agreement) free of construction debris, rocks, clay, or other foreign matter, and shall be obtained from a source landward of the Coastal Construction Control Line as authorized under the Beach Management Agreement. No excavation, beach scraping or similar ground alteration is authorized.
3. The permittee shall not disturb existing beach and dune topography and vegetation except as expressly authorized in the Beach Management Agreement and this permit. A maximum of 100 square feet of vegetation can be disturbed under this permit. Before the project is considered complete, any disturbed topography or vegetation shall be restored with suitable fill material or revegetated with appropriate beach and dune vegetation. All topographic restoration and revegetation work is subject to the approval and acceptance by the Department staff.
4. This permit does not authorize the creation of new construction access points. The construction site must be accessed through an established beach access point or through the upland property taking special care to avoid damaging vegetated areas seaward of the control line. Construction shall not obstruct or interfere with existing public beach access.
5. If dune restoration planting is proposed, such plants shall consist of a minimum of three species of salt tolerant beach dune vegetation native to the plant communities of the area. Planting dune grasses should adhere to the Department of Environmental Protection Coastal Construction Control Line Planting Guidelines.

B.If Dune Planting is proposed, the following conditions apply

1. All vegetation planting shall be designed and conducted to minimize impacts to sea turtles. Dune vegetation planting may occur during the sea turtle nesting season under the following conditions.
2. Daily early morning sea turtle nesting surveys (before 9 a.m.) shall be conducted during the period from March 1 through November 30. Nesting surveys shall only be conducted by personnel with prior experience and training in nesting surveys. Surveyors shall have a valid FWC permit. Nesting surveys shall be conducted daily between sunrise and 9 a.m. (all times). No dune planting activity shall occur until after the daily turtle survey and nest conservation and protection efforts have been completed. Hatching and emerging success monitoring will involve checking nests beyond the completion date of the daily early morning nesting surveys;
3. Any nests deposited in the dune planting area shall be left in place. The turtle permit holder shall install an on-beach marker at the nest site and a secondary marker at a point as far landward as possible to assure that future location of the nest will be possible should the on-beach marker be lost. A series of stakes and highly visible survey ribbon or string shall be installed to establish a 3-foot radius around the nest. No planting or other activity shall occur within this area nor will any activities be allowed that could result in impacts to the nest. Nest sites shall be inspected daily to assure nest markers remain in place and the nest has not been disturbed by the planting activity;
4. If a nest is disturbed or uncovered during planting activity, the contractor, Applicant, or the Applicant's contractors shall cease all work and immediately contact the project turtle permit holder. If a nest(s) cannot be safely avoided during planting, all activity within 10 feet of a nest shall be delayed until hatching and emerging success monitoring of the nest is completed;
5. All dune planting activities shall be conducted by hand and only during daylight hours;
6. All dune vegetation shall consist of coastal dune species native to Palm Beach Island. Vegetation shall be planted with an appropriate amount of fertilizer and antidesiccant material for the plant size;
7. No use of heavy equipment shall occur on the dunes or seaward for planting purposes. A lightweight (all-terrain type) vehicle, with tire pressures of 10 psi or less may be used for this purpose; and
8. Irrigation equipment, if needed, shall be authorized under a separate FDEP permit.
In the event a sea turtle nest is excavated during construction activities, the project turtle permit holder responsible for egg relocation for the project shall be notified immediately so the eggs can be moved to a suitable relocation site.

9. Upon locating a dead or injured sea turtle adult, hatchling, or egg, that may have been harmed or destroyed as a direct or indirect result of the project, the permittee shall be responsible for notifying FWC Wildlife Alert at 1-888-404-FWCC (3922).
10. Care shall be taken in handling injured sea turtles or eggs to ensure effective treatment or disposition, and in handling dead specimens to preserve biological materials in the best possible state for later analysis.

C. Dune Restoration Marine Turtle Protection Conditions

1. Irrigation systems are to be constructed outside of marine turtle nesting season and designed and maintained so as to not discharge water onto the unplanted sandy beach. In the event a marine turtle nest is deposited within an irrigated area, the permittee must modify the irrigation system so that watering within 10 feet of the nest does not occur. Daily inspection of the irrigation system must be conducted by the permittee to ensure compliance with this condition. Irrigation installed within marine turtle nesting habitat seaward of a seawall, or frontal dune, whichever is landward, must be entrenched 1 to 3 inches below grade so as not to pose a barrier to sea turtle hatchlings and to allow for easy removal. Irrigation systems and other structures placed within marine turtle nesting habitat must be removed prior to permit expiration or the after approval of planting success by the Department, whichever is first.
2. Fill placement shall conform to the following additional requirements:
 - a. Where a scarp height 3-feet or less (Fig. 1) or where a scarp is not present, the seaward slope shall be 4:1 horizontal to vertical.
 - b. Where a scarp height is greater than 3-feet (Fig. 2), the seaward slope shall be 4:1 horizontal to vertical for the seaward 20 feet, and 1.5:1 horizontal to vertical landward of the first 20 feet.
 - c. Dune crest elevations are to match existing or historic natural dune elevations.
 - d. Fill is limited to 5 cubic yards per linear foot.

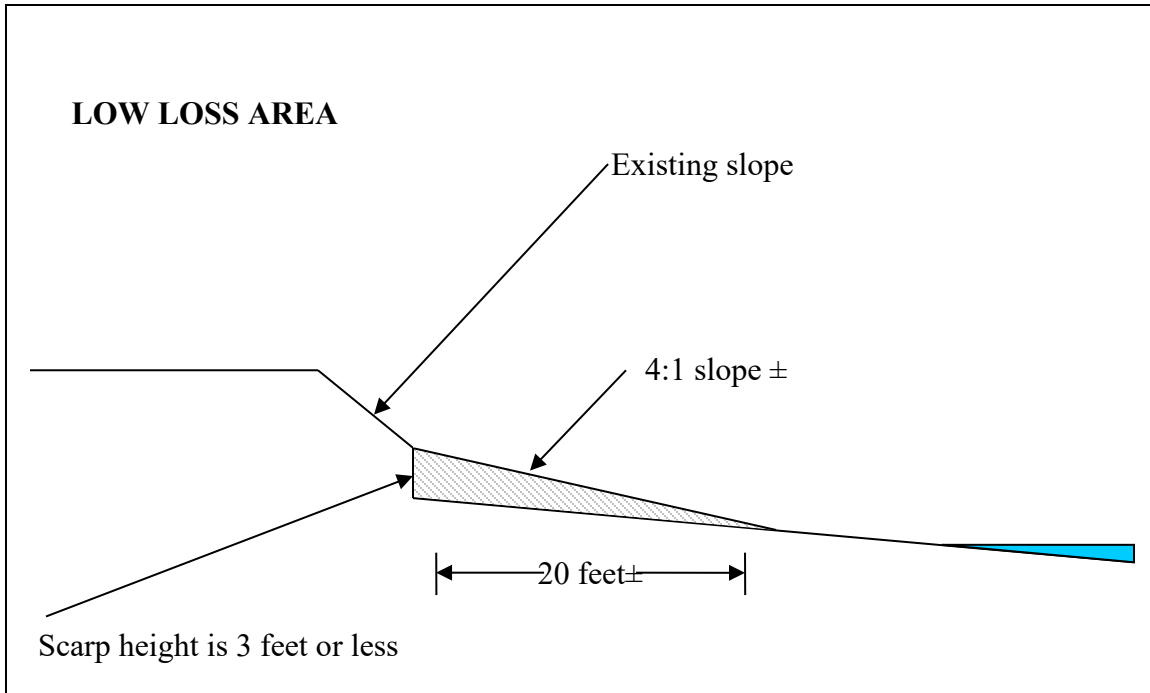


Figure 3: Recommended slope on a low erosion beach for sand placement projects that include the creation of a dune.

