POTENTIAL DEEPWATER HORIZON OIL SPILL RESTORATION PROJECTS: PROVIDING INFORMATION TO ASSIST WITH PROJECT ASSESSMENT

To help you propose projects to the State of Florida's Department of Environmental Protection (DEP), we developed this project submission form. You are not required to complete this form to submit a project. However, completion of the form will help DEP gather the information required to completely and accurately evaluate a project against the selection and evaluation criteria. Where appropriate in the form, please provide references to any additional supporting information.

Project Name: *(Include project number from DEP's existing list of submitted projects, if applicable.)*

Multi-Site Okaloosa County Nearshore Artificial Reef Construction – Fish Haven 15 and Fish Haven 16

Location for Project Implementation: *(For example, city and county, GIS coordinates if known.)*

1. Fish Haven 15, quarter-mile square reef construction area – Centerpoint; Latitude 30° 21.891' N, Longitude 86° 42.374' W
2. Fish Haven 16, quarter-mile square reef construction area – Centerpoint; Latitude 30° 20.891'N, Longitude 86° 42.374'W

Brief Project Narrative: *(Describe what the project will do.)*

Fish Haven 15 and Fish Haven 16- This scope of these projects includes the construction build out and monitoring of two nearshore artificial reef networks designed for use by kayakers, fishermen and divers. The two nearshore artificial reef networks (Fish Havens 15 and 16) are intended to extend and separate user groups that access the stressed County artificial reef network. Each Fish Haven will contain nine individual reefs for a total of 18 proposed reefs. While the County has an active reef building community, a lion's share of reefs constructed are built by private entities. Public reef construction is needed to provide habitat to both targeted marine species and other species that are critical to a self-sustaining ecosystem. Artificial reefs have very high public support, provide positive economic impacts to a wide range of local businesses and enhance the offshore environment by providing habitat in an otherwise featureless terrain.

The material for Fish Haven 15 and Fish Haven 16 will be pre-fabricated reef structures, donated materials from the United States Air Force, materials of opportunity collected from other entities. All materials will be properly inspected for compliance with local, state and federal regulations and guidelines before being approved for use.

Each Fish Haven will contain nine separate reef construction sites. The permit applications for the two Fish Havens are attached to this document. These permit applications contain the application itself and Supplemental Information that details the specifications for the project and provides figures for visual reference. Since these projects are located within state waters, this project will require two permits through two permitting agencies; the Florida Department of Environmental Protection (FDEP) and the US Army Corps of Engineers (USACE). The FDEP permits have been approved. The USACE permit is noticed meaning that the permit is reviewed and approved by a host of Federal Agencies including the National Marine Fisheries Service, The US Coast Guard and the USACE themselves. The USACE permit approval is expected in the summer of 2013.

Estimated Project Costs: *(Describe the costs of the project, including any assumptions for contingency and ongoing operations and maintenance. Identify other available funding sources such as matching funds, in kind contributions or state or federal dollars. If possible, attach a schedule of anticipated costs, by year, over the anticipated project life.)*

This project can be completed in 12 months. Permit applications for these two construction areas have been submitted and approved by the FDEP and should have the USACE permits in the summer of 2013. The County has accepted material donations from the City of Fort Walton Beach and the USAF. Prefabricated reef structures will supplement inventories of donated materials and are readily available for a per-unit cost. A breakdown of costs associated with this project is as follows:

Construction Activity	Estimated Cost
Project Management	$35,000
Material	$208,800
Loading at Site and Transport to Staging Area	$53,932
Stage Area Work and Barge Loading	$101,900
Deployment	$357,900
Sub Total	***$757,532***

The costs above include all necessary equipment (front end loaders, cranes, etc) for the movement and loading of material. They also include the costs of the barge, tugboat, deployment vessels, quality control dives and project oversight. Siting is complete. The material will be deployed in designated deployment locations within Fish Haven 15 and Fish Haven 16.

Monitoring – Monitoring of Fish Havens will be initiated once construction is complete. A five-year monitoring effort will provide invaluable date that will establish a baseline for future projects constructed in similar fashion to the proposed sites. The objective of the monitoring will be two-fold - observations of fish available for recreational harvest as well as other species that populate the structures and documentation of physical changes to the reef- signs of burial , scouring, movement and the ability to measure such changes. A Monitoring Plan will be developed to detail the processes and expectations of the Monitoring effort. However, in concept, monitoring will most likely incorporate the use of video systems such as GoPro to collect raw data. Video data will be collected by driving transects across the reef. The physical condition of the reefs will be documented through reef dives. Monitoring is proposed for two events per year over 5 years. The cost of the Monitoring effort is estimated to be.

Post Construction Activity	Estimated Cost
Monitoring	$149,600
Sub Total	***$149,600***

Project Activities	Estimated Cost
Construction Activity	$757,532
Post Construction Activity	$149,600
Grand Total	***$907,132***

Anticipated Project Outcome with Respect to Screening Criteria

S1. Technically and administratively feasible: *(Briefly describe the critical technologies involved and any relevant past experience with similar projects.)*

The Okaloosa County Artificial Reef Program (OCARP) has managed over 1500 artificial reef construction projects and deployments and can organize the project to utilize local contractors with the expertise and experience to execute projects in our unique regional marine environment. The County program is experienced in management and execution of the types of projects presented in this proposal. The contractors utilized to perform the bulk of the field work are extensively screened to determine competency, experience and understanding of project objectives.

OCARP will administer permit and reef construction guidance compliance and generate all related documentation throughout construction and post-construction phases. A Project Work Plan will be developed to serve as a reference document for the implementation of Project Controls. OCARP will also produce and manage the various contracts required to complete the project. The Okaloosa County Finance and Purchasing Departments work closely with OCARP to assure that contracts are compliance with all Local, State and Federal regulation. All County departments contributing to the administration of the project are experienced in the reef construction processes. An OCARP Project Manager will be assigned and will be the primary Point of Contact for the project and will oversee the execution of the Project work Plan.

Currently, OCARP has an large inventory of material from two primary sources; USAF Air Force Research Laboratory (AFRL) and the City of Fort Walton Beach (FWB). The bulk of this material will be utilized in the construction of Fish Haven 13 and 14 prior to construction of Fish Haven 15 and 16. The USAF Research Laboratory inventory (see attached permit applications) includes target material used in the research and testing of a variety of USAF ordnance. Currently, the USAF disposes this material and is partially recycled but would like to re-purpose the material for benefit of the marine ecosystem and local community. The aggregate is comprised of 45% native Florida limestone which provides a chemical composition preferred by invertebrates and other marine life that initially colonize the base reef structure. The inventory from FWB (see attached permit applications) includes approximately 200 units of reinforced concrete culverts measuring 2 to 5 feet in diameter and 5 to 10 feet in length. Both the USAF material and the City of Fort Walton Beach material have been inspected by OCARP for compliance with State and Federal regulations.

Even though there currently exists an inventory of reef materials, It is anticipated that the majority of this material will be used building out 18 reefs in Fish Haven 13 and 14. The USAF inventory will be slowly replenished but not at the rate to guarantee enough material will be available for the build out of the proposed construction effort. To guarantee that enough reef building material is available at the time of construction, the County will supplement the donated material with prefabricated reef structures. Some examples pf prefabricated reef structures can be found on the following websites:

- http://artificialreefs.com/
- http://www.reefmaker.com/artificial-reefs/florida-limestone-artificial-reef
- http://www.reefball.org/reef_ball_styles.htm
- http://structurespot.com/category/artificial-reefs/
- http://www.waffle-crete.com/#!__old-applications/artificial-reef

Materials such as those described above will be placed within the proposed construction area with a design spacing intended to promote the growth of a vibrant reef complex. Studies have shown that reef communities can be optimized when the proximity of each reef is considered with respect to the foraging characteristics of target species. While the science of forging areas is not exact, OCARP believes that a 400 foot minimum spacing provides an optimal configuration. With respect to a design minimum of 400 feet, approximately 9 separate reef structures can be constructed in the quarter-mile construction area. The reef structures would be constructed evenly spaced on the perimeter of the quarter-mile rectangle approximately 660 feet apart. There will be some overlap between adjacent reefs, especially toward the center but each perimeter reef will have unlimited seaward foraging. A small amount of material will be placed as a marker at the centerpoint of the construction area.

OCARP will have divers inspect each reef construction to assure that the maximum heights have not been exceeded. Subsidence of material is expected to be minimal. However, all artificial reefs are susceptible to constant external forces including chemical deterioration from contact with salt water and shifting currents which are amplified during extreme weather events. Shifting of the material is expected but as the reef matures, organisms that colonize the material serve to stabilize the material and strengthen the structure.

S2. Provides environmental benefits: *(Briefly describe the nature, magnitude, and timing of any environmental benefits attributable to the project and any potential environmental costs associated with implementing or maintaining the project, e.g., loss of a habitat or conversion of habitat from one type to another during implementation.)*

The local marine environment off of Okaloosa County is relatively featureless. It has been well documented that the addition of submerged structure has an immediate positive impact on the marine environment. OCARP is the permitting agency charged with the oversight of all artificial reef construction, both private and public, in the waters off of Okaloosa County. Expansion of the local reef systems is highly desirable to the citizens of Okaloosa County and the visitors to the area. The proper construction of artificial reefs provides habitat to a wide variety of marine life including target species such a snapper, grouper, amberjack and a variety of pelagic species. In addition, the presence of smaller marine species that find refuge on and around artificial reef, will sustain the environment indefinitely. The construction of an artificial reef represents the construction of new habitats with a very low maintenance requirement. Recent reef construction efforts have shown that smaller baitfish begin to inhabit the water column immediately after and even during the construction process. Within 6 months after the deployment, a wide variety of bony fishes were observed and documented to inhabit the ecosystem and smaller invertebrates and plant life had begun to colonize the structure. Generally, one would expect to observe the smaller species to populate the ecosystem first. In the marine environment, smaller bait fishes use the structure for refuge which in turn attracts larger predatory fish. Invertebrates and plant life are slower to proliferate.

The construction process for materials deployed in the proposed 18 reef sites will consist of the placement of massive pieces of concrete. The properties of the sand at the proposed deployment site will cause the sand to be slightly displaced as the material is placed but the sand will not suspend in the water column. Some finer material will also be displaced but the turbidity is expected to remain low, localized and temporary. No other materials are introduced into the water column that will affect turbidity or dissolve in the saltwater environment.

Detrimental impacts to the marine environment are few. The most harmful affect is the attraction of invasive species like the lionfish. The proliferation of the lionfish over the last couple of years to artificial reefs in waters off of Okaloosa county has been uncontrolled. The impact of this species has not been documented but the physiology and voracious appetite of the lionfish is well documented in other areas.

S3. Does not conflict with any ongoing or planned response or remediation work: *(Briefly describe ongoing response activities in the project implementation area, if any, and why the project does or does not interfere with that work.)*

There is no response or remediation work in the proposed reef construction area.

Other activities that are performed in the area are as follows:

One permitted sand borrow area exists approximately 7.5 miles east of the proposed Fish Haven 15 location and approximately 11 miles from the proposed location of fish Haven 16 but activities in either the proposed reef area or borrow area will not interfere with each other. The borrow site is utilized as a source of material for beach nourishment projects.

US Air Force training missions originating from Eglin Air Force Base and other facilities are routine over waters offshore of Okaloosa County. Other military organizations use the extensive Gulf front real estate owned by the military to conduct exercises and several permanent mission support structures are located along the shoreline. Prior to the beginning the permitting process on any conceptual reef project, OCARP solicits the military for input. In general, the USAF and other military organizations do not restrict the use of any submerged lands in the Gulf. However, some areas are more likely to contain unexploded ordinance than others. Most of these areas are clearly mapped and are made available to the public through NOAA navigation charts. Therefore, consultation with the military is a courtesy and performed early in the project development in order to avoid any future complications. If ordnance was potentially an issue, OCARP would not pursue the project location.

S4. Complies with applicable and relevant federal, state, local, and tribal laws and regulations: *(No information is needed for this screening criteria.)*

This project is regulated by federal state and local rules and regulations. OCARP provides local regulatory oversight and works closely with the US Army Corps of Engineers and Florida Department of Environmental Protection in the permitting process of the applicable reef deployment area. The Florida Fish and Wildlife Conservation Commissions – Division of Marine fisheries provides guidance applicable to the planning, execution and long-term monitoring of County reef projects.

Anticipated Project Outcome with Respect to Evaluation Criteria

E1. Will restore, rehabilitate, or replace a natural resource or service[1] believed/demonstrated to have been injured as a result of the Deepwater Horizon oil spill or associated response activities: *(Briefly describe the nature of any relationship between the new/improved resources or services and those adversely impacted by the oil spill.)*

Okaloosa County experienced significant loss of use of nearshore/offshore Gulf waters resources as a result of the Deepwater Horizon oil spill. This project, upon completion, will aide in enhancing marine resources available for local, residential and commercial use and as an attraction for the significant tourist industry. The enhanced marine resource will result in an overall increase in marine biomass and serve as a safe haven for migratory juvenile species from inshore spawning areas to permanent offshore habitats. The project will also provide recreational opportunities to a wide variety of user groups and relieve pressure on existing reef systems.

[1] In this form, "Services" (or "natural resource services") refers to the functions performed by a natural resource for the benefit of another natural resource and/or the public. Services can be "ecological services" – physical, chemical or biological functions that one natural resource provides for another (such as provision of food) – or "human services" – the use of natural resources used by humans that provide value to the public (such as hunting and fishing).

E2. Is located in, or nearby, resources or services injured by the deepwater horizon spill: *(Briefly describe where the project would be implemented with respect to past/ongoing remediation work.)*

Okaloosa County experienced impacts to its coastal shoreline and inland waters as a result of the Deepwater Horizon oil spill. The County had documented incidents of product washing on shore, as well as floating product observed in the East Pass area of Choctawhatchee Bay. The impact of the incident on submerged resources has not been performed. However, empirical data suggests that the existing reef network continues to be productive and adding to that network will increase the level of productivity.

E3. Is ready for implementation, e.g., design, permitting, and necessary impacts assessments have been completed: *(Briefly describe where in the permitting process the project stands along with an estimated date of when the project can be implemented if it is not currently ready.)*

Permits were submitted in a joint Noticed General Permit to the FDEP and USACE (See Attachments of Permit Application Packages FH15 and FH16) in October 2013. The FDEP has permitted both fish Havens and the USACE continues to review the permit application through solicitation of reviews from other commenting agencies such as the US Coast Guard and National Marine Fisheries. The USACE review is expected to conclude with an approval in the Summer of 2013. At the receipt of the approval, OCARP will be ready to solicit the local business community for reef construction proposals. Funding of the project must be secure before this process is initiated.

E4. Is cost effective: *(Briefly describe why you think the project is cost effective. Discuss whether this project is more cost effective than alternative projects which would provide similar resource or service benefits.)*

Construction of artificial reefs have been documented as providing an excellent cost benefit ratio and are supported by public opinion. Recently, a study performed by the Florida Sea Grant was reported by UF/IFAS News that the "study finds artificial reefs are economic boon, enjoy widespread public support." A link to the news article and report is as follows:
http://www.flseagrant.org/index.php?option=com_content&view=article&id=284:economic-impacts-of-artificial-reefs&catid=51:research-summary&Itemid=101

Okaloosa and other panhandle counties share a similar geographical and economic demography with the southwest Florida study area and a projection of the conclusion to northwest Florida county is comparable.

As per the County Artificial Reef Five Year Plan - *"Artificial reefs are an important component of the recreational fishing and diving opportunities available to Okaloosa County residents and visitors. Most natural "live bottom" reef formations and communities exist farther offshore from Destin Pass than in other parts of the state. The scarcity of live bottom formations in the northeastern Gulf of Mexico is documented in a 1992 Continental Shelf Associates, Inc. report to NOAA; an estimated 3% of the local seafloor contains natural reef formations. The estimated 2003 population of Okaloosa County is 178,104; a 4.5% increase since the US Census conducted in 2000. Vessel registration records for 1997/98 indicate that there are at least 9,000 boats in Okaloosa County capable of utilizing artificial reefs in local waters. The charter fishing and SCUBA diving fleet is composed of over one hundred vessels. A 1999 survey of Destin charter boat operators indicates that these vessels utilize artificial reefs more than 50% of the time. Of the $713 million economic impact of tourists in 1997/98, over $61 million can be attributed to the boating and charter fishing industry. In a 1999 report to Florida DEP Office of Fisheries Management and Assistance Services ("Economic Impact and Importance of Artificial Reefs in Northwest Florida"), Dr Frederick Bell estimates total revenues attributable to artificial reefs for 1997/98 to be $125.94 million. Thus Okaloosa County has an economic interest in maintaining and enhancing local waters through the artificial reef program."*

E5. Has a high potential for long-term success as demonstrated by incorporating established/reliable methods and technologies: *(Briefly describe if/how critical methods and technologies that will be used to implement the project could be considered reliable or proven.)*

The proposed reef system provides a foundation for marine life to perpetuate their natural life-cycle. A minimal amount of monitoring can confirm that this process has begun. Ironically, the biggest threat to this asset is the same environment in which it succeeds. The saltwater marine environment is extremely harsh and includes not only from the water but extreme climactic phenomenon such as tropical storms and hurricanes. However, the design of the reef systems proposed includes the integration of materials that have demonstrated excellent resilience in the saltwater marine environment and effectively resists extreme climatic forces.

E6. Is likely to provide benefits rapidly following implementation: *(Briefly describe the anticipated change in benefits anticipated over time.)*

Once construction of the asset is complete, benefits are realized immediately. The structures themselves, devoid of marine life, provide a visual complexity that is attractive to user groups like divers and snorkelers. Past monitoring on newly deployed reef materials show that large schools of bait fishes and other small migrating fishes are attracted to the asset during the construction process and continue to utilize the asset once construction is complete. Other marine species begin to populate and propagate throughout the reef network within days of construction. A monitoring report of a recent deployment of a tugboat in May 2011 received in December 2011 indicated that the vessel was "covered up" with bait fish and also present were target species like gag grouper, triggerfish, amberjack and schools of red snapper. The presence of this magnitude and variety of marine life is not uncommon for northwest Florida artificial reef projects.

E7. Has a high likelihood of public acceptance: *(Briefly describe evidence to support the given answer based on surveys or results and assessments from past projects. Known or likely opposition to a project should be recognized.)*

Currently, the most requests from the public are nearshore artificial reef projects. Okaloosa County has three permitted Large Area Artificial Reef Sites (LAARS) open for public and private reef deployments and managed by the Okaloosa County Artificial Reef Program. These locations are located in federal waters and collectively occupy over 150 square miles. However, the closest LAARS is approximately 15 miles from the Destin Pass. This distance restricts access for many smaller vessels. The minimum depth in the LAARS is about 90' which restricts recreational diver usage. The proposed reef sites are sorely needed but lack of funding to initiate individual deployments will allow intermittent small scale construction efforts. Funding support of this project through BP restoration dollars will go a long way on the road to healing the tarnished image of BP in the local community and the southeastern US where typical reef system users originate. The nearshore locations of the proposed reef construction areas accommodate almost all of the recreational user needs in the Gulf of Mexico. These needs include;

- Allows relatively quick access from Destin East Pass reducing fuel consumption
- Relieves pressure on offshore fishing reefs
- Safer for recreational fishing vessels due to proximity to shore.
- Attracts target species
- Does not interfere with established shipping corridors.

WE WANT YOUR INPUT!

Submit this form via email to Rebecca Wintering at Rebecca.Wintering@dep.state.fl.us . If you have any questions or concerns about the process for submitting a project, please contact Rebecca Wintering at:

Rebecca Wintering
Environmental Specialist III
3900 Commonwealth Boulevard, MS 235
Tallahassee, FL 32399
Rebecca.Wintering@dep.state.fl.us

A current summary of projects is accessible through the Florida DEP's website at http://www.dep.state.fl.us/deepwaterhorizon/projects.htm (click on "*View the list of restoration project ideas*").

NOTICE OF INTENT TO USE AN ENVIRONMENTAL RESOURCE NOTICED GENERAL PERMIT IN NORTHWEST FLORIDA

A. General Information

1. Applicant Information

Name: Okaloosa County Board of County Commissioners

Mailing Address: 1804 Lewis Turner Blvd. Suite 100

City: Fort Walton Beach State: FL Zip Code: 32547

Telephone: 850- 651-7105 Fax: 850-651-7142 E-mail: shenson@co.okaloosa.fl.us

2. Agent Information

Name: Scott R. Henson

Corporate or Agency Name: Okaloosa County Public Works

Mailing Address: 84 Ready Ave

City: Fort Walton Beach State: FL Zip Code: 32548

Telephone: 850-978-0009 Fax: 850-651-7397 E-mail: shenson@co.okaloosa.fl.us

3. Rule section number of the NGP for which you are applying: **62-341.600, F.A.C.**

4. Location of proposed activities:

Address: Gulf of Mexico
City: NA Zip Code: NA County(ies): Okaloosa
In (name of waterway): Gulf of Mexico
Latitude (DMS) see table below Longitude (DMS) see table below
Datum NA (Taken from Central Location)
Tax Parcel Identification Number: NA

Fish Haven 15	Latitude	Longitude	Latitude	Longitude
Centroid	30° 21.891' N	86° 42.374' W	30.3649° N	86.7062° W
Northwest Corner	30° 22.000' N	86° 42.500' W	30.3667° N	86.7083° W
Northeast Corner	30° 22.000' N	86° 42.249' W	30.3667° N	86.7041° W
Southeast Corner	30° 21.783' N	86° 42.249' W	30.3630° N	86.7041° W
Southwest Corner	30° 21.782' N	86° 42.500' W	30.3630° N	86.7083° W

5. Date activity is proposed: To Commence: February 1, 2013 **To be Completed**: Not later than February 1, 2018

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6. Total Extent of Work in Wetlands and Other Surface Waters: (Use additional sheets and provide breakdown of each category if more space is needed.)

a. Within Federal Jurisdiction:
Fill - 0 Sq. Ft. 0 Acres; 0 Cu. Yds.
Excavation - 0 Sq. Ft.; 0 Acres; 0 Cu. Yds.

b. Within State Jurisdiction:
Fill - up to 6,750 Sq. Ft. or < 0.2 Acres; 0 Cu. Yds.
Excavation - 0 Sq. Ft. or 0 Acres; 0 Cu. Yds.
Fill Waterward of Mean or Ordinary High Water - Cu. Yds.
Excavation Waterward of Mean or Ordinary High Water - 0 Cu. Yds.

c. State Jurisdictional Area that will be Severed Landward of Any Fill: 0 Sq. Ft. or 0 Acres

d. State Jurisdictional Area to be Created from Uplands, Excluding Mitigation: 0 Sq. Ft. or 0 Acres

e. Docks, Piers, and Over Water Structures:
Total Number of Slips 0 Total number of mooring pilings 0
Length 0 Width 0 Height above MHW 0
Length 0 Width 0 Height above MHW 0

Number of Finger Piers 0 Length 0 Width 0 Height 0
Number of Finger Piers 0 Length 0 Width 0 Height 0

Total area of structure over waters & wetlands 0 sq. ft.
Use of structure NA

Will the docking facility provide:	No	Yes	Number
Liveaboard Slips	☒	☐	
Fueling Facilities	☒	☐	
Sewage Pump-out Facilities	☒	☐	
Other Supplies or Services	☒	☐	
Other Supplies or Services Required for Boating (Excluding refreshments, bait and tackle)	☒	☐	

f. Seawall length: NA ft. Seawall material: NA
Riprap revetment length: NA ft. Slope NA H: NA V Toe width NA ft.
Riprap at toe of seawall length NA ft. Slope NA H: NA V Toe width NA ft.
Size of riprap NA Type of material NA

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7. Stormwater Information

a. Project area: 0 ac. Total applicant-owned area contiguous to project: NA ac.
b. Total area served by system: NA ac.
c. Impervious area excluding wetlands and other surface waters: NA ac.
d. Volume of water that the system is capable of impounding: NA ac. ft.
e. Name of project, including phase if applicable: NA
f. Is this application for part of a multi-phase project? ☐yes ☒no. If you answered yes, please provide permit numbers for other authorized phases:

Agency	Date	No.\Application Type

g. Treatment type proposed: NA .
h. Current site conditions and land uses: NA
i. Proposed Land Use: NA
j. Names and classifications of all receiving waters (if available): NA NA

8. All Proposed Activities—Describe Proposed Activities (be specific; use additional sheets as necessary).

a. What is proposed? Okaloosa County Artificial Reef Program (OCARP) seeks authorization for the designation of a ¼-mile square (40 acre) areas (Fish Haven 15) to accept materials for the phased construction of an artificial reef network as per 62-341.600 F.A.C. Deployments of locally permitted materials will occur over the duration of the FDEP/USACE permits solicited through this application. Deployments of clean concrete materials within the ¼-mile square area will occur at a total of nine locations. Ideal deployment will cover an area of 30 ft x 50 ft. With an assumption of some error in deployment accuracy, all nine sites within Fish Haven 15 will cover approximately one-half acre of bottom.

(See attached Supplemental Information for additional information.)

c. Describe wetland and aquatic habitats to be affected: The proposed fish haven area includes predominately sand bottom (with occasional areas of muddy sand) devoid of all vegetation except a surficial layer of microalgae/cyanobacteria. These bottom conditions are typical of near-shore gulf benthic habitat off the northwest coast of Florida. Monitoring reports from other nearshore reefs in the immediate area include similar descriptions. Categories of affected essential fish habitat within the project area include marine water column and sand bottom.

There are no seagrass beds located within the vicinity of the deployment site (source: NOAA Gulf of Mexico Aquatic Ecosystems – Seagrassess – Coastal Region: http://www.ncddc.noaa.gov/interactive-maps/coastal-habitats/gom-coastal-habitat/index.html). There are no known natural rock outcrops or hard bottom formations within the proposed permit area (source: NOAA Gulf of Mexico Marine Sediments – Sediment Core Analysis [Sand Very Dominant >66%] - http://www.ncddc.noaa.gov/interactive-maps/coastal-habitats/gom-coastal-habitat/index.html). Each deployment of material in the proposed construction area will be preceded by sonar scanning utilizing a depth/bottom sounder or equivalent (e.g. "fish finder") to verify the absence of natural habitats. OCARP will submit a report of each sonar scan as part of a deployment report to FDEP.

(See attached Supplemental Information for additional information.)

d. Construction methods and schedule: Prior to an individual deployment effort, Coast Guard and OCARP inspection of all material will certify that the materials meet all state and federal regulations and guidelines for artificial reef use. The proposed configuration of deployed materials considers the properties of the proposed material and scientific research that provides guidance for material placement creating an optimal ecosystem. Individual material deployments will receive OCARP permits prior to transporting to and deploying the materials at a specified permitted location within the approved construction area. The contractor for the material deployment will place materials at predetermined locations, generally illustrated in the figures contained in the Supplemental Information attachment to this permit application. The OCARP project manager will stay immediately and directly involved in locating and verifying the deployment process.

OCARP expects construction to continue throughout the life-cycle of the permit. OCARP will deploy materials as they become available and complete regulatory inspections. The schedule of individual deployments will depend on availability of funding to transport and deploy the materials. OCARP expects to have at least two or more deployments per year under OCARPs current funding projections. However, if the proposed construction project receives funding through the Natural Resource Damage Assessment (NRDA) process as applied in response to the Deepwater Horizon oil spill or the RESTORE Act, an accelerated construction schedule can occur.

(See attached Supplemental Information for additional information.)

e. Additional information that demonstrates that you qualify for the general permit, addressing all the parameters, thresholds, and conditions required in the general permit.

The proposed project meets the general permit conditions for the construction of artificial reefs (See below for Florida Administrative Code 62-341-600)

1. The material comprises clean concrete from two local sources (Eglin AFB and City of Ft. Walton Beach). OCARP will have all concrete materials proposed for use inspected and approved prior to use. In the event that currently available material inventory from our two local sources becomes depleted, alternate materials may be procured. All material will be compliant with approved materials specified in 62-341-600. All material will be inspected and certified free of all materials listed in 62-341-600(1)(b) and otherwise appropriate for use.
2. The material is sufficiently massive that anchoring is unnecessary or will be specifically designed for use as artificial reef construction. Supplemental information in attachments C and E provide data on material sizes and weights of the material inventory available from Eglin AFB and the City of Fort Walton Beach.
3. The installations will not exceed ½ the height of the water column. The county or their contractor(s) will record the height at the end of construction and report the data to the FDEP. Final heights will be determined in consultation with the appropriate regulatory agencies, but will not exceed the regulatory limit.
4. The sites selected by OCARP are in areas known to be general devoid of seafloor surface features. This characteristic of the area is one of the reasons for selection of those sites. The site is too deep for seagrasses and shellfish reefs or other hardbottom habitat. Prior to construction, OCARP will perform a sonar scan of the project area bottom and will make the survey available to the FDEP by request to demonstrate the site conditions. If those efforts identify seafloor surface features of the type indicated in the general permit conditions, OCARP will not use the site and instead search for a suitable substitute in the immediate vicinity.
5. The application package supplemental information fully describes the Eglin Air Force Base and City of Fort Walton Beach materials proposed for construction. The materials will not include any of the items listed in 62-341.600(2)(c).
6. As described in the supplemental information, marker buoys and GPS coordinates will provide the tools for the contractor to position the transport vessel for deployment of materials.
7. OCARP has identified a ¼ square mile areas of Gulf bottom for construction of Fish Haven #15. Construction will occur inside the boundaries and will not extend beyond the ¼ square mile area.
8. Figure 1 of the supplemental information provides the distance to the nearest shipping lanes. The sites do not lie in or immediately adjacent to shipping lanes.
9. As stated in the local permit application, OCARP will notify the agencies listed in 62-341.600(2)(g) of the specific location of each of the reefs constructed. If construction of a site is continuous to complete all nine reefs in a single effort, OCARP will notify the listed agencies after the ninth and final reef is constructed.

62-341.600 General Permit for the Construction of Artificial Reefs.

(1) A general permit is hereby provided for the construction of an artificial reef by any person, provided:

(a) The material to be used shall be clean concrete or rock, clean steel boat hulls, other clean, heavy gauge steel products with a thickness of 1/4 inch or greater, and prefabricated structures that are a mixture of clean concrete and heavy gauge steel;

(b) The material shall be free of soils, oils and greases, debris, litter, putrescible substances or other pollutants;

(c) The material shall be firmly anchored to the bottom and shall not be indiscriminately dumped; and

(d) The material shall be placed so that the top of the reef does not exceed 1/2 the distance from the bottom to the surface of the water unless a greater distance from the surface is required for safe navigation. At no time shall the distance between the top of the reef and the surface of the water be less than 6 feet.

(2) This general permit shall be subject to the following specific conditions:

(a) The permittee shall conduct a survey of the bottom of the waterbody on which the reef is to be built and shall submit the survey to the Department with the notice required in subsection 62-343.090(1), F.A.C.,

demonstrating that the bottom does not have submerged grassbed communities, shellfish or other hardbottom communities, or corals;
(b) There shall be no reefs constructed in bays, lagoons, or estuaries that are less than 12 feet deep;
(c) There shall be no "white goods" (inoperative and discarded refrigerators, freezers, ranges, water heaters, washers, and other similar domestic and commercial appliances), asphalt material, tires, other polluting materials used in construction of the reef;
(d) The site shall be marked with perimeter buoys during construction to ensure that no material is deposited outside of the site;
(e) The size of the boundaries within which the artificial reef is to be deposited shall not exceed 1/4 mile on any side;
(f) The artificial reef site shall not be established within any shipping lanes; and
(g) The permittee shall notify the National Ocean Service, National Oceanographic and Atmospheric Association, U.S. Department of Commerce, Rockville, Maryland, and the Florida Fish and Wildlife Conservation Commission, Division of Marine Fisheries Management, via e-mail at artificialreefdeployments@myfwc.com of the precise location of the reef within 30 days of placement of the reef material.
Specific Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.414(9), 373.416, 373.418 FS. History–New 10-3-95.

f. OCARP allows public and private entities to deploy materials in County-permitted areas through a local permitting process sanctioned by the USACE for sites in federal waters. The County does not allow private reef construction in State waters. OCARP currently manages three Large Area Artificial Reef Sites in federal waters available for public or private entity use. Reef construction sites managed by OCARP within state waters are not available for private deployments. OCARP staff directly supervises all deployments to state-permitted reef construction sites such as the site proposed in this permit application.

OCARP has aggressively pursued a partnership with the Florida Fish and Wildlife Conservation Commission (FWC) to provide guidance and expertise in the planning and execution of artificial reef construction. OCARP believes that properly constructed artificial reef systems are a great benefit for the public and local ecosystem. OCARP strives to comply with applicable regulation because we believe the regulatory framework that applies to artificial reefs was created to assure the public that the construction of artificial reefs needed to be managed properly in order to optimize the potential benefits and protect the environment.

(See attached Supplemental Information for additional information.)

9. Permanent and Temporary Turbidity, Erosion, and Sedimentation Controls Proposed:

OCARP will use clean concrete free of soils, oil and greases, debris, litter, putrescible substances or other pollutants. OCARP staff will inspect all materials prior to deployment to assure compliance with applicable regulation. Specific Turbidity, Erosion, and Sedimentation Controls are not applicable to this process.

(See attached Supplemental Information for additional information.)

10. Previous Applications for this Project have been: None

B. Drawings

Please provide scaled or fully dimensioned plan (overhead) and profile (side-view) drawings that clearly delineate and identify the extent of the proposed activities on drawings of an appropriate size. If the work involves activities located within federal or state wetlands or other surface waters, submit an additional set of drawings on 8 ½" x 11" paper. All drawings must include the following, clearly and accurately depicted:

a. Existing approximate mean high water (MHW/OHW) shoreline.
b. Applicant's property boundaries and dimensions.
c. North arrow.
d. Location and dimensions of all existing structures.
e. Location and dimensions of proposed activities.
f. Boundaries of wetlands and other surface waters, identifying open water areas. Cross-hatch limits of proposed excavation in wetlands and other surface waters, and hatch limits of proposed fill in wetlands and other surface waters.
g. Boundary area and volume of all temporary and permanent earthwork, including pre- and post-construction grades.
h. Label all impervious and pervious areas, and indicate their size (area).
i. Drainage and flow patterns on the property.
j. Distances of project in relation to permanent landmarks (i.e. trees, buildings, etc.) as appropriate,
k. Location map(s), clearly locating the proposed project location in relation to streets and roads, which should be clearly labeled. Provide directions to get to site if necessary.
l. Note: Plans, drawings, and supporting calculations must be signed, sealed, and dated by a registered professional, as required by the relevant statutory provisions when the design of the system requires the services of a registered professional.

<u>(See attached Supplemental Information for additional information.)</u>

C. Certification

I hereby certify I have read and will conduct the above activities in accordance with the criteria, limitations, and Specific Conditions of the general permit identified in Item 3, and in accordance with the General Conditions of Rule 62-341.215, F.A.C. Unless otherwise provided in Chapter 62-341, F.A.C., activities conducted pursuant to the above general permit may commence thirty (30) days after receiving written acknowledgment that notice has been provided to the Department of Environmental Protection or the Northwest Florida Water Management District, along with any required additional documentation which may be required to fulfill the requirements of the general permit, unless the Department or Northwest Florida Water Management District responds that the proposed work does not qualify for a general permit. Written acknowledgment may include certified mail return receipt.

