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DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND, ATLANTIC
6506 HAMPTON BLVD
NORFOLK VA 23508-1278

IN REPLY REFER TO:

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Ser EV31KRC/521
December 17, 2010

Mr. David M. Bernhart
Assistant Regional Administrator for Protected Resources
National Marine Fisheries Service
263 13th Avenue South
St. Petersburg, Florida 33701-5505

Dear Mr. Bernhart:

The Navy is pleased to submit one hardcopy and one CD of the Final Work Plan for the Bahia Icacos Waterway Barrier Installation Biological Assessment, Former Vieques Naval Training Range, Vieques, Puerto Rico. Please also find enclosed comments on the Draft Work Plan submitted by Dr. Lisamarie Carrubba on December 6, 2010, the Navy's responses to the received comments, and the specific revisions made to the Draft Work Plan to address the received comments. Additional copies of the enclosures have been sent to the individuals listed below.

Should you have any questions, please do not hesitate to contact Mr. Kevin Cloe at (757) 322-4736 or e-mail: kevin.cloe@navy.mil.

Sincerely,

R. D. CUREMAN
Environmental Business Line Manager
By direction of the Commander

Enclosures (3)

- Copy to:
- NMFS (Ms. Lisamarie Carrubba)
- PRDNER (Mr. Craig Lilyestrom)
- NOAA (Ms. Diane Wehner)
- EPA (Mr. Daniel Rodriguez)
- FWS (Mr. Rich Henry, Ms. Susan Silander, Mr. Mike Barandiaran)
- PREQB (Ms. Wilmarie Rivera)
- CH2M HILL (Mr. John Tomik, Mr. Tunch Orsoy)

Navy Responses to NMFS Comments on November 2010 Draft Bahia Icacos Biological Assessment Work Plan

Comments submitted by Dr. Lisamarie Carrubba on December 6, 2010

Mr. Tunch Orsoy/CH2M HILL discussed comments with Dr. Lisamarie Carrubba via teleconference on December 10, 2010

Navy responses to comments prepared on December 14, 2010

- 1. The work plan is not clear as to how maps of coral designated critical habitat will be prepared. As discussed during our July 22, 2010, site inspection, a map showing the location of listed coral colonies in relation to the proposed barriers and buoys, as well as showing the location of coral critical habitat in the project area, needs to be included in the BA. NMFS suggests adding a note in section 2.3.5 regarding the methods to be used to map coral designated critical habitat in the project area.**

Section 2.3.5 of the Work Plan has been revised to include how critical habitat for federally listed coral species within the project area will be identified and mapped (see attached highlighted revisions and Final Work Plan).

- 2. The locations of the proposed mariner warning buoys, in particular buoys 1 and 3 seem to be in areas where boaters may not view the buoys prior to getting into shallow water. NMFS recommends that areas outside the reef and that are not behind the cay be surveyed to determine locations that will enable better line of sight for mariners to view the buoys well before approaching Bahia Icacos. In addition, NMFS recommends that a different type of anchorage system be utilized in areas where it is not possible to locate these buoys in sand bottoms. There are other anchor systems that have less impact on the marine bottom than those proposed that would be more appropriate for installation in areas containing listed sea turtle habitat and designated critical habitat for listed corals.**

Sections 2.2 and 2.3.2.2 of the Work Plan have been revised to indicate that 1) the locations of the mariner warning buoys shown on Figure 2-2 are intended only as preliminary starting point locations for consideration in the field, 2) the field team will evaluate areas outside the preliminary locations for consideration and may select final locations that are significantly different from the locations shown on Figure 2.2, and 3) the anchoring system for the mariner warning buoys presented in the Work Plan is subject to change based on further evaluation (see attached highlighted revisions and Final Work Plan).