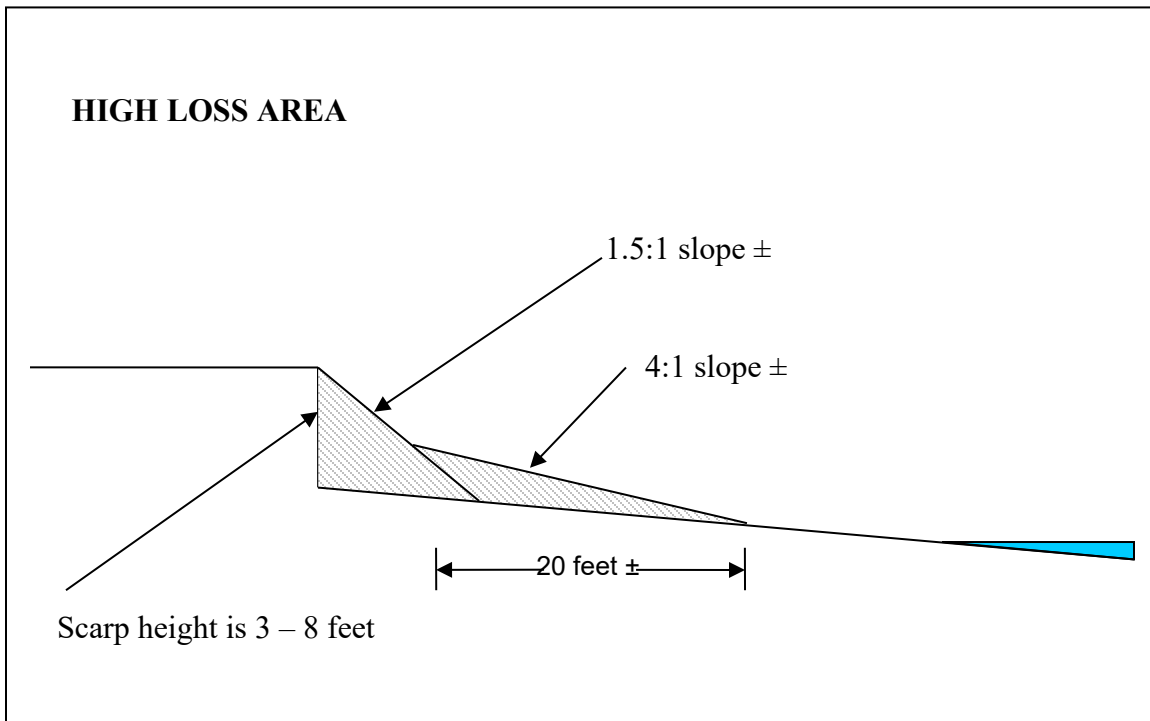


Figure 4: Recommended slope on a high erosion beach for sand placement projects that include the creation of a dune.

APPENDIX D-6

All Nourishment, Groin, or Building of a Second Discharge for Sand Transfer Plant

- A. All reports or notices that are required by the conditions of this BMA shall be sent to the Department's JCP Compliance Officer via email at JCP.Compliance@dep.state.fl.us.
- B. The Permittee shall not store or stockpile tools, equipment, materials, etc., within littoral zones or elsewhere within surface waters of the state without prior written approval from the Department. Storage, stockpiling or access of equipment on, in, over or through hardbottom areas, seagrass (or other aquatic vegetation) beds or wetlands is prohibited unless within a work area or ingress/egress corridor specifically approved by this BMA. Anchoring or spudding of vessels and barges within beds of aquatic vegetation or over hardbottom areas is also prohibited.
- C. The Permittee shall not conduct project operations or store project-related equipment in, on or over dunes, or otherwise impact dune vegetation, outside the approved staging, beach access and dune restoration areas designated in the approved BMA drawings.
- D. *Pre-Construction Conference.* Prior to each construction event, the Permittee shall conduct a pre-construction teleconference to review the specific conditions and monitoring requirements of this BMA with Permittee's contractors (including the individuals who will be conducting the turbidity monitoring), the engineer of record, the US Fish and Wildlife Service (FWS), the FWC, marine turtle permit holder, and Bird Monitors as appropriate, and the JCP Compliance Officer (or designated alternate). The meeting will provide an opportunity for explanation and/or clarification of the protection measures as well as additional guidelines when construction occurs during nesting season, such as staging equipment and reporting within the work area as well as follow up meetings during construction. The teleconference shall include a discussion on the turbidity monitoring requirements, with emphasis on monitoring locations. In order to ensure that appropriate representatives are available, at least twenty-one (21) days prior to the intended commencement date for the permitted construction, the Permittee is advised to contact the Department, and the other agency representatives listed below:

The Department's JCP Compliance Officer
Email: JCP.Compliance@dep.state.fl.us

DEP Southeast District Office
Submerged Lands & Environmental Resources
400 North Congress Ave
Suite 200
West Pam Beach, FL 33401
Phone: 561-681-6642

Imperiled Species Management Section
Florida Fish & Wildlife Conservation Commission
620 South Meridian Street
Tallahassee, Florida 32399-1600
Phone: (850) 922-4330
Fax: (850) 921-4369 or email: marineturtle@myfwc.com

The Permittee is also advised to schedule the pre-construction conference at least a week prior to the intended commencement date. At least seven (7) days in advance of the pre-construction conference, the Permittee shall provide written notification, advising the participants (listed above) of the agreed-upon date, time and location of the meeting, and also provide a meeting agenda and a teleconference number.

APPENDIX D-7

Turbidity Monitoring Requirements for all Nourishment and Groin Construction Projects

- A. No turbidity monitoring would be required for the operation of sand transfer plants at their intake points or at the discharge points if the pipeline discharges landward of the mean low water line. Open water discharge is not authorized.

B Water Quality Monitoring - Turbidity shall be monitored as follows:

1. Units:

Nephelometric Turbidity Units (NTUs).

2. Frequency:

Three (3) times per day, at least 4 hours apart, during all dredging and filling operations, and once per day during groin construction. Sampling shall be conducted (day or night) while the highest project-related turbidity levels are crossing the edge of the mixing zone. Since turbidity levels can be related to pumping rates, the dredge pumping rates shall be recorded, and provided to the Department upon request. The compliance samples and the corresponding background samples shall be collected at approximately the same time, i.e., one shall immediately follow the other.

3. Location

a. Background:

At surface, mid-depth, and (for sites with depths greater than 25 feet) 2 meters above the bottom, up-current of the discharge and clearly outside the influence of any artificially generated turbidity plume or the influence of an outgoing inlet plume.

- i. Dredge Site: at least 300 meters up-current from the source of turbidity at the dredge site.
- ii. Beach Site: at least 500 meters up-current from any portion of the beach that has been, or is being, filled during the current construction event, at the same distances offshore as the associated compliance and intermediate samples.

- b. Compliance: At surface, mid-depth, and (for sites with depths greater than 25 feet) 2 meters above the bottom, within the densest portion of any visible turbidity plume generated by this project.

i. Dredge Site

For a cutterhead dredge:

Samples shall be collected 150 meters down-current from the cutterhead, and from any other source of turbidity generated by the

dredge, in the densest portion of any visible turbidity plume. If no plume is visible, follow the likely direction of flow. For a hopper dredge, samples shall be collected 150 meters from the overflow point, and from any other source of turbidity generated by the dredge, in the densest portion of any visible turbidity plume, taking into account both the direction of the current and the direction of the moving dredge.

ii. *Fill placement site when using an offshore borrow area:*

Samples shall be collected where the densest portion of the turbidity plume crosses the edge of the mixing zone polygon, which measures up to 150 meters offshore and up to 1000 meters alongshore from the point where the return water from the dredged discharge reenters the Atlantic Ocean. For each sampling event, compliance samples shall be collected within the area of highest turbidity at both the rip current location if present and the longshore drift location. Note: If the plume flows parallel to the shoreline, it may cross the mixing zone polygon at a distance less than 150 meters offshore, and the sample would be collected at that point, not necessarily 150 meters offshore. If the plume flows offshore, it may cross the mixing zone polygon at a distance less than 1000 meters alongshore, and the sample would be collected at that point, not necessarily 1000 meters alongshore. See Diagram 1 (Figure 5).

iii. *Fill placement site when using an upland borrow area (truck haul):*

Samples shall be collected 150 meters down-current from the point where fill material is being placed seaward of the MHW line during the sampling event. If the highest turbidity from the in-water fill placement reaches the edge of the mixing zone after the fill placement has stopped, then samples shall be collected 150 meters down-current from the point where fill material was being placed immediately prior to the sampling event. See Diagram 2 (Figure 6).

iv. **Hardbottom Edge:**

If there are any hardbottom resources within 1000 meters downcurrent from the source of turbidity, monitoring shall also be conducted once per day at the edge of the hardbottom.

v. **Intermediate Monitoring (required when using a mixing zone that exceeds 150 size):**

At surface, mid-depth and (for sites with depths greater than 25 feet) 2 meters from the bottom, at points approximately 150 meters, 250 meters, 500 meters and 750 meters down-current from the point where the return water from the dredged discharge reenters the

Atlantic Ocean (if those points are located inside the mixing zone), within the densest portion of any visible turbidity plume. These measurements will be used to calibrate the size of the mixing zone for future events.