I understand I may have to provide any additional information/data that may be necessary to provide reasonable assurance or evidence that the proposed project will comply with the applicable State Water Quality Standards or other environmental standards both before construction and after the process is completed.

I further acknowledge that work done under this general permit may also require the review and approval of other Federal, State, or local agencies, and that commencement of construction before such Federal, State, or local agency approvals or permits are obtained may subject me to enforcement action and fines or penalties by such agencies. Further, the work shall be conducted in a manner that does not violate applicable water quality standards.

In addition, I agree to provide entry to the project site for inspectors with proper identification or documents as required by law from the environmental agencies for the purpose of inspecting the site. Further, I agree to provide entry to the project site for such inspectors to monitor permitted work.

_____	_____	_____
Typed/Printed Name of Applicant or Agent	Signature of Applicant or Agent	Date

An Agent May Sign Above If Applicant Completes the Following:
I hereby designate and authorize the agent listed in Item 2 to act on my behalf as my agent in the processing of this permit application and to furnish on request, supplemental information in support of the application.

_____	_____	_____
Typed/Printed Name of Applicant (and Corporate Title, if applicable)	Signature of Applicant	Date

D. For systems that require the certification of a registered professional:

This is to certify that the features of the system that are the subject of this application have been designed by me or my designee under my direct supervision and have been examined by me and found to be in conformity the laws and other requirements of my professional practice act. I further certify that the system has been designed in accordance with the applicable criteria and specifications required by the "Department of Environmental Protection and Northwest Florida Water Management District Environmental Resource Permit Applicant's Handbook—Volume I (General and Environmental) and Volume II (Design Requirements for Stormwater Treatment and Management Systems — Water Quality and Water Quantity)" effective November 1, 2010.

Name of Registered Professional:_____

Florida Registration Number:_____

Company Name:_____

Mailing Address:_____ (Affix Seal)

City:_____State:_____Zip Code:_____

Telephone:_____Fax:_____E-mail:_____

_____ _____

Signature of Registered Professional Date

E. Submittal

Submit this completed form, with attached drawings and with the noticed general permit processing fee of $250, made payable to the "Florida Department of Environmental Protection," or the "Northwest Florida Water Management District (WMD)," in accordance with the responsibilities of these agencies as provided in Chapter 62-346, F.A.C.

Application for Noticed General Permit
Fish Haven 15 – Okaloosa County
Supplemental Information Contents

The supplemental information provided with this permit application includes the following (in order):

- Supplemental information (text)
- Permit Drawings (Figures 1-3)
  - Figure 1 – Location Map, Fish Haven 15 and Fish Haven 16
  - Figure 2 – General Fish Haven 15 Design (9 reefs)
  - Figure 3 – Foraging Pressure Diagram
- Attachments A through H
  - Attachment A: Example Air Force Material Lab (AFRL) Materials for use in Reef Construction
  - Attachment B: Example AFRL Materials Photographs
  - Attachment C: Example Ft. Walton Beach Materials Inventory
  - Attachment D: Biological Assessment of Project Area
  - Attachment E: Vessel Strike and Avoidance Procedures
  - Attachment F: Sea Turtle and Small Tooth Sawfish Construction Conditions

Application for Noticed General Permit Fish Havens 15 – Gulf of Mexico Okaloosa County, FL Supplemental Information

Prepared By:

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October 2012

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PROPOSAL
ENVIRONMENTAL RESOURCE NOTICED GENERAL PERMIT
FISH HAVENS 15 – Gulf of Mexico off Okaloosa County, FL

This document provides the Florida Department of Environmental Protection (FDEP), United States Corps of Engineers (USACE) and other agencies with supplemental information for the evaluation of two proposed artificial reef construction sites located on submerged lands in the Gulf of Mexico seaward of Okaloosa County, Florida within nine nautical miles of the shoreline (State of Florida waters). The Okaloosa County Artificial Reef Program (OCARP) provides the appropriate information requested by the FDEP through FDEP Form # 62-346.900(2), *Notice of Intent to Use An Environmental Resource Noticed General Permit in Northwest Florida*, Effective Date: November 1, 2010, Incorporated by reference in 62-346.070(2), F.A.C.

Additional information for the USACE review of this proposal complies with criteria outlined by the State Programmatic General Permit (SPGP III). The purpose of the SPGP III was to avoid duplication of permitting between the USACE and the FDEP for minor work located in waters of the United States, including navigable waters. Thus, the need for separate approval from the Corps would be mostly eliminated. SPGP IV further increased the efficiency of both State and Federal staff in serving the public. Currently, SPGP IV-R1 has expanded the geographic coverage by including Okaloosa County. Therefore, SPGP IV-R1 will be implemented throughout the entire State of Florida, excluding Monroe County, continuing environmental protection while increasing the service to the public.

General Permit Supplemental Information

This document contains supplemental information in association with the Proposal for Environmental Resource Noticed General - Permit Fish Havens, prepared by the OCARP. Specific FDEP Form # 62-346.900(2) permit criteria addressed in this supplement are:

- Section A, Item 8
- Section A, Item 9
- Section B, Drawings

The information provided for the permit criteria above is also relevant to USACE review criteria

SECTION A, Item 8 (a) *of Form # 62-346.900(2) asks "What is proposed?" The County's response: Okaloosa County Artificial Reef Program (OCARP) seeks authorization for the designation of a ¼-mile square (40 acre) areas (Fish Haven 15) to accept materials for the phased construction of an artificial reef network as per 62-341.600 F.A.C. Deployments of locally permitted materials will occur over the duration of the FDEP/USACE permits solicited through this application. Deployments of clean concrete materials within the ¼-mile square area will occur at a total of nine locations. Ideal deployment will cover an area of 30 ft x 50 ft. With an assumption of some*

error in deployment accuracy, all nine sites within Fish Haven 15 will cover approximately one-half acre of bottom.

This particular project can be described as construction of nine reef structures within a designated quarter-mile construction areas designated as Fish Haven 15 (See Figure 1 – Reef Construction Area Locations). A sister project, Fish Haven 16, is also under permit review and is illustrated for proximity reference. The project will include the placement of relatively large, surplus and used concrete structures in an "I" formation (see Attachment A - Typical Reef Structure) using methods very similar to the process of constructing jetty structures. This material is currently in an inventory with the USAF and designated for use by the County for reef construction. Figures 2 and 3 illustrate the proposed configuration of individual reef structures within the general reef areas. Construction of all nine reefs within each quarter mile square area will result in less than one acre of bottom covered with reef materials. If the inventory of material is no longer available when this permit is approved, the County will construct reefs utilizing other materials that conform to those specified in 62-341.600 F.A.C. in the configurations shown in Figures 2 and 3.

Currently, OCARP has an inventory of material from two primary sources: USAF Air Force Research Laboratory (AFRL) and the City of Fort Walton Beach (FWB). Okaloosa County has established a relationship with Eglin Air Force Base (Eglin) to repurpose a wide variety of material suitable for artificial reef construction. The historical material provided by Eglin varies: building foundations, building infrastructure, munitions testing targets, observation towers, tanks and other materials that meet the standards for use as artificial reef. The USAF also generates certain materials on a regular schedule. In particular, munitions testing is an ongoing activity that generates used targets constructed of concrete and metal. USAF quality control measures require regular testing of some ordnance types throughout a manufacturing run and at intervals during storage life. Munitions testing targets are single use items; after a single test cycle the USAF disposes of them and constructs new ones. Therefore the USAF used concrete target materials inventory is continually replenished. Currently, the USAF disposes of this material as land fill but would like to re-purpose the material for benefit of the marine ecosystem and local community. Attachment B contains examples of those materials

The target materials are fabricated at Eglin AFB and possess unique properties that make the materials particularly compatible for artificial reef construction. Most notably, the aggregate is comprised of 45% native Florida limestone. The limestone has a chemical composition preferred by invertebrates and other marine life that first colonize the base reef structure. In addition, most of the targets have lifting lugs that make them easier to place in an orderly fashion (rather than indiscriminately dumped). Large holes in the middle of the used targets increase the surface area and exposure of the aggregate.

Materials from Ft. Walton Beach (see Attachment C – FWB Material Inventory) includes 200 reinforced concrete culverts measuring 2 to 5 feet in diameter and 5 to 10 feet in length. OCARP has inspected the USAF material and the City of Fort Walton Beach material for compliance with

62-341.600 General Permit for the Construction of Artificial Reef. OCARP has determined that all materials proposed for artificial reef construction are compliant and acceptable for reef construction.

In addition to the Eglin Air Force Base inventory of used target materials, other USAF concrete materials, and concrete materials from the City of Ft. Walton Beach, OCARP regularly receives requests for placement of a variety of materials in their artificial reef system. For example, OCARP was recently contacted by the Florida Department of Transportation concerning the replacement of the Yellow River Bridge in Milligan, FL. The material generated by the dismantling of the old bridge will be available to the county for artificial reef construction in about 2015.

Okaloosa County is confident that they have available sufficient material to build out the proposed Fish Havens within a few years. However, as the understanding of artificial reefs grow; it has become clear that long-term monitoring and maintenance comprise necessary program components if the county intends to optimize the long-term functions of these reefs. Okaloosa County intends to begin a long term reef maintenance program to assess the condition of existing reefs and determine whether additional deployments are warranted. The County recognizes that it did not build out some of their older sites to the desired reef material density. Based on the data collected during monitoring, the County will determine whether to submit a permit application to request to reopen certain areas for additional reef construction.

OCARP will place the material described within the proposed construction area using a spacing intended to promote the growth of a vibrant reef complex (See Figure 2). Studies have shown that reef communities can be optimized when the proximity of each reef is considered with respect to the foraging characteristics of target species. While the science of forging areas is not exact, OCARP believes that a 400 foot minimum spacing provides an optimal configuration. With minimum spacing between reefs of 400 feet, the ¼ sq. mi construction site can hold approximately nine separate reef structures. The reef structures would occur evenly spaced on the perimeter of the quarter-mile rectangle approximately 660 feet apart. There will be some foraging overlap between adjacent reefs, especially toward the center but each perimeter reef will have unlimited seaward foraging (See Figure 4 – Foraging Pressure). A smaller reef placed in the center of the ¼ sq. mile (Figure 2: Reef 9) will serve as a marker for the center point of the construction area.

The weight of each piece of material and the lack of void spaces that could potentially trap air and provide buoyancy significantly reduce the ability of the material to move. This characteristic causes each piece to be considered a reef anchor. As with any anchoring system, failure of its intended purpose is low-risk but a possibility nonetheless. External forces like currents and waves will cause seawater to eddy around the anchor material. Strong-enough currents or large enough wave forces may cause sand at the bottom of the material to scour. Over time, scouring may cause the material to either settle slightly into the sand or, if the material is a culvert, to roll

into a void created by the scouring. This settlement will result in a "suction" force that will have to be overcome by external forces in order for the materials to move laterally. Because of these large forces stabilizing the material and resisting external forces, redundant anchoring systems will not be necessary. Okaloosa County has installed many reefs with similar materials. Observations over time have shown that no significant movement of those reef materials has occurred. In addition, as the material is built up during construction, void spaces will be filled and the material will lock into position. The structure itself will become more rigid as additional material is added – increasing the resistance of material movement by external forces.

Prior to deployment of material, a support vessel will place marker buoys at each end of the reef spine and tees (Attachment A). Each barge load can carry and deploy about 200 tons of material. First, the larger base anchor material will be loaded and transferred to the deployment location. The transfer barge will arrive onsite, position itself, and then anchor itself at the buoys. Deployment of the materials will occur sequentially. Placement of larger base materials will occur first. Visual verification of that placement will precede placement secondary (smaller) materials. The contractor will first construct the spine and tees (Attachment A) at all locations or at as many as the available material and funding will allow. The construction barge will return to port as many times as necessary to place all available base materials. Meanwhile, divers will descend on the reef site where base materials are deployed to record the placement of the base material and determine if the site will require additional base material and if so, where the barge operator should deploy that material. GPS location data and buoys will identify any additional deployment location or locations. Once the spine and tee construction is completed, the contractor will transport secondary anchor material (Attachment A) to the sites and place that material on the base material. This process will be repeated until all reef material has been deployed or each reef has reached its maximum vertical height. Subsequent site dives will verify and record the reef structure.

OCARP will have the Contractor inspect each constructed reef to assure that each reef remains at or below maximum allowable height. OCARP expects some minimal subsidence and shifting of material as time passes. All artificial reefs are susceptible to constant external forces including chemical deterioration from contact with salt water and shifting currents which are amplified during extreme weather events. The material will stabilize through settling and chemical binding from organisms that colonize and stabilize the material and strengthen the structure.

The FDEP has specified in 62-341.600(d) *General Permit for the Construction of Artificial Reefs* – "The material shall be placed so that the top of the reef does not exceed ½ the distance from the bottom to the surface of the water unless a greater distance from the surface is required for safe navigation. At no time shall the distance between the top of the reef and the surface of the water be less than 6 feet". Based on data in NOAA Chart #11388, water depth at the proposed location for Fish Havens 15 ranges between 68 and 70 feet.

Based on the criteria from the FDEP and experience of other counties in the Florida panhandle, the individual reef structures could potentially reach a height of approximately 30 feet above

the seafloor, leaving more than 35 feet of water column for navigational clearance. According to USEPA and the US Maritime Administrations - *National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs, May 6, 2006 – "W*ater depth is a significant siting criterion. Artificial reefs should be placed in water at sufficient depths to avoid creating a hazard to navigation – minimum clearance above the reef should accommodate the draft of the largest vessels expected to operate in the vicinity with an adequate safety margin." In *CFR Title 33 PART 64: Navigation and Navigable Waters—Marking of Structures, Sunken Vessels and Other Obstructions,* a hazard to navigation means "an obstruction, usually sunken, that presents sufficient danger to navigation so as to require expeditious, affirmative action such as marking, removal, or redefinition of a designated waterway to provide for navigational safety". OCARP is not aware of any vessel that frequents waters near the proposed construction site that has a draft capable of being obstructed by the proposed reef complex.

According to NOAA navigation chart 11388 – Choctawhatchee Bay, waters become progressively shallow from Safety Fairway 166.220 approximately 12 miles from shore, up to the shoreline and Destin Pass which has a navigable minimum depth of approximately 12 feet. There is no designated navigation lane that exists from Destin Pass to the Safety Fairway 166.220. It makes sense that any vessel with a significant draft (greater than 12 feet) would not attempt entering Destin Pass. Nor would it be reasonable that vessels with significant drafts (greater than 30 feet) would attempt to navigate waters north of the Safety Fairway. However, OCARP understands that heavy seas and distressed vessels could potentially digress from the Safety Fairway. The closest point of the construction areas to the Safety Fairway exceeds two nautical miles (Figure 1). OCARP believes that this buffer distance provides sufficient space for wayward or disabled vessels to correct their bearing or anchor. OCARP requests that the reviewers of this application consider allowing a 30 foot minimum clearance for this construction area with the stipulation that the OCARP submit a request to NOAA to designate the proposed construction areas as obstructions to mariners for inclusion on all navigational products and aides to mariners.

While OCARP strongly desires a permit that would allow reef heights of as much as 30 ft, we are aware that as responsible agencies review the application, they will provide OCARP a recommendation for the most appropriate clearance given each agency's authority and responsibility.

SECTION A, Item 8 (of Section C – no section B on application) of Form # 62-346.900(2) states, "*Describe wetland and aquatic habitats to be affected."* The affected habitat is that typical of what is found in the near-shore region along Florida's northwest coast. The scarcity of live bottom formations in the northeastern Gulf of Mexico is documented in a 1992 Continental Shelf Associates, Inc. report to NOAA; an estimated 3% of the local seafloor contains natural reef formations. A general description of the Gulf of Mexico regional oceanographic properties from *Gulf Base: Resource Database for Gulf of Mexico Research*. World Wide Web electronic publication is as follows:

Extending from just east of the Mississippi Delta near Biloxi to the eastern side of Apalachee Bay, this region of the Gulf bottom is characterized by soft sediments. To the west of the DeSoto Canyon, terrigenous (land-derived) sediments are thick and fill the remnants of the Gulf basin. In the eastern portion of the region, Mississippi-derived sediments cover the western edge of the Florida Carbonate Platform and a transition towards carbonate sediments begins. The Florida Escarpment separates the Florida Platform from the Gulf Basin and also forms the southeastern side of the DeSoto Canyon. In a region characterized by sediment deposition, the presence of the DeSoto Canyon is poorly understood. Some theories suggest that the canyon is the result of erosion caused by oceanic currents, possibly the Loop Current (Nowlin, 1971)."

The proposed construction areas are comprised primarily of a thick (> 3 feet) layer of medium-grained textured sand, which indicates a firm substrate to support the proposed artificial reef structures.

Fish Haven 15 is located within a sand borrow source investigation area (Figure 1). Two sand source investigations (Taylor Engineering 2009. *Eglin AFB/Okaloosa County/Destin Sand Source Investigation, Okaloosa County, FL* and Stone, G.W., Liu, B., and Jose, F. 2007 *Okaloosa County, Florida, Sand Source Investigation: Geophysical and Geotechnical Data Analysis*. Stone & Associates, Inc. Baton Rouge, LA) have found that the area of the fish havens includes no or insufficient beach quality sand for use as a beach sand nourishment source.

Biological Assessment

Reviewed information indicates that the project will not negatively affect existing communities or species that use the proposed project area.

- NOAA Gulf of Mexico Aquatic Ecosystems – Seagrassess – Coastal Region: http://www.ncddc.noaa.gov/interactive-maps/coastal-habitats/gom-coastal-habitat/index.html, anecdotal evidence, as well as evidence derived from physical observation at other artificial reef sites in the vicinity, indicates no submerged aquatic vegetation is present in the proposed construction area.
- The proposed deployment sites are located at water depths of 68 ft to 70 ft, which precludes the growth of submerged grasses. In addition, no known coral outcrops/formations occur at or near the proposed Fish Havens.
- Pre-deployment site surveys will verify that no live bottom occurs in the proposed locations.
- No threatened or endangered species are known to typically occur within the proposed construction areas.
- Most typically observed larger species on the sand bottom areas include the beaded sea star and the pearly razorfish.
- No submerged cultural resources have been observed or are suspected to be located in the immediate vicinity of the site.

The community that develops at the reef site will likely resemble an offshore natural reef found in this area of the Gulf of Mexico. Based on observations of other artificial reefs and natural reefs in the region, OCARP expects that the greater elevation and complexity of the artificial reef will result in colonization of both temperate and some tropical organisms developing a complex community of plants and animals. Artificial habitat provides space that is quickly colonized by sessile organisms and provides new food sources, greater protection of juveniles by providing more space to be used as refuge, and a possible focal point for aggregating adults to spawn.

Science and observation suggests that a wide variety of marine organisms will assemble on the artificial reefs constructed within the proposed Fish Haven construction areas. This includes a variety of sponges (Porifera), segmented worms (Annelida), shrimp, crabs, lobsters, hermit crabs, barnacles (Arthropoda), bryozoans (Ectoprocta), and tunicates (Chordata).

The primary fish species that are expected to utilize the newly created habitats and take up permanent residence or pass through would include, but not limited to:

Red Snapper	Spanish Mackerel	Black Sea Bass	Cubbyu
Gray Snapper	Cobia	Sand Perch	Nurse Shark
Vermillion Snapper	Great Barracuda	Hogfish	Gulf Flounder
Pinfish	Tomtate	Peacock Flounder	Gray Triggerfish
Red Porgy	Scamp	Leopard Toadfish	Greater Amberjack
Sheepshead	Gag Grouper	Spotted Goatfish	
Shark	Red Grouper	Yellow Goatfish	

All of these species are commonly found in the general vicinity of the proposed construction area and these species represent a mix of demersal and pelagic species.

It is assumed that any settling of the reef material will be minimal. Monitoring of other reef material in the vicinity supports the assumption that the reef will experience only minimal settling. The minor subsidence that will occur will provide a stable foundation for the rest of the reef material. OCARP also asserts that the proposed artificial reefs will have negligible impact to any non-living marine resources in either the immediate vicinity of the reefs or in the area surrounding the reefs.

SECTION A, Item 9 of Form # 62-346.900(2) requires clarification of Permanent and Temporary Turbidity, Erosion, and Sedimentation Controls Proposed. The County's response is as follows: *As per 62-312.807 General Permit for the Construction of Artificial Reefs - (a) The material to be used shall be clean concrete or rock, or clean steel boat hulls; and (b) The material shall be free of soils, oil and greases, debris, litter, putrescible substances or other pollutants. The Okaloosa County Artificial Reef Program will inspect all proposed materials prior to deployment to assure compliance with 62-312.807. Specific Turbidity, Erosion, and Sedimentation Controls are not applicable to this process.*

Pre-deployment inspection will ensure that all deployed material include no soil and petroleum residues as per 62-341.600(a-b) to minimize the degree of temporary turbidity changes during the actual deployment operations. The water quality within the construction areas is assumed to meet Class III Marine quality influenced by eddies from the Gulf Loop Current. This influence heavily effects the water chemistry, temperature, density and dissolved oxygen, etc. within the construction area.

Biological Assessment Criteria - The following discussion addresses specific and applicable items outlined by the USACE (as authorized by the Clean Water Act and Rivers and Harbors Act) State Programmatic General Permit authorizing the State of Florida to administer particular categories of work in the marine environment and reduce duplicity in the permitting process between the USACE and FDEP. Attachment D contains a detailed Biological Assessment for the proposed Okaloosa County reef construction sites, derived from a document entitled *Biological Assessment, Navarre Beach Park Gulf Snorkel Reef Site, and Santa Rosa County, Florida.* The referenced Biological Assessment was prepared by Wetland Sciences, Inc., 1829 Bainbridge Ave., Pensacola, Florida 32501 and dated August 7, 2009 and contains applicable and relevant information to the Okaloosa County project. Attachment E and F include additional applicable biological assessment information.

Threatened or Endangered Species and Candidate Species potentially found in waters offshore from Okaloosa County in the project area:

Mammal - **West Indian Manatee**
Reptiles –, **Green Sea Turtle**, **Loggerhead Sea Turtle**
Fishes – **Gulf Sturgeon**, **Smalltooth Sawfish**

West Indian Manatee (*Trichechus manatus*)

Since the Florida manatee may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" ***(http://sero.nmfs.noaa.gov/pr/pdf/Vessel%20Strike%20Avoidance%20with%20Ship%20Strike%20Form-February%202008-web%20version.pdf*** **(Attachment E)**. The project is not anticipated to affect Florida manatee foraging areas or critical habitat therefore the deployment of artificial reefs within the deployment sites will not likely have an adverse effect on the Florida manatee.

Green Sea Turtle (*Chelonia mydas*)

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st. Since the green sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" found at:
(http://sero.nmfs.noaa.gov/pr/pdf/Vessel%20Strike%20Avoidance%20with%20Ship%20Strike%20Form-February%202008-web%20version.pdf)

and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions" (Attachment F), found at:
(http://sero.nmfs.noaa.gov/pr/endangered%20species/Sea%20Turtle%20and%20Smalltooth%20Sawfish%20Construction%20Conditions%203-23-06.pdf).
The project is not anticipated to affect green sea turtle foraging areas or critical habitat. The barges will move slowly due to the nature of the loads. Therefore, the project will not likely have an adverse affect on the green sea turtle. However, project vessels will comply with "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting", guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions

Loggerhead Turtle (*Caretta caretta*)

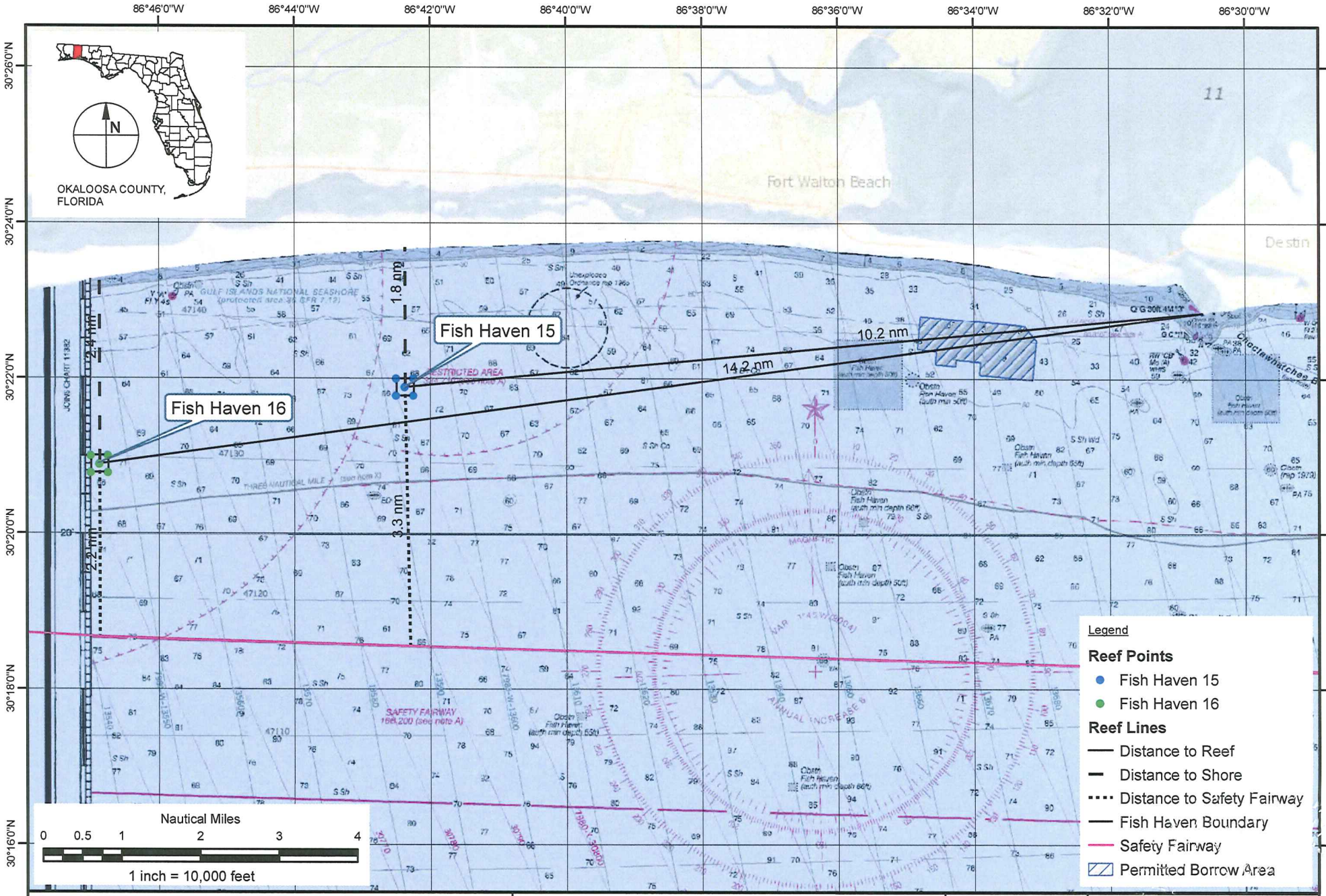
Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st. The loggerhead is responsible for the majority of nesting in Okaloosa County. Since the loggerhead sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting", guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", found at:
http://sero.nmfs.noaa.gov/pr/endangered%20species/Sea%20Turtle%20and%20Smalltooth%20Sawfish%20Construction%20Conditions%203-23-06.pdf.
The project is not anticipated to affect loggerhead sea turtle foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the loggerhead sea turtle.

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

Seaward of Okaloosa County, critical habitat for the Gulf Sturgeon is defined in the Gulf of Mexico as the area within one mile of the coastline. Both proposed construction sites are south of the extent of the designated critical habitat. However, OCARP recognizes no physical boundaries exist preventing the gulf sturgeon from entering the proposed construction areas. OCARP believes construction of the reefs will pose no increased threat for the Gulf Sturgeon.

Smalltooth Sawfish (*Pristis pectinata*)

Smalltooth sawfish were once prevalent throughout Florida and were commonly encountered from Texas to North Carolina. Currently, smalltooth sawfish can be only found with any regularity in south Florida between the Caloosahatchee River and the Florida Keys (NMFS 2006), and therefore is unlikely to be found in or near the proposed construction areas.



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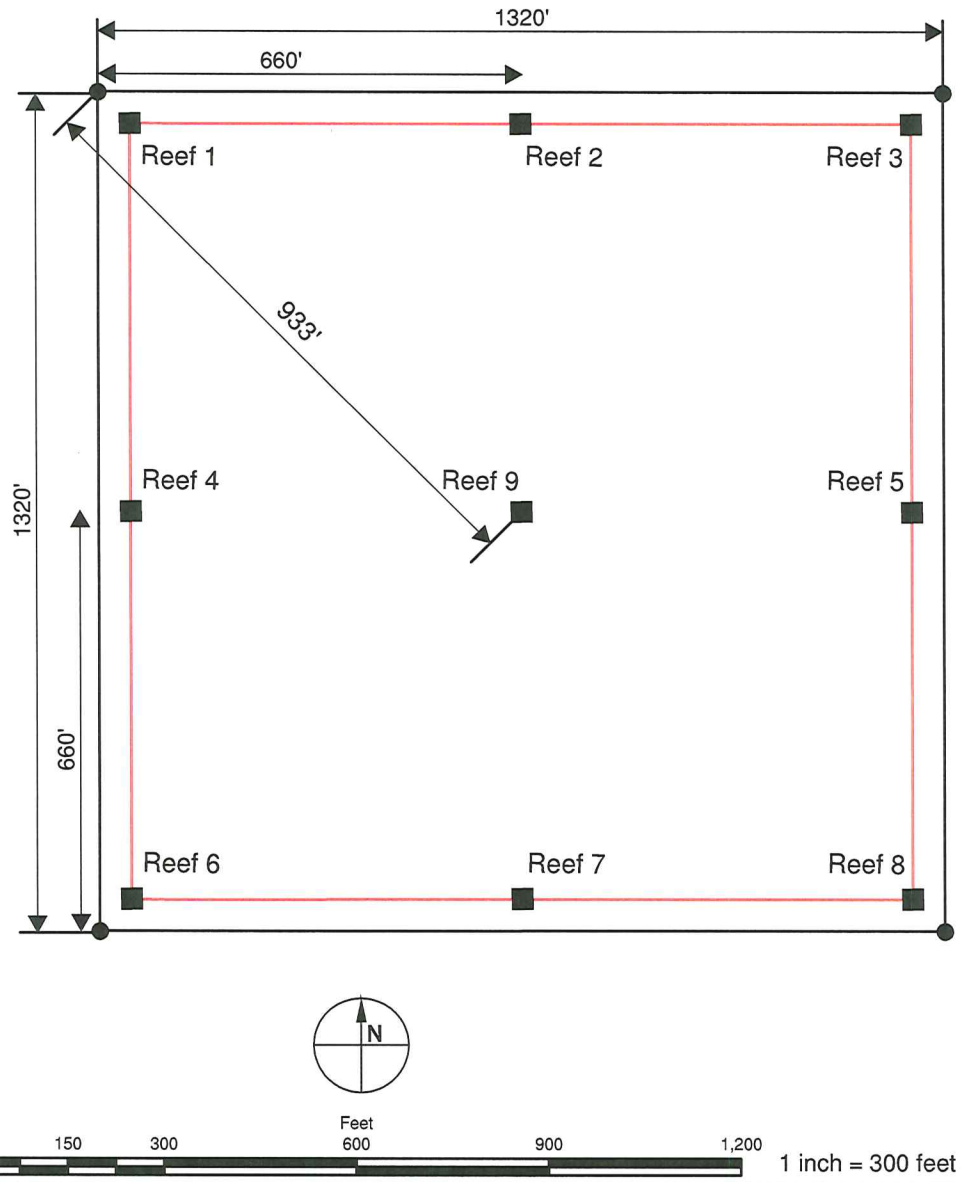
Jacksonville, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

FIGURE 1
FISH HAVEN 15 & 16
OKALOOSA COUNTY ARTIFICIAL REEFS
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-052
DRAWN BY	PL
SHEET	1 of 3
DATE	OCT 2012

SEAL
MATTHEW E. TRAMMELL P.E. # 69344
11/7/12
DATE



Legend
- Corner Points
- Reef Locations
- 50' Offset
- Fish Haven Boundary

Fish Haven 15					
Name	**Location**	**Longitude**	**Latitude**	**Longitude**	**Latitude**
Fish Haven 15	Centroid	86° 42.374' W	30° 21.891' N	86.7062° W	30.3649° N
Fish Haven 15	Northwest Corner	86° 42.500' W	30° 22.000' N	86.7083° W	30.3667° N
Fish Haven 15	Northeast Corner	86° 42.249' W	30° 22.000' N	86.7041° W	30.3667° N
Fish Haven 15	Southeast Corner	86° 42.249' W	30° 21.783' N	86.7041° W	30.3630° N
Fish Haven 15	Southwest Corner	86° 42.500' W	30° 21.782' N	86.7083° W	30.3630° N
Fish Haven 15	Reef 1	86° 42.490' W	30° 21.992' N	86.7082° W	30.3665° N
Fish Haven 15	Reef 2	86° 42.374' W	30° 21.992' N	86.7062° W	30.3665° N
Fish Haven 15	Reef 3	86° 42.258' W	30° 21.992' N	86.7043° W	30.3665° N
Fish Haven 15	Reef 4	86° 42.490' W	30° 21.891' N	86.7082° W	30.3649° N
Fish Haven 15	Reef 5	86° 42.258' W	30° 21.891' N	86.7043° W	30.3649° N
Fish Haven 15	Reef 6	86° 42.490' W	30° 21.791' N	86.7082° W	30.3632° N
Fish Haven 15	Reef 7	86° 42.374' W	30° 21.791' N	86.7062° W	30.3632° N
Fish Haven 15	Reef 8	86° 42.258' W	30° 21.791' N	86.7043° W	30.3632° N
Fish Haven 15	Reef 9	86° 42.374' W	30° 21.891' N	86.7062° W	30.3649° N

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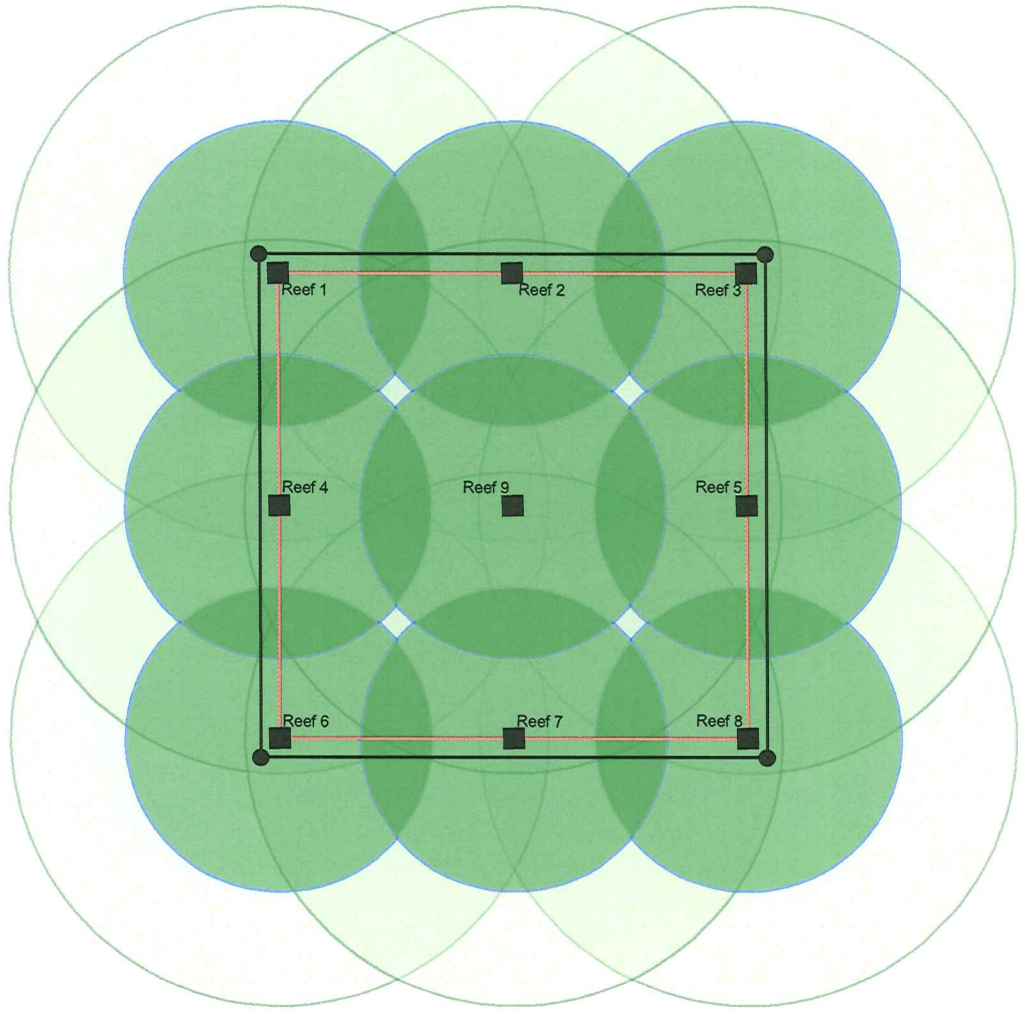
FIGURE 2
FISH HAVEN 15
OKALOOSA COUNTY ARTIFICIAL REEFS
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-052
DRAWN BY	PL
SHEET	2 of 3
DATE	NOV 2012

SEAL
MATTHEW E. TRAMMELL P.E. # 69244
11/7/12
DATE



Legend
- Corner Points
- Reef Locations
- 50' Offset
- Fish Haven Boundary

Foraging pressure is greater in the darker shaded areas. Foraging characteristics on the perimeter represent an infinite foraging prospect. The two circles around each reef location represent a 400' and 700' foraging radius, characteristic of target species such as red snapper and gag grouper.