- 3. As for #2, NMFS recommends that the locations of reef marker buoys to warn boaters of the presence of shallow reefs be located in areas where boaters are likely to attempt to transit in order to avoid the floating barriers. Based on the proposed location of the barriers versus the reefs, NMFS recommends eliminating the buoys proposed adjacent to points A and B and surveying the reef face between B and F (points demarcating two of the floating barriers) to determine whether sea conditions would allow for the installation of reef marker buoys along the reef face; expanding the area to be surveyed near point E to include the area between point E and the reef to the east; and eliminating the buoy near point D and instead surveying the area south of proposed mariner warning buoy 3**

to determine whether an additional reef marker buoy should be placed in this area to minimize the possibility of boaters attempting to access the bay through the reefs in this area. Also, as for #2, NMFS recommends the use of another type of anchor system such as Manta or Halas that would be less damaging to the marine bottom than the anchor system currently proposed.

Sections 2.2 and 2.3.2.3 of the Work Plan have been revised to indicate that 1) the locations of the reef marker buoys shown on Figure 2-2 are intended only as preliminary starting point locations for consideration in the field, 2) the field team will evaluate areas outside the preliminary locations for consideration and may select final locations that are significantly different from the locations shown on Figure 2.2, 3) some or all of the reef marker buoys may be anchored directly into the reef, 4) depending on field conditions and the locations chosen, the reef marker buoys may be anchored by bulk anchors or by other anchor types such as Manta or Halas anchors, and 5) in locations where reef marker buoys are to be anchored directly into the reef, the anchor points must not contain live or dead coral; these locations must be bare rock or rock covered with macroalgae (see attached highlighted revisions and Final Work Plan).

- 4. NMFS also reminds the Navy that we would like to participate in a portion of the field surveys in order to snorkel the proposed locations of anchor points for each of the structures proposed in the project area. We hope we can work with the Navy to accommodate this site inspection into the work plan during ecological surveys to be performed as required by the plan.**

The Navy welcomes NMFS participation during the field surveys. The Navy plans to update the project schedule in the upcoming weeks and will coordinate the final field schedule with Dr. Carrubba as soon as it is developed.

Revisions Made to Draft Bahia Icacos Biological Assessment Work Plan Based on NMFS Comments (Revisions highlighted in yellow)

2.2 Barrier System Overview

Three channels (south, west, and east channels) are used by boaters to access Bahia Icacos (Figure 2-1). Waterway barriers are proposed to be installed across each of these channels to restrict large recreational boats from entering Bahia Icacos. In addition, 3 mariner warning buoys and 6 to 8 reef marker buoys will be installed. The purpose of the mariner warning buoys is to provide adequate early warning to boaters about the hazards of the waterway barrier system and submerged shallow reefs beyond the buoys. The purpose of the reef marker buoys is to provide adequate early warning to boaters about the hazards of the submerged shallow reefs adjacent to the waterway barrier. The installation of the waterway barriers, mariner warning buoys, and reef marker buoys will be covered by a separate work plan.

The approximate locations for the waterway barriers, mariner warning buoys, and reef marker buoys are shown on Figure 2-2. The waterway barrier and mariner warning buoy locations shown on Figure 2-2 are those proposed in the 2009 draft work plan for the waterway barrier system installation (CH2M HILL, 2009). Reef marker buoys were not proposed in the 2009 draft work plan but were recommended by Dr. Lisamarie Carrubba/NMFS during the meeting/site visit conducted on July 22, 2010. It is important to note that the locations of the mariner warning buoys and reef marker buoys shown on Figure 2-2, in particular, are approximate and intended only as preliminary starting point locations for consideration in the field. The final locations for the buoys will be selected in the field based on field conditions and their potential to be functionally effective.

Schematics of the waterway barrier and its anchoring system and of the mariner warning buoy and its anchoring system are presented as Figures 2-3 and 2-4, respectively. The reef marker buoys will be smaller in size than the mariner warning buoys (schematic to be developed). The type of reef marker buoy that will be used and its anchoring system has yet to be determined and will be based partly on the findings of the field investigation. The anchoring system for the mariner warning buoys presented in this Work Plan is also subject to change based on further analysis. Component details and installation guidelines for the waterway barrier system are provided in Appendix A.