4. Analysis of turbidity samples shall be performed in compliance with DEP-SOP-001/01 FT 1600 Field Measurement of Turbidity:
<http://publicfiles.dep.state.fl.us/dear/sas/sopdoc/2008sops/ft1600.pdf>
5. *Calibration:* The instruments used to measure turbidity shall be fully calibrated with primary standards within one month of the commencement of the project, and at least once a month throughout the project. Calibration with secondary standards shall be verified each morning prior to use, after each time the instrument is turned on, and after field sampling using two secondary turbidity “standards” that bracket the anticipated turbidity samples. If the post-sampling calibration value deviates more than 8% from the previous calibration value, results shall be reported as estimated and a description of the problem shall be included in the field notes.
6. If the turbidity monitoring protocol specified above prevents the collection of accurate data, the person in charge of the turbidity monitoring shall contact the JCP Compliance Officer to establish a more appropriate protocol. If sampling instruments fail or are unable to be calibrated, turbidity samples shall be collected, preserved as described in DEP-SOP-001/01 FT 1000, and analyzed by a lab. A backup meter will also be required, as lab results would not be timely in case a shut-down is required. Once approved in writing by the Department, the new protocol shall be attached to the BMA and shall be implemented without the need for a BMA modification.

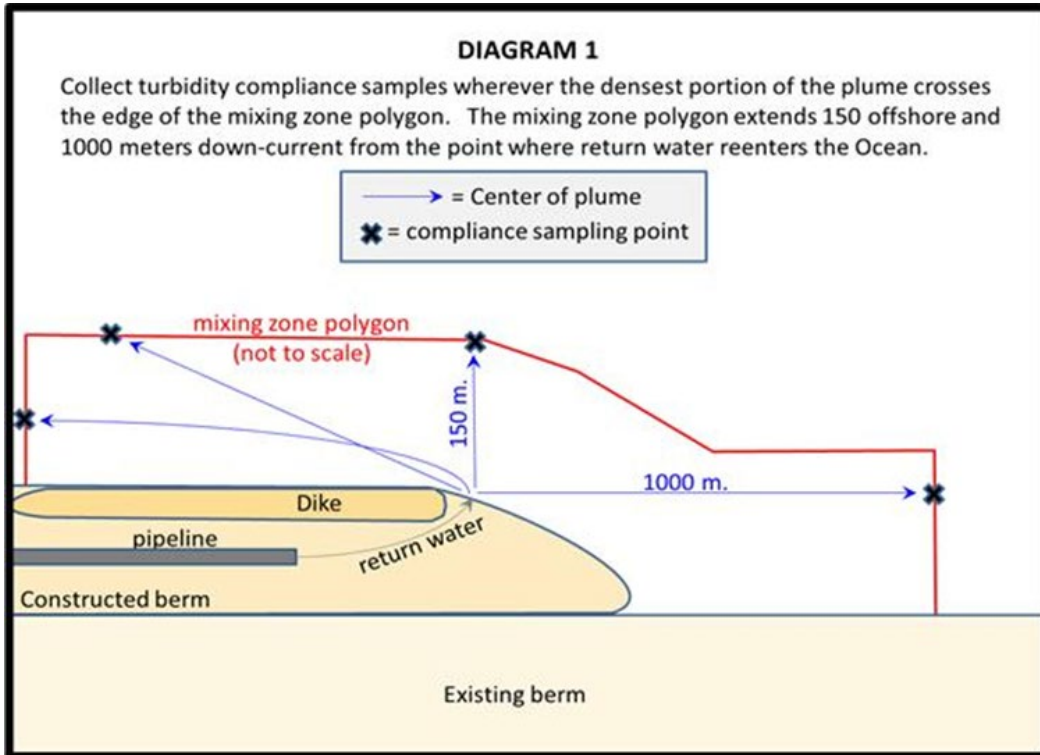


Figure 5. Turbidity mixing zone for fill placement when using an offshore borrow area.

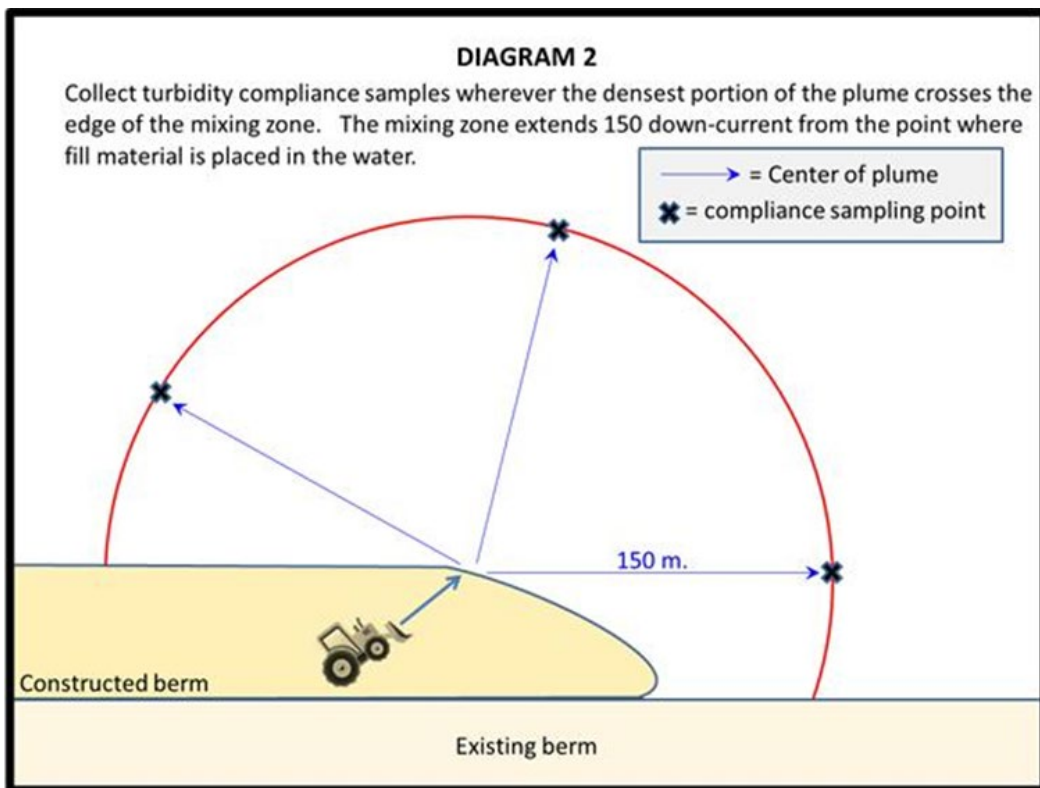


Figure 6. Turbidity mixing zone for fill placement when using an upland borrow area (truck haul).

- C. The compliance locations given above shall be considered the limits of the temporary mixing zone for turbidity allowed during construction. If monitoring reveals turbidity levels at the compliance sites that are greater than 29 NTUs above the corresponding background turbidity levels, construction activities shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. Any such occurrence shall also be immediately reported to the Department's JCP Compliance Officer via email at [JCP Compliance@dep.state.fl.us](mailto:JCP.Compliance@dep.state.fl.us). The subject line of the email shall state "TURBIDITY EXCEEDANCE". Also notify the Department's Southeast District office.
- D. Any project-associated turbidity source other than dredging or fill placement for beach nourishment (e.g., scow or pipeline leakage) shall be monitored as close to the source as possible. If the turbidity level exceeds 29 NTUs above background, the construction activities related to the exceedance shall cease immediately and not resume until corrective measures have been taken and turbidity has returned to acceptable levels. This turbidity monitoring shall continue every hour until background turbidity levels are restored or until otherwise directed by the Department. The Permittee shall notify the Department, by separate email to the JCP Compliance Officer, of such an event within 24 hours of the time the Permittee first becomes aware of the discharge. The subject line of the email shall state "project-associated discharge-OTHER".
1. When reporting a turbidity exceedance, the following information shall also be included:
 - a. Project Name;
 - b. Permit Number;
 - c. Location and level (NTUs above background) of the turbidity exceedance and location and status of the dredge;
 - d. Time and date that the exceedance occurred; and
 - e. Time and date that construction ceased.
 2. Prior to re-commencing the construction, a report shall be emailed to the Department's JCP Compliance Officer with the same information that was included in the "Exceedance Report", plus the following information:
 - a. Turbidity monitoring data collected during the shutdown documenting the decline in turbidity levels and achievement of acceptable levels;
 - b. Corrective measures that were taken; and
 - c. Cause of the exceedance.
- E. When discharging slurried sand onto the beach from a pipeline (not applicable to truck hauled projects or sand transfer plants), the Permittee shall employ best management practices (BMPs) to reduce turbidity. At a minimum, these BMPs shall include the following:

1. Use of shore-parallel sand dike to promote settlement of suspended sediment on the beach before return water from the dredged discharge reenters the Atlantic Ocean; and
2. The pipeline discharge location shall be set back a minimum of 50 feet from open water, or at the landward edge of the beach berm, whichever is less.