N

Feet

0 250 500 1,000 1,500 2,000

1 inch = 500 feet

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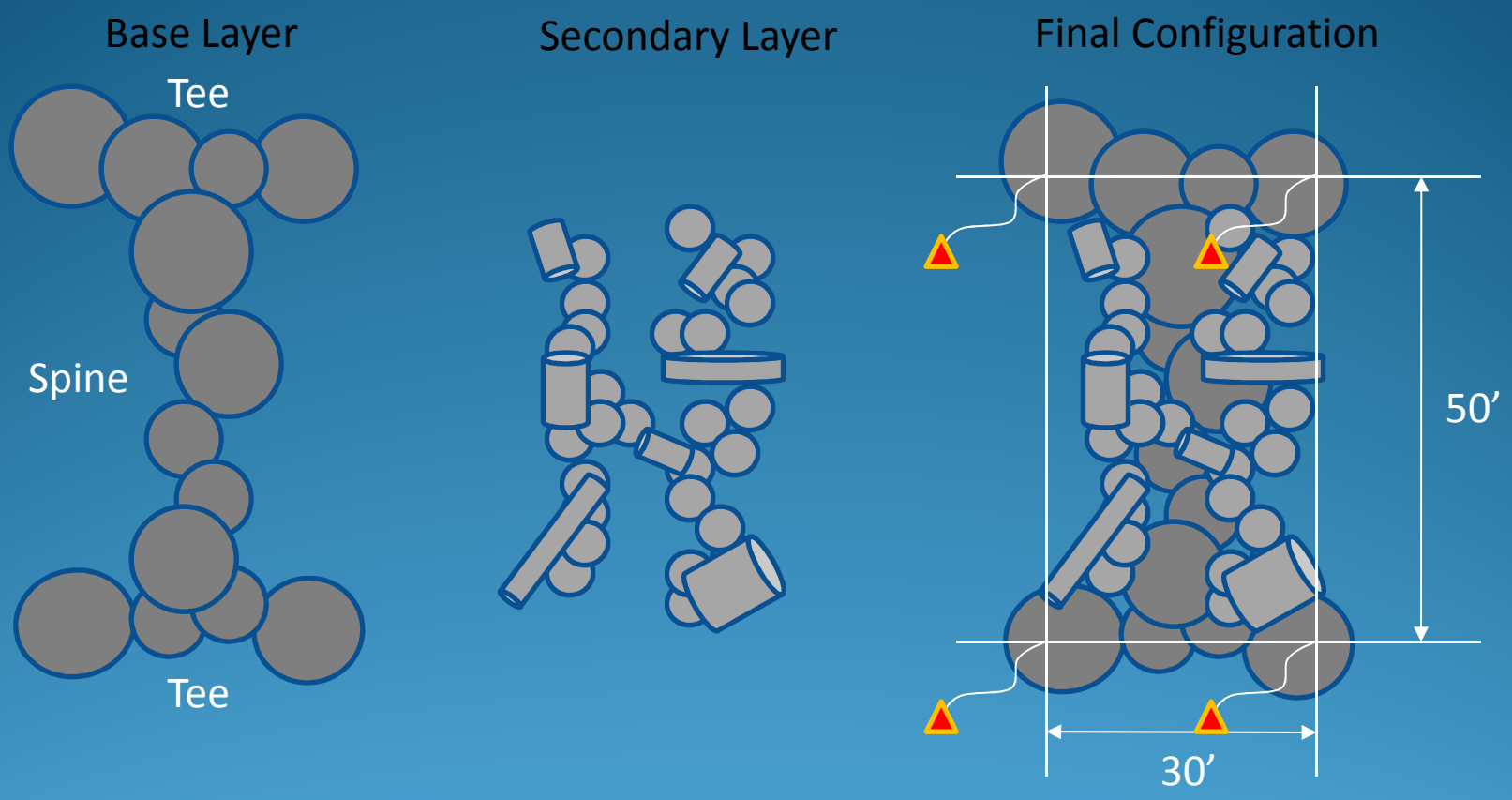
FIGURE 3
TYPICAL FORAGING PRESSURE
OKALOOSA COUNTY ARTIFICIAL REEFS
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-052
DRAWN BY	PL
SHEET	3 of 3
DATE	NOV 2012

SEAL

MATTHEW E. TRAMMELL P.E. # 69244 DATE 11/7/12

Attachment A – Typical Reef Structure Fish Haven 15 & 16 – Plan View
Okaloosa County , Florida

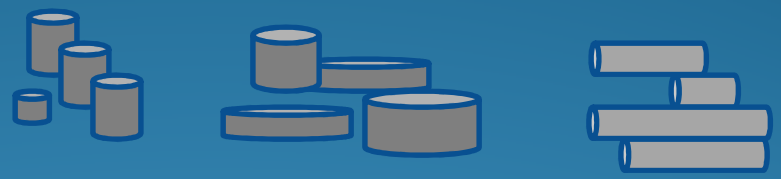


The Base Layer will be placed first. A quality control dive will be performed prior to approval of the base. Once complete, an estimate of the number of pieces for the secondary layer materials will be calculated and placed to reach the maximum relief. Dimensions are approximate

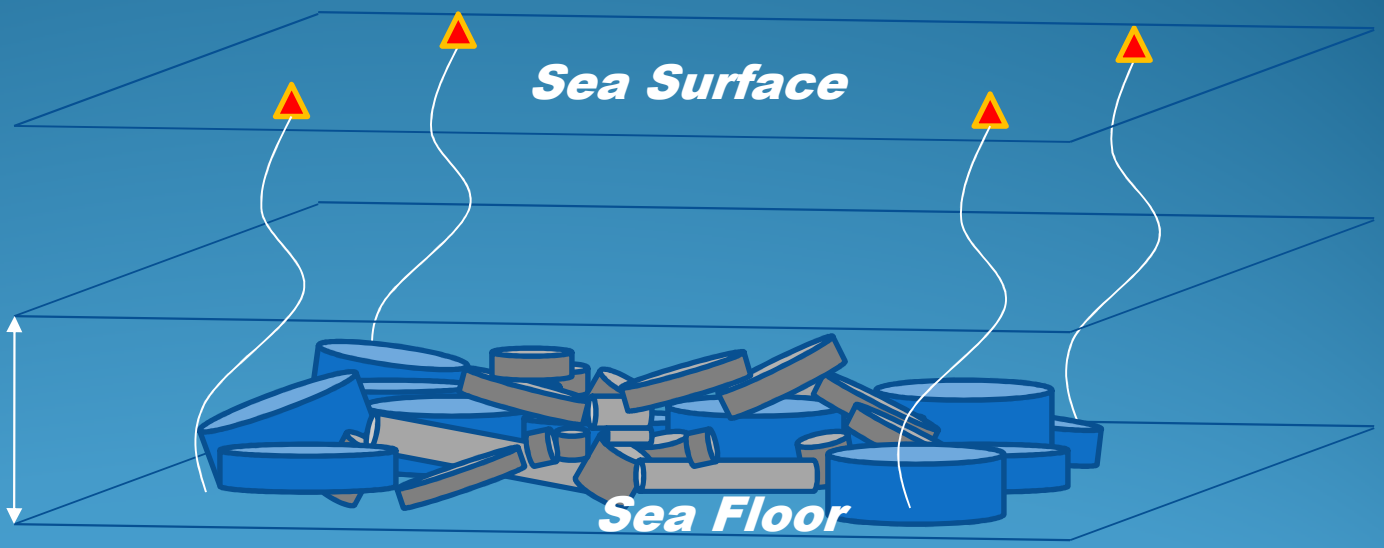
Attachment A – Typical Reef Structure Fish Haven 15 & 16 - Oblique View
Okaloosa County , Florida

Base Anchor Layer

Secondary Anchor Layer Materials



Final Configuration



Maximum reef height equals half the distance from the sea floor to sea surface or as required by USACE.

The Base Layer will contain larger anchor material. The Secondary Layer will contain smaller anchor material and larger targets that have lost structural integrity. The layers will be built up until the desired relief is achieved. Marker buoys will be secured prior to material placement to define drop area and serve as a material placement aide.

Attachment B – Typical AFRL Materials for Construction of Fish Haven 15 and 16 Okaloosa County , Florida

Attachment B – Typical AFRL Materials for Construction of Fish Haven 15 and 16

Okaloosa County , Florida

City of Fort Walton Beach Material Photographs – Fish Haven 13 and Fish Haven 14
Okaloosa County , Florida

USAF AFRL - Material Inventory
Range Site C-64A
Artificial Reef Construction
Okaloosa County, Florida

					Cylinders/Culverts				Blocks							
ID		Qty	Location	Description	Dimensions (ft)			Est. Yrd^3 each				Est. Yrd^3 each	Est. lbs Each	Est. lbs Total	Est. Yrd^3 Total	TradCost $/yr^3
					L	D_out	D_in		L	W	H		4000lb/yr^3			85
A	1	3	behind A	Cylinders	3.00	2.58		0.581				-	2,323	6,968	1.742	148
A	2	3	behind A	Arches				-	30	3.25	1	2.401	9,606	28,817	7.204	612
A	3	10	behind A	Large Cylinders intact w/lugs	5.00	5.00		3.625				-	14,501	145,008	36.252	3,081
A	4	1	behind A	Large Cylinder intact w/lugs	3.00	6.00		3.132				-	12,529	12,529	3.132	266
A	5	1	behind A	culvert	4.75	7.25	6	2.282				-	9,126	9,126	2.282	194
A	6	1	behind A	cylinder	3.00	4.67		1.895				-	7,579	7,579	1.895	161
A	7	2	PL82 area	Big thin block				-	10	10	1	3.693	14,770	29,541	7.385	628
A	8	6	PL82 area	1/4 arches				-	13	3.25	1	1.041	4,162	24,974	6.244	531
A	9	1	PL82 area	Big Block some rebar showing				-	6	6	5	6.647	26,587	26,587	6.647	565
A	10							-				-	-	-	0.000	-
A	11							-				-	-	-	0.000	-
A	12							-				-	-	0	0.000	-
A	13							-				-	-	0	0.000	-
A	14							-				-	-	0	0.000	-
A	15							-				-	-	0	0.000	-
A	16							-				-	-	0	0.000	-
A	17							-				-	-	0	0.000	-
A	18							-				-	-	0	0.000	-
A	19							-				-	-	0	0.000	-
A	20							-				-	-	0	0.000	-
A	21							-				-	-	0	0.000	-
A	22							-				-	-	0	0.000	-
A	23							-				-	-	0	0.000	-
A	24							-				-	-	0	0.000	-
A	25							-				-	-	0	0.000	-
A	26							-				-	-	0	0.000	-
A	27							-				-	-	0	0.000	-
A	28							-				-	-	0	0.000	-
A	29							-				-	-	0	0.000	-
A	30							-				-	-	0	0.000	-
A	31							-				-	-	0	0.000	-
A	32							-				-	-	0	0.000	-
A	33											-	-	0	0.000	-
A	34											-	-	0	0.000	-
												-	-	0	0.000	-
												-	-	0	0.000	-
												Totals				
														Est. lbs Total	Est. Yrd^3 Total	Est. $
														291,129	73	6,186

USAF AFRL - Material Inventory
Range Site C-64B
Artificial Reef Construction
Okaloosa County, Florida

					Cylinders/Culverts				Blocks							
	ID	Qty	General Location	Description	Dimensions (ft)			Est. Yrd^3 each				Est. Yrd^3 each	Est. lbs Each Item	Est. lbs Total for Group	Est. Tons Total for Group	Est. Yrd^3 Total
					L	D_out	D_in		L	W	H		4000lb/yr^3		2,000	
B	1	5	front	Very large cylinders w/thermocouples in sides	7.00	7.50		11.419				-	45,678	228,388	114	57
B	2	20	front	Small cylinders under very large cylinders	3.00	2.58		0.579				-	2,317	46,331	23	12
B	3	6	front	Pile of cubes				-	1	1	1	0.037	148	886	0	0
B	4	3	front	1/2 culverts	8.67	6.33	5.67	1.005				-	4,022	12,065	6	3
B	5	4	West Side front	Cylinders gal metal outer skin intact w/Lugs	1.67	6.00		1.740				-	6,960	27,842	14	7
B	6	2	West Side front	Cylinders gal metal outer skin intact w/Lugs	3.00	2.67		0.619				-	2,475	4,950	2	1
B	7	2	West Side front	Cylinders gal metal outer skin intact w/Lugs	6.00	6.00		6.264				-	25,057	50,115	25	13
B	8	1	West Side front	Cylinders gal metal outer skin intact w/Lugs	5.00	2.67		1.031				-	4,125	4,125	2	1
B	9	9	West Side front	Cylinders gal metal outer skin intact w/Lugs	0.67	6.00		0.696				-	2,784	25,057	13	6
B	10	6	West Side front	Cylinders gal metal outer skin intact w/Lugs	4.00	6.00		4.176				-	16,705	100,230	50	25
B	11	10	West Side front	Cylinders gal metal outer skin intact w/Lugs	1.50	6.00		1.566				-	6,264	62,643	31	16
B	12	55	West Side front	Cylinders gal metal outer skin intact w/Lugs	3.00	2.58		0.581				-	2,323	127,740	64	32
B	13	28	West Side front	Cylinders gal metal outer skin intact w/Lugs	5	2.58		0.968				-	3,871	108,385	54	27
B	14	3	West lane east side	Blocks				-	5	2.25	0.667	0.277	1,108	3,325	2	1
B	15	14	West Side in back	W shot Cylinders Gal Metal Outer Skin w/Lugs	4	6.00		4.176				-	16,705	233,869	117	58
B	16	2	West Side in back	W shot Cylinders Gal Metal Outer Skin Broken Up	4	6.00		4.176				-	16,705	33,410	17	8
B	17	3	West Side in back	Small Blocks w/Center hole and lugs				-	2.666667	2.666667	0.666667	0.175	700	2,101	1	1
B	18	2	West Side in back	Small Blocks w/Center hole and lugs				-	2.666667	2.666667	0.333333	0.088	350	700	0	0
B	19	1	West Side in back	Large Cylinder	4	6.00		4.176				-	16,705	16,705	8	4
B	20	1	East side in back	Large Cylinder	4	6.00		4.176				-	16,705	16,705	8	4
B	21	13	East side in back	Large Cylinder	6	6.00		6.264				-	25,057	325,746	163	81
B	22	2	West side in back	W shot cylinders broken up	5	2.67		1.031				-	4,125	8,249	4	2
B	23	1	West side in back	W shot cylinders Intact	5	2.67		1.031				-	4,125	4,125	2	1
B	24	1	East side Mid	Large Cylinder w/ Galv Skin intact	5	5.00		3.625				-	14,501	14,501	7	4
B	25	1	East side Mid	Cylinder w/ Galv Skin intact	4	5.00		2.900				-	11,601	11,601	6	3
B	26	2	East side Mid	Cylinder w/ Galv Skin intact	4	6.00		4.176				-	16,705	33,410	17	8
B	27	8	East side Mid	Cylinder w/ Galv Skin intact	3	2.58		0.581				-	2,323	18,580	9	5
B	28	2	East side mid	Cylinder w/ Galv Skin intact	5	2.58		0.968				-	3,871	7,742	4	2
B	29	2	East side mid	Large Cylinder w/ Galv Skin intact	6	6.00		6.264				-	25,057	50,115	25	13
B	30	1	East side Mid	2 broken outer skin 6'x6'cylinder, Est. concrete rubble <1/2 of 1	6	6.00		3.132				-	12,529	12,529	6	3
B	31	2	East toward front	Large Culverts in woods	8.666667	6.33	5.666667	2.011				-	8,043	16,086	8	4
B	32	1	woods patch front	cylinder w/ projectile sticking out	5	2.58		0.968				-	3,871	3,871	2	1
B	33	1	woods patch front	Large Block w/ River rock agregate				-	10	10	5	18.463	73,852	73,852	37	18
B	34	1	woods patch front	Small block intact				-	2.666667	2.5	0.666667	0.164	656	656	0	0
B	35	1	woods patch front	Small block intact				-	2.666667	2.5	1	0.246	985	985	0	0
B	36	1	woods patch front	Shot cylinder near unshot group	3	2.583333		0.581				-	2,323	2,323	1	1
B	37	1	by fence east	Empty cylinder	4	6.00	5.9	0.138				-	552	552	0	0
B	38	1	by fence east	Empty cylinder	1.666667	6.00	5.9	0.058				-	230	230	0	0
B	39	18	center pile	Large Cylinder	4	6.00		4.176				-	16,705	300,689	150	75
B	40	5	center pile	Large cylinder	6	6.00		6.264				-	25,057	125,287	63	31
B	41	5	center pile	20 deg angle large cylinders	4	6.00		3.341				-	13,364	66,820	33	17
B	42	10	center pile	Large thin cylinder	2	8.00		3.712				-	14,849	148,488	74	37
B	43	7	center pile	Large thin cylinder	1.583333	6.00		1.653				-	6,612	46,287	23	12
B	44	17	center pile	Small cylinders	3	2.58		0.581				-	2,323	39,483	20	10
B	45	6	center pile	small cylinders	5	2.58		0.968				-	3,871	23,225	12	6
B	46	4	East side blast pad	1/2 culverts	8.666667	6.33	5.666667	1.005				-	4,022	16,086	8	4
B	47	1	East side blast pad	Large thin Block on ground				-	10	10	1.333333	4.923	19,694	19,694	10	5
B	48	1	East side blast pad	Large up right block w/ rebar showing				-	4	5.583333	5.583333	4.604	18,418	18,418	9	5
B	49	6	field by blast pad	2 groups of stacked thin blocks				-	10	10	1	3.693	14,770	88,622	44	22
															-	
															-	
B	50	1	East of Blast Pad	Cylinder w/skin and rebar showing in center	2.00	4.00		0.928				-	3,712	3,712	2	1
B	51	4	Behind Blast Pad	Cylinders	11.67	1.67		0.940				-	3,759	15,038	8	4
B	52	2	Behind Blast Pad	Arches				-	13.00	3.25	1.00	1.560	6,241	12,481	6	3

USAF AFRL - Material Inventory
Range Site C-64B
Artificial Reef Construction
Okaloosa County, Florida

B	53	3	Behind Blast Pad	Blocks				-	5.00	3.42	0.67	0.421	1,682	5,047	3	1
B	54	1	Behind Blast Pad	Culvert	3.25	7.25	6.00	1.561				-	6,244	6,244	3	2
B	55	3	Behind Blast Pad	Cylinders Against Walls	3.00	2.67		0.619				-	2,475	7,424	4	2
B	56	8	Side of Blast Pad	Cylinders by blast pad mound	3.00	2.67		0.619				-	2,475	19,798	10	5
B	57											-	-	-	-	-
B	58											-	-	-	-	-
B	59											-	-	-	-	-
B	60											-	-	-	-	-
												Totals				
														Est. lbs Total		Est. Yrd^3 Total
														2,653,568	1,327	663

USAF AFRL - Material Inventory
Range Site A-22
Artificial Reef Construction
Okaloosa County, Florida

				Cylinders/Culverts				Blocks							
ID		Qty	Description	Dimensions (ft)			Est. Yrd^3 each				Est. Yrd^3 each	Est. lbs Each	Est. lbs Total		Est. Yrd^3 Total
				L	D_out	D_in		L	W	H		4000lb/yr^3			
F	1	2	Blocks w/Rebar				-	7	7	1	1.809	7,238	14,475		3.619
F	2	10	Blocks w/Rebar				-	7	7	2	3.619	14,475	144,750		36.188
F	3	6	Blocks w/Rebar				-	7	9	2	4.653	18,611	111,664		27.916
F	4	1	Blocks w/Rebar				-	7	9	3	6.979	27,916	27,916		6.979
F	5	1	Blocks w/Rebar				-	7	9	4	9.305	37,221	37,221		9.305
F	6	1	Cylinder w/Rebar	1.00	6.00		1.044				-	4,176	4,176		1.044
F	7	12	Cylinder w/Rebar	4.00	8.00		7.424				-	29,698	356,372		89.093
F	8	6	Cylinder w/Rebar	2.00	6.00		2.088				-	8,352	50,115		12.529
F	9	8	Cylinder w/Rebar	4.00	6.00		4.176				-	16,705	133,639		33.410
F	10	1	Cylinder w/Rebar	2.00	8.00		3.712				-	14,849	14,849		3.712
F	11						-				-	-	-		0.000
F	12											-			0.000
F	13											-			0.000
F	14											-			0.000
F	15											-			0.000
F	16											-			0.000
F	17											-			0.000
F	18											-			0.000
											Totals				
													Est. lbs Total	Est. Total Tons	Est. Yrd^3 Total
													895,178	448	224

USAF AFRL - Material Inventory
Total Inventory for All Range Sites
Artificial Reef Construction
Okaloosa County, Florida

Est. lbs Total	Est. Yrd^3 Total	Est. ft^3 Total
$ 3,839,875	960	25,997

1920 Tons Total

USAF AFRL - Material Inventory
Range Site C-64A
Artificial Reef Construction
Okaloosa County, Florida

					Cylinders/Culverts				Blocks							
ID		Qty	Location	Description	Dimensions (ft)			Est. Yrd^3 each				Est. Yrd^3 each	Est. lbs Each	Est. lbs Total	Est. Yrd^3 Total	TradCost $/yr^3
					L	D_out	D_in		L	W	H		4000lb/yr^3			85
A	1	3	behind A	Cylinders	3.00	2.58		0.581				-	2,323	6,968	1.742	148
A	2	3	behind A	Arches				-	30	3.25	1	2.401	9,606	28,817	7.204	612
A	3	10	behind A	Large Cylinders intact w/lugs	5.00	5.00		3.625				-	14,501	145,008	36.252	3,081
A	4	1	behind A	Large Cylinder intact w/lugs	3.00	6.00		3.132				-	12,529	12,529	3.132	266
A	5	1	behind A	culvert	4.75	7.25	6	2.282				-	9,126	9,126	2.282	194
A	6	1	behind A	cylinder	3.00	4.67		1.895				-	7,579	7,579	1.895	161
A	7	2	PL82 area	Big thin block				-	10	10	1	3.693	14,770	29,541	7.385	628
A	8	6	PL82 area	1/4 arches				-	13	3.25	1	1.041	4,162	24,974	6.244	531
A	9	1	PL82 area	Big Block some rebar showing				-	6	6	5	6.647	26,587	26,587	6.647	565
A	10							-				-	-	-	0.000	-
A	11							-				-	-	-	0.000	-
A	12							-				-	-	0	0.000	-
A	13							-				-	-	0	0.000	-
A	14							-				-	-	0	0.000	-
A	15							-				-	-	0	0.000	-
A	16							-				-	-	0	0.000	-
A	17							-				-	-	0	0.000	-
A	18							-				-	-	0	0.000	-
A	19							-				-	-	0	0.000	-
A	20							-				-	-	0	0.000	-
A	21							-				-	-	0	0.000	-
A	22							-				-	-	0	0.000	-
A	23							-				-	-	0	0.000	-
A	24							-				-	-	0	0.000	-
A	25							-				-	-	0	0.000	-
A	26							-				-	-	0	0.000	-
A	27							-				-	-	0	0.000	-
A	28							-				-	-	0	0.000	-
A	29							-				-	-	0	0.000	-
A	30							-				-	-	0	0.000	-
A	31							-				-	-	0	0.000	-
A	32							-				-	-	0	0.000	-
A	33											-	-	0	0.000	-
A	34											-	-	0	0.000	-
												-	-	0	0.000	-
												-	-	0	0.000	-
												Totals				
														Est. lbs Total	Est. Yrd^3 Total	Est. $
														291,129	73	6,186

USAF AFRL - Material Inventory
Range Site C-64B
Artificial Reef Construction
Okaloosa County, Florida

					Cylinders/Culverts				Blocks							
	ID	Qty	General Location	Description	Dimensions (ft)			Est. Yrd^3 each				Est. Yrd^3 each	Est. lbs Each Item	Est. lbs Total for Group	Est. Tons Total for Group	Est. Yrd^3 Total
					L	D_out	D_in		L	W	H		4000lb/yr^3		2,000	
B	1	5	front	Very large cylinders w/thermocouples in sides	7.00	7.50		11.419				-	45,678	228,388	114	57
B	2	20	front	Small cylinders under very large cylinders	3.00	2.58		0.579				-	2,317	46,331	23	12
B	3	6	front	Pile of cubes				-	1	1	1	0.037	148	886	0	0
B	4	3	front	1/2 culverts	8.67	6.33	5.67	1.005				-	4,022	12,065	6	3
B	5	4	West Side front	Cylinders gal metal outer skin intact w/Lugs	1.67	6.00		1.740				-	6,960	27,842	14	7
B	6	2	West Side front	Cylinders gal metal outer skin intact w/Lugs	3.00	2.67		0.619				-	2,475	4,950	2	1
B	7	2	West Side front	Cylinders gal metal outer skin intact w/Lugs	6.00	6.00		6.264				-	25,057	50,115	25	13
B	8	1	West Side front	Cylinders gal metal outer skin intact w/Lugs	5.00	2.67		1.031				-	4,125	4,125	2	1
B	9	9	West Side front	Cylinders gal metal outer skin intact w/Lugs	0.67	6.00		0.696				-	2,784	25,057	13	6
B	10	6	West Side front	Cylinders gal metal outer skin intact w/Lugs	4.00	6.00		4.176				-	16,705	100,230	50	25
B	11	10	West Side front	Cylinders gal metal outer skin intact w/Lugs	1.50	6.00		1.566				-	6,264	62,643	31	16
B	12	55	West Side front	Cylinders gal metal outer skin intact w/Lugs	3.00	2.58		0.581				-	2,323	127,740	64	32
B	13	28	West Side front	Cylinders gal metal outer skin intact w/Lugs	5	2.58		0.968				-	3,871	108,385	54	27
B	14	3	West lane east side	Blocks				-	5	2.25	0.667	0.277	1,108	3,325	2	1
B	15	14	West Side in back	W shot Cylinders Gal Metal Outer Skin w/Lugs	4	6.00		4.176				-	16,705	233,869	117	58
B	16	2	West Side in back	W shot Cylinders Gal Metal Outer Skin Broken Up	4	6.00		4.176				-	16,705	33,410	17	8
B	17	3	West Side in back	Small Blocks w/Center hole and lugs				-	2.666667	2.666667	0.666667	0.175	700	2,101	1	1
B	18	2	West Side in back	Small Blocks w/Center hole and lugs				-	2.666667	2.666667	0.333333	0.088	350	700	0	0
B	19	1	West Side in back	Large Cylinder	4	6.00		4.176				-	16,705	16,705	8	4
B	20	1	East side in back	Large Cylinder	4	6.00		4.176				-	16,705	16,705	8	4
B	21	13	East side in back	Large Cylinder	6	6.00		6.264				-	25,057	325,746	163	81
B	22	2	West side in back	W shot cylinders broken up	5	2.67		1.031				-	4,125	8,249	4	2
B	23	1	West side in back	W shot cylinders Intact	5	2.67		1.031				-	4,125	4,125	2	1
B	24	1	East side Mid	Large Cylinder w/ Galv Skin intact	5	5.00		3.625				-	14,501	14,501	7	4
B	25	1	East side Mid	Cylinder w/ Galv Skin intact	4	5.00		2.900				-	11,601	11,601	6	3
B	26	2	East side Mid	Cylinder w/ Galv Skin intact	4	6.00		4.176				-	16,705	33,410	17	8
B	27	8	East side Mid	Cylinder w/ Galv Skin intact	3	2.58		0.581				-	2,323	18,580	9	5
B	28	2	East side mid	Cylinder w/ Galv Skin intact	5	2.58		0.968				-	3,871	7,742	4	2
B	29	2	East side mid	Large Cylinder w/ Galv Skin intact	6	6.00		6.264				-	25,057	50,115	25	13
B	30	1	East side Mid	2 broken outer skin 6'x6'cylinder, Est. concrete rubble <1/2 of 1	6	6.00		3.132				-	12,529	12,529	6	3
B	31	2	East toward front	Large Culverts in woods	8.666667	6.33	5.666667	2.011				-	8,043	16,086	8	4
B	32	1	woods patch front	cylinder w/ projectile sticking out	5	2.58		0.968				-	3,871	3,871	2	1
B	33	1	woods patch front	Large Block w/ River rock agregate				-	10	10	5	18.463	73,852	73,852	37	18
B	34	1	woods patch front	Small block intact				-	2.666667	2.5	0.666667	0.164	656	656	0	0
B	35	1	woods patch front	Small block intact				-	2.666667	2.5	1	0.246	985	985	0	0
B	36	1	woods patch front	Shot cylinder near unshot group	3	2.583333		0.581				-	2,323	2,323	1	1
B	37	1	by fence east	Empty cylinder	4	6.00	5.9	0.138				-	552	552	0	0
B	38	1	by fence east	Empty cylinder	1.666667	6.00	5.9	0.058				-	230	230	0	0
B	39	18	center pile	Large Cylinder	4	6.00		4.176				-	16,705	300,689	150	75
B	40	5	center pile	Large cylinder	6	6.00		6.264				-	25,057	125,287	63	31
B	41	5	center pile	20 deg angle large cylinders	4	6.00		3.341				-	13,364	66,820	33	17
B	42	10	center pile	Large thin cylinder	2	8.00		3.712				-	14,849	148,488	74	37
B	43	7	center pile	Large thin cylinder	1.583333	6.00		1.653				-	6,612	46,287	23	12
B	44	17	center pile	Small cylinders	3	2.58		0.581				-	2,323	39,483	20	10
B	45	6	center pile	small cylinders	5	2.58		0.968				-	3,871	23,225	12	6
B	46	4	East side blast pad	1/2 culverts	8.666667	6.33	5.666667	1.005				-	4,022	16,086	8	4
B	47	1	East side blast pad	Large thin Block on ground				-	10	10	1.333333	4.923	19,694	19,694	10	5
B	48	1	East side blast pad	Large up right block w/ rebar showing				-	4	5.583333	5.583333	4.604	18,418	18,418	9	5
B	49	6	field by blast pad	2 groups of stacked thin blocks				-	10	10	1	3.693	14,770	88,622	44	22
															-	
															-	
B	50	1	East of Blast Pad	Cylinder w/skin and rebar showing in center	2.00	4.00		0.928				-	3,712	3,712	2	1
B	51	4	Behind Blast Pad	Cylinders	11.67	1.67		0.940				-	3,759	15,038	8	4
B	52	2	Behind Blast Pad	Arches				-	13.00	3.25	1.00	1.560	6,241	12,481	6	3

USAF AFRL - Material Inventory
Range Site C-64B
Artificial Reef Construction
Okaloosa County, Florida

B	53	3	Behind Blast Pad	Blocks				-	5.00	3.42	0.67	0.421	1,682	5,047	3	1
B	54	1	Behind Blast Pad	Culvert	3.25	7.25	6.00	1.561				-	6,244	6,244	3	2
B	55	3	Behind Blast Pad	Cylinders Against Walls	3.00	2.67		0.619				-	2,475	7,424	4	2
B	56	8	Side of Blast Pad	Cylinders by blast pad mound	3.00	2.67		0.619				-	2,475	19,798	10	5
B	57											-	-	-	-	-
B	58											-	-	-	-	-
B	59											-	-	-	-	-
B	60											-	-	-	-	-
												Totals				
														Est. lbs Total		Est. Yrd^3 Total
														2,653,568	1,327	663

USAF AFRL - Material Inventory
Range Site A-22
Artificial Reef Construction
Okaloosa County, Florida

				Cylinders/Culverts				Blocks							
ID		Qty	Description	Dimensions (ft)			Est. Yrd^3 each				Est. Yrd^3 each	Est. lbs Each	Est. lbs Total		Est. Yrd^3 Total
				L	D_out	D_in		L	W	H		4000lb/yr^3			
F	1	2	Blocks w/Rebar				-	7	7	1	1.809	7,238	14,475		3.619
F	2	10	Blocks w/Rebar				-	7	7	2	3.619	14,475	144,750		36.188
F	3	6	Blocks w/Rebar				-	7	9	2	4.653	18,611	111,664		27.916
F	4	1	Blocks w/Rebar				-	7	9	3	6.979	27,916	27,916		6.979
F	5	1	Blocks w/Rebar				-	7	9	4	9.305	37,221	37,221		9.305
F	6	1	Cylinder w/Rebar	1.00	6.00		1.044				-	4,176	4,176		1.044
F	7	12	Cylinder w/Rebar	4.00	8.00		7.424				-	29,698	356,372		89.093
F	8	6	Cylinder w/Rebar	2.00	6.00		2.088				-	8,352	50,115		12.529
F	9	8	Cylinder w/Rebar	4.00	6.00		4.176				-	16,705	133,639		33.410
F	10	1	Cylinder w/Rebar	2.00	8.00		3.712				-	14,849	14,849		3.712
F	11						-				-	-	-		0.000
F	12											-			0.000
F	13											-			0.000
F	14											-			0.000
F	15											-			0.000
F	16											-			0.000
F	17											-			0.000
F	18											-			0.000
											Totals				
													Est. lbs Total	Est. Total Tons	Est. Yrd^3 Total
													895,178	448	224

USAF AFRL - Material Inventory
Total Inventory for All Range Sites
Artificial Reef Construction
Okaloosa County, Florida

Est. lbs Total	Est. Yrd^3 Total	Est. ft^3 Total
$ 3,839,875	960	25,997

1920 Tons Total

BIOLOGICAL ASSESSMENT

Fish Haven 15
Okaloosa County, Florida

Original Text created
For Santa Rosa County, Florida
Navarre Beach Park Gulf Snorkel Reef Site
By Wetland Sciences, Inc.
1829 Bainbridge Ave.
Pensacola, Florida 32501
August 7, 2009

Revised for Okaloosa County Fish Haven 15
by: Scott R. Henson
Okaloosa County Artificial Reef Program Manager
84 Ready Avenue
Fort Walton Beach, Florida 32548

December 6, 2011

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1.0 Introduction

This Biological Assessment (BA) has been prepared to fulfill the U.S. Army Corps of Engineer's (USACE) requirements as outlined under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended. This BA evaluates the potential impacts that the proposed Okaloosa County Artificial Reef Deployment area Fish Haven 15 may have on federally listed endangered and threatened species, and describes the avoidance, minimization and conservation measures proposed by the applicant, Okaloosa County.