Based on the 2009 draft work plan for the waterway barrier system installation, the south, west, and east channel barriers are estimated to be approximately 200, 350, and 650 feet long, respectively, for a total system length of approximately 1,200 feet. The lengths of the barriers are subject to change based on their final location. The waterway barrier proposed to be used is modular; each module is 120 inches long, 16 inches in diameter, and weighs 100 pounds. The barrier will have a draft of approximately 3 to 8 inches.

Based on preliminary planning, the waterway barriers and mariner warning buoys will be secured to the sea floor by 3-ton bulk anchors (clump weights). Secondary anchors will be connected to the bulk anchors. Three types of secondary anchors may be used, depending on

the sand depth. Core (rock) anchors will be used if the sand depth is less than 1 foot, disk anchors will be used if the sand depth is between 1 and 9 feet, and helical (sand screw) anchors will be used if the sand is greater than 9 feet.

As discussed above, the type of anchoring system that will be used for the reef marker buoys has yet to be determined and will be based partly on the findings of the field investigation. Depending on field conditions and the locations chosen, the reef marker buoys may be anchored by bulk anchors or by other anchor types such as Manta or Halas anchors. Unlike the waterway barriers and mariner warning buoys, the reef marker buoys may be anchored directly into the reef to provide effective early warning to boaters about the hazards of the submerged shallow reefs adjacent to the waterway barriers and in nearby areas.

The location on the seafloor where each anchor will be installed is referred to as the anchor point. Each end of each waterway barrier will be anchored by 2 bulk anchors. The bulk anchors will be several feet apart from each other, the distance being roughly equivalent to double the water depth. Therefore, the waterway barrier system will have a total of 14 anchor points (see Figure 2-2). The south and west channel barriers will each have 4 anchor points – 2 on each end of each barrier. The east channel barrier will have 6 anchor points – 2 on each end of the barrier and 2 in the middle of the barrier.

The mariner warning buoys and reef marker buoys will each be anchored by 1 anchor. Therefore, there will be a total of 3 mariner buoy anchor points and 6 to 8 reef marker buoy anchor points (see Figure 2-2).

2.3.2.2 Mariner Buoy Anchor Point Locations

The approximate locations for the mariner warning buoy anchor points are shown on Figure 2-2. The field team will first maneuver the boat to the approximate locations for the mariner warning buoy anchor points shown on Figure 2-1 and preliminarily assess from the boat how suitable each location appears in terms of buoy constructability and effectiveness of the buoys to provide adequate early warning to boaters about the hazards of the waterway barrier system and submerged shallow reefs beyond the buoys. Based on this preliminary assessment, the team will determine the areas to be dived to survey for MEC and to evaluate the benthic environment. As discussed in Section 2.2, the locations of the mariner warning buoys shown on Figure 2-2 are intended only as preliminary starting point locations for consideration in the field. The field team will evaluate areas outside the preliminary locations for consideration and may select final locations that are significantly different from the locations shown on Figure 2.2.

After the areas to be dived are identified, the UXO divers will conduct underwater MEC surveys of the areas. After the MEC surveys are completed, the eco divers will evaluate the benthic habitat in the areas. The UXO divers will accompany the eco divers during these and all other dives. The eco divers will select anchor point locations for the mariner warning buoys based on the following criteria:

- Anchor point locations must not contain live or dead coral
- Live or dead coral must not exist within the potential reach of either the bulk anchor chain or the secondary anchor chain
- Anchor points must be located to provide adequate early warning to boaters about the hazards of the waterway barrier system and submerged shallow reefs beyond the buoys.