APPENDIX D-8

Reporting Requirements for all Nourishment, Bypassing and Groin Projects

A. Turbidity Reports

1. All turbidity monitoring data shall be submitted to DEP by the BMA Participant within one week of analysis. The data shall be presented in tabular format, indicating the measured turbidity levels at the compliance sites for each depth, the corresponding background levels at each depth and the number of NTUs over background at each depth. Any exceedances of the turbidity standard (29 NTUs above background) shall be highlighted in the table. In addition to the raw and processed data, the reports shall also contain the following information:
 - a. time of day samples were taken;
 - b. dates of sampling and analysis;
 - c. GPS location of samples;
 - d. depth of water body;
 - e. depth of each sample;
 - f. antecedent weather conditions, including wind direction and velocity;
 - g. tidal stage and direction of flow;
 - h. water temperature;
 - i. One map or schematic (per sampling event) used to indicate sampling locations, dredging and discharge locations, and direction of flow;
 - j. a statement describing the methods used in collection, handling, storage and analysis of the samples;
 - k. a statement by the individual responsible for implementation of the sampling program concerning the authenticity, precision, limits of detection, calibration of the meter and accuracy of the turbidity and GPS data;
 - l. When samples cannot be collected, include an explanation in the report. If unable to collect samples due to severe weather conditions, include a copy of a current report from a reliable, independent source, such as an online weather service.
2. Monitoring reports shall be submitted by email to the JCP Compliance Officer. In the subject line of the reports, on the cover page to the submittal and at the top of each page, include the Project Name, Individual Project Approval Number and the dates of the monitoring interval. Failure to submit reports in a timely manner constitutes grounds for revocation of the BMA.

B.FWC data

Unless otherwise required as part of a U.S. Fish and Wildlife Service Incidental Take Authorization, nesting surveys shall be conducted by the BMA Participant in accordance with the cell-wide monitoring plan as outlined in Appendix F Electronic summaries of all nesting activity shall be provided for the entire cell (number of nests or false crawls) annually. Upon project construction, site specific information on nest location, GPS, hatch and emergence success shall be collected on all nests per species in sixteen (16) Treatment zones randomly chosen within the project area and sixteen (16) Reference zones randomly chosen outside the project area across the island while the BMA remains in effect. Monitoring and reporting shall occur as follows:

1. The number and type of emergences (nests or false crawls) across the cell shall be reported per species in accordance with the BMA Marine Turtle Monitoring Spreadsheets and the Cell-Wide monitoring plan (Appendix B).
2. Reproductive success shall be reported per species in accordance with the BMA Marine Turtle Monitoring Spreadsheets. Reproductive success shall be reported for all loggerhead, green and leatherback nests in the sixteen (16) Treatment Zones randomly chosen within the project area and sixteen (16) Reference Zones randomly chosen outside the project area across the island
3. Monitoring of nesting activity in the seasons following construction shall include daily surveys and any additional measures authorized by the FWC in accordance with the Cell-Wide monitoring plan. Electronic summaries of all crawl activity, nesting success rates, hatching success of all nests, dates of construction and names of all personnel involved in nest surveys and relocation activities in accordance with the electronic BMA Marine Turtle Monitoring Spreadsheets provided to the Marine Turtle Permit Holder shall be submitted to Marineturtle@myfwc.com . by January 15 of the following year.

C.Physical Monitoring Reporting

An engineering report and the monitoring data shall be submitted to the Department and all parties to this beach management agreement within 90 days following completion of a post-construction borrow area survey. The report shall summarize and discuss the data, the performance of the beach fill projects, and identify erosion and accretion patterns within the coastal cell. The report shall update the shoreline and volumetric changes at each reference monument and by reach. In addition, the report shall include a comparative review of project performance to performance expectations and identification of adverse impacts attributable to the projects. Appendices shall include plots of survey profiles and graphical representations of volumetric and shoreline position changes for the monitoring area. Results shall be analyzed for patterns, trends, or changes between annual surveys and cumulatively since project construction.

Table 1. BMA Marine Turtle Monitoring Spreadsheet

Metric	Duration	Variable	Criterion
Nesting Success	Annually	Number of nests and non-nesting emergences by day by species	NA
Hatching Success	Year of construction and one to three years post construction if placed sand remains on beach and variable does not meet criterion based on previous year	Number of hatchlings by species to completely escape egg	Average of 60% or greater (data must include washed out nests)
Emergence Success	Year of construction and one to three years post construction if placed sand remains on beach and variable does not meet success criterion based on previous year	Number of hatchlings by species to emerge from nest onto beach	Average must not be significantly different than the average emergent hatching success in non-project zones
Disorientation	Year of construction and one to three years post construction if placed sand remains on beach	Number of nests and individuals that misorient or disorient	
Lighting Surveys	Two surveys the year following construction , one survey between May 1 and May 15 and second survey between July 15 and August 1	Number, location and photographs of lights visible from nourished berm, corrective actions and notifications made	100% reduction in lights visible from nourished berm within one to two month period
Compaction	Not required if the beach is tilled prior to nesting season each year placed sand remains on beach	Shear resistance	Less than 500 psi
Escarpment Surveys	Weekly during nesting season for up to three years each year placed sand remains on the beach	Number of scarps 18 inches or greater extending for more than 100 feet that persist for more than 2 weeks	Successful remediation of all persistent scarps as needed

APPENDIX D-9a
Sediment Quality Control/Quality Assurance Plan
for Beach Restoration Or Nourishment Using an Offshore Borrow
Area

Palm Beach Island Beach Management Agreement

Midtown Beach Nourishment
Phipps Ocean Park Beach Nourishment

June 10, 2013

A. Introduction

This template QA/QC plan is for use for beach restoration and beach nourishment when an offshore borrow area is used. A different plan document will be used for inlet excavation involving beach or nearshore placement of dredged material.

Pursuant to Fla. Admin. Code r. 62B-41.008 (1) (k) 4.b., permit applications for inlet excavation, beach restoration, or nourishment shall include a quality control/assurance plan that will ensure that the sediment from the borrow areas to be used in the project will meet the standard in Fla. Admin. Code r. 62B-41.007(2) (j). To protect the environmental functions of Florida's beaches, only beach compatible fill shall be placed on the beach or in any associated dune system. Beach compatible fill is material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system.

The Permittee has conducted geotechnical investigations that provide adequate data concerning the character of the sediment and the quantities available within the spatial limits of the permitted borrow area(s). The Permittee has provided an analysis of the existing or native sediment and the sediment within the permitted borrow area(s) that demonstrates its compatibility with the naturally occurring beach sediment in accordance with Fla. Admin. Coder. 62B-41.007(2) (j). The sediment analysis and volume calculations were performed using established industry standards and are certified by a Professional Engineer or a Professional Geologist registered in the State of Florida.

Based upon this information and the design of the borrow area(s), the Department of Environmental Protection (Department) has determined that use of the sediment from the borrow area(s) will maintain the general character and functionality of the sediment occurring on the beach and in the adjacent dune and coastal system. Furthermore, this information and the borrow area design provides sufficient quality control/quality assurance (QC/QA) that the mean grain size and

carbonate content of the sediment from the borrow area(s) will meet the requirements of Fla. Admin. Code r. 62B-41.007(2) (j); hence, additional QC/QA procedures are not required for these sediment parameters during construction.