This BA is prepared pursuant to Section 7 of the Endangered Species Act (ESA) as well as the relevant implementing regulations and agency guidance. 16 U.S.C. § 1536; 50 C.F.R. § 402.12; and Final ESA Section 7 Consultation Handbook (March 1998) [Section 7 Handbook]. The primary purpose of the BA is to address potential impacts to threatened and endangered species and their designated critical habitats that may result from the Project. The primary objectives of this BA are to:

- Provide a conceptual framework of the history of the Project;
- Document the evolution of the project alternatives and past consultations with the United States Fish and Wildlife Services (USFWS), Corps, National Marine Fisheries Service (MNFS) and the Florida Fish and Wildlife Commission (FWC);
- Describe the Project, including the planned use and all proposed mitigation and conservation measures;
- Provide information on the natural history of federally-listed endangered or threatened species, species proposed for listing and other sensitive species potentially occurring in the vicinity of the Project;
- Evaluate the potential effects of the Project on federally-listed or proposed-listed endangered or threatened species; and
- Provide a determination of effect (i.e., "no effect", "may affect, not likely to adversely affect, or modify critical habitat", or "may affect, is likely to adversely affect, or modify critical habitat") for the listed and proposed-listed species.

2.0 Project Description

The proposed Fish Haven is a quarter-mile square area as defined by the following coordinates:

Fish Haven 15	Latitude	Longitude	Latitude	Longitude
Centroid	30° 21.891' N	86° 42.374' W	30.3649° N	86.7062° W
Northwest Corner	30° 22.000' N	86° 42.500' W	30.3667° N	86.7083° W
Northeast Corner	30° 22.000' N	86° 42.249' W	30.3667° N	86.7041° W
Southeast Corner	30° 21.783' N	86° 42.249' W	30.3630° N	86.7041° W
Southwest Corner	30° 21.782' N	86° 42.500' W	30.3630° N	86.7083° W

This location is approximately 10 nautical miles from East Pass, Destin, Florida at a bearing of 264° and 1.82 miles from the closest shoreline at a bearing of 176°. The depth range across Fish Haven 15 is approximately 70 to 75 feet below sea level.

It is the County's intent to construct 9 separate reefs in Fish Haven 15. The materials to be used to construct the reefs are industry standard prefabricated reef structures, clean concrete prefabricated concrete structures donated by the United States Air Force and the City of Fort Walton Beach. These materials are repurposed materials that have been utilized for their intended purpose or are excess inventory from historical projects. The overwhelming majority of the material is solid, multi-ton and not likely to mobilize once placed on the sea floor.

Fish Haven 15 is part of a network of construction areas for artificial reefs off of the shores of Okaloosa County. Fish Haven 15 is an essential component providing a significant share of the environmental and recreational benefits for the reef network. Increased presence of marine organisms from their expected growth on the reef structures will encourage increased biodiversity within the Gulf. The reef structures themselves, coupled with the additional growth on the structures, will provide shelter that promotes improved mortality rates for juvenile fish species. Fish Haven 15 will provide an easily accessible amenity for local and transient fishing and diving community. The reefs constructed within Fish Haven 15 will relieve the ever increasing pressure on the existing public and private reef network and will be readily available to vessels not capable of prolonged forays to offshore waters.

3.0 Project Area

Monitoring of reefs in and around the proposed reef construction area indicate the proposed area is predominately unvegetated sand bottom with a surficial layer of microalgae/cyanobacteria. Categories of affected Essential Fish Habitat within the project area include marine water column and unvegetated sand bottom. There are no seagrasses located within the vicinity of the deployment site. There are no natural rock outcrops or hard bottom formations within the deployment sties. There are several other public artificial reefs within the vicinity of Fish Haven 15 but there is sufficient distance to limit an increase in foraging pressure but will allow refuge for transient species..

4.0 Alternatives Considered

Recent consultation with potential user groups has indicated that more near-shore reef areas are desirable. Also, a survey of the current public reef database was performed to determine a suitable location for Fish Haven 15. The Okaloosa County Artificial Reef - 5-Year Plan was also reviewed. Based on this input, the proposed location was selected. There are numerous other locations within the same radius from East Pass, Destin, Florida that are compatible with selection criteria. However, these sites are typically located in deeper waters or are along regularly utilized traffic patterns.

The proposed area was chosen to facilitate safe access and utilization. Factors considered included; shore proximity, vessel traffic patterns, ideal diving depths, avoidance of permitted borrow and/or

disposal sites, avoidance of safety fairways, anchorages, designated shipping lanes, and avoidance of sensitive environmental resources (i.e. hard bottom formations, seagrasses, etc.).

A variety of reef materials have been successfully used to construct artificial reefs. The materials proposed within the deployment area are consistent with the material specifications outlined in the DEP notice general permit 62-341.600, Florida Administrative Code. The materials specified are consistent with the National Artificial Reef Plan (As Amended): Guidelines for Siting, Construction, Development, and Assessment of Artificial Reefs (U.S. Department of Commerce 2007).

4.1 No-Action Alternative

The objective of the proposed activity is to increase near shore fishing, snorkeling, and diving opportunities for residents of Santa Rosa County. Currently there are only a few areas which offer such opportunities. To accept the No-Action Alternative would abandon the following Artificial Reef Program Goals:

- Enhance the seafloor of the marine and estuarine waters of, and adjacent to, Okaloosa County by the placement of stable and durable artificial reef materials for the purpose of establishing access and creating habitat for reef-associated species of fishes and invertebrates.
- Increase regional abundance of marine life.
- Reduce negative impacts to natural reefs.
- Provide fishing and diving opportunities for the residents and tourists of Okaloosa County
- Increase fishing and diving success, and artificial reef-user satisfaction
- Reduce conflicts between artificial reef users and user groups
- Enhance the local and state economies
- Increase safety of boaters using artificial reefs via establishment of artificial reef close to shore
- Increase fuel economy (decrease fuel consumption) via establishment of artificial reef permits close to shore

The No-Action Alternative does not meet the stated objective for the proposed nearshore reef deployment sites.

4.2 Preferred Alternative – Establishment of a Gulf Snorkel Reef Site

The preferred alternative is described in the project description section of this document. The reef deployment location was selected based upon many factors, including: proximity to safe harbor to minimize safety risks for boaters (particularly small vessels) water depth range; and user groups.

4.2.1 Pre-Deployment Procedures

No less than 5 days prior to deployment of material within the Fish Haven 15 area, the Permittee shall transmit by electronic mail ("e-mail") a complete and signed "Florida Artificial Reef Materials Cargo Manifest and Pre-Deployment Notification form to the Corps and FWC to allow inspection of the proposed reef materials. Inspections will be held at the staging area. By signing the Pre-Deployment Notification, the Permittee certifies that all materials are free from asphalt, petroleum, other hydrocarbons and toxic residues. The Permitte will take digital photos of representative

components/piers of reef material and transmit with the above form as PDF attachments to the appropriate agencies. Permittee will ensure receipt of transmittals to appropriate agencies. The Permittee will not deploy material if notified by the Corps or FWC that the material is questionable or unacceptable until the material has been evaluated and released for deployment. Any material that is deemed unacceptable for reef material will be disposed in an approved upland disposal site.

Deployment of the material shall not occur until the end of the inspection period. The Permittee will ensure both a copy of the Corps and DEP permit and the signed "Florida Artificial Reef Materials Cargo Manifest and Pre-Deployment Notification form" are maintained aboard the deployment vessel at all times during loading, transit, and deployment.

4.2.2 Deployment Procedures

Each deployment of material to the Fish Haven 15 will be loaded onto a barge outfitted with the equipment necessary to place the material at the designated location. The permitte or permittee's representative will be present to document the transport and deployment of the material. A deployment plan will be generated to outline the procedures and objectives of each deployment effort. The permittee or their agent will execute the deployment according to the criteria in the deployment plan. Variations to the plan will be documented for posterity. Reef locations within Fish Haven 15 will be marked with buoys prior to deployment.

4.2.3 Deployment Monitoring

The Permittee or the permittee's representative shall be on site during every deployment to verify compliance with the permit and its conditions. The authorized representative shall not be the person who physically or contractually is responsible for deployment of the transported reef materials. The permittee or representative will verify geographic coordinates using a Differentially Corrected Global Positioning System (DGPS) accurate to within 5 meters horizontal distance. Depth shall be verified utilizing fathometer, depth sounder, or similar device accurate to within 1 meter.

4.2.4 Post Deployment Monitoring

Within 12 months from the effective date of this permit and annually thereafter until expiration of the deployment authorization, the Permittee shall submit to the Corps and FWC a spreadsheet listing the deployments that occurred within the previous 12 months and a written report which summarizes, analyses, and draws conclusions regarding the activities or issues associated with the reef in the past twelve months. For each deployment, the spreadsheet will include the local tracking number, date deployed, geographic coordinates, description and quantity of the material deployed, depth of water above material, approximate area of seafloor covered. The spreadsheet will document any known changes in material condition (stability, durability, and location) as compared to those same characteristics at time of deployment. The report may include but is not limited to use trends, site management constraints and resolutions, management techniques, modifications of operations plans, lessons learned, etc. Results of any performance monitoring (description of fish and other biota observed) will be included in the report. The report shall include written text and drawing(s) or similar visual depiction of the location of each deployment in relation to the boundary of the reef site. Immediately upon expiration of the deployment authorization or request for permit extension, a

summary of reports submitted since the last permit issuance/renewal will be submitted to the Corps, NOAA, and FWC. This compilation will document any known changes in material stability, durability, or location as compared to that most recently reported for a site as well as a summary/analysis of the qualitative data (trends, lessons learned, etc.) in the yearly reports.

5.0 Status of Listed Species and Habitat

While numerous state and federally listed species potentially occur in Santa Rosa County, Florida, the table below provides a listed species that may be potentially affected by the proposed project.

Listed Species	Scientific Name	Status
Marine Mammals		
West Indian manatee	*Trichechus manatus*	Endangered
Sea Turtles		
Green sea turtle	*Chelonia mydas*	Endangered
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Endangered
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered
Loggerhead sea turtle	*Caretta caretta*	Threatened
Fish		
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened

Five, federally-protected, endangered whales species are of potential occurrence in the Gulf of Mexico: blue whale (*Balaenoptera musculus*), finback whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*). These five whale species are not considered in this BA as these whales are generally restricted to offshore waters, and therefore unlikely to be found in or near the project area.

One federally-protected, endangered ray is of potential occurrence in the Gulf of Mexico: smalltooth sawfish *(Pristis pectinata*). Smalltooth sawfish were once prevalent throughout Florida and were commonly encountered from Texas to North Carolina. Currently, smalltooth sawfish can be only found with any regularity in south Florida between the Caloosahatcheee River and the Florida Keys (NMFS 2006), and therefore is unlikely to be found in or near the project area and is not considered in this BA.

5.1 Loggerhead Sea Turtle

5.1.1 Status and Threats

The loggerhead turtle (*Caretta caretta*) was listed as threatened throughout its range on July 28, 1978 (43 FR 32808). The loggerhead is the most abundant sea turtle species in U.S. coastal waters (NMFS and USFWS 1991a).

Genetic research has identified four different loggerhead nesting subpopulations in the southeastern United States: (1) the Northern Subpopulation ranging from North Carolina to Northeast Florida; (2)

South Florida Subpopulation ranging from just north of Cape Canaveral, Florida and extending to Sarasota, Florida; (3) Dry Tortugas, Florida Subpopulation; and (4) Northwest Florida Subpopulation on the beaches of Florida's Panhandle (Bowen et al. 1993, Bowen et al. 1994, Bowen 1995, Encalada et al. 1998, Pearce 2001). Each nesting subpopulation is considered a distinct reproductive population. Due to the high site fidelity of nesting females to their natal region and low gene flow among nesting assemblages, most western North Atlantic loggerhead nesting assemblages are vulnerable to extirpation.

Based upon nesting data collected on index nesting beaches in the U.S. from 1989-1998, the total number of loggerhead nests laid along the Atlantic and Gulf Coasts ranged from 53,016 nests to 89,034 nests annually. On average 0.8% of the nests were from the Florida Panhandle subpopulation.

The most significant threats to the loggerhead sea turtle population are coastal development, commercial fisheries and marine pollution (NMFS 2007a). Juvenile loggerhead turtles are particularly susceptible to impacts associated with shrimp fisheries offshore of the Atlantic coast and along the southeastern Atlantic coast. Shrimp harvesting is managed in the Gulf of Mexico: waters out to 200 nautical miles are closed annually for 3 months to shrimp fishing offshore of Texas (mid May through mid July) to allow shrimp to migrate out of estuarine waters. The management of shrimp harvesting in the Gulf appears to contribute to the reduction of sea turtle stranding during this period (NMFS unpublished data).

Loggerhead nesting habitat is threatened with beach erosion, armoring and nourishment; artificial lighting; increased human activity associated with coastal development, including poaching activities; natural predation by fire ants, raccoons, armadillos, and opossums; and storm activity. Negative impacts to sea turtle nesting and hatching success in Okaloosa County include predation, hatchling disorientation due to artificial upland lighting, human activity/disturbance, and lost or damaged nests due to storm activity.

5.1.2 Distribution and Range

Loggerhead sea turtles occur throughout the temperate and tropical regions of the Atlantic, Gulf of Mexico, Pacific and Indian Oceans. The loggerhead occurs in open water as far as 500 miles from shore, but is mainly found over the continental shelf and in bays, estuaries, lagoons, creeks, and mouths of rivers. The loggerhead favors warm temperate and subtropical regions in relatively close proximity to shorelines. Similar to other sea turtles species, water temperature influences the movements of loggerhead, and they do not usually appear at summer foraging grounds until June, although some individuals can be found in Virginia as early as April. Immature stages of loggerheads (juveniles/sub-adults) which forage in the northeastern U.S. are known to migrate southward in the fall as water temperatures drop, and migrate northward in spring.

5.1.3 Habitat

Loggerheads are primarily carnivorous, feeding on sponges, squid, sea urchins, crabs, horseshoe crabs, shrimp, basket starfish and a variety of mollusks. Loggerhead turtles are primarily bottom feeders; however they also feed on jellyfish while swimming in the water column or resting/basking near the

surface of the water. Under certain conditions, they may prey upon slow moving, demersal fish species. Hatchlings and juveniles feed on prey concentrated at the surface such as gastropods and *Sargassum*. Along the Gulf Coast, loggerhead sea turtles are frequently observed near offshore oil platforms, natural hardbottom/reefs and rock jetties.

Adult loggerheads occupy various habitats from turbid bays to clear waters of reef. After emergence from the nest, hatchlings move out to sea, and spend approximately 3 to 5 years in the pelagic immature stage, generally associated with floating *Sargassum* mats (NMFS and USFWS 1991a). The pelagic stage may span as long as 7 to 12 years. Juveniles/sub-adults occur mainly in nearshore and estuarine waters and use these habitats for feeding. As loggerheads mature, they travel and forage through nearshore waters until their breeding season, when they return to the nesting beach. The estimated age at maturity is approximately 21 to 35 years (Frazer and Ehrhart 1985; Frazer et al. 1994). The majority of mature loggerheads appear to nest on a two or three year cycle.

Major nesting beaches for loggerheads include the Sultanate of Oman, southeastern United States and eastern Australia. In the continental U.S., loggerhead sea turtles nest along the Atlantic coast from Florida to New Jersey (Musick 1979). In the western Atlantic, most loggerhead nesting occurs from North Carolina to Florida and the Gulf Coast. The southeastern nesting population is critical to the survival of the species and is second in size only to the nesting aggregation on Masirah Island, Oman. Steeply sloped beaches with gradually slopes offshore approaches are generally favored by nesting females. Approximately 80% of all loggerhead nesting in the southeastern U.S. occurs in six Florida counties (Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties)

5.1.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st. The loggerhead is responsible for the majority of nesting in Okaloosa County.

5.2 Green Sea Turtle

5.2.1 Status and Threats

The green sea turtle (*Chelonia mydas*) was listing on July 28, 1978 as threatened, except for Florida and the Pacific Coast of Mexico(including the Gulf of California), where it was listed as endangered (43FR 32808). The greatest cause of the worldwide decline in green turtle populations is the commercial harvest for eggs and meat. In Florida, the nesting population was nearly extirpated within 100 years of the initiation of commercial exploitation.

Green sea turtle population in Florida, Hawaii and other parts of the world have experienced significant mortality from the disease, fibropapillomatosis, which is a disease characterized by the development of multiple tumors on the skin and internal organs. The tumors can interfere with swimming, eating, breathing, vision and reproduction. Other threats to green sea turtles include loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; excessive nest predation by fire ants, raccoons and opossums; degradation of

foraging habitat; marine pollution and debris; watercraft strike; and incidental take from commercial fishing operations such as shrimp trawling.

Due to their main dietary component of seagrass, Caribbean green sea turtles are considered to be nutrient limited, resulting in low growth rates, delayed sexual maturity, and low annual reproductive effort. This low reproductive effort makes recovery of the species slow once the adult population number have been severely reduced (Bjorndal 1981). Estimates of age at sexually maturity range from 20 to 50 years (Balazs 1982; Frazer and Ehrhart 1985) and the lifespan may be over 100 years.

5.2.2 Distribution and Range

The green sea turtle is a circumglobal species in tropical and subtropical waters. In the U.S. Atlantic waters, it occurs around the U.S. Virgin Islands, Puerto Rico, and the continental U.S. from Massachusetts to Texas. Relatively small numbers nest in Florida with even smaller numbers in Georgia, North Carolina and Texas (NMFS and USFWS 1991b; Hirth 1997). Green turtles are distributed more widely in the summer when warmer temperatures allow them to migrate north along the Atlantic Coast. Juvenile and sub-adult green sea turtles can be found in estuarine and coastal waters from Long Island Sound, Chesapeake Bay and North Carolina sounds south throughout the tropics (Musick and Limpus 1997). As the water temperatures decline during the winter months, green sea turtles that are found north of Florida migrate south into subtropical and tropical water.

Major nesting areas for green sea turtles in the Atlantic include Surinam, Guyana, French Guyana, Costa Rica, the Leeward Islands and Ascension Island in the mid Atlantic. Historically in the U.S., green turtles have been known to nest in the Florida Keys and Dry Tortugas. Green sea turtles primarily nest on selected beaches along the coast of eastern Florida, predominantly Brevard through Broward Counties. In the southeastern U.S., the majority of nesting occurs during the months of June, July and August.

5.2.3 Habitat

The green turtle primarily utilizes shallow habitats such as lagoons, bays, inlets, shoals, estuaries and other areas with abundance for marine algae and seagrasses. Individuals observed in the open ocean are believed to be migrating to feeding grounds or nesting beaches (Meylan 1982). Hatchlings often float in masses of algae (*Sargassum* sp) in convergence zones. Coral reefs and rock outcrops are often used as resting areas.

Green sea turtle hatchlings are believed to feed mainly on jellyfish and other invertebrates. Adult green sea turtles prefer an herbivorous diet frequenting shallow water flats for feeding (Fritts et al. 1983). Adult turtles feed primarily in seagrasses such as *Thalassia testudinum*. This vegetation provides the turtles with a high fiber content and low forage quality (Bjorndal 1981). Green turtles migrate long distances between feeding and nesting areas (Carr and Hirth 1962). Nocturnal resting sites may be a considerable distance from feeding areas and distribution of the species is generally correlated with grassbed distribution, location of resting beaches and possibly ocean currents (Hirth 1971). In the Gulf of Mexico, principal foraging areas are located in the upper west coast of Florida. Green sea turtle hatchlings are believed to feed mainly in jellyfish and other invertebrates.

Nesting occurs nocturnally at 2, 3 or 4 year intervals and females only occasionally produce clutches in successive year. Little is known about the pelagic distribution of hatchlings to juvenile size. When juveniles reach a carapace length of approximately 20 to 25 cm, they leave their pelagic habitats and enter benthic foraging areas, shifting to an herbivorous diet.

5.2.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

Within the vicinity of the project area, no green sea turtles or nests have been observed. Since the green sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect green sea turtle foraging areas or critical habitat, therefore, with use of the demolition conditions the project will not likely have an adverse affect on the green sea turtle.

5.3 Kemp's Ridley Sea Turtle

5.3.1 Status and Threats

Kemp's ridley sea turtle (*Lepidochelys kempii*) was listed as endangered throughout its range on December 2, 1970 (35 FR 18320). Of the seven extant species of sea turtles, the Kemp's ridley has declined to the lowest population level. Recent studies suggest increased nesting activities and an overall increase in population size due to increased hatchling production and survival rates of immature turtles (USFWS 2000). Kemp's ridleys have been subject to high levels of incidental take by shrimp trawlers (USFWS and NMFS 1992). In 1990, the National Research Council's Committee on Sea Turtle Conservation estimated that 86% of human caused death of juvenile and adult loggerhead and Kemp's ridley resulted from shrimp trawling (Campbell 1995). The recent increased survival of juvenile and sub-adult individuals is partly attributed to the use of turtle exclusion devices (TEDs) in commercial shrimping fleets.

The primary decline of Kemp's ridley is due to human activities including collection of eggs, fishing for juveniles and adults and direct take for indigenous use. Dredging operations affect Kemp's ridley turtles through incidental take and degradation of habitat. Incidental take of Kemp's ridley has been documented with hopper dredging. Similar to other sea turtles species, future threats to the Kemps' ridley include interaction with fishery gear; marine pollution which results in the ingestion of manmade debris and garbage; destruction of foraging habitat; illegal poaching; and impacts to nesting beaches associated with rising sea level, development, artificial lighting and tourism pressure.

5.3.2 Distribution and Range

Adults are primarily restricted to the Gulf of Mexico, although juveniles may range throughout the Atlantic Ocean since they have been observed as far north as Nova Scotia (Musick 1979). Important foraging areas include Campeche Bay, Mexico and Louisiana coastal waters. Nearly the entire population of Kemp's ridleys nest on an 11 mile stretch of coastline near Ranch Nuevo, Tamaulipas, Mexico, approximately 190 miles south of the Rio Grande. A second nesting aggregation occurs at Tuxpan, Veracruz.

Juveniles and sub-adults have been found along the eastern seaboard of the U.S. and in the Gulf of Mexico. Studies suggest that the benthic stage, juvenile turtles stay in shallow, warm nearshore waters in the northern Gulf until cooling waters force them offshore or south along the Florida coast (Renaud 1995). Little is known about the movements of the post hatchling, pelagic stage within the Gulf. Studies have indicated that this stage varies from 1 to 4 or more years and the immature stage lasts about 7 to 9 years. The maturity age of this species is estimated to 7 to 15 years. Females return to their nesting beach approximately every other year with nesting from April into July and usually limited to the western Gulf of Mexico. The mean clutch size for this species is about 100 eggs per nest and an average of 2.5 nests per female per season.

5.3.3 Habitat

Kemp's ridleys inhabit shallow coastal and estuarine waters, usually over sand of mud bottoms. Adults are primarily shallow water benthic feeders that specialize on crabs, especially portunid crabs, while juveniles feed on *Sargassum* sp. and associated infauna and other epipelagic species of the Gulf (USFWS and MNFS 1992). Other food items include shrimp, snails, bivalves, sea urchin, jellyfish, sea stars, fish and occasionally marine plants (Pritchard and Marquez 1973; Shaver 1991; Campbell 1995).

5.3.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

Within the vicinity of the project area, no Kemp's ridley sea turtles or nests have been observed. Since the Kemp's ridley sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect Kemp's ridley sea turtle foraging areas or critical habitat therefore with use of the demolition conditions the project will not likely have an adverse affect on the Kemp's ridley sea turtle.

5.4 Leatherback Sea Turtle

The leatherback sea turtle (*Dermochelys coriacea*) was listed as endangered throughout its range on June 2, 1970 (35 FR 8495), with critical habitat designated in the U.S. Virgin Islands on September 26, 1978 and March 23, 1979 (43 FR 43688-43689 and 44 FR 17710-17712, respectively).

The general decline of the leatherback sea turtle is attributed to exploitation of eggs (Ross 1981). The population has been threatened by egg harvesting in countries such as Malaysia, Surinam, the Guiana's, the west coast of Mexico, Costa Rica and in several Caribbean Islands. In the past, leatherbacks were killed for their abundant oil, which was used for oil lamps and for caulking wooden boats. Similar to other sea turtle species, ingestion of manmade debris, such as plastic bags and other plastic waste, is a significant cause of mortality in leatherback turtles.

Leatherbacks prefer open access beaches possibly to avoid damage to their soft plastron and flippers. Unfortunately, open beaches with little shoreline protection are vulnerable to beach erosion triggered by seasonal changes in wind and wave direction. Nests are more susceptible to inundation on open beaches during severe erosion events.

5.4.2 Distribution and Range

The leatherback, the largest of all sea turtles, is mainly pelagic, inhabiting the open ocean and diving nearly continuously to great depths. Leatherbacks seldom approach land except for nesting (Eckert 1992). The leatherback is probably the most wide ranging of all sea turtle species, occurring in the Atlantic, Pacific and Indian oceans; as far north as British Columbia, Newfoundland, Great Britain and Norway; as far south as Australia, Cape of Good Hope, and Argentina; and in other water bodies such as the Mediterranean Sea (NFWL 1980). Distribution of this species has been linked to thermal preference and seasonal fluctuations in the Gulf Stream and other warm water features (Fritts et al. 1983).

5.4.3 Habitat

Leatherback sea turtles are omnivorous. Leatherbacks feed mainly on pelagic soft bodied invertebrates such as jellyfish and tunicates. Their diet may include squid, fish, crustaceans, algae and floating seaweed. Highest concentrations of these prey animals are often found in upwelling areas or where ocean currents converge. They will also ingest plastic bags and other plastic debris, which are commonly generated by oil drilling rigs and production platforms in coastal Florida, Alabama, Mississippi and Louisiana (Fritts et al. 1983).

Leatherbacks nest primarily in tropical regions. Major nesting beaches include Malaysia, Mexico, French Guiana, Surinam, Costa Rica and Trinidad (Ross 1981). Leatherbacks nest only sporadically in some of the Atlantic and Gulf states of the continental U.S., with one nesting reported as far north as North Carolina (Schwartz 1976). In the Atlantic and Caribbean, the largest nesting assemblages occur in the U.S. Virgin Islands, Puerto Rico and Florida (NMFS 2007a). During the summer, leatherbacks tend to occur along the east coast of the U.S. from the Gulf of Maine to the middle of Florida.

5.4.4 Presence in the Project Area

Sea turtle nesting data for Santa Rosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Santa Rosa County extends from May 1st through October 31st.

Within the vicinity of the project area, no leatherback sea turtles or nests have been observed. Since the leatherback sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and

marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect leatherback sea turtle foraging areas or critical habitat therefore with use of the demolition conditions the project will not likely have an adverse affect on the leatherback sea turtle.

5.5 Hawksbill Sea Turtle

5.5.1 Status and Threats

The hawksbill sea turtle (*Eretmochelys imbricata*) was federally listed as endangered on June 2, 1970 (35 FR 8495) with critical habitat designated in Puerto Rico on May 24, 1978 (43 FR 22224). In 1998, NMFS designated critical habitat near Isla Monito, Puerto Rico, seaward to 5.6 km (63 FR 46693-46701).

The greatest threat to this species is from the harvest of the hawksbill shell for jewelry. Between 1970 and 1989, Japanese imports of hawksbill shell totaled 713, 850 kg, representing more than 670,000 turtles. The hawksbill is also used in the manufacture of leather, oil, perfume and cosmetics (NMFS 2007a).

Other threats to the hawksbill sea turtles include destruction of nesting locations by beach development, incidental take in fishery operations, pollution by petroleum products, entanglement in marine debris (Meylan 1992), and predation on eggs and hatchlings. In America Samoa, villagers harvest sea turtle eggs when encountered (Tuato-o-Bartley et al. 1993).

5.5.2 Distribution and Range

The hawksbill is circum tropical, occurring in tropical and subtropical seas of the Atlantic, Pacific and Indian Oceans (Witzell 1983). This species is probably the most tropical of all marine turtles, although it does occur in many temperate regions. The hawksbill sea turtle is widely distributed in the Caribbean Sea and western Atlantic Ocean, with representatives of at least some life history stages regularly occurring in southern Florida and the northern Gulf (especially Texas), south to brazil (NMFS 2007a). In the continental U.S., the hawksbill largely nests in Florida where it is sporadic at best (NFWL 1980). However, a major nesting beach exists on Mona Island, Puerto Rico. Elsewhere in the western Atlantic, hawksbills nest in small numbers along the Gulf Coast of Mexico, the West Indies and the Caribbean coasts of Central and South America (Musick 1979).

5.5.3 Habitat

Hawksbills generally inhabit coastal reefs, bays, rocky area, passes, estuaries and lagoons, in water depths of less than 70 feet. Similar to green sea turtles, hatchlings are sometimes found floating in masses of pelagic marine algae (*Spargassum* sp.) (NFWL 1980). When they reach a carapace length of approximately 20 to 25 centimeters, hawksbill juveniles reenter coastal waters. Coral reefs are widely recognized as the resident foraging habitat of juveniles, sub-adults and adults. This habitat associates is likely related to their diet of sponges, which need solid substrate for attachment. Hawksbills are omnivorous and prefer invertebrates, especially encrusting organisms, and will feed on plant material such as algae, seagrasses and mangroves (Carr 1952; Rebel 1974; Pritchard 1977; Musick 1979;

Mortimer 1982). Hawksbills also occur around rocky outcrops and high energy shoals, which are also optimum sites for sponge growth.

5.5.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

No documented records of hawksbills exist from Okaloosa County, Florida; however. This species is of potential occurrence within the offshore areas of the northwest Gulf of Mexico. Within the vicinity of the project area, no hawksbill sea turtles or nests have been observed. Since the hawksbill sea turtle may occur in the project area the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect hawksbill sea turtle foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the hawksbill sea turtle.

5.6 Gulf Sturgeon

5.6.1 Status and Threats

The USFWS and NMFS listed the Gulf Sturgeon (*Acipenser oxyrhinchus desotoi*) a subspecies of the Atlantic sturgeon (*A. oxyrhinchus*), as endangered on September 30, 1991 (56 FR 49653 49658). As with other sturgeon species, the damming of rivers has been the most significant threat to the Gulf sturgeon (NMFS 2007b). Other threats to the species include over exploitation, incidental catch, dredging activities, the removal of snags and dredged material placement associated with channel improvements and maintenance (USFWS and Gulf States Marine Fisheries Commission [GSMFC] 1995; NMFS 2007b).

5.6.2 Distribution and Range

The gulf surgeon is anadromous, which means the species breeds in freshwater environments, but spends the remainder of the year in marine and estuarine environments. Spawning occurs in the deeper portions of rivers on clean rock or rubble bottoms. Mud and sand bottoms and seagrass communities are likely important marine habitats (USFWS and GSMFC 1995). The Gulf sturgeon lives in riverine systems during the warmer months of the year and during the remaining months (November through March), the Gulf sturgeon migrates to estuarine or Gulf of Mexico waters to feed. In early to late spring, the fish migrate to the riverine systems to spawn.

The Gulf Sturgeon historically ranged along the northeastern Gulf, in major rivers from the Mississippi delta in Louisiana, east to Charlotte Harbor, Florida, and in marine waters of the central and eastern Gulf (USFWS and GSMFC 1995; NMFS 2007b). Its current range extends from Lake Pontchatrain and the Pearl River in Louisiana and Mississippi east to the Suwannee River in Florida. There are sporadic reports from as far west as the Rio Grande River between Texas and Mexico, and as far east and south

as Florida Bay. Viable populations exist in the Mississippi, Pearl, Escambia, Yellow, Choctawhatchee, Apalachicola, and Suwannee rivers (NMFS 2007b).

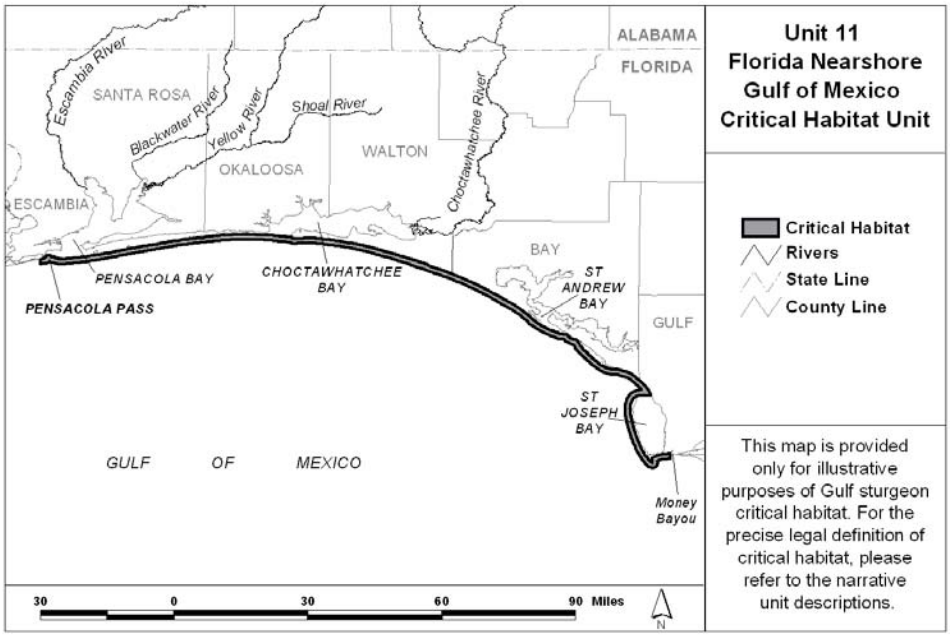
5.6.3 Habitat

The movement and behavior of the Gulf sturgeon is discussed in the Gulf Sturgeon Recovery/Management Plan produced by the USWS, GSMFC and NMFS (1995). Unpublished information from NMFS and USFWS personnel and other suggest that, while in the Gulf of Mexico during the winter months, the Gulf sturgeon may spend a portion of time feeding in relatively shallow water in the nearshore (<30ft.). However, there are some anecdotal reports of Gulf sturgeon as much as twelve mile offshore (Olsen Associates, Inc 2002). The primary migratory pathway of Gulf sturgeon is parallel to the shoreline in the nearshore area.