2.3.2.3 Reef Marker Buoy Anchor Point Locations

Reef marker buoy anchor points will be located in the vicinities of the shallow reefs that are close to where the waterway barriers will be installed. The reef marker buoys should be on the seaward side of the barriers in most or all locations. The approximate locations for the reef marker buoy anchor points are shown on Figure 2-2. As discussed in Section 2.2, the locations of the reef marker buoys shown on Figure 2-2 are intended only as preliminary starting point locations for consideration in the field. The field team will evaluate areas outside the preliminary locations for consideration and may select final locations that are significantly different from the locations shown on Figure 2.2. The field team will evaluate locations for the reef marker buoy anchor points based on where the waterway barrier anchor points are located. The field team will preliminary assess from the boat locations for reef marker buoy anchor points in terms of buoy constructability and effectiveness of the buoys to provide adequate early warning to boaters about the hazards of the submerged shallow reefs adjacent to the waterway barriers and in nearby areas. Based on this preliminary assessment, the team will determine the areas to be dived to survey for MEC and to evaluate the benthic environment.

After the areas to be dived are identified, the UXO divers will conduct underwater MEC surveys of the areas. After the MEC surveys are completed, the eco divers will evaluate the benthic habitat in the areas. The UXO divers will accompany the eco divers during these and all other dives.

As discussed in Section 2.2, some or all of the reef marker buoys may be anchored directly into the reef to provide effective early warning to boaters about the hazards of the submerged shallow reefs adjacent to the waterway barriers and in nearby areas. Depending on field conditions and the locations chosen, the reef marker buoys may be anchored by bulk anchors or by other anchor types such as Manta or Halas anchors. In locations where reef marker buoys are to be anchored directly into the reef, the anchor points must not contain live or dead coral. These locations must be bare rock or rock covered with macroalgae (fleshy or calcareous).

The eco divers will select anchor point locations for the reef marker buoys based on the following criteria:

- Anchor point locations must not contain live or dead coral
- Live or dead coral must not exist within the potential reach of the anchor chain
- In locations where reef marker buoys are to be anchored directly into the reef, the location must be bare rock or rock covered with macroalgae; the rock must not contain live or dead coral
- Anchor points must be located to provide adequate early warning to boaters about the hazards of the submerged shallow reefs adjacent to the waterway barriers and in nearby areas.

2.3.5.1 General Ecological Survey

The area to be covered by the general ecological survey is shown on Figure 2-2. The general ecological survey will be conducted by the eco divers via snorkeling and SCUBA diving. The UXO divers will accompany the eco divers during the snorkel and SCUBA dives. Satellite data and mapping of Bahia Icacos and surrounding areas will be obtained and evaluated prior to the general ecological survey (discussed in Section 2.3.6). A benthic habitat characterization map

will be created for Bahia Icacos and surrounding areas based on the satellite mapping and the data collected during dives. The eco divers will snorkel and conduct SCUBA bounce dives within the project area to photo-interpret the benthic habitats on the satellite mapping. The extent and locations of snorkel and SCUBA dives will be determined during the field investigation and in consultation with the CH2M HILL Senior Ecologist. All primary marine species, including corals, seagrasses, fishes, macro-invertebrates, and sea turtles occurring in the project area will be indentified to lowest possible taxon and recorded on datasheets that can be filled out underwater. The general locations of any listed and candidate coral species (discussed above) sighted during the general survey of the project area will be identified on the benthic habitat characterization map.

Areas that represent critical habitat for staghorn and elkhorn coral will also be delineated on the benthic habitat characterization map. Critical habitat for these coral species within the project area will be designated and mapped as areas that contain substrate of suitable quality and availability, in water depths of 30 meters or less, to support successful recruitment and population growth of the species. Such areas will consist of exposed hard substrate and dead coral skeleton free of sediment cover and turf and fleshy macroalgae cover. Areas of loose sediment, fleshy macroalgal covered hardbottom, or seagrasses will not be considered critical habitat for these coral species.