This plan outlines the responsibilities of each stakeholder in the project as they relate to the placement of beach compatible material on the beach. These responsibilities are in response to the possibility that non-beach compatible sediments may exist within the borrow area(s) and could be unintentionally placed on the beach. The QC Plan specifies the minimum construction management, inspection and reporting requirements placed on the Marine Dredging Contractor and enforced by the Permittee, to ensure that the sediment from the borrow area(s) to be used in the project meet the compliance specifications. The QA Plan specifies the minimum construction oversight, inspection and reporting requirements to be undertaken by the Permittee or the Permittee's On-Site Representative to observe, sample, and test the placed sediments to verify the sediments are in compliance.

B. Sediment Quality Specifications

The sediment from the borrow area(s) is similar in Munsell color and grain size distribution to the material in the existing coastal system at the beach placement site. The Department and the Permittee acknowledge that it is possible that discrete occurrences of non-beach compatible sediments may exist within the permitted borrow area(s) that do not comply with the limiting parameters of Fla. Admin. Code. 62B-41.007 (2) (j) 1. – 5. or vary in Munsell color from the composite value. Furthermore, the Department may consider more restrictive values for the sediment parameters to ensure that the sediment from the borrow area(s) is similar in color and grain size distribution to the sediment in the existing coastal system at the beach placement site. Therefore, fill material compliance specifications for the sediment from the borrow area(s) proposed for this project are provided in Table 1.

The compliance specifications take into account the variability of sediment on the native or existing beach and are values which may reasonably be attained given what is known about the borrow area sediment. Beach fill material which falls outside of these limits will be considered unacceptable and subject to remediation.

Table 1: Sediment Compliance Specifications

Sediment Parameter	Parameter Definition	Compliance Value
Mean grain size	Minimum and maximum values (Using moment method calculation)	0.25 mm to 0.60 mm
Max. Silt Content	passing #230 sieve	2%
Max. Fine Gravel Content*	retained on #4 sieve	5%
Munsell Color Value	moist Value (chroma = 1)	6 or lighter

Beach fill material shall not contain construction debris, toxic material, other foreign matter, coarse gravel or rocks.

*Shell Content is used as the indicator of fine gravel content for the implementation of quality control/quality assurance procedures.

C. Quality Control Plan

The contract documents shall incorporate the following technical requirements, or equivalent language that addresses the location of dredging, sediment quality monitoring on the beach, and, if necessary, remedial actions. The Permittee will seek to enforce these contract requirements during the execution of work.

C1. Electronic Positioning and Dredge Depth Monitoring Equipment.

The Contractor will continuously operate electronic positioning equipment, approved by the Engineer, to monitor the precise positioning of the excavation device location(s) and depth(s). A Differential Global Positioning System (DGPS) or equivalent system providing equal or better accuracy will be used to determine the horizontal position and will be interfaced with an appropriate depth measuring device to determine the vertical position of the bottom of the excavation device. The horizontal positioning equipment will maintain an accuracy of +/- 3.0 feet. The vertical positioning equipment will maintain a vertical accuracy of +/-0.5 feet with continuous applicable tidal corrections measured at the project site.

C2. Dredge Location Control

The Contractor is required to have, in continuous operation on the dredge, electronic positioning equipment that will accurately compute and plot the position of the dredge. Such fixes, and the accompanying plots, will be furnished to the Permittee's on-site representative daily as part of the QC Reports. The electronic positioning equipment will be installed on the dredge so as to monitor, as closely as possible, the actual location of the excavation device(s). The location of the master antenna on the dredge and the distance and direction from the master antenna to the bottom of the excavation device will be reported on the Daily Reports. A printout of the excavation device positions in State Plane Coordinates, the excavation device depths corrected for tide elevation and referenced to the North American Vertical Datum of 1988 (NAVD 88) and the time, will be

maintained using an interval of two (2) minutes for each printed fix. A printed and computer file (in ASCII format) copy of the position data will be provided to the Engineer as part of the daily report. The Contractor will prepare a plot of the data that includes the State Plane Coordinate grid system and the borrow area limits. The format of the plot may be subject to approval by the Permittee's Engineer. No dredging will take place outside of the borrow area limits (horizontal and vertical limits) as shown on the drawings.

C3.Dredging Observation

The Contractor will be responsible for establishing such control as may be necessary to insure that the allowable excavation depths and spatial limits are not exceeded. If the Contractor encounters noncompliant sediment during dredging, the Contractor will immediately cease dredging, relocate the dredge into compliant sediment, and will verbally notify the Permittee's On-site Representative, providing the time, location, and description of the noncompliant sediment. The Contractor will also report any encounters with noncompliant sediment in the Contractor's Daily Report, providing depth and location in State Plane Coordinates of said materials within the borrow area. The Contractor, in cooperation with the Permittee's Engineer, will use the dredge positioning records, plans, and vibrocore descriptions to determine where the Contractor may dredge to avoid additional placement of noncompliant sediment. The Contractor will adjust his or her construction operation to avoid the noncompliant sediment to the greatest extent practicable.

C4.Beach Observation

The Contractor will continuously visually monitor the sediment being placed on the beach. If noncompliant sediment is placed on the beach, the Contractor will immediately cease dredging, relocate the dredge into compliant sediment, and verbally notify the Permittee's On-site Representative, providing the time, location, and description of the noncompliant sediment. The Contractor will also report any encounters with noncompliant sediment in the Contractor's Daily Report, providing depth and location in State Plane Coordinates of said materials within the borrow area. The Contractor will take the appropriate remediation actions as directed by the Permittee or Permittee's Engineer.

C5.Excavation Requirements

The Contractor will excavate within the approved boundaries and maximum depths of the borrow area(s) in a uniform and continuous manner. If directed by the Permittee's Engineer, the Contractor will change the location and/or depth of excavation within the borrow area limits.

C6.Vibrocore Logs and Grain Size Data

The Contractor will be provided with all descriptions of sediment vibrocore borings collected within the borrow area(s), and will acknowledge that he is aware of the quality of the sediment as

described in the sediment vibracore logs. These logs and grain size data will be presented in the construction specifications.

D. Quality Assurance Plan

The Permittee will seek to enforce the construction contract and Department permits related to sediment quality. In order to do so, the following steps shall be followed:

D1. Construction Observation

Construction observation by the Permittee's On-Site Representative will be performed 7 days a week, at least 8 hours a day during periods of active construction. Most observations will be conducted during daylight hours; however, random nighttime observations shall be conducted.

D2. On-Site Representative

The Permittee will provide on-site observation by individuals with training or experience in beach nourishment and construction inspection and testing, and who are knowledgeable of the project design and permit conditions. The project Engineer, a qualified coastal engineer, will actively coordinate with the Permittee's On-Site Representative, who may be an employee or sub-contractor of the Permittee or the Engineer. Communications will take place between the Engineer and the Permittee's On-Site Representative on a daily basis.

D3. Pre-Construction Meeting

The project QC/QA Plan will be discussed as a matter of importance at the pre-construction meeting. The Contractor will be required to acknowledge the goals and intent of the above described QC/QA Plan, in writing, prior to commencement of construction.

D4. Contractor's Daily Reports

The Engineer will review the Contractor's Daily Reports which characterize the nature of the sediments encountered at the borrow area and placed along the project shoreline with specific reference to moist sand color and the occurrence of rock, rubble, shell, silt or debris that exceeds acceptable limits. The Engineer will review the dredge positions in the Contractor's Daily Report.

D5. On Call

The Engineer will be continuously on call during the period of construction for the purpose of making decisions regarding issues that involve QC/QA Plan compliance.

D6.Addendums

Any addendum or change order to the Contract between the Permittee and the Contractor will be evaluated to determine whether or not the change in scope will potentially affect the QC\QA Plan.