A priority action item identified in the Gulf Sturgeon Recovery/Management Plan was the identification of Gulf sturgeon estuarine and marine habitat use. During the Gulf Sturgeon Marine Movement and Habitat Use Study, researchers collected and analyzed data through the capture, tagging, release and subsequent recapture of these species. Data collected from several years of research suggest that the fish near Panama City Beach are usually found to the east of the St. Andrews Bay inlet along Tyndall and Mexico Beaches, which are known over wintering areas (Frank Parauka 2006, personal communication for the Panama City Shore Protection Project Biological Assessment, April 13, 2006). Gulf sturgeons from the Brothers, Yellow, Apalachicola and Choctawhatchee Rivers have been located off Tyndall and/or Mexico Beaches in water depths typically of 12-20 feet (Frank Parauka 2006, personal communication for the Panama City Shore Protection Project Biological Assessment, April 13, 2006). Studies supporting the critical habitat rule indicated that the Gulf sturgeon's diet includes amphipods, lancelets, polychaetes, gastropods, shrimp, isopods, mollusks and crustaceans.

5.6.4 Presence in Project Area

The reef site is located within Unit 11 critical habitat area for the Gulf Sturgeon (see Figure below.). Unit 11 includes a portion of the Gulf of Mexico as defined by the following boundaries. The western boundary is the line of longitude 87/20.0'W (approximately 1 nm (1.9 km) west of Pensacola Pass) from its intersection with the shore to its intersection with the southern boundary. The northern boundary is the MHW of the mainland shoreline and the 72 COLREGS lines at passes as defined at 30 CFR 80.810 (a-g). The southern boundary is 1 nm (1.9 km) offshore of the northern boundary. The eastern boundary is the line of longitude 85/17.0'W from its intersection with the shore (near Money Bayou between Cape San Blas and Indian Peninsula) to its intersection with the southern boundary.



Since Gulf sturgeon may occur in the project area, a discussion of the project relative to the seven elements considered essential for the conservation of the species follow:

(1) Abundant food items, such as detritus, aquatic insects, worms, and/or mollusks, within riverine habitats for larval and juvenile life stages; and abundant prey items, such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks and/or crustaceans, within estuarine and marine habitats and substrates for subadult and adult life stages.

The project site is not located within a riverine area and will not alter or negatively affect foraging opportunities.

(2) Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay;

The project site is not located within spawning areas, and thus will not affect spawning behavior or suitable substrates

(3) Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, subadult, and/or juveniles, generally, but not always, located in holes below normal riverbed depths, believed necessary for minimizing energy expenditures during fresh water residency and possibly for osmoregulatory functions;

The project site is not located within a riverine area, and thus will not affect aggregation behavior or fish movement.

(4) A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-ofchange of fresh water discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding selection, courtship, egg fertilization, resting, and staging, and for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larval staging;

The proposed project will not alter flow patterns and this is not expected to negatively affect behavior, growth or reproductive activity.

(5) Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages;

The project is not expected to adversely impact water quality. For a short duration after initial reef deployment there will be some re-suspension of the in-situ sediments, and are expected to settle out naturally. Turbidity reduction devices would not be effective and cannot be utilized under this circumstance. The proposed activity will not affect water quality and thus not affect sturgeon activities that depend on the maintenance of a certain quality of water.

(6) Sediment quality, including texture and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and

The proposed activity will not alter sediment composition and thus it is expected that the project will not alter normal behavior, growth, and viability of all life stages of sturgeon.

(7) Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., an unobstructed river or a dammed river that still allows for passage).

The proposed activity will not hinder sturgeon migration patterns. The proposed activity will not affect migration behavior of the gulf sturgeon.

Since Gulf sturgeon may occur in the project area, the applicant will comply with the "Sea Turtle and Smalltooth Sawfish Construction Conditions" which also applies to sturgeon, provided in Attachment G.

The project is not anticipated to affect Gulf sturgeon foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Gulf sturgeon.

5.7 West Indian Manatee

5.7.1 Status and Threats

The West Indian manatee, also known as the Florida manatee, is a federally listed endangered aquatic mammal protected under the Endangered Species Act. The Florida manatee population is divided into four subpopulations; the Upper St. Johns River (4% of the population); Atlantic Coast (46%); Southwest Florida (38%); and Northwest Florida (12%) (USFWS 2007). Based on published data for the survival

rates, reproduction and population growth, the Upper St. Johns River and Northwest Florida subpopulations are expanding and doing well. The Atlantic Coast subpopulation is likely stable and little information exists on the status of the Southwest Florida subpopulation (USFWS 2007).

Based on the 2001 statewide aerial synoptic survey, it is believed that the minimum population is 3,276 individuals. The manatee population appears to have increased over the past few decades. In the last decade, annual mortality in Florida has averaged nearly 150 animals a year. In 2006, there were 417 manatee deaths in Florida state waters. In 2005, there were 396 manatee deaths (FWCC 2007). These statistics may reflect an increase in population growth, increased mortality or better detection of carcasses. However, the best available sciences indicates that Florida's manatee population is stable or growing in all regions of the state except the Southwest, which may contain more than a third of the statewide population. Red tide continues to threaten manatees on Southwest Florida, with 37-96 deaths annually in four of the past five years. Preliminary findings suggest red tide may have been responsible for the deaths of 61 manatees in 2006.

A large percent of mortality is due to collisions with watercrafts, particularly mortality of calves. The increasing human population growth and visitation in Florida has contributed to a steady increase in the number of watercraft using Florida's waters. In 2001, 943,611 vessels were registered in the State of Florida, a 42% increase since 1993. The Florida Department of Community Affairs estimated that between 300,000 and 400,000 boats registered in other states us Florida waters each year. With the projected increase in Florida's population, coupled with an increase in watercraft usage on Florida's waters, interactions between boats and manatees are expected to significantly increase into the foreseeable future. Another factor in their decline has been the loss of suitable habitat through incompatible coastal, particularly destruction of seagrass beds.

Manatees have few natural predators, and the greatest natural threats are exposure to cold temperatures, hurricanes and poisoning from ref tide (USFWS 2007).

5.7.2 Distribution and Range

During the cooler months between October and April, Florida manatees concentrate in areas of warmer water. Manatees are thermally stressed at water temperatures below 18ºC (64.4ºF), therefore, during winter months, when ambient water temperatures approach 20ºC (68ºF), the manatee population confines itself to the coastal waters of the southern half of peninsular Florida and to springs and warm water industrial outfalls as far north as southeast Georgia. Manatees also winter in the St. Johns River near Blue Spring State Park. Severe cold fronts have been known to kill manatees when the animals did not have access to warm water refuges. During summer months, they may migrate as far north as coastal Virginia on the east coast and the Louisiana coast on the Gulf of Mexico and appear to choose areas based on an adequate food supply, water depth and proximity to freshwater. Annual migratory circuits of some individuals through the intracoastal waterway of the Atlantic Coast are 1,700 km round trips at seasonal travel rates as high as 50km/day.

5.7.3 Habitat

Manatees inhabit both salt and fresh water and can be found in shallow (5ft. to usually <20ft.), slow moving rivers, estuaries, saltwater bays, canals and coastal areas throughout their range. Manatees have been occasionally observed as far as 3.7 miles off the Florida Gulf coast. The West Indian manatee is herbivorous and feeds upon aquatic plants such as hydrilla, eelgrass and water lettuce.

5.7.4 Presence in the Project Area

Since the Florida manatee may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and provided in Attachment G.

The project is not anticipated to affect Florida manatee foraging areas or critical habitat therefore the deployment of artificial reefs within the deployment sites will not likely have an adverse affect on the Florida manatee.

6.0 Status of Not Listed Species and Habitat

6.1 Bottlenose Dolphin

The northern Gulf of Mexico coastal bottlenose dolphin (*Tursiops truncatus*) stock has been defined for management purpose as the bottlenose dolphins occupying the area which extends from approximately 84ºW longitude to the Mississippi River Delta. Coastal waters are defined as those from shore, barrier islands, or presumed bay boundaries to 20 m isobath. As a working hypothesis, it is assumed that dolphins occupying habitats with dissimilar climactic, coastal and oceanographic characteristics might be restricted in their movements between habitats. Bottlenose dolphin abundance for the northern Gulf of Mexico was estimated to be 4,191 dolphins in an assessment preformed in 1993.

The level of direct human caused mortality is unknown. There are a number of difficulties associated with the interpretation of stranding data. Stranding data probably underestimate the extent of fishery related mortality and serious injury because not all of the dolphins which die or are seriously injured wash ashore, nor will all of those that do wash ashore necessarily show signs of entanglement or other fishery interaction.

The status of this stock relative to optimum sustainable population is not known and population trends cannot be determined as a result of insufficient data. This species is not listed as threatened or endangered under the Endangered Species Act, but is protected under the Marine Mammal Protection Act.

Since the Bottlenose dolphin may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals provided in Attachment G.

The project is not anticipated to affect Bottlenose dolphin foraging areas or habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Bottlenose dolphin.

6.2 Alligator Gar

The range of the alligator gar (*Atractosteus spatula*) extends from the Florida Panhandle, through the Gulf Coastal Plain and the Mississippi River Basin extending north to the lower portions of the Ohio and the Missouri River, and ranges southwest through Texas down to Veracruz, Mexico. There is a population in the Mississippi Sound and the brackish waster of the Gulf Coast and Mobile-Tensaw Delta.

The alligator gar is disappearing from many parts of the range and declining population everywhere due to over fishing and the construction of dikes, dams, and other flood control devices, resulting in the loss of key breeding.

The gar inhabits large, slow moving rivers, reservoirs, oxbow lakes, bayous and bays, in fresh and brackish water. The alligator gar is the most tolerant gar species of high salinity and occasionally strays into salt water. Young gars may be seen at the surface in debris such as leaves and twigs. They prefer large rivers that have a large overflow floodplain, but these rivers have all but disappeared in North America sue to the use of dredging, dams, dikes, and levees.

Since the Alligator gar may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect Alligator gar foraging areas or habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Alligator gar.

7.0 Conclusions

Based on the previously mentioned findings, it has been determined that the proposed project may affect, but is not likely to adversely affect the following species

- Loggerhead sea turtle
- Green sea turtle
- Kemp's ridley sea turtle
- Leatherback sea turtle
- Hawksbill sea turtle
- Gulf sturgeon
- West Indian manatee
- Bottlenose dolphin
- Alligator gar

There is no designated critical habitat for the Florida manatee; therefore there will be no adverse modifications to critical habitat for this species as a result of the proposed action.

The reef site is located within Unit 11 critical habitat area for the Gulf Sturgeon. This assessment contains a discussion of the project relative to the seven elements considered essential for the conservation of the species. The project is not anticipated to affect Gulf sturgeon foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Gulf sturgeon.

The project is not expected to adversely impact water quality. For a short duration after initial reef deployment there will be some re-suspension of the in-situ sediments, and are expected to settle out naturally. Turbidity reduction devices would not be effective and cannot be utilized under this circumstance.

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Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region

Background
The National Marine Fisheries Service (NMFS) has determined that collisions with vessels can injure or kill protected species (e.g., endangered and threatened species, and marine mammals). The following standard measures should be implemented to reduce the risk associated with vessel strikes or disturbance of these protected species to discountable levels. NMFS should be contacted to identify any additional conservation and recovery issues of concern, and to assist in the development of measures that may be necessary.

Protected Species Identification Training
Vessel crews should use an Atlantic and Gulf of Mexico reference guide that helps identify protected species that might be encountered in U.S. waters of the Atlantic Ocean, including the Caribbean Sea, and Gulf of Mexico. Additional training should be provided regarding information and resources available regarding federal laws and regulations for protected species, ship strike information, critical habitat, migratory routes and seasonal abundance, and recent sightings of protected species.

Vessel Strike Avoidance
In order to avoid causing injury or death to marine mammals and sea turtles the following measures should be taken when consistent with safe navigation:

1. Vessel operators and crews should maintain a vigilant watch for marine mammals and sea turtles to avoid striking sighted protected species.

2. When whales are sighted, maintain a distance of 100 yards or greater between the whale and the vessel.

3. When sea turtles or small cetaceans are sighted, attempt to maintain a distance of 50 yards or greater between the animal and the vessel whenever possible.

4. When small cetaceans are sighted while a vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until the cetacean has left the area.

5. Reduce vessel speed to 10 knots or less when mother/calf pairs, groups, or large assemblages of cetaceans are observed near an underway vessel, when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity; therefore, prudent precautionary measures should always be exercised. The vessel should attempt to route around the animals, maintaining a minimum distance of 100 yards whenever possible.

6. Whales may surface in unpredictable locations or approach slowly moving vessels. When an animal is sighted in the vessel's path or in close proximity to a moving vessel and when safety permits, reduce speed and shift the engine to neutral. Do not engage the engines until the animals are clear of the area.

Additional Requirements for the North Atlantic Right Whale

1. If a sighted whale is believed to be a North Atlantic right whale, federal regulation requires a minimum distance of 500 yards be maintained from the animal (50 CFR 224.103 (c)).

2. Vessels entering North Atlantic right whale critical habitat are required to report into the Mandatory Ship Reporting System.

3. Mariners should check with various communication media for general information regarding avoiding ship strikes and specific information regarding North Atlantic right whale sighting locations. These include NOAA weather radio, U.S. Coast Guard NAVTEX broadcasts, and Notices to Mariners. Commercial mariners calling on United States ports should view the most recent version of the NOAA/USCG produced training CD entitled "A Prudent Mariner's Guide to Right Whale Protection" (contact the NMFS Southeast Region, Protected Resources Division for more information regarding the CD).

4. Injured, dead, or entangled right whales should be immediately reported to the U.S. Coast Guard via VHF Channel 16.

Injured or Dead Protected Species Reporting

Vessel crews should report sightings of any injured or dead protected species immediately, regardless of whether the injury or death is caused by your vessel.

Report marine mammals to the Southeast U.S. Stranding Hotline: 877-433-8299
Report sea turtles to the NMFS Southeast Regional Office: 727-824-5312

If the injury or death of a marine mammal was caused by a collision with your vessel, responsible parties should remain available to assist the respective salvage and stranding network as needed. NMFS' Southeast Regional Office should be immediately notified of the strike by email (takereport.nmfsser@noaa.gov) using the attached vessel strike reporting form.

For additional information, please contact the Protected Resources Division at:

NOAA Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701
Tel: (727) 824-5312
Visit us on the web at http://sero.nmfs.noaa.gov

Print Form | Submit by Email

NOAA Fisheries Service

Southeast Region Ship Strike Report

Reporter Information

Reporting Vessel/Aircraft Name or #

Reporter's Name

Reporter's phone

Date of Report

Strike Vessel Information *(complete all that apply)*

TYPE OF VESSEL: Check all that apply

- ☐ Container
- ☐ Tanker
- ☐ Freight
- ☐ Research
- ☐ Fishing
- ☐ Towing
- ☐ Government
- ☐ Whale watch
- ☐ Ferry
- ☐ Recreational
- ☐ Other

Specify _____

Draft _____ ◯ Feet ◯ Meters

Forward _____

Aft _____

Mean _____

Name of Vessel involved in Strike

Gross Tonnage

Vessel Length ◯ Feet ◯ Meters

Vessel Make

Vessel Model

Propulsion

Engine Make

Distance between shafts

Horsepower

Prop Diameter

Prop Pitch

Observed or Noted Strike Information *(strike was noted visually or impact felt)*

Date of Strike

Time of Strike ◯ Local ◯ GMT

General Location

North Latitude

West Longitude

ENVIRONMENTAL CONDITIONS AT TIME OF STRIKE

Lighting

Weather

Visibility

Distance of Visibility ◯ Kilometers ◯ Miles

Air Temperature ◯ Degrees F ◯ Degrees C

Wind Speed

Direction (degrees)

Current Speed

Direction (degrees)

Water depth

Wave Height ◯ Feet ◯ Meters

Swell Height ◯ Feet ◯ Meters

Water Depth ◯ Feet ◯ Meters

NOAA Fisheries Service

Southeast Region Ship Strike Report - Continued

NAVIGATION INFORMATION AT TIME OF STRIKE

Vessel Activity

Engine RPMs

Engine Speed (Knots)

Vessel Course (Degrees)

Autopilot ON

Autopilot OFF

Total # of watchstanders

on Navigation Bridge

on Observation Bridge

on Bow

Other

INCIDENT INFORMATION

Part of vessel struck by whale

Describe what was seen, felt, heard, etc.

Was avoidance action taken

Describe action taken, or reasons why avoidance not possible

Comments on damage to vessel

NOAA Fisheries Service

Southeast Region Ship Strike Report - Continued

ANIMAL INFORMATION

Time elapsed between sighting and collision

Distance from vessel when first sighted

Animal's orientation to the vessel

Estimated size/species of whale

Other marine mammals present?

Approximate number

Species

What direction was the whale traveling

Briefly describe whale's behavior prior to strike

Briefly describe whale's behavior after collision *(if seen)*

Portion of animal struck

Condition post-strike

Blood seen in water after strike

Description of wounds on animal. Use drawings to mark the location of wound(s). Include estimates of length and depth of wounds.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.

b. 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.

c. 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.

d. 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.

e. If a sea 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 sea 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.

f. Any collision with and/or injury to a sea 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.

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

Revised: March 23, 2006
O:\forms\Sea Turtle and Smalltooth Sawfish Construction Conditions.doc

NOTICE OF INTENT TO USE AN ENVIRONMENTAL RESOURCE NOTICED GENERAL PERMIT IN NORTHWEST FLORIDA

A. General Information

1. Applicant Information

Name: Okaloosa County Board of County Commissioners

Mailing Address: 1804 Lewis Turner Blvd. Suite 100

City: Fort Walton Beach State: FL Zip Code: 32547

Telephone: 850- 651-7105 Fax: 850-651-7142 E-mail: shenson@co.okaloosa.fl.us

2. Agent Information

Name: Scott R. Henson

Corporate or Agency Name: Okaloosa County Public Works

Mailing Address: 84 Ready Ave

City: Fort Walton Beach State: FL Zip Code: 32548

Telephone: 850-978-0009 Fax: 850-651-7397 E-mail: shenson@co.okaloosa.fl.us

3. Rule section number of the NGP for which you are applying: **62-341.600, F.A.C.**

4. Location of proposed activities:

Address: Gulf of Mexico
City: NA Zip Code: NA County(ies): Okaloosa
In (name of waterway): Gulf of Mexico
Latitude (DMS) see table below Longitude (DMS) see table below
Datum NA (Taken from Central Location)
Tax Parcel Identification Number: NA

Fish Haven 16	Latitude	Longitude	Latitude	Longitude
Centroid	30° 20.891' N	86° 46.874' W	30.3482° N	86.7812° W
Northwest Corner	30° 21.000' N	86° 47.000' W	30.3500° N	86.7833° W
Northeast Corner	30° 21.000' N	86° 46.749' W	30.3500° N	86.7791° W
Southeast Corner	30° 20.783' N	86° 46.749' W	30.3464° N	86.7791° W
Southwest Corner	30° 20.782' N	86° 47.000' W	30.3464° N	86.7833° W

5. Date activity is proposed: To Commence: February 1, 2013 **To be Completed**: Not later than February 1, 2018

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6. Total Extent of Work in Wetlands and Other Surface Waters: (Use additional sheets and provide breakdown of each category if more space is needed.)

a. Within Federal Jurisdiction:
Fill - 0 Sq. Ft. 0 Acres; 0 Cu. Yds.
Excavation - 0 Sq. Ft.; 0 Acres; 0 Cu. Yds.

b. Within State Jurisdiction:
Fill - up to 136,750 Sq. Ft. or < 0.2 Acres; 0 Cu. Yds
Excavation - 0 Sq. Ft. or 0 Acres; 0 Cu. Yds.
Fill Waterward of Mean or Ordinary High Water - Cu. Yds.
Excavation Waterward of Mean or Ordinary High Water - 0 Cu. Yds.

c. State Jurisdictional Area that will be Severed Landward of Any Fill: 0 Sq. Ft. or 0 Acres

d. State Jurisdictional Area to be Created from Uplands, Excluding Mitigation: 0 Sq. Ft. or 0 Acres

e. Docks, Piers, and Over Water Structures:
Total Number of Slips 0 Total number of mooring pilings 0
Length 0 Width 0 Height above MHW 0
Length 0 Width 0 Height above MHW 0

Number of Finger Piers 0 Length 0 Width 0 Height 0
Number of Finger Piers 0 Length 0 Width 0 Height 0

Total area of structure over waters & wetlands 0 sq. ft.
Use of structure NA

Will the docking facility provide:	No	Yes	Number
Liveaboard Slips	☒	☐	_____
Fueling Facilities	☒	☐	_____
Sewage Pump-out Facilities	☒	☐	_____
Other Supplies or Services	☒	☐	_____
Other Supplies or Services Required for Boating (Excluding refreshments, bait and tackle)	☒	☐	_____

f. Seawall length: NA ft. Seawall material: NA
Riprap revetment length: NA ft. Slope NA H: NA V Toe width NA ft.
Riprap at toe of seawall length NA ft. Slope NA H: NA V Toe width NA ft.
Size of riprap NA Type of material NA

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7. Stormwater Information

a. Project area: 0 ac. Total applicant-owned area contiguous to project: NA ac.
b. Total area served by system: NA ac.
c. Impervious area excluding wetlands and other surface waters: NA ac.
d. Volume of water that the system is capable of impounding: NA ac. ft.
e. Name of project, including phase if applicable: NA
f. Is this application for part of a multi-phase project? ☐yes ☒no. If you answered yes, please provide permit numbers for other authorized phases:

Agency	Date	No.\Application Type

g. Treatment type proposed: NA .
h. Current site conditions and land uses: NA
i. Proposed Land Use: NA
j. Names and classifications of all receiving waters (if available): NA NA

8. All Proposed Activities—Describe Proposed Activities (be specific; use additional sheets as necessary).

a. What is proposed? Okaloosa County Artificial Reef Program (OCARP) seeks authorization for the designation of a ¼-mile square (40 acre) areas (Fish Haven 16) to accept materials for the phased construction of an artificial reef network as per 62-341.600 F.A.C. Deployments of locally permitted materials will occur over the duration of the FDEP/USACE permits solicited through this application. Deployments of clean concrete materials within the ¼-mile square area will occur at a total of nine locations. Ideal deployment will cover an area of 30 ft x 50 ft. With an assumption of some error in deployment accuracy, all nine sites within Fish Haven 16 will cover approximately one-half acre of bottom.

(See attached Supplemental Information for additional information.)

c. Describe wetland and aquatic habitats to be affected: The proposed fish haven area includes predominately sand bottom (with occasional areas of muddy sand) devoid of all vegetation except a surficial layer of microalgae/cyanobacteria. These bottom conditions are typical of near-shore gulf benthic habitat off the northwest coast of Florida. Monitoring reports from other nearshore reefs in the immediate area include similar descriptions. Categories of affected essential fish habitat within the project area include marine water column and sand bottom.

There are no seagrass beds located within the vicinity of the deployment site (source: NOAA Gulf of Mexico Aquatic Ecosystems – Seagrassess – Coastal Region: http://www.ncddc.noaa.gov/interactive-maps/coastal-habitats/gom-coastal-habitat/index.html). There are no known natural rock outcrops or hard bottom formations within the proposed permit area (source: NOAA Gulf of Mexico Marine Sediments – Sediment Core Analysis [Sand Very Dominant >66%] - http://www.ncddc.noaa.gov/interactive-maps/coastal-habitats/gom-coastal-habitat/index.html). Each deployment of material in the proposed construction area will be preceded by sonar scanning utilizing a depth/bottom sounder or equivalent (e.g. "fish finder") to verify the absence of natural habitats. OCARP will submit a report of each sonar scan as part of a deployment report to FDEP.

(See attached Supplemental Information for additional information.)

d. Construction methods and schedule: Prior to an individual deployment effort, Coast Guard and County inspection of all material will certify that the materials meet all state and federal regulations and guidelines for artificial reef use. The proposed configuration of deployed materials considers the properties of the proposed material and scientific research that provides guidance for material placement creating an optimal ecosystem. Individual material deployments will receive OCARP permits prior to transporting to and deploying the materials at a specified permitted location within the approved construction area. The contractor for the material deployment will place materials at predetermined locations, generally illustrated in the figures contained in the Supplemental Information attachment to this permit application. OCARP project manager will stay immediately and directly involved in locating and verifying the deployment process.

OCARP expects construction to continue throughout the life-cycle of the permit. OCARP will deploy materials as they become available and complete regulatory inspections. The schedule of individual deployments will depend on availability of funding to transport and deploy the materials. OCARP expects to have at least two or more deployments per year under OCARPs current funding projections. However, if the proposed construction project receives funding through the Natural Resource Damage Assessment (NRDA) process as applied in response to the Deepwater Horizon oil spill or the RESTORE Act, an accelerated construction schedule can occur.

(See attached Supplemental Information for additional information.)

e. Additional information that demonstrates that you qualify for the general permit, addressing all the parameters, thresholds, and conditions required in the general permit.

The proposed project meets the general permit conditions for the construction of artificial reefs (See below for Florida Administrative Code 62-341-600)

1. The material comprises clean concrete from two local sources (Eglin AFB and City of Ft. Walton Beach). OCARP will have all concrete materials proposed for use inspected and approved prior to use. In the event that currently available material inventory from our two local sources becomes depleted, alternate materials may be procured. All material will be compliant with approved materials specified in 62-341-600. All material will be inspected and certified free of all materials listed in 62-341-600(1)(b) and otherwise appropriate for use.
2. The material is sufficiently massive that anchoring is unnecessary or will be specifically designed for use as artificial reef construction. Supplemental information in attachments C and E provide data on material sizes and weights of the material inventory available from Eglin AFB and the City of Fort Walton Beach.
3. The installations will not exceed ½ the height of the water column. The county or their contractor(s) will record the height at the end of construction and report the data to the FDEP. Final heights will be determined in consultation with the appropriate regulatory agencies, but will not exceed the regulatory limit.
4. The sites selected by OCARP are in areas known to be general devoid of seafloor surface features. This characteristic of the area is one of the reasons for selection of those sites. The site is too deep for seagrasses and shellfish reefs or other hardbottom habitat. Prior to construction, OCARP will perform a sonar scan of the project area bottom and will make the survey available to the FDEP by request to demonstrate the site conditions. If those efforts identify seafloor surface features of the type indicated in the general permit conditions, OCARP will not use the site and instead search for a suitable substitute in the immediate vicinity.
5. The application package supplemental information fully describes the Eglin Air Force Base and City of Fort Walton Beach materials proposed for construction. The materials will not include any of the items listed in 62-341.600(2)(c).
6. As described in the supplemental information, marker buoys and GPS coordinates will provide the tools for the contractor to position the transport vessel for deployment of materials.
7. OCARP has identified a ¼ square mile areas of Gulf bottom for construction of OCARP Fish Haven #16. Construction will occur inside these boundaries and will not extend beyond the ¼ square mile area.
8. Figure 1 of the supplemental information provides the distance to the nearest shipping lanes. The sites do not lie in or immediately adjacent to shipping lanes.
   As stated in the local permit application, OCARP will notify the agencies listed in 62-341.600(2)(g) of the specific location of each of the reefs constructed. If construction of a site is continuous to complete all nine reefs in a single effort, OCARP will notify the listed agencies after the ninth and final reef is constructed.

62-341.600 General Permit for the Construction of Artificial Reefs.

(1) A general permit is hereby provided for the construction of an artificial reef by any person, provided:

(a) The material to be used shall be clean concrete or rock, clean steel boat hulls, other clean, heavy gauge steel products with a thickness of 1/4 inch or greater, and prefabricated structures that are a mixture of clean concrete and heavy gauge steel;

(b) The material shall be free of soils, oils and greases, debris, litter, putrescible substances or other pollutants;

(c) The material shall be firmly anchored to the bottom and shall not be indiscriminately dumped; and

(d) The material shall be placed so that the top of the reef does not exceed 1/2 the distance from the bottom to the surface of the water unless a greater distance from the surface is required for safe navigation. At no time shall the distance between the top of the reef and the surface of the water be less than 6 feet.

(2) This general permit shall be subject to the following specific conditions:

(a) The permittee shall conduct a survey of the bottom of the waterbody on which the reef is to be built and shall submit the survey to the Department with the notice required in subsection 62-343.090(1), F.A.C.,

demonstrating that the bottom does not have submerged grassbed communities, shellfish or other hardbottom communities, or corals;
(b) There shall be no reefs constructed in bays, lagoons, or estuaries that are less than 12 feet deep;
(c) There shall be no "white goods" (inoperative and discarded refrigerators, freezers, ranges, water heaters, washers, and other similar domestic and commercial appliances), asphalt material, tires, other polluting materials used in construction of the reef;
(d) The site shall be marked with perimeter buoys during construction to ensure that no material is deposited outside of the site;
(e) The size of the boundaries within which the artificial reef is to be deposited shall not exceed 1/4 mile on any side;
(f) The artificial reef site shall not be established within any shipping lanes; and
(g) The permittee shall notify the National Ocean Service, National Oceanographic and Atmospheric Association, U.S. Department of Commerce, Rockville, Maryland, and the Florida Fish and Wildlife Conservation Commission, Division of Marine Fisheries Management, via e-mail at artificialreefdeployments@myfwc.com of the precise location of the reef within 30 days of placement of the reef material.
Specific Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.414(9), 373.416, 373.418 FS. History–New 10-3-95.

f. OCARP allows public and private entities to deploy materials in County-permitted areas through a local permitting process sanctioned by the USACE for sites in federal waters. The County does not allow private reef construction in State waters. OCARP currently manages three Large Area Artificial Reef Sites in federal waters available for public or private entity use. Reef construction sites managed by OCARP within state waters are not available for private deployments. The county reef program staff directly supervises all deployments to state-permitted reef construction sites such as the site proposed in this permit application.

OCARP has aggressively pursued a partnership with the Florida Fish and Wildlife Conservation Commission (FWC) to provide guidance and expertise in the planning and execution of artificial reef construction. OCARP believes that properly constructed artificial reef systems are a great benefit for the public and local ecosystem. OCARP strives to comply with applicable regulation because we believe the regulatory framework that applies to artificial reefs was created to assure the public that the construction of artificial reefs needed to be managed properly in order to optimize the potential benefits and protect the environment.

(See attached Supplemental Information for additional information.)

9. Permanent and Temporary Turbidity, Erosion, and Sedimentation Controls Proposed:

OCARP will use clean concrete free of soils, oil and greases, debris, litter, putrescible substances or other pollutants. The Okaloosa County Artificial Reef Program staff will inspect all materials prior to deployment to assure compliance with applicable regulation. Specific Turbidity, Erosion, and Sedimentation Controls are not applicable to this process.

(See attached Supplemental Information for additional information.)

10. Previous Applications for this Project have been: None

B. Drawings

Please provide scaled or fully dimensioned plan (overhead) and profile (side-view) drawings that clearly delineate and identify the extent of the proposed activities on drawings of an appropriate size. If the work involves activities located within federal or state wetlands or other surface waters, submit an additional set of drawings on 8 ½" x 11" paper. All drawings must include the following, clearly and accurately depicted:

a. Existing approximate mean high water (MHW/OHW) shoreline.
b. Applicant's property boundaries and dimensions.
c. North arrow.
d. Location and dimensions of all existing structures.
e. Location and dimensions of proposed activities.
f. Boundaries of wetlands and other surface waters, identifying open water areas. Cross-hatch limits of proposed excavation in wetlands and other surface waters, and hatch limits of proposed fill in wetlands and other surface waters.
g. Boundary area and volume of all temporary and permanent earthwork, including pre- and post-construction grades.
h. Label all impervious and pervious areas, and indicate their size (area).
i. Drainage and flow patterns on the property.
j. Distances of project in relation to permanent landmarks (i.e. trees, buildings, etc.) as appropriate,
k. Location map(s), clearly locating the proposed project location in relation to streets and roads, which should be clearly labeled. Provide directions to get to site if necessary.
l. Note: Plans, drawings, and supporting calculations must be signed, sealed, and dated by a registered professional, as required by the relevant statutory provisions when the design of the system requires the services of a registered professional.

<u>(See attached Supplemental Information for additional information.)</u>

C. Certification

I hereby certify I have read and will conduct the above activities in accordance with the criteria, limitations, and Specific Conditions of the general permit identified in Item 3, and in accordance with the General Conditions of Rule 62-341.215, F.A.C. Unless otherwise provided in Chapter 62-341, F.A.C., activities conducted pursuant to the above general permit may commence thirty (30) days after receiving written acknowledgment that notice has been provided to the Department of Environmental Protection or the Northwest Florida Water Management District, along with any required additional documentation which may be required to fulfill the requirements of the general permit, unless the Department or Northwest Florida Water Management District responds that the proposed work does not qualify for a general permit. Written acknowledgment may include certified mail return receipt.

I understand I may have to provide any additional information/data that may be necessary to provide reasonable assurance or evidence that the proposed project will comply with the applicable State Water Quality Standards or other environmental standards both before construction and after the process is completed.

I further acknowledge that work done under this general permit may also require the review and approval of other Federal, State, or local agencies, and that commencement of construction before such Federal, State, or local agency approvals or permits are obtained may subject me to enforcement action and fines or penalties by such agencies. Further, the work shall be conducted in a manner that does not violate applicable water quality standards.

In addition, I agree to provide entry to the project site for inspectors with proper identification or documents as required by law from the environmental agencies for the purpose of inspecting the site. Further, I agree to provide entry to the project site for such inspectors to monitor permitted work.

_____	_____	_____
Typed/Printed Name of Applicant or Agent	Signature of Applicant or Agent	Date

An Agent May Sign Above If Applicant Completes the Following:
I hereby designate and authorize the agent listed in Item 2 to act on my behalf as my agent in the processing of this permit application and to furnish on request, supplemental information in support of the application.