D7.During Construction Sampling for Visual Inspection

To assure that the fill material placed on the beach is in compliance with the permit, the Permittee's Engineer or On-Site Representative will conduct assessments of the beach fill material as follows:

- a. During excavation and fill placement activities, the Permittee's On-Site Representative will collect a sediment sample at not less than 200-foot intervals of newly constructed berm to visually assess grain size, Munsell color, shell content, and silt content. The sample shall be a minimum of 1 U.S. pint (approximately 200 grams). This assessment will consist of handling the fill material to ensure that it is predominantly sand to note the physical characteristics and assure the material meets the sediment compliance parameter specified in this Plan. If deemed necessary, quantitative assessments of the sand will be conducted for grain size, silt content, shell content and Munsell color using the methods outlined in section D.8.b. Each sample will be archived with the date, time, and location of the sample. The results of these daily inspections, regardless of the quality of the sediment, will be appended to or notated on the Contractor's Daily Report. All samples will be stored by the Permittee for at least 60 days after project completion.
- b. If the Permittee or Engineer determines that the beach fill material does not comply with the sediment compliance specifications in this QC/QA Plan, the Permittee or Engineer will immediately instruct the Contractor to cease material excavation operations and take whatever actions necessary to avoid further discharge of noncompliant sediment. The Contractor, in cooperation with the Permittee's Engineer, will use the dredge positioning records, plans, and vibracore descriptions to determine where the Contractor may dredge to avoid additional placement of noncompliant sediment. The Contractor will adjust his or her construction operation to avoid the noncompliant sediment to the greatest extent practicable. The sediment inspection results will be reported to the Department.

D8.Post-Construction Sampling for Laboratory Testing

To assure that the fill material placed on the beach was adequately assessed by the borrow area investigation and design, the Project Engineer will conduct assessments of the sediment as follows:

- a. Post-construction sampling of each acceptance section and testing of the fill material will be conducted to verify that the sediment placed on the beach meets

the expected criteria/characteristics provided during from the geotechnical investigation and borrow area design process. Upon completion of an acceptance section of constructed beach, the Engineer will collect two (2) duplicate sand samples at each Department reference monument profile line to quantitatively assess the grain size distribution, moist Munsell color, shell content, and silt content for compliance. The Engineer will collect the sediment samples of a minimum of 1 U.S. pint (at least 200 grams) each from the bottom of a test hole a minimum of 18 inches deep within the limits of the constructed berm. The Engineer will visually assess grain size, Munsell color, shell content, and silt content of the material by handling the fill material to ensure that it is predominantly sand, and further to note the physical characteristics. The Engineer will note the existence of any layering or rocks within the test hole. One sample will be sent for laboratory analysis while the other sample will be archived by the Permittee. All samples and laboratory test results will be labeled with the Project name, FDEP Reference Monument Profile Line designation, State Plane (X,Y) Coordinate location, date sample was obtained, and "Construction Berm Sample.

- b. All samples will be evaluated for visual attributes (Munsell color and shell content), sieved in accordance with the applicable sections of ASTM D422-63 (Standard Test Method for Particle-Size Analysis of Soils), ASTM D1140 (Standard Test Method for Amount of Material in Soils Finer than No. 200 Sieve), and ASTM D2487 (Classification of Soils for Engineering Purposes), and analyzed for carbonate content. The samples will be sieved using the following U.S. Standard Sieve Numbers: 3/4", 5/8", 3.5, 4, 5, 7, 10, 14, 18, 25, 35, 45, 60, 80, 120, 170, and 230.
- c. A summary table of the sediment samples and test results for the sediment compliance parameters shall accompany the complete set of laboratory testing results. The column headings will include: Sample Number; Mean Grain Size (mm); Sorting Value; Silt Content (%); Shell Content (%); Munsell Color Value; and a column stating whether each sample MET or FAILED the compliance values found in Table 1. The sediment testing results will be certified by a P.E or P.G. registered in the State of Florida. A statement of how the placed fill material compares to the sediment analysis and volume calculations from the sand search investigation and borrow area design shall be included in the sediment testing results report. The Permittee will submit sediment testing results and analysis report to the Department within 90 days following beach construction.
- d. In the event that a section of beach contains fill material that is not in compliance with the sediment compliance specifications, then the Department will be notified. Notification will indicate the volume, aerial extent and location of any unacceptable beach areas and remediation planned.

E. Remediation

E1.Compliance Area

If a sample does not meet the compliance value for construction debris, toxic material, other foreign material, coarse gravel, or rock the Permittee shall determine the aerial extent and remediate regardless of the extent of the noncompliant material. If a sample is noncompliant for the silt content, shell content, or Munsell color and the aerial extent exceeds 10,000 square feet, the Permittee shall remediate.

E2.Notification

If an area of newly constructed beach does not meet the sediment compliance specifications, then the Department (JCPCCompliance@dep.state.fl.us) will be notified. Notification will indicate the aerial extent and location of any areas of noncompliant beach fill material and remediation planned. As outlined in section E.4 below, the Permittee will immediately undertake remediation actions without additional approvals from the Department. The results of any remediation will be reported to the Department following completion of the remediation activities and shall indicate the volume of noncompliant fill material removed and replaced.

E3.Sampling to determine extent

In order to determine if an area greater than 10,000 square feet of beach fill is noncompliant, the following procedure will be performed by the Engineer:

- a. Upon determination that the first sediment sample is noncompliant, at minimum, five (5) additional sediment samples will be collected at a 25-foot spacing in all directions and assessed. If the additional samples are also noncompliant, then additional samples will be collected at a 25-foot spacing in all directions until the aerial extent is identified.
- b. The samples will be visually compared to the acceptable sand criteria. If deemed necessary by the Engineer, quantitative assessments of the sand will be conducted for grain size, silt content, shell content, and Munsell color using the methods outlined in Section D.8.b. Samples will be archived by the Permittee.
- c. A site map will be prepared depicting the location of all samples and the boundaries of all areas of noncompliant fill.
- d. The total square footage will be determined.
- e. The site map and analysis will be included in the Contractor's Daily Report.

E4.Actions

The Permittee or Permittee's Engineer shall have the authority to determine whether the material placed on the beach is compliant or noncompliant. If placement of noncompliant material occurs, the Contractor will be directed by the Permittee or Permittee's Engineer on the necessary corrective actions. Should a situation arise during construction that cannot be corrected by the remediation methods described within this QC/QA Plan, the Department will be notified. The remediation actions for each sediment parameter are as follows:

- a. *Silt*: blending the noncompliant fill material with compliant fill material within the adjacent construction berm sufficiently to meet the compliance value, or removing the noncompliant fill material and replacing it with compliant fill material.
- b. *Shell*: blending the noncompliant fill material with compliant fill material within the adjacent construction berm sufficiently to meet the compliance value or removing the noncompliant fill material and replacing it with compliant fill material.
- c. *Munsell color*: blending the noncompliant fill material with compliant fill material within the adjacent construction berm sufficiently to meet the compliance value or removing the noncompliant fill material and replacing it with compliant fill material.
- d. *Coarse gravel*: screening and removing the noncompliant fill material and replacing it with compliant fill material.
- e. *Construction debris, toxic material, or other foreign matter*: removing the noncompliant fill material and replacing it with compliant fill material.

All noncompliant fill material removed from the beach will be transported to an appropriate upland disposal facility located landward of the Coastal Construction Control Line.

E5.Post-Remediation Testing

Re-sampling shall be conducted following any remediation actions in accordance with the following protocols:

- a. Within the boundaries of the remediation actions, samples will be taken at maximum of 25-foot spacing.

- b. The samples will be visually compared to the acceptable sand criteria. If deemed necessary by the Engineer, quantitative assessments of the sand will be conducted for grain size, silt content, and Munsell color using the methods outlined in section D.8.b. Samples will be archived by the Permittee.
- c. A site map will be prepared depicting the location of all samples and the boundaries of all areas of remediation actions.

E6.Reporting

A post-remediation report containing the site map, sediment analysis, and volume of noncompliant fill material removed and replaced will be submitted to the Department within 7 days following completion of remediation activities.

All reports or notices relating to this permit shall be emailed and sent to the Department at the following locations:

DEP Bureau of Beaches & Coastal Systems
JCP Compliance Officer
Mail Station 300
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000
phone: (850) 414-7716
e-mail: JCP Compliance@dep.state.fl.us

End of Plan

FDEP Version dated August 30, 2012

APPENDIX D-9b

Sediment Quality Control/Quality Assurance Plan
for Beach or Dune Restoration using an Upland Sand Source

Palm Beach Island Beach Management Agreement

Midtown Beach Nourishment
Phipps Ocean Park Beach Nourishment

July 10, 2013

A. Introduction

This template QA/QC plan is for use for dune restoration using an upland sand source. Pursuant to Fla. Admin. Code r. 62B-41.008 (1) (k) 4.b., permit applications for inlet excavation, beach restoration, or nourishment shall include a quality control/assurance plan that will ensure that the sediment from the borrow areas to be used in the project will meet the standard in Fla. Admin. Code r. 62B-41.007(2) (j). To protect the environmental functions of Florida's beaches, only beach compatible fill shall be placed on the beach or in any associated dune system. Beach compatible fill is material that maintains the general character and functionality of the material occurring on the beach and in the adjacent dune and coastal system.

The Department has received the results of geotechnical investigations that provide adequate data concerning the character of the sediment and the quantities available within the spatial limits of the upland sand source(s). The Department has received an analysis of the existing or native sediment and the sediment within the permitted upland sand source(s), including the methods of mining and post-mining processing, that demonstrates its compatibility with the naturally occurring beach sediment in accordance with Fla. Admin. Code r. 62B-41.007(2) (j). The sediment analysis and volume calculations were performed using established industry standards and are certified by a Professional Engineer or a Professional Geologist registered in the State of Florida.

Based upon this information, the Department of Environmental Protection (Department) has determined that use of the sediment from the upland sand source(s) will maintain the general character and functionality of the sediment occurring on the beach and in the adjacent dune and coastal system. Furthermore, this information provides sufficient quality control/quality assurance (QC/QA) that the mean grain size and carbonate content of the sediment from the upland sand source(s) will meet the requirements of Fla. Admin. Code r. 62B-41.007(2) (j); hence, additional QC/QA procedures are not required for these sediment parameters during construction.

This plan outlines the responsibilities of each stakeholder in the project as they relate to the placement of beach compatible material on the beach. These responsibilities are in response to the possibility that non-beach compatible sediments may exist within the upland sand source(s) and could be unintentionally placed on the beach. The QC Plan specifies the minimum construction management, inspection and reporting requirements placed on the Contractor and enforced by the Permittee, to ensure that the sediment from the upland sand source(s) to be used in the project meet the compliance specifications. The QA Plan specifies the minimum construction oversight, inspection and reporting requirements to be undertaken by the Permittee or the Permittee’s On-Site Representative to observe, sample, and test the placed sediments to verify the sediments are in compliance.

B. Sediment Quality Specifications

The sediment from the upland sand source(s) is similar in Munsell color and grain size distribution to the material in the existing coastal system at the beach placement site. The Department and the Permittee acknowledge that it is possible that discrete occurrences of non-beach compatible sediments may exist within the permitted upland sand source(s) that do not comply with the limiting parameters of Fla. Admin. Code r. 62B-41.007 (2) (j) 1. – 5., or vary in Munsell color from the composite value. Furthermore, the Department may consider more restrictive values for the sediment parameters to ensure that the sediment from the upland sand source(s) is similar in color and grain size distribution to the sediment in the existing coastal system at the beach placement site. Therefore, fill material compliance specifications for the sediment from the upland sand source(s) proposed for this project are provided in Table 1.

The compliance specifications take into account the variability of sediment on the native or existing beach, and are values which may reasonably be attained given what is known about the upland sand source(s). Beach fill material which falls outside of these limits will be considered unacceptable and subject to remediation.

Table 1: Sediment Compliance Specifications

Sediment Parameter	Parameter Definition	Compliance Value
Mean grain size	Minimum and maximum values (Using moment method calculation)	0.25 mm to 0.60 mm
Max. Silt Content	passing #230 sieve	2%
Max. Fine Gravel Content*	retained on #4 sieve	5%
Munsell Color Value	moist Value (chroma = 1)	6 or lighter

Beach fill material shall not contain construction debris, toxic material, other foreign matter, coarse gravel or rocks.

*Shell Content is used as the indicator of fine gravel content for the implementation of quality control/quality assurance procedures.

C. Quality Control Plan

The contract documents shall incorporate the following technical requirements, or equivalent language that addresses the sediment quality monitoring on the beach, and, if necessary, remedial actions. The Permittee will seek to enforce these contract requirements during the execution of work. The Contractor's Quality Control Plan shall be submitted for review and acceptance by the Permittee. This Plan shall also address sediment quality assurance by including: (1) the specific sampling frequency and testing methodology to be provided by the Contractor, (2) the name, address and point of contact for the Licensed Testing Laboratory to be used for the required collection of samples and laboratory testing, and (3) how the Contractor intends to assess compliance with the Sediments Compliance Specifications as shown in Table 1 above.

The characteristics of the in-situ materials in the upland sand source(s) are indicated the geotechnical data, including the boring logs and grain size distribution curves. The characteristics of the processed material are also included with the geotechnical data. However, the Contractor should be aware that it is possible for material of differing characteristics to be present and that the mining process may correspondingly require revisions to produce beach compatible sand consistent with the Sediment Compliance Specifications in Table 1.

C1. Assessment at Upland Sand Source

The material shall be observed while the material is being loaded into the trucks for transport to the Construction Access/ Staging Area. Both the Contractor and the Permittee will have benchmark samples labeled with the permit number, "Benchmark Sample", date collected, site name and information on where the sample was attained. The benchmark sample shall be material that has been deemed beach compatible in accordance with the Sediment Compliance Specifications and shall serve as the minimum requirement for the material being placed on the beach. If any material appears to be non-compliant, it shall be set aside for testing and/or further processing and not transported to the beach.

a. For conventional hydraulic excavation and stockpiling.

The Contractor will collect a sediment sample at not less than 4 samples for each 3,000 cubic yards of stockpiled material to visually assess grain size, Munsell color, shell content, and silt content against the benchmark sample. The sample shall be a minimum of 1 U.S. pint (approximately 200 grams). This assessment will consist of handling the fill material to ensure that it is predominantly sand to note the physical characteristics and assure the material meets the sediment compliance parameter specified in this Plan. If deemed necessary, quantitative assessments of the sand will be conducted for grain size, silt content, shell content and Munsell color using the methods outlined in section D.7.b. Each sample will be archived with the date, time, and location of the sample. The results of these daily inspections, regardless of the quality of the sediment, will be appended to or notated

on the Contractor's Daily Report. All samples will be stored by the Permittee for at least 60 days after project completion.

b. For material requiring special handling and material processing

If special handling and material processing are necessary to produce beach compatible material consistent with the Sediment Compliance Specifications in Table 1, then sampling and laboratory testing of the processed sand shall be conducted at the upland mine(s) from the stockpiled material before the material is transported to the Construction Access/Staging Areas. The Contractor will collect 4 representative samples from approximately every 3,000 cubic yards of material in the stockpile no less than 6 inches below the surface. The samples shall be tested at a Licensed Testing Laboratory using the criteria outlined in Section D.7.b.

If a sample does not meet the Sediment Compliance Specifications in Table 1, then the 3,000 cubic yards of material represented by that sample shall not be transported to the Construction Access/Staging Area. The material may undergo further processing to meet the Sediment Compliance Specifications with additional testing to verify the additional processing produce material that meets the Sediment Compliance Specifications, or the material shall be set aside and not used.

C2. Beach Observation

The Contractor will continuously visually monitor the sediment being placed on the beach. An assessment will be made during placement at a minimum of once every hour. This assessment will consist of handling the fill material to ensure that it is predominantly sand and to note the physical characteristics, and assure the material meets the Sediment Compliance Specifications in Table 1. If noncompliant sediment is placed on the beach, the Contractor will immediately cease placement until any stockpiled material at the beach construction staging area can be verified as beach compatible and verbally notify the Permittee's On-site Representative, providing the time, location, and description of the noncompliant sediment. The Contractor will take the appropriate remediation actions as directed by the Permittee or Permittee's Engineer.

D. Quality Assurance Plan

The Permittee will seek to enforce the construction contract and Department permits related to sediment quality. In order to do so, the following steps shall be followed:

D1. Construction Observation

Construction observation by the Permittee's On-Site Representative will be performed daily basis during periods of active construction. The Permittee's On-Site Representative will collect a sediment sample to visually assess grain size, Munsell color, shell content, and silt content against

the benchmark sample. The observation will include handling the fill material to ensure that it is predominantly sand to note the physical characteristics and assure the material meets the sediment compliance parameter specified in this Plan. If deemed necessary, quantitative assessments of the sand will be conducted for grain size, silt content, shell content and Munsell color using the methods outlined in section D.7.b.