_____	_____	_____
Typed/Printed Name of Applicant (and Corporate Title, if applicable)	Signature of Applicant	Date

D. For systems that require the certification of a registered professional:

This is to certify that the features of the system that are the subject of this application have been designed by me or my designee under my direct supervision and have been examined by me and found to be in conformity the laws and other requirements of my professional practice act. I further certify that the system has been designed in accordance with the applicable criteria and specifications required by the "Department of Environmental Protection and Northwest Florida Water Management District Environmental Resource Permit Applicant's Handbook—Volume I (General and Environmental) and Volume II (Design Requirements for Stormwater Treatment and Management Systems — Water Quality and Water Quantity)" effective November 1, 2010.

Name of Registered Professional:_____

Florida Registration Number:_____

Company Name:_____

Mailing Address:_____ (Affix Seal)

City:_____State:_____Zip Code:_____

Telephone:_____Fax:_____E-mail:_____

_____ _____

Signature of Registered Professional Date

E. Submittal

Submit this completed form, with attached drawings and with the noticed general permit processing fee of $250, made payable to the "Florida Department of Environmental Protection," or the "Northwest Florida Water Management District (WMD)," in accordance with the responsibilities of these agencies as provided in Chapter 62-346, F.A.C.

Application for Noticed General Permit
Fish Haven 16 – Okaloosa County
Supplemental Information Contents

The supplemental information provided with this permit application includes the following (in order):

- Supplemental information (text)
- Permit Drawings (Figures 1-3)
  - Figure 1 – Location Map, Fish Haven 15 and Fish Haven 16
  - Figure 2 – General Fish Haven 16 Design (9 reefs)
  - Figure 3 – Foraging Pressure Diagram
- Attachments A through H
  - Attachment A: Example Air Force Material Lab (AFRL) Materials for use in Reef Construction
  - Attachment B: Example AFRL Materials Photographs
  - Attachment C: Example Ft. Walton Beach Materials Inventory
  - Attachment D: Biological Assessment of Project Area
  - Attachment E: Vessel Strike and Avoidance Procedures
  - Attachment F: Sea Turtle and Small Tooth Sawfish Construction Conditions

Application for Noticed General Permit Fish Havens 16 – Gulf of Mexico Okaloosa County, FL Supplemental Information

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October 2012

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PROPOSAL
ENVIRONMENTAL RESOURCE NOTICED GENERAL PERMIT
FISH HAVEN 16 – Gulf of Mexico off Okaloosa County, FL

This document provides the Florida Department of Environmental Protection (FDEP), United States Corps of Engineers (USACE) and other agencies with supplemental information for the evaluation of two proposed artificial reef construction sites located on submerged lands in the Gulf of Mexico seaward of Okaloosa County, Florida within nine nautical miles of the shoreline (State of Florida waters). The Okaloosa County Artificial Reef Program (OCARP) provides the appropriate information requested by the FDEP through FDEP Form # 62-346.900(2), *Notice of Intent to Use An Environmental Resource Noticed General Permit in Northwest Florida*, Effective Date: November 1, 2010, Incorporated by reference in 62-346.070(2), F.A.C.

Additional information for the USACE review of this proposal complies with criteria outlined by the State Programmatic General Permit (SPGP III). The purpose of the SPGP III was to avoid duplication of permitting between the USACE and the FDEP for minor work located in waters of the United States, including navigable waters. Thus, the need for separate approval from the Corps would be mostly eliminated. SPGP IV further increased the efficiency of both State and Federal staff in serving the public. Currently, SPGP IV-R1 has expanded the geographic coverage by including Okaloosa County. Therefore, SPGP IV-R1 will be implemented throughout the entire State of Florida, excluding Monroe County, continuing environmental protection while increasing the service to the public.

General Permit Supplemental Information

This document contains supplemental information in association with the Proposal for Environmental Resource Noticed General - Permit Fish Havens, prepared by the OCARP. Specific FDEP Form # 62-346.900(2) permit criteria addressed in this supplement are:

- Section A, Item 8
- Section A, Item 9
- Section B, Drawings

The information provided for the permit criteria above is also relevant to USACE review criteria

SECTION A, Item 8 (a) *of Form # 62-346.900(2) asks "What is proposed?" The County's response: Okaloosa County Artificial Reef Program (OCARP) seeks authorization for the designation of a ¼-mile square (40 acre) areas (Fish Haven 16) to accept materials for the phased construction of an artificial reef network as per 62-341.600 F.A.C. Deployments of locally permitted materials will occur over the duration of the FDEP/USACE permits solicited through this application. Deployments of clean concrete materials within the ¼-mile square area will occur at a total of nine locations. Ideal deployment will cover an area of 30 ft x 50 ft. With an assumption of some*

error in deployment accuracy, all nine sites within Fish Haven 16 will cover approximately one-half acre of bottom.

This particular project can be described as construction of nine reef structures within a designated quarter-mile construction areas designated as Fish Haven 16 (See Figure 1 – Reef Construction Area Locations). A sister project, Fish Haven 15, is also under permit review and is illustrated for proximity reference. The project will include the placement of relatively large, surplus and used concrete structures in an "I" formation (see Attachment A - Typical Reef Structure) using methods very similar to the process of constructing jetty structures. This material is currently in an inventory with the USAF and designated for use by the County for reef construction. Figures 2 and 3 illustrate the proposed configuration of individual reef structures within the general reef areas. Construction of all nine reefs within each quarter mile square area will result in less than one acre of bottom covered with reef materials. If the inventory of material is no longer available when this permit is approved, the County will construct reefs utilizing other materials that conform to those specified in 62-341.600 F.A.C. in the configurations shown in Figures 2 and 3.

Currently, OCARP has an inventory of material from two primary sources: USAF Air Force Research Laboratory (AFRL) and the City of Fort Walton Beach (FWB). Okaloosa County has established a relationship with Eglin Air Force Base (Eglin) to repurpose a wide variety of material suitable for artificial reef construction. The historical material provided by Eglin varies: building foundations, building infrastructure, munitions testing targets, observation towers, tanks and other materials that meet the standards for use as artificial reef. The USAF also generates certain materials on a regular schedule. In particular, munitions testing is an ongoing activity that generates used targets constructed of concrete and metal. USAF quality control measures require regular testing of some ordnance types throughout a manufacturing run and at intervals during storage life. Munitions testing targets are single use items; after a single test cycle the USAF disposes of them and constructs new ones. Therefore the USAF used concrete target materials inventory is continually replenished. Currently, the USAF disposes of this material as land fill but would like to re-purpose the material for benefit of the marine ecosystem and local community. Attachment B contains examples of those materials

The target materials are fabricated at Eglin AFB and possess unique properties that make the materials particularly compatible for artificial reef construction. Most notably, the aggregate is comprised of 45% native Florida limestone. The limestone has a chemical composition preferred by invertebrates and other marine life that first colonize the base reef structure. In addition, most of the targets have lifting lugs that make them easier to place in an orderly fashion (rather than indiscriminately dumped). Large holes in the middle of the used targets increase the surface area and exposure of the aggregate.

Materials from Ft. Walton Beach (see Attachment C – FWB Material Inventory) includes 200 reinforced concrete culverts measuring 2 to 5 feet in diameter and 5 to 10 feet in length. OCARP has inspected the USAF material and the City of Fort Walton Beach material for compliance with

62-341.600 General Permit for the Construction of Artificial Reef. OCARP has determined that all materials proposed for artificial reef construction are compliant and acceptable for reef construction.

In addition to the Eglin Air Force Base inventory of used target materials, other USAF concrete materials, and concrete materials from the City of Ft. Walton Beach, OCARP regularly receives requests for placement of a variety of materials in their artificial reef system. For example, OCARP was recently contacted by the Florida Department of Transportation concerning the replacement of the Yellow River Bridge in Milligan, FL. The material generated by the dismantling of the old bridge will be available to the county for artificial reef construction in about 2015.

Okaloosa County is confident that they have available sufficient material to build out the proposed Fish Havens within a few years. However, as the understanding of artificial reefs grow; it has become clear that long-term monitoring and maintenance comprise necessary program components if the county intends to optimize the long-term functions of these reefs. Okaloosa County intends to begin a long term reef maintenance program to assess the condition of existing reefs and determine whether additional deployments are warranted. The County recognizes that it did not build out some of their older sites to the desired reef material density. Based on the data collected during monitoring, the County will determine whether to submit a permit application to request to reopen certain areas for additional reef construction.

OCARP will place the material described within the proposed construction area using a spacing intended to promote the growth of a vibrant reef complex (See Figure 2). Studies have shown that reef communities can be optimized when the proximity of each reef is considered with respect to the foraging characteristics of target species. While the science of forging areas is not exact, OCARP believes that a 400 foot minimum spacing provides an optimal configuration. With minimum spacing between reefs of 400 feet, the ¼ sq. mi construction site can hold approximately nine separate reef structures. The reef structures would occur evenly spaced on the perimeter of the quarter-mile rectangle approximately 660 feet apart. There will be some foraging overlap between adjacent reefs, especially toward the center but each perimeter reef will have unlimited seaward foraging (See Figure 4 – Foraging Pressure). A smaller reef placed in the center of the ¼ sq. mile (Figure 2: Reef 9) will serve as a marker for the center point of the construction area.

The weight of each piece of material and the lack of void spaces that could potentially trap air and provide buoyancy significantly reduce the ability of the material to move. This characteristic causes each piece to be considered a reef anchor. As with any anchoring system, failure of its intended purpose is low-risk but a possibility nonetheless. External forces like currents and waves will cause seawater to eddy around the anchor material. Strong-enough currents or large enough wave forces may cause sand at the bottom of the material to scour. Over time, scouring may cause the material to either settle slightly into the sand or, if the material is a culvert, to roll

into a void created by the scouring. This settlement will result in a "suction" force that will have to be overcome by external forces in order for the materials to move laterally. Because of these large forces stabilizing the material and resisting external forces, redundant anchoring systems will not be necessary. Okaloosa County has installed many reefs with similar materials. Observations over time have shown that no significant movement of those reef materials has occurred. In addition, as the material is built up during construction, void spaces will be filled and the material will lock into position. The structure itself will become more rigid as additional material is added – increasing the resistance of material movement by external forces.

Prior to deployment of material, a support vessel will place marker buoys at each end of the reef spine and tees (Attachment A). Each barge load can carry and deploy about 200 tons of material. First, the larger base anchor material will be loaded and transferred to the deployment location. The transfer barge will arrive onsite, position itself, and then anchor itself at the buoys. Deployment of the materials will occur sequentially. Placement of larger base materials will occur first. Visual verification of that placement will precede placement secondary (smaller) materials. The contractor will first construct the spine and tees (Attachment A) at all locations or at as many as the available material and funding will allow. The construction barge will return to port as many times as necessary to place all available base materials. Meanwhile, divers will descend on the reef site where base materials are deployed to record the placement of the base material and determine if the site will require additional base material and if so, where the barge operator should deploy that material. GPS location data and buoys will identify any additional deployment location or locations. Once the spine and tee construction is completed, the contractor will transport secondary anchor material (Attachment A) to the sites and place that material on the base material. This process will be repeated until all reef material has been deployed or each reef has reached its maximum vertical height. Subsequent site dives will verify and record the reef structure.

OCARP will have the Contractor inspect each constructed reef to assure that each reef remains at or below maximum allowable height. OCARP expects some minimal subsidence and shifting of material as time passes. All artificial reefs are susceptible to constant external forces including chemical deterioration from contact with salt water and shifting currents which are amplified during extreme weather events. The material will stabilize through settling and chemical binding from organisms that colonize and stabilize the material and strengthen the structure.

The FDEP has specified in 62-341.600(d) *General Permit for the Construction of Artificial Reefs* – "The material shall be placed so that the top of the reef does not exceed ½ the distance from the bottom to the surface of the water unless a greater distance from the surface is required for safe navigation. At no time shall the distance between the top of the reef and the surface of the water be less than 6 feet". Based on data in NOAA Chart #11388, water depths at the proposed location for Fish Haven 16 ranges between 68 and 70 feet.

Based on the criteria from the FDEP and experience of other counties in the Florida panhandle, the individual reef structures could potentially reach a height of approximately 30 feet above

the seafloor, leaving more than 35 feet of water column for navigational clearance. According to USEPA and the US Maritime Administrations - *National Guidance: Best Management Practices for Preparing Vessels Intended to Create Artificial Reefs, May 6, 2006 – "W*ater depth is a significant siting criterion. Artificial reefs should be placed in water at sufficient depths to avoid creating a hazard to navigation – minimum clearance above the reef should accommodate the draft of the largest vessels expected to operate in the vicinity with an adequate safety margin." In *CFR Title 33 PART 64: Navigation and Navigable Waters—Marking of Structures, Sunken Vessels and Other Obstructions,* a hazard to navigation means "an obstruction, usually sunken, that presents sufficient danger to navigation so as to require expeditious, affirmative action such as marking, removal, or redefinition of a designated waterway to provide for navigational safety". OCARP is not aware of any vessel that frequents waters near the proposed construction site that has a draft capable of being obstructed by the proposed reef complex.

According to NOAA navigation chart 11388 – Choctawhatchee Bay, waters become progressively shallow from Safety Fairway 166.220 approximately 12 miles from shore, up to the shoreline and Destin Pass which has a navigable minimum depth of approximately 12 feet. There is no designated navigation lane that exists from Destin Pass to the Safety Fairway 166.220. It makes sense that any vessel with a significant draft (greater than 12 feet) would not attempt entering Destin Pass. Nor would it be reasonable that vessels with significant drafts (greater than 30 feet) would attempt to navigate waters north of the Safety Fairway. However, OCARP understands that heavy seas and distressed vessels could potentially digress from the Safety Fairway. The closest point of the construction areas to the Safety Fairway exceeds two nautical miles (Figure 1). OCARP believes that this buffer distance provides sufficient space for wayward or disabled vessels to correct their bearing or anchor. OCARP requests that the reviewers of this application consider allowing a 30 foot minimum clearance for this construction area with the stipulation that the OCARP submit a request to NOAA to designate the proposed construction areas as obstructions to mariners for inclusion on all navigational products and aides to mariners.

While OCARP strongly desires a permit that would allow reef heights of as much as 30 ft, we are aware that as responsible agencies review the application, they will provide OCARP a recommendation for the most appropriate clearance given each agency's authority and responsibility.

SECTION A, Item 8 (of Section C – no section B on application) of Form # 62-346.900(2) states, "*Describe wetland and aquatic habitats to be affected."* The affected habitat is that typical of what is found in the near-shore region along Florida's northwest coast. The scarcity of live bottom formations in the northeastern Gulf of Mexico is documented in a 1992 Continental Shelf Associates, Inc. report to NOAA; an estimated 3% of the local seafloor contains natural reef formations. A general description of the Gulf of Mexico regional oceanographic properties from *Gulf Base: Resource Database for Gulf of Mexico Research*. World Wide Web electronic publication is as follows:

Extending from just east of the Mississippi Delta near Biloxi to the eastern side of Apalachee Bay, this region of the Gulf bottom is characterized by soft sediments. To the west of the DeSoto Canyon, terrigenous (land-derived) sediments are thick and fill the remnants of the Gulf basin. In the eastern portion of the region, Mississippi-derived sediments cover the western edge of the Florida Carbonate Platform and a transition towards carbonate sediments begins. The Florida Escarpment separates the Florida Platform from the Gulf Basin and also forms the southeastern side of the DeSoto Canyon. In a region characterized by sediment deposition, the presence of the DeSoto Canyon is poorly understood. Some theories suggest that the canyon is the result of erosion caused by oceanic currents, possibly the Loop Current (Nowlin, 1971)."

The proposed construction areas are comprised primarily of a thick (> 3 feet) layer of medium-grained textured sand, which indicates a firm substrate to support the proposed artificial reef structures.

Fish Haven 16 is located within a sand borrow source investigation area (Figure 1). Two sand source investigations (Taylor Engineering 2009. *Eglin AFB/Okaloosa County/Destin Sand Source Investigation, Okaloosa County, FL* and Stone, G.W., Liu, B., and Jose, F. 2007 *Okaloosa County, Florida, Sand Source Investigation: Geophysical and Geotechnical Data Analysis*. Stone & Associates, Inc. Baton Rouge, LA) have found that the area of the fish havens includes no or insufficient beach quality sand for use as a beach sand nourishment source.

Biological Assessment

Reviewed information indicates that the project will not negatively affect existing communities or species that use the proposed project area.

- NOAA Gulf of Mexico Aquatic Ecosystems – Seagrassess – Coastal Region: http://www.ncddc.noaa.gov/interactive-maps/coastal-habitats/gom-coastal-habitat/index.html, anecdotal evidence, as well as evidence derived from physical observation at other artificial reef sites in the vicinity, indicates no submerged aquatic vegetation is present in the proposed construction area.
- The proposed deployment sites are located at water depths of 68 ft to 70 ft, which precludes the growth of submerged grasses. In addition, no known coral outcrops/formations occur at or near the proposed Fish Havens.
- Pre-deployment site surveys will verify that no live bottom occurs in the proposed locations.
- No threatened or endangered species are known to typically occur within the proposed construction areas.
- Most typically observed larger species on the sand bottom areas include the beaded sea star and the pearly razorfish.
- No submerged cultural resources have been observed or are suspected to be located in the immediate vicinity of the site.

The community that develops at the reef site will likely resemble an offshore natural reef found in this area of the Gulf of Mexico. Based on observations of other artificial reefs and natural reefs in the region, OCARP expects that the greater elevation and complexity of the artificial reef will result in colonization of both temperate and some tropical organisms developing a complex community of plants and animals. Artificial habitat provides space that is quickly colonized by sessile organisms and provides new food sources, greater protection of juveniles by providing more space to be used as refuge, and a possible focal point for aggregating adults to spawn.

Science and observation suggests that a wide variety of marine organisms will assemble on the artificial reefs constructed within the proposed Fish Haven construction areas. This includes a variety of sponges (Porifera), segmented worms (Annelida), shrimp, crabs, lobsters, hermit crabs, barnacles (Arthropoda), bryozoans (Ectoprocta), and tunicates (Chordata).

The primary fish species that are expected to utilize the newly created habitats and take up permanent residence or pass through would include, but not limited to:

Red Snapper	Spanish Mackerel	Black Sea Bass	Cubbyu
Gray Snapper	Cobia	Sand Perch	Nurse Shark
Vermillion Snapper	Great Barracuda	Hogfish	Gulf Flounder
Pinfish	Tomtate	Peacock Flounder	Gray Triggerfish
Red Porgy	Scamp	Leopard Toadfish	Greater Amberjack
Sheepshead	Gag Grouper	Spotted Goatfish	
Shark	Red Grouper	Yellow Goatfish	

All of these species are commonly found in the general vicinity of the proposed construction area and these species represent a mix of demersal and pelagic species.

It is assumed that any settling of the reef material will be minimal. Monitoring of other reef material in the vicinity supports the assumption that the reef will experience only minimal settling. The minor subsidence that will occur will provide a stable foundation for the rest of the reef material. OCARP also asserts that the proposed artificial reefs will have negligible impact to any non-living marine resources in either the immediate vicinity of the reefs or in the area surrounding the reefs.

SECTION A, Item 9 of Form # 62-346.900(2) requires clarification of Permanent and Temporary Turbidity, Erosion, and Sedimentation Controls Proposed. The County's response is as follows: *As per 62-312.807 General Permit for the Construction of Artificial Reefs - (a) The material to be used shall be clean concrete or rock, or clean steel boat hulls; and (b) The material shall be free of soils, oil and greases, debris, litter, putrescible substances or other pollutants. The Okaloosa County Artificial Reef Program will inspect all proposed materials prior to deployment to assure compliance with 62-312.807. Specific Turbidity, Erosion, and Sedimentation Controls are not applicable to this process.*

Pre-deployment inspection will ensure that all deployed material include no soil and petroleum residues as per 62-341.600(a-b) to minimize the degree of temporary turbidity changes during the actual deployment operations. The water quality within the construction areas is assumed to meet Class III Marine quality influenced by eddies from the Gulf Loop Current. This influence heavily effects the water chemistry, temperature, density and dissolved oxygen, etc. within the construction area.

Biological Assessment Criteria - The following discussion addresses specific and applicable items outlined by the USACE (as authorized by the Clean Water Act and Rivers and Harbors Act) State Programmatic General Permit authorizing the State of Florida to administer particular categories of work in the marine environment and reduce duplicity in the permitting process between the USACE and FDEP. Attachment D contains a detailed Biological Assessment for the proposed Okaloosa County reef construction sites, derived from a document entitled *Biological Assessment, Navarre Beach Park Gulf Snorkel Reef Site, and Santa Rosa County, Florida.* The referenced Biological Assessment was prepared by Wetland Sciences, Inc., 1829 Bainbridge Ave., Pensacola, Florida 32501 and dated August 7, 2009 and contains applicable and relevant information to the Okaloosa County project. Attachment E and F include additional applicable biological assessment information.

Threatened or Endangered Species and Candidate Species potentially found in waters offshore from Okaloosa County in the project area:

Mammal - **West Indian Manatee**
Reptiles –, **Green Sea Turtle**, **Loggerhead Sea Turtle**
Fishes – **Gulf Sturgeon**, **Smalltooth Sawfish**

West Indian Manatee (*Trichechus manatus*)

Since the Florida manatee may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" ***(http://sero.nmfs.noaa.gov/pr/pdf/Vessel%20Strike%20Avoidance%20with%20Ship%20Strike%20Form-February%202008-web%20version.pdf*** **(Attachment E)**. The project is not anticipated to affect Florida manatee foraging areas or critical habitat therefore the deployment of artificial reefs within the deployment sites will not likely have an adverse effect on the Florida manatee.

Green Sea Turtle (*Chelonia mydas*)

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st. Since the green sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" found at:
(http://sero.nmfs.noaa.gov/pr/pdf/Vessel%20Strike%20Avoidance%20with%20Ship%20Strike%20Form-February%202008-web%20version.pdf)

and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions" (Attachment F), found at:
(http://sero.nmfs.noaa.gov/pr/endangered%20species/Sea%20Turtle%20and%20Smalltooth%20Sawfish%20Construction%20Conditions%203-23-06.pdf).
The project is not anticipated to affect green sea turtle foraging areas or critical habitat. The barges will move slowly due to the nature of the loads. Therefore, the project will not likely have an adverse affect on the green sea turtle. However, project vessels will comply with "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting", guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions

Loggerhead Turtle (*Caretta caretta*)

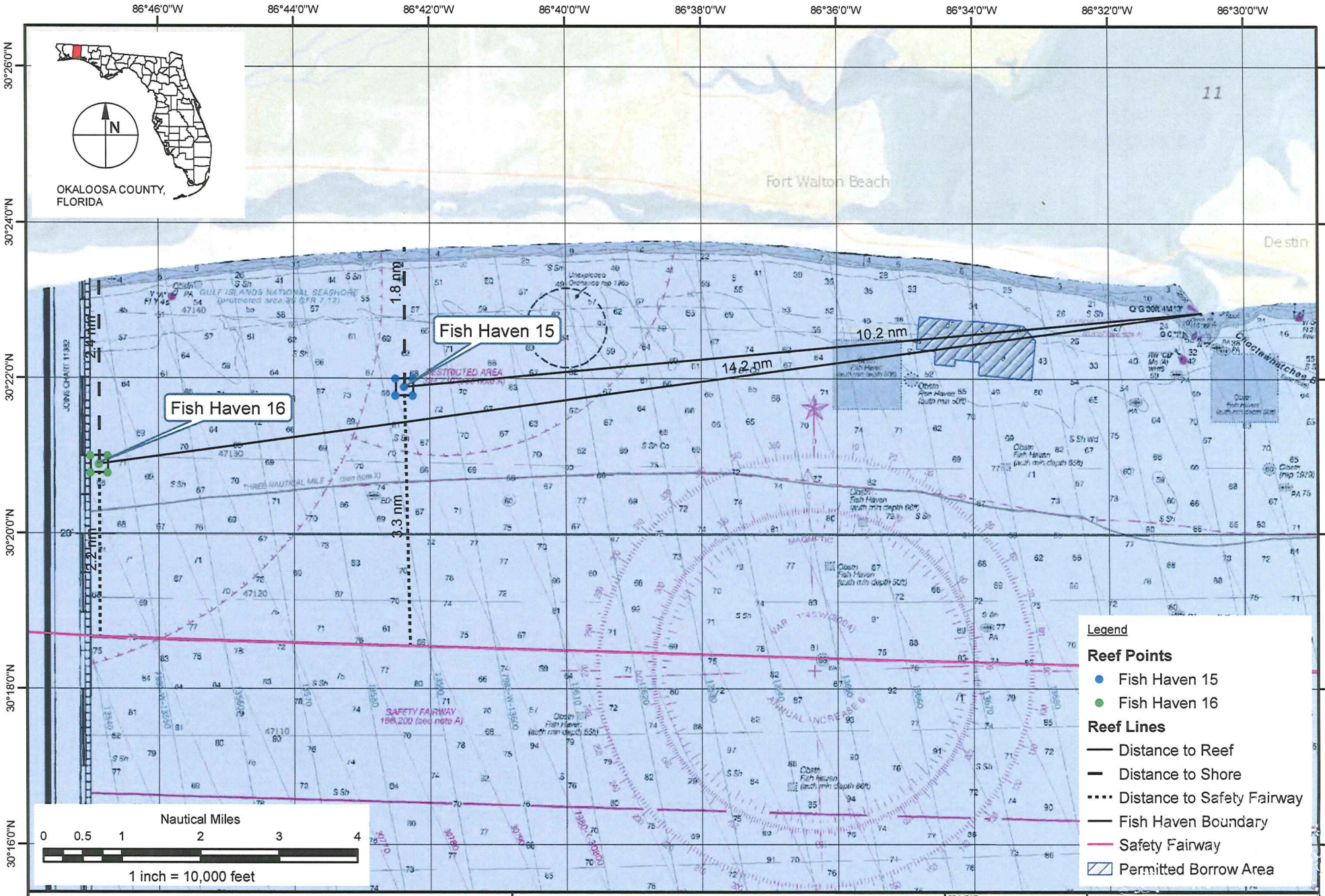
Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st. The loggerhead is responsible for the majority of nesting in Okaloosa County. Since the loggerhead sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting", guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", found at:
http://sero.nmfs.noaa.gov/pr/endangered%20species/Sea%20Turtle%20and%20Smalltooth%20Sawfish%20Construction%20Conditions%203-23-06.pdf.
The project is not anticipated to affect loggerhead sea turtle foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the loggerhead sea turtle.

Gulf Sturgeon (*Acipenser oxyrinchus desotoi*)

Seaward of Okaloosa County, critical habitat for the Gulf Sturgeon is defined in the Gulf of Mexico as the area within one mile of the coastline. Both proposed construction sites are south of the extent of the designated critical habitat. However, OCARP recognizes no physical boundaries exist preventing the gulf sturgeon from entering the proposed construction areas. OCARP believes construction of the reefs will pose no increased threat for the Gulf Sturgeon.

Smalltooth Sawfish (*Pristis pectinata*)

Smalltooth sawfish were once prevalent throughout Florida and were commonly encountered from Texas to North Carolina. Currently, smalltooth sawfish can be only found with any regularity in south Florida between the Caloosahatchee River and the Florida Keys (NMFS 2006), and therefore is unlikely to be found in or near the proposed construction areas.



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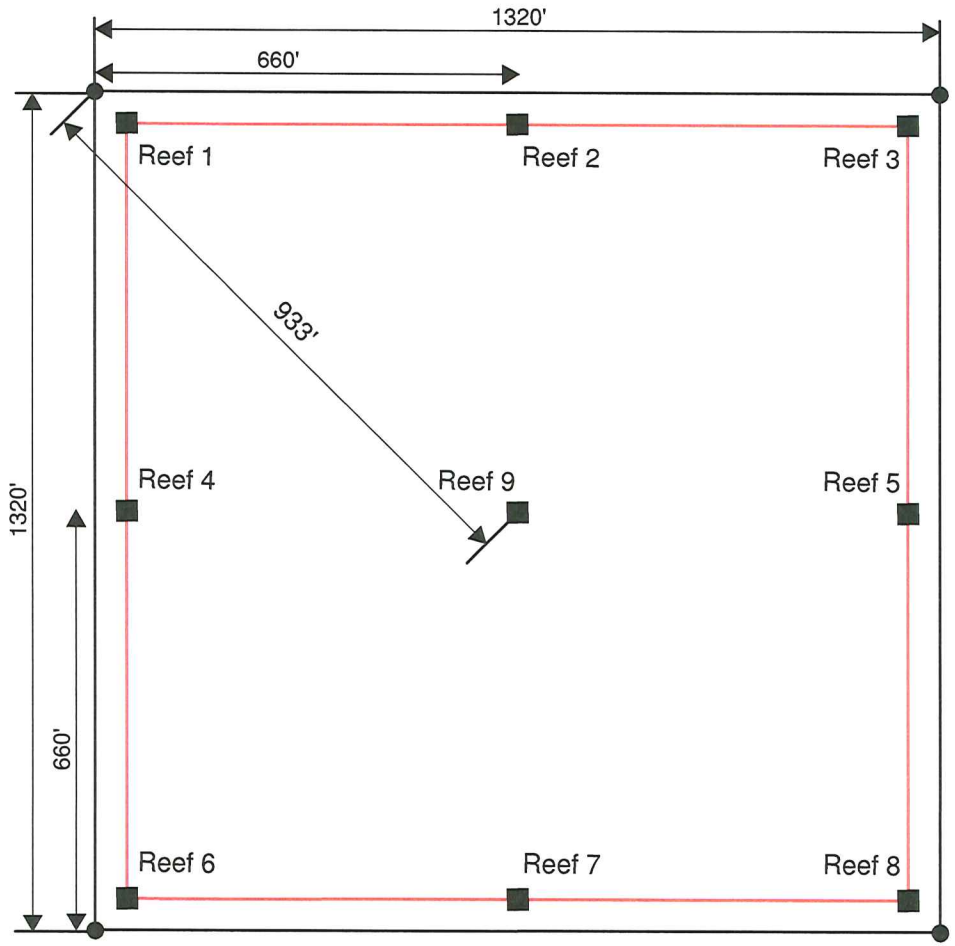
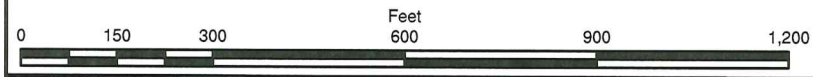
Jacksonville, FL 32256
CERTIFICATE OF AUTHORIZATION # 4815

FIGURE 1
FISH HAVEN 15 & 16
OKALOOSA COUNTY ARTIFICIAL REEFS
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-052
DRAWN BY	PL
SHEET	1 of 3
DATE	OCT 2012

SEAL
MATTHEW E. TRAMMELL P.E. # 69244
11/7/12
DATE





1 inch = 300 feet

Legend
- Corner Points
- Reef Locations
- 50' Offset
- Fish Haven Boundary

Fish Haven 16					
Name	**Location**	**Longitude**	**Latitude**	**Longitude**	**Latitude**
Fish Haven 16	Centroid	86° 46.874' W	30° 20.891' N	86.7812° W	30.3482° N
Fish Haven 16	Northwest Corner	86° 47.000' W	30° 21.000' N	86.7833° W	30.3500° N
Fish Haven 16	Northeast Corner	86° 46.749' W	30° 21.000' N	86.7791° W	30.3500° N
Fish Haven 16	Southeast Corner	86° 46.749' W	30° 20.783' N	86.7791° W	30.3464° N
Fish Haven 16	Southwest Corner	86° 47.000' W	30° 20.782' N	86.7833° W	30.3464° N
Fish Haven 16	Reef 1	86° 46.990' W	30° 20.992' N	86.7832° W	30.3499° N
Fish Haven 16	Reef 2	86° 46.874' W	30° 20.992' N	86.7812° W	30.3499° N
Fish Haven 16	Reef 3	86° 46.759' W	30° 20.992' N	86.7793° W	30.3499° N
Fish Haven 16	Reef 4	86° 46.990' W	30° 20.891' N	86.7832° W	30.3482° N
Fish Haven 16	Reef 5	86° 46.758' W	30° 20.892' N	86.7793° W	30.3482° N
Fish Haven 16	Reef 6	86° 46.990' W	30° 20.791' N	86.7832° W	30.3465° N
Fish Haven 16	Reef 7	86° 46.874' W	30° 20.791' N	86.7812° W	30.3465° N
Fish Haven 16	Reef 8	86° 46.758' W	30° 20.791' N	86.7793° W	30.3465° N
Fish Haven 16	Reef 9	86° 46.874' W	30° 20.891' N	86.7812° W	30.3482° N

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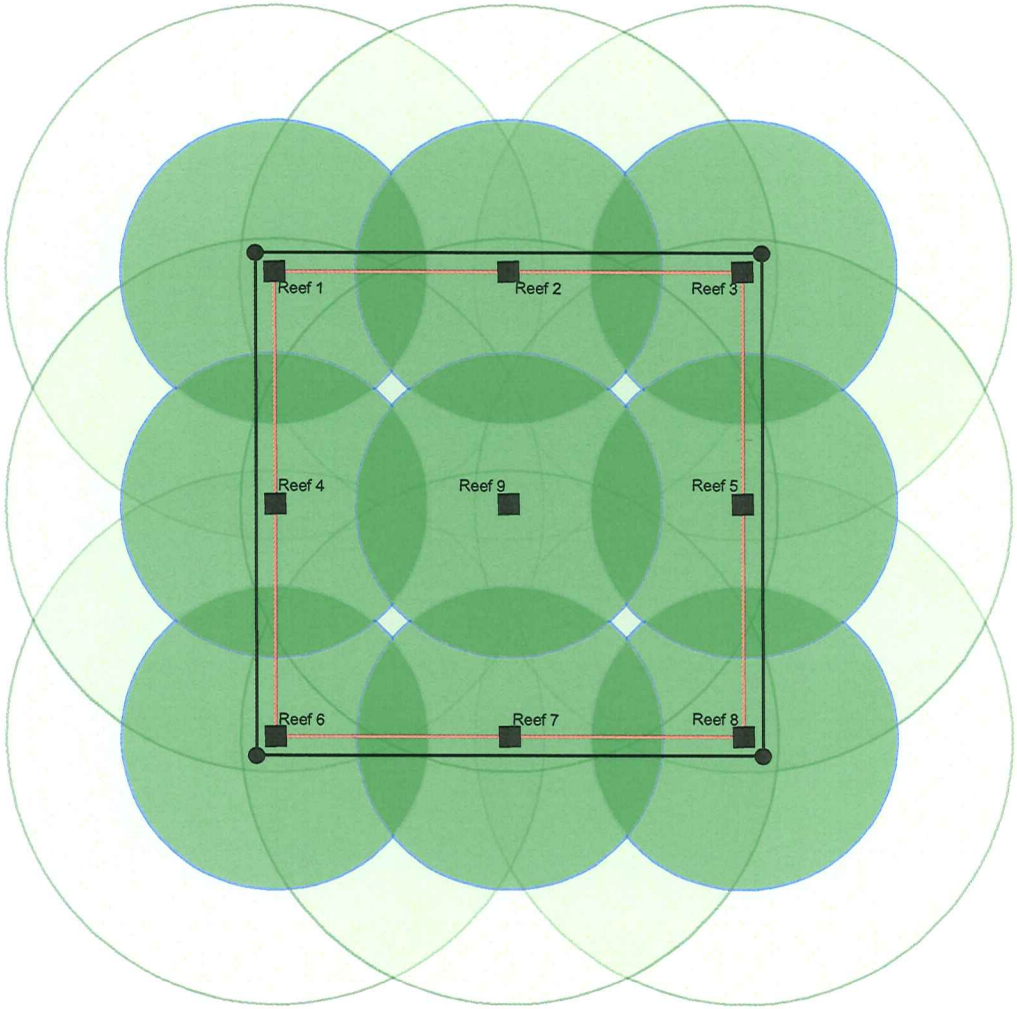
FIGURE 2
FISH HAVEN 16
OKALOOSA COUNTY ARTIFICIAL REEFS
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-052
DRAWN BY	PL
SHEET	2 of 3
DATE	NOV 2012

SEAL
MATTHEW E. TRAMMELL, P.E. # 69244
DATE



Legend
- Corner Points
- Reef Locations
- 50' Offset
- Fish Haven Boundary

Foraging pressure is greater in the darker shaded areas. Foraging characteristics on the perimeter represent an infinite foraging prospect. The two circles around each reef location represent a 400' and 700' foraging radius, characteristic of target species such as red snapper and gag grouper.

N

Feet
0 250 500 1,000 1,500 2,000

1 inch = 500 feet

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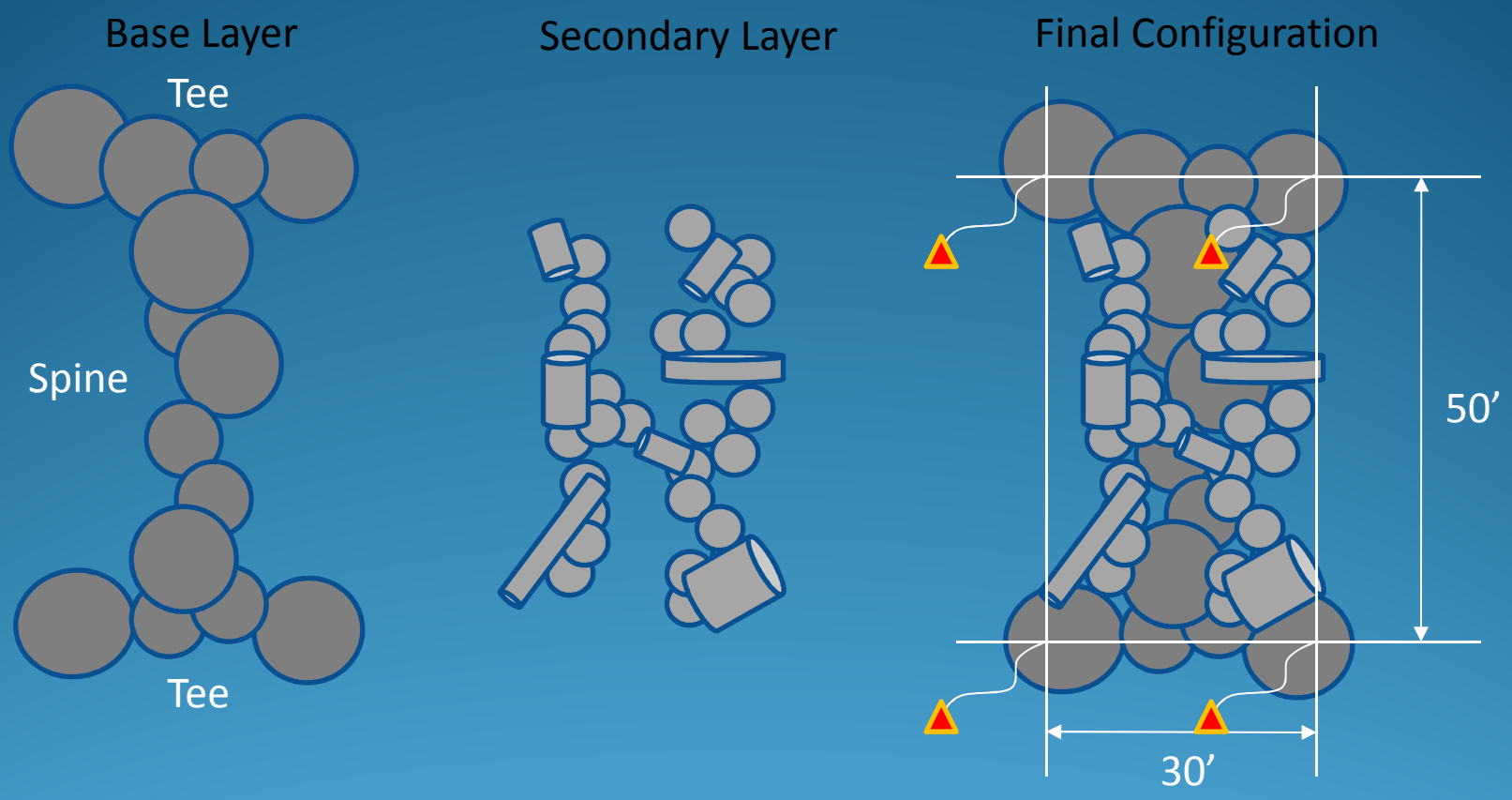
FIGURE 3
TYPICAL FORAGING PRESSURE
OKALOOSA COUNTY ARTIFICIAL REEFS
OKALOOSA COUNTY, FLORIDA

PROJECT	C2012-052
DRAWN BY	PL
SHEET	3 of 3
DATE	NOV 2012

SEAL
11/7/12
MATTHEW E. TRAMMELL P.E. # 59241 DATE

Attachment A – Typical Reef Structure Fish Haven 15 & 16 – Plan View
Okaloosa County , Florida

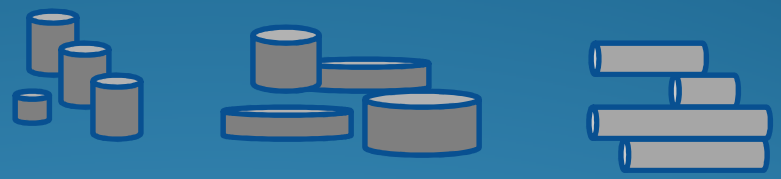


The Base Layer will be placed first. A quality control dive will be performed prior to approval of the base. Once complete, an estimate of the number of pieces for the secondary layer materials will be calculated and placed to reach the maximum relief. Dimensions are approximate

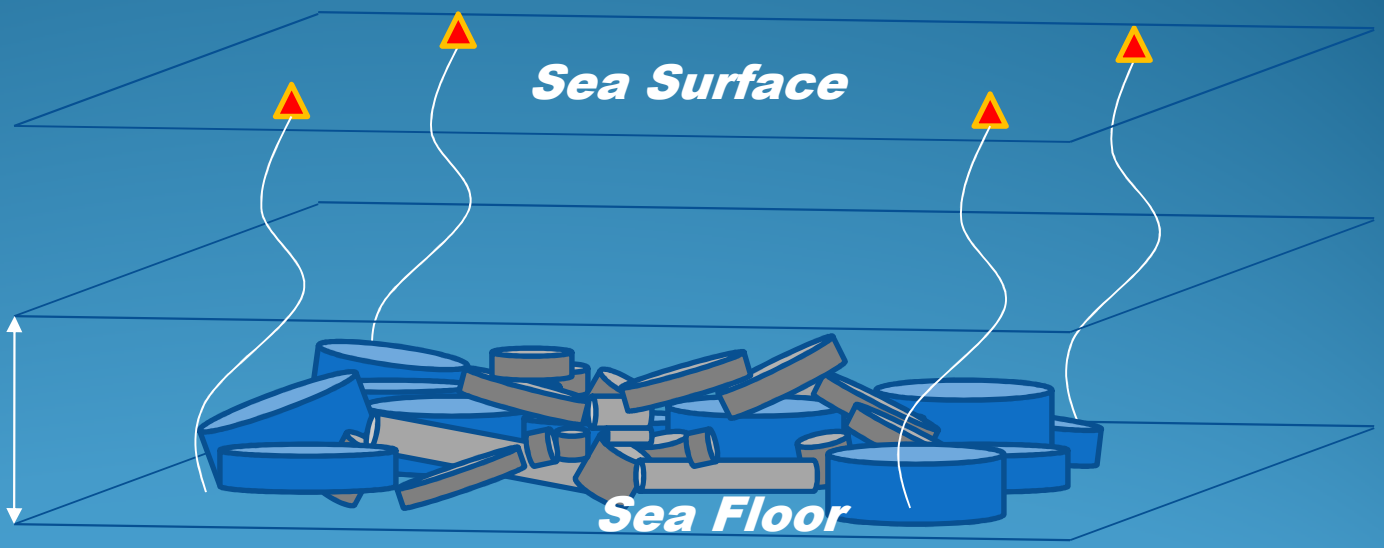
Attachment A – Typical Reef Structure Fish Haven 15 & 16 - Oblique View
Okaloosa County , Florida

Base Anchor Layer

Secondary Anchor Layer Materials



Final Configuration



Maximum reef height equals half the distance from the sea floor to sea surface or as required by USACE.

The Base Layer will contain larger anchor material. The Secondary Layer will contain smaller anchor material and larger targets that have lost structural integrity. The layers will be built up until the desired relief is achieved. Marker buoys will be secured prior to material placement to define drop area and serve as a material placement aide.

Attachment B – Typical AFRL Materials for Construction of Fish Haven 15 and 16 Okaloosa County , Florida

Attachment B – Typical AFRL Materials for Construction of Fish Haven 15 and 16

Okaloosa County , Florida

Attachment D – City of Fort Walton Beach Material Photographs – Fish Haven 13 Okaloosa County , Florida

USAF AFRL - Material Inventory
Range Site C-64A
Artificial Reef Construction
Okaloosa County, Florida

					Cylinders/Culverts				Blocks							
ID		Qty	Location	Description	Dimensions (ft)			Est. Yrd^3 each				Est. Yrd^3 each	Est. lbs Each	Est. lbs Total	Est. Yrd^3 Total	TradCost $/yr^3
					L	D_out	D_in		L	W	H		4000lb/yr^3			85
A	1	3	behind A	Cylinders	3.00	2.58		0.581				-	2,323	6,968	1.742	148
A	2	3	behind A	Arches				-	30	3.25	1	2.401	9,606	28,817	7.204	612
A	3	10	behind A	Large Cylinders intact w/lugs	5.00	5.00		3.625				-	14,501	145,008	36.252	3,081
A	4	1	behind A	Large Cylinder intact w/lugs	3.00	6.00		3.132				-	12,529	12,529	3.132	266
A	5	1	behind A	culvert	4.75	7.25	6	2.282				-	9,126	9,126	2.282	194
A	6	1	behind A	cylinder	3.00	4.67		1.895				-	7,579	7,579	1.895	161
A	7	2	PL82 area	Big thin block				-	10	10	1	3.693	14,770	29,541	7.385	628
A	8	6	PL82 area	1/4 arches				-	13	3.25	1	1.041	4,162	24,974	6.244	531
A	9	1	PL82 area	Big Block some rebar showing				-	6	6	5	6.647	26,587	26,587	6.647	565
A	10							-				-	-	-	0.000	-
A	11							-				-	-	-	0.000	-
A	12							-				-	-	0	0.000	-
A	13							-				-	-	0	0.000	-
A	14							-				-	-	0	0.000	-
A	15							-				-	-	0	0.000	-
A	16							-				-	-	0	0.000	-
A	17							-				-	-	0	0.000	-
A	18							-				-	-	0	0.000	-
A	19							-				-	-	0	0.000	-
A	20							-				-	-	0	0.000	-
A	21							-				-	-	0	0.000	-
A	22							-				-	-	0	0.000	-
A	23							-				-	-	0	0.000	-
A	24							-				-	-	0	0.000	-
A	25							-				-	-	0	0.000	-
A	26							-				-	-	0	0.000	-
A	27							-				-	-	0	0.000	-
A	28							-				-	-	0	0.000	-
A	29							-				-	-	0	0.000	-
A	30							-				-	-	0	0.000	-
A	31							-				-	-	0	0.000	-
A	32							-				-	-	0	0.000	-
A	33											-	-	0	0.000	-
A	34											-	-	0	0.000	-
												-	-	0	0.000	-
												-	-	0	0.000	-
												Totals				
														Est. lbs Total	Est. Yrd^3 Total	Est. $
														291,129	73	6,186

USAF AFRL - Material Inventory
Range Site C-64B
Artificial Reef Construction
Okaloosa County, Florida

					Cylinders/Culverts				Blocks							
	ID	Qty	General Location	Description	Dimensions (ft)			Est. Yrd^3 each				Est. Yrd^3 each	Est. lbs Each Item	Est. lbs Total for Group	Est. Tons Total for Group	Est. Yrd^3 Total
					L	D_out	D_in		L	W	H		4000lb/yr^3		2,000	
B	1	5	front	Very large cylinders w/thermocouples in sides	7.00	7.50		11.419				-	45,678	228,388	114	57
B	2	20	front	Small cylinders under very large cylinders	3.00	2.58		0.579				-	2,317	46,331	23	12
B	3	6	front	Pile of cubes				-	1	1	1	0.037	148	886	0	0
B	4	3	front	1/2 culverts	8.67	6.33	5.67	1.005				-	4,022	12,065	6	3
B	5	4	West Side front	Cylinders gal metal outer skin intact w/Lugs	1.67	6.00		1.740				-	6,960	27,842	14	7
B	6	2	West Side front	Cylinders gal metal outer skin intact w/Lugs	3.00	2.67		0.619				-	2,475	4,950	2	1
B	7	2	West Side front	Cylinders gal metal outer skin intact w/Lugs	6.00	6.00		6.264				-	25,057	50,115	25	13
B	8	1	West Side front	Cylinders gal metal outer skin intact w/Lugs	5.00	2.67		1.031				-	4,125	4,125	2	1
B	9	9	West Side front	Cylinders gal metal outer skin intact w/Lugs	0.67	6.00		0.696				-	2,784	25,057	13	6
B	10	6	West Side front	Cylinders gal metal outer skin intact w/Lugs	4.00	6.00		4.176				-	16,705	100,230	50	25
B	11	10	West Side front	Cylinders gal metal outer skin intact w/Lugs	1.50	6.00		1.566				-	6,264	62,643	31	16
B	12	55	West Side front	Cylinders gal metal outer skin intact w/Lugs	3.00	2.58		0.581				-	2,323	127,740	64	32
B	13	28	West Side front	Cylinders gal metal outer skin intact w/Lugs	5	2.58		0.968				-	3,871	108,385	54	27
B	14	3	West lane east side	Blocks				-	5	2.25	0.667	0.277	1,108	3,325	2	1
B	15	14	West Side in back	W shot Cylinders Gal Metal Outer Skin w/Lugs	4	6.00		4.176				-	16,705	233,869	117	58
B	16	2	West Side in back	W shot Cylinders Gal Metal Outer Skin Broken Up	4	6.00		4.176				-	16,705	33,410	17	8
B	17	3	West Side in back	Small Blocks w/Center hole and lugs				-	2.666667	2.666667	0.666667	0.175	700	2,101	1	1
B	18	2	West Side in back	Small Blocks w/Center hole and lugs				-	2.666667	2.666667	0.333333	0.088	350	700	0	0
B	19	1	West Side in back	Large Cylinder	4	6.00		4.176				-	16,705	16,705	8	4
B	20	1	East side in back	Large Cylinder	4	6.00		4.176				-	16,705	16,705	8	4
B	21	13	East side in back	Large Cylinder	6	6.00		6.264				-	25,057	325,746	163	81
B	22	2	West side in back	W shot cylinders broken up	5	2.67		1.031				-	4,125	8,249	4	2
B	23	1	West side in back	W shot cylinders Intact	5	2.67		1.031				-	4,125	4,125	2	1
B	24	1	East side Mid	Large Cylinder w/ Galv Skin intact	5	5.00		3.625				-	14,501	14,501	7	4
B	25	1	East side Mid	Cylinder w/ Galv Skin intact	4	5.00		2.900				-	11,601	11,601	6	3
B	26	2	East side Mid	Cylinder w/ Galv Skin intact	4	6.00		4.176				-	16,705	33,410	17	8
B	27	8	East side Mid	Cylinder w/ Galv Skin intact	3	2.58		0.581				-	2,323	18,580	9	5
B	28	2	East side mid	Cylinder w/ Galv Skin intact	5	2.58		0.968				-	3,871	7,742	4	2
B	29	2	East side mid	Large Cylinder w/ Galv Skin intact	6	6.00		6.264				-	25,057	50,115	25	13
B	30	1	East side Mid	2 broken outer skin 6'x6'cylinder, Est. concrete rubble <1/2 of 1	6	6.00		3.132				-	12,529	12,529	6	3
B	31	2	East toward front	Large Culverts in woods	8.666667	6.33	5.666667	2.011				-	8,043	16,086	8	4
B	32	1	woods patch front	cylinder w/ projectile sticking out	5	2.58		0.968				-	3,871	3,871	2	1
B	33	1	woods patch front	Large Block w/ River rock agregate				-	10	10	5	18.463	73,852	73,852	37	18
B	34	1	woods patch front	Small block intact				-	2.666667	2.5	0.666667	0.164	656	656	0	0
B	35	1	woods patch front	Small block intact				-	2.666667	2.5	1	0.246	985	985	0	0
B	36	1	woods patch front	Shot cylinder near unshot group	3	2.583333		0.581				-	2,323	2,323	1	1
B	37	1	by fence east	Empty cylinder	4	6.00	5.9	0.138				-	552	552	0	0
B	38	1	by fence east	Empty cylinder	1.666667	6.00	5.9	0.058				-	230	230	0	0
B	39	18	center pile	Large Cylinder	4	6.00		4.176				-	16,705	300,689	150	75
B	40	5	center pile	Large cylinder	6	6.00		6.264				-	25,057	125,287	63	31
B	41	5	center pile	20 deg angle large cylinders	4	6.00		3.341				-	13,364	66,820	33	17
B	42	10	center pile	Large thin cylinder	2	8.00		3.712				-	14,849	148,488	74	37
B	43	7	center pile	Large thin cylinder	1.583333	6.00		1.653				-	6,612	46,287	23	12
B	44	17	center pile	Small cylinders	3	2.58		0.581				-	2,323	39,483	20	10
B	45	6	center pile	small cylinders	5	2.58		0.968				-	3,871	23,225	12	6
B	46	4	East side blast pad	1/2 culverts	8.666667	6.33	5.666667	1.005				-	4,022	16,086	8	4
B	47	1	East side blast pad	Large thin Block on ground				-	10	10	1.333333	4.923	19,694	19,694	10	5
B	48	1	East side blast pad	Large up right block w/ rebar showing				-	4	5.583333	5.583333	4.604	18,418	18,418	9	5
B	49	6	field by blast pad	2 groups of stacked thin blocks				-	10	10	1	3.693	14,770	88,622	44	22
															-	
															-	
B	50	1	East of Blast Pad	Cylinder w/skin and rebar showing in center	2.00	4.00		0.928				-	3,712	3,712	2	1
B	51	4	Behind Blast Pad	Cylinders	11.67	1.67		0.940				-	3,759	15,038	8	4
B	52	2	Behind Blast Pad	Arches				-	13.00	3.25	1.00	1.560	6,241	12,481	6	3

USAF AFRL - Material Inventory
Range Site C-64B
Artificial Reef Construction
Okaloosa County, Florida

B	53	3	Behind Blast Pad	Blocks				-	5.00	3.42	0.67	0.421	1,682	5,047	3	1
B	54	1	Behind Blast Pad	Culvert	3.25	7.25	6.00	1.561				-	6,244	6,244	3	2
B	55	3	Behind Blast Pad	Cylinders Against Walls	3.00	2.67		0.619				-	2,475	7,424	4	2
B	56	8	Side of Blast Pad	Cylinders by blast pad mound	3.00	2.67		0.619				-	2,475	19,798	10	5
B	57											-	-	-	-	-
B	58											-	-	-	-	-
B	59											-	-	-	-	-
B	60											-	-	-	-	-
												Totals				
														Est. lbs Total		Est. Yrd^3 Total
														2,653,568	1,327	663

USAF AFRL - Material Inventory
Range Site A-22
Artificial Reef Construction
Okaloosa County, Florida

				Cylinders/Culverts				Blocks							
ID		Qty	Description	Dimensions (ft)			Est. Yrd^3 each				Est. Yrd^3 each	Est. lbs Each	Est. lbs Total		Est. Yrd^3 Total
				L	D_out	D_in		L	W	H		4000lb/yr^3			
F	1	2	Blocks w/Rebar				-	7	7	1	1.809	7,238	14,475		3.619
F	2	10	Blocks w/Rebar				-	7	7	2	3.619	14,475	144,750		36.188
F	3	6	Blocks w/Rebar				-	7	9	2	4.653	18,611	111,664		27.916
F	4	1	Blocks w/Rebar				-	7	9	3	6.979	27,916	27,916		6.979
F	5	1	Blocks w/Rebar				-	7	9	4	9.305	37,221	37,221		9.305
F	6	1	Cylinder w/Rebar	1.00	6.00		1.044				-	4,176	4,176		1.044
F	7	12	Cylinder w/Rebar	4.00	8.00		7.424				-	29,698	356,372		89.093
F	8	6	Cylinder w/Rebar	2.00	6.00		2.088				-	8,352	50,115		12.529
F	9	8	Cylinder w/Rebar	4.00	6.00		4.176				-	16,705	133,639		33.410
F	10	1	Cylinder w/Rebar	2.00	8.00		3.712				-	14,849	14,849		3.712
F	11						-				-	-	-		0.000
F	12											-			0.000
F	13											-			0.000
F	14											-			0.000
F	15											-			0.000
F	16											-			0.000
F	17											-			0.000
F	18											-			0.000
											Totals				
													Est. lbs Total	Est. Total Tons	Est. Yrd^3 Total
													895,178	448	224

USAF AFRL - Material Inventory
Total Inventory for All Range Sites
Artificial Reef Construction
Okaloosa County, Florida

Est. lbs Total	Est. Yrd^3 Total	Est. ft^3 Total
$ 3,839,875	960	25,997

1920 Tons Total

INVENTORIED BY: Dale Campbell

FWB CULVERT INVENTORY

Memorial Parkway

Date: 11/17/2011 and 11/21/2011

Pipe #	Diameter	Length	Weight Per foot	Wt/Lbs	Wt/Tons
1	60"	8	1209	9672	4.84
2	60"	8	1209	9672	4.84
3	48"	4.4	868	3819.2	1.91
4	48"	4.4	868	3819.2	1.91
5	48"	4.4	868	3819.2	1.91
6	48"	8	868	6944	3.47
7	48"	8	868	6944	3.47
8	48"	8	868	6944	3.47
9	48"	8	868	6944	3.47
10	48"	8	868	6944	3.47
11	48"	8	868	6944	3.47
12	48"	8	868	6944	3.47
13	48"	8	868	6944	3.47
14	48"	8	868	6944	3.47
15	36"	4	524	2096	1.05
16	48"	8	868	6944	3.47
17	48"	8	868	6944	3.47
18	48"	8	868	6944	3.47
19	48"	8	868	6944	3.47
20	48"	8	868	6944	3.47
21	48"	8	868	6944	3.47
22	48"	8	868	6944	3.47
23	48"	8	868	6944	3.47
24	36"	4	524	2096	1.05
25	36"	4	524	2096	1.05
26	36"	4	524	2096	1.05
27	36"	4	524	2096	1.05
28	36"	4	524	2096	1.05
29	36"	8	524	4192	2.10
30	36"	8	524	4192	2.10
31	36"	8	524	4192	2.10
32	36"	8	524	4192	2.10
33	36"	8	524	4192	2.10
34	42"	8.5	684	5814	2.91
35	42"	8.5	684	5814	2.91
36	42"	8.5	684	5814	2.91
37	42"	8.5	684	5814	2.91
38	42"	8	684	5472	2.74
39	42"	8	684	5472	2.74
40	42"	8	684	5472	2.74
41	42"	8	684	5472	2.74
42	42"	8	684	5472	2.74
43	42"	8	684	5472	2.74
44	42"	8	684	5472	2.74
45	42"	8	684	5472	2.74
46	42"	8	684	5472	2.74
47	42"	8.5	684	5814	2.91
48	42"	8.5	684	5814	2.91
49	48"	12.6	1736	21873.6	10.94
50	48"	12.6	1736	21873.6	10.94
51	48"	12.6	1736	21873.6	10.94
52	42"	4.5	684	3078	1.54
53	42"	4.5	684	3078	1.54

INVENTORIED BY: Dale Campbell

FWB CULVERT INVENTORY

Memorial Parkway

Date: 11/17/2011 and 11/21/2011

Pipe #	Diameter	Length	Weight Per foot	Wt/Lbs	Wt/Tons
54	42"	4.5	684	3078	1.54
55	42"	4.5	684	3078	1.54
56	Elliptical 59" - 38"	8.3	1000	8300	4.15
57	Elliptical 59" - 38"	8.3	1000	8300	4.15
58	Elliptical 59" - 38"	8.3	1000	8300	4.15
59	Elliptical 59" - 38"	8.3	1000	8300	4.15
60	Elliptical 59" - 38"	8.3	1000	8300	4.15
61	Elliptical 59" - 38"	8.3	1000	8300	4.15
62	Elliptical 59" - 38"	8.3	1000	8300	4.15
63	Bell 26.5" - 48"	38" tall	404	1616	0.81
64	Bell 24" - 48"	38" tall	404	1616	0.81
65	Elliptical 45" - 31"	39"	625	2031.25	1.02
66	Round Lids 8'		5770	5770	2.89
67	Round Lids 8'		5770	5770	2.89
68	Square Boxes 65" 53"	5' x 4'		10100	5.05
69	Square Boxes 65" 53"			10100	5.05
70	6 ft pipe (72")	7	1800	12600	6.30
71	6 ft pipe (72")	7	1800	12600	6.30
72	48" round pipe	2	868	1736	0.87
73	6 ft pipe (72")	58" tall	1070	5168.1	2.58
74	4 ft pipe (48")	36" tall	524	1572	0.79
75	4 ft box	41" tall		8800	4.40
76	4 ft box	41" tall		8800	4.40
83	52" box	6.5 tall		10600	5.30
84	36" pipe	4	524	2096	1.05
		vol ft3	lb/ft3		
77	7 ft across 1.5 thick circle	4.808125	144	692.37	0.35
78	7 ft across 1.5 thick circle	4.808125	144	692.37	0.35
79	7 ft across 1.5 thick circle	4.808125	144	692.37	0.35
80	7 ft across 1.5 thick circle	4.808125	144	692.37	0.35
81	7 ft across 1.5 thick circle	4.808125	144	692.37	0.35
82	7 ft across 5 tall	5 tall			
					253.49

INVENTORIED BY: Dale Campbell

FWB CULVERT INVENTORY

Hollywood Boulevard

Date: 11/17/2011 and 11/21/2011

Pipe #	Diameter	Length	Wt/Lbs	Wt/Tons
1	36"	8.5	524	2.227
2	36"	8.5	524	2.227
3	30"	8.5	385	1.63625
4	30"	8.5	385	1.63625
5	30"	8.5	385	1.63625
6	24"	8.5	268	1.139
7	24"	8.5	268	1.139
8	30"	8.5	385	1.63625
9	30"	8.5	385	1.63625
10	30"	8.5	385	1.63625
11	28"	8.5	385	1.63625
12	28"	8.5	385	1.63625
13	30"	8.5	385	1.63625
14	30"	8.5	385	1.63625
15	18"	4.33	168	0.36372
16	18"	6.33	168	0.53172
17	18"	4.33	168	0.36372
18	18"	4.33	168	0.36372
19	18"	4.33	168	0.36372
20	18"	4.33	168	0.36372
21	18"	8.5	168	0.714
22	18"	8.5	168	0.714
23	18"	8.5	168	0.714
24	18"	8.5	168	0.714
25	18"	8.5	168	0.714
26	16"	8.5	128	0.544
27	16"	8.5	128	0.544
28	16"	8.5	128	0.544
29	16"	8.5	128	0.544
30	16"	8.5	128	0.544
31	16"	6.5	128	0.416
32	16"	4.25	128	0.272
33	16"	4.25	128	0.272
34	14"	4.25	128	0.272
35	14"	4.25	128	0.272
36	18"	8.5	168	0.714
37	22"	8.5	268	1.139
38	22"	8.5	268	1.139
39	22"	8.5	268	1.139
40	20"	8.5	268	1.139
41	21"	8.5	268	1.139
42	21"	8.5	268	1.139
43	21"	8.5	268	1.139
44	18"	8.5	168	0.714
45	18"	8.5	168	0.714
46	18"	8.5	168	0.714
47	18"	8.5	168	0.714
48	24"	8.5	268	1.139
49	24"	8.5	268	1.139
50	15"	4	128	0.256
51	30"	8.5	385	1.63625

INVENTORIED BY: Dale Campbell

FWB CULVERT INVENTORY

Hollywood Boulevard

Date: 11/17/2011 and 11/21/2011

Pipe #	Diameter	Length	Wt/Lbs	Wt/Tons
52	30"	8.5	385	1.63625
53	30"	8.5	385	1.63625
54	30"	8.5	385	1.63625
55	24"	8.5	268	1.139
56	24"	8.5	268	1.139
57	24"	8.5	268	1.139
58	24"	8.5	268	1.139
59	24"	8.5	268	1.139
60	24"	3.25	268	0.4355
61	24"	4.33	268	0.58022
				60.57154

BIOLOGICAL ASSESSMENT

Fish Haven 16
Okaloosa County, Florida

Original Text created
For Santa Rosa County, Florida
Navarre Beach Park Gulf Snorkel Reef Site
By Wetland Sciences, Inc.
1829 Bainbridge Ave.
Pensacola, Florida 32501
August 7, 2009

Revised for Okaloosa County Fish Haven 16
by: Scott R. Henson
Okaloosa County Artificial Reef Program Manager
84 Ready Avenue
Fort Walton Beach, Florida 32548

December 6, 2011

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1.0 Introduction

This Biological Assessment (BA) has been prepared to fulfill the U.S. Army Corps of Engineer's (USACE) requirements as outlined under Section 7(c) of the Endangered Species Act (ESA) of 1973, as amended. This BA evaluates the potential impacts that the proposed Okaloosa County Artificial Reef Deployment area Fish Haven 16 may have on federally listed endangered and threatened species, and describes the avoidance, minimization and conservation measures proposed by the applicant, Okaloosa County.

This BA is prepared pursuant to Section 7 of the Endangered Species Act (ESA) as well as the relevant implementing regulations and agency guidance. 16 U.S.C. § 1536; 50 C.F.R. § 402.12; and Final ESA Section 7 Consultation Handbook (March 1998) [Section 7 Handbook]. The primary purpose of the BA is to address potential impacts to threatened and endangered species and their designated critical habitats that may result from the Project. The primary objectives of this BA are to:

- Provide a conceptual framework of the history of the Project;
- Document the evolution of the project alternatives and past consultations with the United States Fish and Wildlife Services (USFWS), Corps, National Marine Fisheries Service (MNFS) and the Florida Fish and Wildlife Commission (FWC);
- Describe the Project, including the planned use and all proposed mitigation and conservation measures;
- Provide information on the natural history of federally-listed endangered or threatened species, species proposed for listing and other sensitive species potentially occurring in the vicinity of the Project;
- Evaluate the potential effects of the Project on federally-listed or proposed-listed endangered or threatened species; and
- Provide a determination of effect (i.e., "no effect", "may affect, not likely to adversely affect, or modify critical habitat", or "may affect, is likely to adversely affect, or modify critical habitat") for the listed and proposed-listed species.

2.0 Project Description

The proposed Fish Haven is a quarter-mile square area as defined by the following coordinates:

Fish Haven 16	Latitude	Longitude	Latitude	Longitude
Centroid	30° 21.891' N	86° 42.374' W	30.3649° N	86.7062° W
Northwest Corner	30° 22.000' N	86° 42.500' W	30.3667° N	86.7083° W
Northeast Corner	30° 22.000' N	86° 42.249' W	30.3667° N	86.7041° W
Southeast Corner	30° 21.783' N	86° 42.249' W	30.3630° N	86.7041° W
Southwest Corner	30° 21.782' N	86° 42.500' W	30.3630° N	86.7083° W

This location is approximately 10 nautical miles from East Pass, Destin, Florida at a bearing of 264° and 1.82 miles from the closest shoreline at a bearing of 176°. The depth range across Fish Haven 16 is approximately 70 to 75 feet below sea level.

It is the County's intent to construct 9 separate reefs in Fish Haven 16. The materials to be used to construct the reefs are industry standard prefabricated reef structures, clean concrete prefabricated concrete structures donated by the United States Air Force and the City of Fort Walton Beach. These materials are repurposed materials that have been utilized for their intended purpose or are excess inventory from historical projects. The overwhelming majority of the material is solid, multi-ton and not likely to mobilize once placed on the sea floor.

Fish Haven 16 is part of a network of construction areas for artificial reefs off of the shores of Okaloosa County. Fish Haven 16 is an essential component providing a significant share of the environmental and recreational benefits for the reef network. Increased presence of marine organisms from their expected growth on the reef structures will encourage increased biodiversity within the Gulf. The reef structures themselves, coupled with the additional growth on the structures, will provide shelter that promotes improved mortality rates for juvenile fish species. Fish Haven 16 will provide an easily accessible amenity for local and transient fishing and diving community. The reefs constructed within Fish Haven 16 will relieve the ever increasing pressure on the existing public and private reef network and will be readily available to vessels not capable of prolonged forays to offshore waters.

3.0 Project Area

Monitoring of reefs in and around the proposed reef construction area indicate the proposed area is predominately unvegetated sand bottom with a surficial layer of microalgae/cyanobacteria. Categories of affected Essential Fish Habitat within the project area include marine water column and unvegetated sand bottom. There are no seagrasses located within the vicinity of the deployment site. There are no natural rock outcrops or hard bottom formations within the deployment sties. There are several other public artificial reefs within the vicinity of Fish Haven 16 but there is sufficient distance to limit an increase in foraging pressure but will allow refuge for transient species..

4.0 Alternatives Considered

Recent consultation with potential user groups has indicated that more near-shore reef areas are desirable. Also, a survey of the current public reef database was performed to determine a suitable location for Fish Haven 16. The Okaloosa County Artificial Reef - 5-Year Plan was also reviewed. Based on this input, the proposed location was selected. There are numerous other locations within the same radius from East Pass, Destin, Florida that are compatible with selection criteria. However, these sites are typically located in deeper waters or are along regularly utilized traffic patterns.

The proposed area was chosen to facilitate safe access and utilization. Factors considered included; shore proximity, vessel traffic patterns, ideal diving depths, avoidance of permitted borrow and/or

disposal sites, avoidance of safety fairways, anchorages, designated shipping lanes, and avoidance of sensitive environmental resources (i.e. hard bottom formations, seagrasses, etc.).