D2. On-Site Representative

The Permittee will provide on-site observation by individuals with training or experience in beach nourishment and construction inspection and testing, and who are knowledgeable of the project design and permit conditions. The project Engineer will actively coordinate with the Permittee's On-Site Representative, who may be an employee or sub-contractor of the Permittee or the Engineer. Communications will take place between the Engineer and the Permittee's On-Site Representative on a weekly basis.

D3. Pre-Construction Meeting

The project QC/QA Plan will be discussed as a matter of importance at the pre-construction meeting. The Contractor will be required to acknowledge the goals and intent of the above described QC/QA Plan, in writing, prior to commencement of construction.

D4. Contractor's Daily Reports

The Permittee's On-Site Representative will review the Contractor's Daily Reports which will characterize the nature of the sediments encountered at the upland sand source and placed along the project shoreline with specific reference to moist sand color and the occurrence of rock, rubble, shell, silt or debris.

D5. On Call

The project Engineer will be continuously on call during the period of construction for the purpose of making decisions regarding issues that involve QC/QA Plan compliance.

D6. Addendums

Any addendum or change order to the Contract between the Permittee and the Contractor will be evaluated to determine whether or not the change in scope will potentially affect the QC/QA Plan.

D7. Post-Construction Sampling for Laboratory Testing

To assure that the fill material placed on the beach was adequately assessed by the borrow area investigation and design, the Project Engineer will conduct assessments of the sediment as follows:

- a. Post-construction sampling of each acceptance section and testing of the fill material will be conducted to verify that the sediment placed on the beach meets the expected criteria/characteristics provided during from the geotechnical investigation and borrow area design process. Upon completion of an acceptance section of constructed beach, the project Engineer will collect two (2) duplicate sand samples at each Department reference monument profile line to quantitatively assess the grain size distribution, moist Munsell color, shell content, and silt content for compliance. The Engineer will collect the sediment samples of a minimum of 1 U.S. pint (at least 200 grams) each from the bottom of a test hole a minimum of 18 inches deep within the limits of the constructed berm. The Engineer will visually assess grain size, Munsell color, shell content, and silt content of the material by handling the fill material to ensure that it is predominantly sand, and further to note the physical characteristics. The Engineer will note the existence of any layering or rocks within the test hole. One sample will be sent for laboratory analysis while the other sample will be archived by the Permittee. All samples and laboratory test results will be labeled with the Project name, FDEP Reference Monument Profile Line designation, date sample was obtained, and "Construction Berm Sample."
- b. All samples will be evaluated for visual attributes (Munsell color and shell content), sieved in accordance with the applicable sections of ASTM D422-63 (Standard Test Method for Particle-Size Analysis of Soils), ASTM D1140 (Standard Test Method for Amount of Material in Soils Finer than No. 200 Sieve), and ASTM D2487 (Classification of Soils for Engineering Purposes), and analyzed for carbonate content. The samples will be sieved using the following U.S. Standard Sieve Numbers: 3/4", 5/8", 3.5, 4, 5, 7, 10, 14, 18, 25, 35, 45, 60, 80, 120, 170, and 230.
- c. A summary table of the sediment samples and test results for the sediment compliance parameters shall accompany the complete set of laboratory testing results. The column headings will include: Sample Number; Mean Grain Size (mm); Sorting Value; Silt Content (%); Shell Content (%); Munsell Color Value; and a column stating whether each sample MET or FAILED the compliance values found in Table 1. The sediment testing results will be certified by a P.E or P.G. registered in the State of Florida. A statement of how the placed fill material compares to the sediment analysis and volume calculations from the sand search investigation and borrow area design shall be included in the sediment testing results report. The Permittee will submit sediment testing results and analysis report to the Department within 90 days following beach construction.
- d. In the event that a section of beach contains fill material that is not in compliance with the sediment compliance specifications, then the Department will be notified.

Notification will indicate the volume, aerial extent and location of any unacceptable beach areas and remediation planned.

E. Remediation

E1.Compliance Area

If a sample does not meet the compliance value for construction debris, toxic material, other foreign material, coarse gravel, or rock the Permittee shall determine the aerial extent of the noncompliant beach fill material and remediate regardless of the extent of the noncompliant material. If a sample is noncompliant for the silt content, shell content, or Munsell color, and the aerial extent exceeds 10,000 square feet of beach berm or 100 linear feet of dune for dune-only projects, the Permittee shall remediate.

E2.Notification

If an area of newly constructed beach or dune does not meet the sediment compliance specifications, then the Department (JCPCompliance@dep.state.fl.us) will be notified. Notification will indicate the aerial extent and location of any areas of noncompliant beach fill material and remediation planned. As outlined in section E.4 below, the Permittee will immediately undertake remediation actions without additional approvals from the Department. The results of any remediation will be reported to the Department following completion of the remediation activities and shall indicate the volume of noncompliant fill material removed and replaced.

E3.Sampling to determine extent

In order to determine if an area greater than 10,000 square feet of beach berm or 100 linear feet of dune for dune-only projects is noncompliant, the following procedure will be performed by the Permittee's On-site Representative or Engineer:

- a. Upon determination that the first sediment sample is noncompliant, at minimum, five (5) additional sediment samples will be collected at a maximum 25-foot spacing in all directions and assessed. If the additional samples are also noncompliant, then additional samples will be collected at a 25-foot spacing in all directions until the aerial extent is identified.
- b. The samples will be visually compared to the acceptable sand criteria. If deemed necessary by the Engineer, quantitative assessments of the sand will be conducted for grain size, silt content, shell content, and Munsell color using the methods outlined in Section D.7.b. Samples will be archived by the Permittee.

- c. A site map will be prepared depicting the location of all samples and the boundaries of all areas of noncompliant fill.
- d. The total square footage will be determined.
- e. The site map and analysis will be included in the Contractor's Daily Report.

E4.Actions

The Permittee or Permittee's Engineer shall have the authority to determine whether the material placed on the beach is compliant or noncompliant. If placement of noncompliant material occurs, the Contractor will be directed by the Permittee or Permittee's Engineer on the necessary corrective actions. Should a situation arise during construction that cannot be corrected by the remediation methods described within this QC/QA Plan, the Department will be notified. The remediation actions for each sediment parameter are as follows:

- a. *Silt*: blending the noncompliant fill material with compliant fill material within the adjacent construction berm or dune sufficiently to meet the compliance value, or removing the noncompliant fill material and replacing it with compliant fill material.
- b. *Shell*: blending the noncompliant fill material with compliant fill material within the adjacent construction berm or dune sufficiently to meet the compliance value or removing the noncompliant fill material and replacing it with compliant fill material.
- c. *Munsell color*: blending the noncompliant fill material with compliant fill material within the adjacent construction berm or dune sufficiently to meet the compliance value or removing the noncompliant fill material and replacing it with compliant fill material.
- d. *Coarse gravel*: screening and removing the noncompliant fill material and replacing it with compliant fill material.
- e. *Construction debris, toxic material, or other foreign matter*: removing the noncompliant fill material and replacing it with compliant fill material.

All noncompliant fill material removed from the beach will be transported to an appropriate upland disposal facility located landward of the Coastal Construction Control Line or returned to the upland mine.

E5.Post-Remediation Testing

Re-sampling shall be conducted following any remediation actions in accordance with the following protocols:

- a. Within the boundaries of the remediation actions, samples will be taken at maximum of 25-foot spacing.
- b. The samples will be visually compared to the acceptable sand criteria. If deemed necessary by the Engineer, quantitative assessments of the sand will be conducted for grain size, silt content, and Munsell color using the methods outlined in Section D.7.b. Samples will be archived by the Permittee.
- c. A site map will be prepared depicting the location of all samples and the boundaries of all areas of remediation actions.

E6.Reporting

A post-remediation report containing the site map, sediment analysis, and volume of noncompliant fill material removed and replaced will be submitted to the Department within 7 days following completion of remediation activities.

All reports or notices relating to this permit shall be emailed and sent to the Department at the following locations:

DEP Bureau of Beaches & Coastal Systems
JCP Compliance Officer
Mail Station 300
3900 Commonwealth Boulevard
Tallahassee, Florida 32399-3000
phone: (850) 414-7716
e-mail: JCP Compliance@dep.state.fl.us

End of Plan
FDEP Version dated August 30, 2012