A variety of reef materials have been successfully used to construct artificial reefs. The materials proposed within the deployment area are consistent with the material specifications outlined in the DEP notice general permit 62-341.600, Florida Administrative Code. The materials specified are consistent with the National Artificial Reef Plan (As Amended): Guidelines for Siting, Construction, Development, and Assessment of Artificial Reefs (U.S. Department of Commerce 2007).

4.1 No-Action Alternative

The objective of the proposed activity is to increase near shore fishing, snorkeling, and diving opportunities for residents of Santa Rosa County. Currently there are only a few areas which offer such opportunities. To accept the No-Action Alternative would abandon the following Artificial Reef Program Goals:

- Enhance the seafloor of the marine and estuarine waters of, and adjacent to, Okaloosa County by the placement of stable and durable artificial reef materials for the purpose of establishing access and creating habitat for reef-associated species of fishes and invertebrates.
- Increase regional abundance of marine life.
- Reduce negative impacts to natural reefs.
- Provide fishing and diving opportunities for the residents and tourists of Okaloosa County
- Increase fishing and diving success, and artificial reef-user satisfaction
- Reduce conflicts between artificial reef users and user groups
- Enhance the local and state economies
- Increase safety of boaters using artificial reefs via establishment of artificial reef close to shore
- Increase fuel economy (decrease fuel consumption) via establishment of artificial reef permits close to shore

The No-Action Alternative does not meet the stated objective for the proposed nearshore reef deployment sites.

4.2 Preferred Alternative – Establishment of a Gulf Snorkel Reef Site

The preferred alternative is described in the project description section of this document. The reef deployment location was selected based upon many factors, including: proximity to safe harbor to minimize safety risks for boaters (particularly small vessels) water depth range; and user groups.

4.2.1 Pre-Deployment Procedures

No less than 5 days prior to deployment of material within the Fish Haven 16 area, the Permittee shall transmit by electronic mail ("e-mail") a complete and signed "Florida Artificial Reef Materials Cargo Manifest and Pre-Deployment Notification form to the Corps and FWC to allow inspection of the proposed reef materials. Inspections will be held at the staging area. By signing the Pre-Deployment Notification, the Permittee certifies that all materials are free from asphalt, petroleum, other hydrocarbons and toxic residues. The Permitte will take digital photos of representative

components/piers of reef material and transmit with the above form as PDF attachments to the appropriate agencies. Permittee will ensure receipt of transmittals to appropriate agencies. The Permittee will not deploy material if notified by the Corps or FWC that the material is questionable or unacceptable until the material has been evaluated and released for deployment. Any material that is deemed unacceptable for reef material will be disposed in an approved upland disposal site.

Deployment of the material shall not occur until the end of the inspection period. The Permittee will ensure both a copy of the Corps and DEP permit and the signed "Florida Artificial Reef Materials Cargo Manifest and Pre-Deployment Notification form" are maintained aboard the deployment vessel at all times during loading, transit, and deployment.

4.2.2 Deployment Procedures

Each deployment of material to the Fish Haven 16 will be loaded onto a barge outfitted with the equipment necessary to place the material at the designated location. The permitte or permittee's representative will be present to document the transport and deployment of the material. A deployment plan will be generated to outline the procedures and objectives of each deployment effort. The permittee or their agent will execute the deployment according to the criteria in the deployment plan. Variations to the plan will be documented for posterity. Reef locations within Fish Haven 16 will be marked with buoys prior to deployment.

4.2.3 Deployment Monitoring

The Permittee or the permittee's representative shall be on site during every deployment to verify compliance with the permit and its conditions. The authorized representative shall not be the person who physically or contractually is responsible for deployment of the transported reef materials. The permittee or representative will verify geographic coordinates using a Differentially Corrected Global Positioning System (DGPS) accurate to within 5 meters horizontal distance. Depth shall be verified utilizing fathometer, depth sounder, or similar device accurate to within 1 meter.

4.2.4 Post Deployment Monitoring

Within 12 months from the effective date of this permit and annually thereafter until expiration of the deployment authorization, the Permittee shall submit to the Corps and FWC a spreadsheet listing the deployments that occurred within the previous 12 months and a written report which summarizes, analyses, and draws conclusions regarding the activities or issues associated with the reef in the past twelve months. For each deployment, the spreadsheet will include the local tracking number, date deployed, geographic coordinates, description and quantity of the material deployed, depth of water above material, approximate area of seafloor covered. The spreadsheet will document any known changes in material condition (stability, durability, and location) as compared to those same characteristics at time of deployment. The report may include but is not limited to use trends, site management constraints and resolutions, management techniques, modifications of operations plans, lessons learned, etc. Results of any performance monitoring (description of fish and other biota observed) will be included in the report. The report shall include written text and drawing(s) or similar visual depiction of the location of each deployment in relation to the boundary of the reef site. Immediately upon expiration of the deployment authorization or request for permit extension, a

summary of reports submitted since the last permit issuance/renewal will be submitted to the Corps, NOAA, and FWC. This compilation will document any known changes in material stability, durability, or location as compared to that most recently reported for a site as well as a summary/analysis of the qualitative data (trends, lessons learned, etc.) in the yearly reports.

5.0 Status of Listed Species and Habitat

While numerous state and federally listed species potentially occur in Santa Rosa County, Florida, the table below provides a listed species that may be potentially affected by the proposed project.

Listed Species	Scientific Name	Status
Marine Mammals		
West Indian manatee	*Trichechus manatus*	Endangered
Sea Turtles		
Green sea turtle	*Chelonia mydas*	Endangered
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Endangered
Hawksbill sea turtle	*Eretmochelys imbricata*	Endangered
Loggerhead sea turtle	*Caretta caretta*	Threatened
Fish		
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened

Five, federally-protected, endangered whales species are of potential occurrence in the Gulf of Mexico: blue whale (*Balaenoptera musculus*), finback whale (*Balaenoptera physalus*), humpback whale (*Megaptera novaeangliae*), sei whale (*Balaenoptera borealis*), and sperm whale (*Physeter macrocephalus*). These five whale species are not considered in this BA as these whales are generally restricted to offshore waters, and therefore unlikely to be found in or near the project area.

One federally-protected, endangered ray is of potential occurrence in the Gulf of Mexico: smalltooth sawfish *(Pristis pectinata*). Smalltooth sawfish were once prevalent throughout Florida and were commonly encountered from Texas to North Carolina. Currently, smalltooth sawfish can be only found with any regularity in south Florida between the Caloosahatcheee River and the Florida Keys (NMFS 2006), and therefore is unlikely to be found in or near the project area and is not considered in this BA.

5.1 Loggerhead Sea Turtle

5.1.1 Status and Threats

The loggerhead turtle (*Caretta caretta*) was listed as threatened throughout its range on July 28, 1978 (43 FR 32808). The loggerhead is the most abundant sea turtle species in U.S. coastal waters (NMFS and USFWS 1991a).

Genetic research has identified four different loggerhead nesting subpopulations in the southeastern United States: (1) the Northern Subpopulation ranging from North Carolina to Northeast Florida; (2)

South Florida Subpopulation ranging from just north of Cape Canaveral, Florida and extending to Sarasota, Florida; (3) Dry Tortugas, Florida Subpopulation; and (4) Northwest Florida Subpopulation on the beaches of Florida's Panhandle (Bowen et al. 1993, Bowen et al. 1994, Bowen 1995, Encalada et al. 1998, Pearce 2001). Each nesting subpopulation is considered a distinct reproductive population. Due to the high site fidelity of nesting females to their natal region and low gene flow among nesting assemblages, most western North Atlantic loggerhead nesting assemblages are vulnerable to extirpation.

Based upon nesting data collected on index nesting beaches in the U.S. from 1989-1998, the total number of loggerhead nests laid along the Atlantic and Gulf Coasts ranged from 53,016 nests to 89,034 nests annually. On average 0.8% of the nests were from the Florida Panhandle subpopulation.

The most significant threats to the loggerhead sea turtle population are coastal development, commercial fisheries and marine pollution (NMFS 2007a). Juvenile loggerhead turtles are particularly susceptible to impacts associated with shrimp fisheries offshore of the Atlantic coast and along the southeastern Atlantic coast. Shrimp harvesting is managed in the Gulf of Mexico: waters out to 200 nautical miles are closed annually for 3 months to shrimp fishing offshore of Texas (mid May through mid July) to allow shrimp to migrate out of estuarine waters. The management of shrimp harvesting in the Gulf appears to contribute to the reduction of sea turtle stranding during this period (NMFS unpublished data).

Loggerhead nesting habitat is threatened with beach erosion, armoring and nourishment; artificial lighting; increased human activity associated with coastal development, including poaching activities; natural predation by fire ants, raccoons, armadillos, and opossums; and storm activity. Negative impacts to sea turtle nesting and hatching success in Okaloosa County include predation, hatchling disorientation due to artificial upland lighting, human activity/disturbance, and lost or damaged nests due to storm activity.

5.1.2 Distribution and Range

Loggerhead sea turtles occur throughout the temperate and tropical regions of the Atlantic, Gulf of Mexico, Pacific and Indian Oceans. The loggerhead occurs in open water as far as 500 miles from shore, but is mainly found over the continental shelf and in bays, estuaries, lagoons, creeks, and mouths of rivers. The loggerhead favors warm temperate and subtropical regions in relatively close proximity to shorelines. Similar to other sea turtles species, water temperature influences the movements of loggerhead, and they do not usually appear at summer foraging grounds until June, although some individuals can be found in Virginia as early as April. Immature stages of loggerheads (juveniles/sub-adults) which forage in the northeastern U.S. are known to migrate southward in the fall as water temperatures drop, and migrate northward in spring.

5.1.3 Habitat

Loggerheads are primarily carnivorous, feeding on sponges, squid, sea urchins, crabs, horseshoe crabs, shrimp, basket starfish and a variety of mollusks. Loggerhead turtles are primarily bottom feeders; however they also feed on jellyfish while swimming in the water column or resting/basking near the

surface of the water. Under certain conditions, they may prey upon slow moving, demersal fish species. Hatchlings and juveniles feed on prey concentrated at the surface such as gastropods and *Sargassum*. Along the Gulf Coast, loggerhead sea turtles are frequently observed near offshore oil platforms, natural hardbottom/reefs and rock jetties.

Adult loggerheads occupy various habitats from turbid bays to clear waters of reef. After emergence from the nest, hatchlings move out to sea, and spend approximately 3 to 5 years in the pelagic immature stage, generally associated with floating *Sargassum* mats (NMFS and USFWS 1991a). The pelagic stage may span as long as 7 to 12 years. Juveniles/sub-adults occur mainly in nearshore and estuarine waters and use these habitats for feeding. As loggerheads mature, they travel and forage through nearshore waters until their breeding season, when they return to the nesting beach. The estimated age at maturity is approximately 21 to 35 years (Frazer and Ehrhart 1985; Frazer et al. 1994). The majority of mature loggerheads appear to nest on a two or three year cycle.

Major nesting beaches for loggerheads include the Sultanate of Oman, southeastern United States and eastern Australia. In the continental U.S., loggerhead sea turtles nest along the Atlantic coast from Florida to New Jersey (Musick 1979). In the western Atlantic, most loggerhead nesting occurs from North Carolina to Florida and the Gulf Coast. The southeastern nesting population is critical to the survival of the species and is second in size only to the nesting aggregation on Masirah Island, Oman. Steeply sloped beaches with gradually slopes offshore approaches are generally favored by nesting females. Approximately 80% of all loggerhead nesting in the southeastern U.S. occurs in six Florida counties (Brevard, Indian River, St. Lucie, Martin, Palm Beach, and Broward Counties)

5.1.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st. The loggerhead is responsible for the majority of nesting in Okaloosa County.

5.2 Green Sea Turtle

5.2.1 Status and Threats

The green sea turtle (*Chelonia mydas*) was listing on July 28, 1978 as threatened, except for Florida and the Pacific Coast of Mexico(including the Gulf of California), where it was listed as endangered (43FR 32808). The greatest cause of the worldwide decline in green turtle populations is the commercial harvest for eggs and meat. In Florida, the nesting population was nearly extirpated within 100 years of the initiation of commercial exploitation.

Green sea turtle population in Florida, Hawaii and other parts of the world have experienced significant mortality from the disease, fibropapillomatosis, which is a disease characterized by the development of multiple tumors on the skin and internal organs. The tumors can interfere with swimming, eating, breathing, vision and reproduction. Other threats to green sea turtles include loss or degradation of nesting habitat from coastal development and beach armoring; disorientation of hatchlings by beachfront lighting; excessive nest predation by fire ants, raccoons and opossums; degradation of

foraging habitat; marine pollution and debris; watercraft strike; and incidental take from commercial fishing operations such as shrimp trawling.

Due to their main dietary component of seagrass, Caribbean green sea turtles are considered to be nutrient limited, resulting in low growth rates, delayed sexual maturity, and low annual reproductive effort. This low reproductive effort makes recovery of the species slow once the adult population number have been severely reduced (Bjorndal 1981). Estimates of age at sexually maturity range from 20 to 50 years (Balazs 1982; Frazer and Ehrhart 1985) and the lifespan may be over 100 years.

5.2.2 Distribution and Range

The green sea turtle is a circumglobal species in tropical and subtropical waters. In the U.S. Atlantic waters, it occurs around the U.S. Virgin Islands, Puerto Rico, and the continental U.S. from Massachusetts to Texas. Relatively small numbers nest in Florida with even smaller numbers in Georgia, North Carolina and Texas (NMFS and USFWS 1991b; Hirth 1997). Green turtles are distributed more widely in the summer when warmer temperatures allow them to migrate north along the Atlantic Coast. Juvenile and sub-adult green sea turtles can be found in estuarine and coastal waters from Long Island Sound, Chesapeake Bay and North Carolina sounds south throughout the tropics (Musick and Limpus 1997). As the water temperatures decline during the winter months, green sea turtles that are found north of Florida migrate south into subtropical and tropical water.

Major nesting areas for green sea turtles in the Atlantic include Surinam, Guyana, French Guyana, Costa Rica, the Leeward Islands and Ascension Island in the mid Atlantic. Historically in the U.S., green turtles have been known to nest in the Florida Keys and Dry Tortugas. Green sea turtles primarily nest on selected beaches along the coast of eastern Florida, predominantly Brevard through Broward Counties. In the southeastern U.S., the majority of nesting occurs during the months of June, July and August.

5.2.3 Habitat

The green turtle primarily utilizes shallow habitats such as lagoons, bays, inlets, shoals, estuaries and other areas with abundance for marine algae and seagrasses. Individuals observed in the open ocean are believed to be migrating to feeding grounds or nesting beaches (Meylan 1982). Hatchlings often float in masses of algae (*Sargassum* sp) in convergence zones. Coral reefs and rock outcrops are often used as resting areas.

Green sea turtle hatchlings are believed to feed mainly on jellyfish and other invertebrates. Adult green sea turtles prefer an herbivorous diet frequenting shallow water flats for feeding (Fritts et al. 1983). Adult turtles feed primarily in seagrasses such as *Thalassia testudinum*. This vegetation provides the turtles with a high fiber content and low forage quality (Bjorndal 1981). Green turtles migrate long distances between feeding and nesting areas (Carr and Hirth 1962). Nocturnal resting sites may be a considerable distance from feeding areas and distribution of the species is generally correlated with grassbed distribution, location of resting beaches and possibly ocean currents (Hirth 1971). In the Gulf of Mexico, principal foraging areas are located in the upper west coast of Florida. Green sea turtle hatchlings are believed to feed mainly in jellyfish and other invertebrates.

Nesting occurs nocturnally at 2, 3 or 4 year intervals and females only occasionally produce clutches in successive year. Little is known about the pelagic distribution of hatchlings to juvenile size. When juveniles reach a carapace length of approximately 20 to 25 cm, they leave their pelagic habitats and enter benthic foraging areas, shifting to an herbivorous diet.

5.2.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

Within the vicinity of the project area, no green sea turtles or nests have been observed. Since the green sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect green sea turtle foraging areas or critical habitat, therefore, with use of the demolition conditions the project will not likely have an adverse affect on the green sea turtle.

5.3 Kemp's Ridley Sea Turtle

5.3.1 Status and Threats

Kemp's ridley sea turtle (*Lepidochelys kempii*) was listed as endangered throughout its range on December 2, 1970 (35 FR 18320). Of the seven extant species of sea turtles, the Kemp's ridley has declined to the lowest population level. Recent studies suggest increased nesting activities and an overall increase in population size due to increased hatchling production and survival rates of immature turtles (USFWS 2000). Kemp's ridleys have been subject to high levels of incidental take by shrimp trawlers (USFWS and NMFS 1992). In 1990, the National Research Council's Committee on Sea Turtle Conservation estimated that 86% of human caused death of juvenile and adult loggerhead and Kemp's ridley resulted from shrimp trawling (Campbell 1995). The recent increased survival of juvenile and sub-adult individuals is partly attributed to the use of turtle exclusion devices (TEDs) in commercial shrimping fleets.

The primary decline of Kemp's ridley is due to human activities including collection of eggs, fishing for juveniles and adults and direct take for indigenous use. Dredging operations affect Kemp's ridley turtles through incidental take and degradation of habitat. Incidental take of Kemp's ridley has been documented with hopper dredging. Similar to other sea turtles species, future threats to the Kemps' ridley include interaction with fishery gear; marine pollution which results in the ingestion of manmade debris and garbage; destruction of foraging habitat; illegal poaching; and impacts to nesting beaches associated with rising sea level, development, artificial lighting and tourism pressure.

5.3.2 Distribution and Range

Adults are primarily restricted to the Gulf of Mexico, although juveniles may range throughout the Atlantic Ocean since they have been observed as far north as Nova Scotia (Musick 1979). Important foraging areas include Campeche Bay, Mexico and Louisiana coastal waters. Nearly the entire population of Kemp's ridleys nest on an 11 mile stretch of coastline near Ranch Nuevo, Tamaulipas, Mexico, approximately 190 miles south of the Rio Grande. A second nesting aggregation occurs at Tuxpan, Veracruz.

Juveniles and sub-adults have been found along the eastern seaboard of the U.S. and in the Gulf of Mexico. Studies suggest that the benthic stage, juvenile turtles stay in shallow, warm nearshore waters in the northern Gulf until cooling waters force them offshore or south along the Florida coast (Renaud 1995). Little is known about the movements of the post hatchling, pelagic stage within the Gulf. Studies have indicated that this stage varies from 1 to 4 or more years and the immature stage lasts about 7 to 9 years. The maturity age of this species is estimated to 7 to 15 years. Females return to their nesting beach approximately every other year with nesting from April into July and usually limited to the western Gulf of Mexico. The mean clutch size for this species is about 100 eggs per nest and an average of 2.5 nests per female per season.

5.3.3 Habitat

Kemp's ridleys inhabit shallow coastal and estuarine waters, usually over sand of mud bottoms. Adults are primarily shallow water benthic feeders that specialize on crabs, especially portunid crabs, while juveniles feed on *Sargassum* sp. and associated infauna and other epipelagic species of the Gulf (USFWS and MNFS 1992). Other food items include shrimp, snails, bivalves, sea urchin, jellyfish, sea stars, fish and occasionally marine plants (Pritchard and Marquez 1973; Shaver 1991; Campbell 1995).

5.3.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

Within the vicinity of the project area, no Kemp's ridley sea turtles or nests have been observed. Since the Kemp's ridley sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect Kemp's ridley sea turtle foraging areas or critical habitat therefore with use of the demolition conditions the project will not likely have an adverse affect on the Kemp's ridley sea turtle.

5.4 Leatherback Sea Turtle

The leatherback sea turtle (*Dermochelys coriacea*) was listed as endangered throughout its range on June 2, 1970 (35 FR 8495), with critical habitat designated in the U.S. Virgin Islands on September 26, 1978 and March 23, 1979 (43 FR 43688-43689 and 44 FR 17710-17712, respectively).

The general decline of the leatherback sea turtle is attributed to exploitation of eggs (Ross 1981). The population has been threatened by egg harvesting in countries such as Malaysia, Surinam, the Guiana's, the west coast of Mexico, Costa Rica and in several Caribbean Islands. In the past, leatherbacks were killed for their abundant oil, which was used for oil lamps and for caulking wooden boats. Similar to other sea turtle species, ingestion of manmade debris, such as plastic bags and other plastic waste, is a significant cause of mortality in leatherback turtles.

Leatherbacks prefer open access beaches possibly to avoid damage to their soft plastron and flippers. Unfortunately, open beaches with little shoreline protection are vulnerable to beach erosion triggered by seasonal changes in wind and wave direction. Nests are more susceptible to inundation on open beaches during severe erosion events.

5.4.2 Distribution and Range

The leatherback, the largest of all sea turtles, is mainly pelagic, inhabiting the open ocean and diving nearly continuously to great depths. Leatherbacks seldom approach land except for nesting (Eckert 1992). The leatherback is probably the most wide ranging of all sea turtle species, occurring in the Atlantic, Pacific and Indian oceans; as far north as British Columbia, Newfoundland, Great Britain and Norway; as far south as Australia, Cape of Good Hope, and Argentina; and in other water bodies such as the Mediterranean Sea (NFWL 1980). Distribution of this species has been linked to thermal preference and seasonal fluctuations in the Gulf Stream and other warm water features (Fritts et al. 1983).

5.4.3 Habitat

Leatherback sea turtles are omnivorous. Leatherbacks feed mainly on pelagic soft bodied invertebrates such as jellyfish and tunicates. Their diet may include squid, fish, crustaceans, algae and floating seaweed. Highest concentrations of these prey animals are often found in upwelling areas or where ocean currents converge. They will also ingest plastic bags and other plastic debris, which are commonly generated by oil drilling rigs and production platforms in coastal Florida, Alabama, Mississippi and Louisiana (Fritts et al. 1983).

Leatherbacks nest primarily in tropical regions. Major nesting beaches include Malaysia, Mexico, French Guiana, Surinam, Costa Rica and Trinidad (Ross 1981). Leatherbacks nest only sporadically in some of the Atlantic and Gulf states of the continental U.S., with one nesting reported as far north as North Carolina (Schwartz 1976). In the Atlantic and Caribbean, the largest nesting assemblages occur in the U.S. Virgin Islands, Puerto Rico and Florida (NMFS 2007a). During the summer, leatherbacks tend to occur along the east coast of the U.S. from the Gulf of Maine to the middle of Florida.

5.4.4 Presence in the Project Area

Sea turtle nesting data for Santa Rosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Santa Rosa County extends from May 1st through October 31st.

Within the vicinity of the project area, no leatherback sea turtles or nests have been observed. Since the leatherback sea turtle may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and

marine mammals and National Marine Fisheries Service's "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect leatherback sea turtle foraging areas or critical habitat therefore with use of the demolition conditions the project will not likely have an adverse affect on the leatherback sea turtle.

5.5 Hawksbill Sea Turtle

5.5.1 Status and Threats

The hawksbill sea turtle (*Eretmochelys imbricata*) was federally listed as endangered on June 2, 1970 (35 FR 8495) with critical habitat designated in Puerto Rico on May 24, 1978 (43 FR 22224). In 1998, NMFS designated critical habitat near Isla Monito, Puerto Rico, seaward to 5.6 km (63 FR 46693-46701).

The greatest threat to this species is from the harvest of the hawksbill shell for jewelry. Between 1970 and 1989, Japanese imports of hawksbill shell totaled 713, 850 kg, representing more than 670,000 turtles. The hawksbill is also used in the manufacture of leather, oil, perfume and cosmetics (NMFS 2007a).

Other threats to the hawksbill sea turtles include destruction of nesting locations by beach development, incidental take in fishery operations, pollution by petroleum products, entanglement in marine debris (Meylan 1992), and predation on eggs and hatchlings. In America Samoa, villagers harvest sea turtle eggs when encountered (Tuato-o-Bartley et al. 1993).

5.5.2 Distribution and Range

The hawksbill is circum tropical, occurring in tropical and subtropical seas of the Atlantic, Pacific and Indian Oceans (Witzell 1983). This species is probably the most tropical of all marine turtles, although it does occur in many temperate regions. The hawksbill sea turtle is widely distributed in the Caribbean Sea and western Atlantic Ocean, with representatives of at least some life history stages regularly occurring in southern Florida and the northern Gulf (especially Texas), south to brazil (NMFS 2007a). In the continental U.S., the hawksbill largely nests in Florida where it is sporadic at best (NFWL 1980). However, a major nesting beach exists on Mona Island, Puerto Rico. Elsewhere in the western Atlantic, hawksbills nest in small numbers along the Gulf Coast of Mexico, the West Indies and the Caribbean coasts of Central and South America (Musick 1979).

5.5.3 Habitat

Hawksbills generally inhabit coastal reefs, bays, rocky area, passes, estuaries and lagoons, in water depths of less than 70 feet. Similar to green sea turtles, hatchlings are sometimes found floating in masses of pelagic marine algae (*Spargassum* sp.) (NFWL 1980). When they reach a carapace length of approximately 20 to 25 centimeters, hawksbill juveniles reenter coastal waters. Coral reefs are widely recognized as the resident foraging habitat of juveniles, sub-adults and adults. This habitat associates is likely related to their diet of sponges, which need solid substrate for attachment. Hawksbills are omnivorous and prefer invertebrates, especially encrusting organisms, and will feed on plant material such as algae, seagrasses and mangroves (Carr 1952; Rebel 1974; Pritchard 1977; Musick 1979;

Mortimer 1982). Hawksbills also occur around rocky outcrops and high energy shoals, which are also optimum sites for sponge growth.

5.5.4 Presence in the Project Area

Sea turtle nesting data for Okaloosa County is available from the Florida Fish and Wildlife Conservation Commission (FFWCC). Sea turtle nesting season in Okaloosa County extends from May 1st through October 31st.

No documented records of hawksbills exist from Okaloosa County, Florida; however. This species is of potential occurrence within the offshore areas of the northwest Gulf of Mexico. Within the vicinity of the project area, no hawksbill sea turtles or nests have been observed. Since the hawksbill sea turtle may occur in the project area the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect hawksbill sea turtle foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the hawksbill sea turtle.

5.6 Gulf Sturgeon

5.6.1 Status and Threats

The USFWS and NMFS listed the Gulf Sturgeon (*Acipenser oxyrhinchus desotoi*) a subspecies of the Atlantic sturgeon (*A. oxyrhinchus*), as endangered on September 30, 1991 (56 FR 49653 49658). As with other sturgeon species, the damming of rivers has been the most significant threat to the Gulf sturgeon (NMFS 2007b). Other threats to the species include over exploitation, incidental catch, dredging activities, the removal of snags and dredged material placement associated with channel improvements and maintenance (USFWS and Gulf States Marine Fisheries Commission [GSMFC] 1995; NMFS 2007b).

5.6.2 Distribution and Range

The gulf surgeon is anadromous, which means the species breeds in freshwater environments, but spends the remainder of the year in marine and estuarine environments. Spawning occurs in the deeper portions of rivers on clean rock or rubble bottoms. Mud and sand bottoms and seagrass communities are likely important marine habitats (USFWS and GSMFC 1995). The Gulf sturgeon lives in riverine systems during the warmer months of the year and during the remaining months (November through March), the Gulf sturgeon migrates to estuarine or Gulf of Mexico waters to feed. In early to late spring, the fish migrate to the riverine systems to spawn.

The Gulf Sturgeon historically ranged along the northeastern Gulf, in major rivers from the Mississippi delta in Louisiana, east to Charlotte Harbor, Florida, and in marine waters of the central and eastern Gulf (USFWS and GSMFC 1995; NMFS 2007b). Its current range extends from Lake Pontchatrain and the Pearl River in Louisiana and Mississippi east to the Suwannee River in Florida. There are sporadic reports from as far west as the Rio Grande River between Texas and Mexico, and as far east and south

as Florida Bay. Viable populations exist in the Mississippi, Pearl, Escambia, Yellow, Choctawhatchee, Apalachicola, and Suwannee rivers (NMFS 2007b).

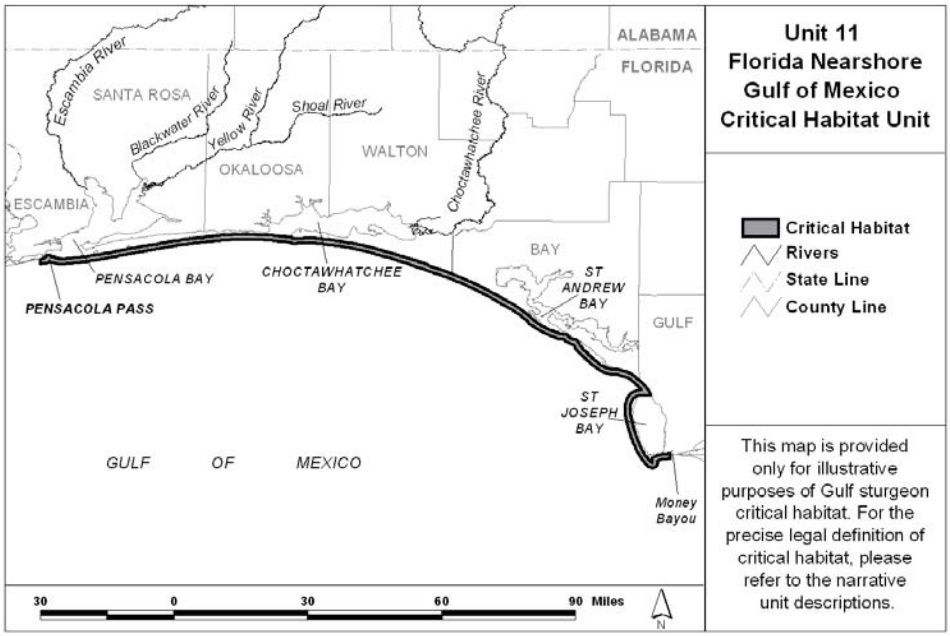
5.6.3 Habitat

The movement and behavior of the Gulf sturgeon is discussed in the Gulf Sturgeon Recovery/Management Plan produced by the USWS, GSMFC and NMFS (1995). Unpublished information from NMFS and USFWS personnel and other suggest that, while in the Gulf of Mexico during the winter months, the Gulf sturgeon may spend a portion of time feeding in relatively shallow water in the nearshore (<30ft.). However, there are some anecdotal reports of Gulf sturgeon as much as twelve mile offshore (Olsen Associates, Inc 2002). The primary migratory pathway of Gulf sturgeon is parallel to the shoreline in the nearshore area.

A priority action item identified in the Gulf Sturgeon Recovery/Management Plan was the identification of Gulf sturgeon estuarine and marine habitat use. During the Gulf Sturgeon Marine Movement and Habitat Use Study, researchers collected and analyzed data through the capture, tagging, release and subsequent recapture of these species. Data collected from several years of research suggest that the fish near Panama City Beach are usually found to the east of the St. Andrews Bay inlet along Tyndall and Mexico Beaches, which are known over wintering areas (Frank Parauka 2006, personal communication for the Panama City Shore Protection Project Biological Assessment, April 13, 2006). Gulf sturgeons from the Brothers, Yellow, Apalachicola and Choctawhatchee Rivers have been located off Tyndall and/or Mexico Beaches in water depths typically of 12-20 feet (Frank Parauka 2006, personal communication for the Panama City Shore Protection Project Biological Assessment, April 13, 2006). Studies supporting the critical habitat rule indicated that the Gulf sturgeon's diet includes amphipods, lancelets, polychaetes, gastropods, shrimp, isopods, mollusks and crustaceans.

5.6.4 Presence in Project Area

The reef site is located within Unit 11 critical habitat area for the Gulf Sturgeon (see Figure below.). Unit 11 includes a portion of the Gulf of Mexico as defined by the following boundaries. The western boundary is the line of longitude 87/20.0'W (approximately 1 nm (1.9 km) west of Pensacola Pass) from its intersection with the shore to its intersection with the southern boundary. The northern boundary is the MHW of the mainland shoreline and the 72 COLREGS lines at passes as defined at 30 CFR 80.810 (a-g). The southern boundary is 1 nm (1.9 km) offshore of the northern boundary. The eastern boundary is the line of longitude 85/17.0'W from its intersection with the shore (near Money Bayou between Cape San Blas and Indian Peninsula) to its intersection with the southern boundary.



Since Gulf sturgeon may occur in the project area, a discussion of the project relative to the seven elements considered essential for the conservation of the species follow:

(1) Abundant food items, such as detritus, aquatic insects, worms, and/or mollusks, within riverine habitats for larval and juvenile life stages; and abundant prey items, such as amphipods, lancelets, polychaetes, gastropods, ghost shrimp, isopods, mollusks and/or crustaceans, within estuarine and marine habitats and substrates for subadult and adult life stages.

The project site is not located within a riverine area and will not alter or negatively affect foraging opportunities.

(2) Riverine spawning sites with substrates suitable for egg deposition and development, such as limestone outcrops and cut limestone banks, bedrock, large gravel or cobble beds, marl, soapstone, or hard clay;

The project site is not located within spawning areas, and thus will not affect spawning behavior or suitable substrates

(3) Riverine aggregation areas, also referred to as resting, holding, and staging areas, used by adult, subadult, and/or juveniles, generally, but not always, located in holes below normal riverbed depths, believed necessary for minimizing energy expenditures during fresh water residency and possibly for osmoregulatory functions;

The project site is not located within a riverine area, and thus will not affect aggregation behavior or fish movement.

(4) A flow regime (i.e., the magnitude, frequency, duration, seasonality, and rate-ofchange of fresh water discharge over time) necessary for normal behavior, growth, and survival of all life stages in the riverine environment, including migration, breeding selection, courtship, egg fertilization, resting, and staging, and for maintaining spawning sites in suitable condition for egg attachment, egg sheltering, resting, and larval staging;

The proposed project will not alter flow patterns and this is not expected to negatively affect behavior, growth or reproductive activity.

(5) Water quality, including temperature, salinity, pH, hardness, turbidity, oxygen content, and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages;

The project is not expected to adversely impact water quality. For a short duration after initial reef deployment there will be some re-suspension of the in-situ sediments, and are expected to settle out naturally. Turbidity reduction devices would not be effective and cannot be utilized under this circumstance. The proposed activity will not affect water quality and thus not affect sturgeon activities that depend on the maintenance of a certain quality of water.

(6) Sediment quality, including texture and other chemical characteristics, necessary for normal behavior, growth, and viability of all life stages; and

The proposed activity will not alter sediment composition and thus it is expected that the project will not alter normal behavior, growth, and viability of all life stages of sturgeon.

(7) Safe and unobstructed migratory pathways necessary for passage within and between riverine, estuarine, and marine habitats (e.g., an unobstructed river or a dammed river that still allows for passage).

The proposed activity will not hinder sturgeon migration patterns. The proposed activity will not affect migration behavior of the gulf sturgeon.

Since Gulf sturgeon may occur in the project area, the applicant will comply with the "Sea Turtle and Smalltooth Sawfish Construction Conditions" which also applies to sturgeon, provided in Attachment G.

The project is not anticipated to affect Gulf sturgeon foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Gulf sturgeon.

5.7 West Indian Manatee

5.7.1 Status and Threats

The West Indian manatee, also known as the Florida manatee, is a federally listed endangered aquatic mammal protected under the Endangered Species Act. The Florida manatee population is divided into four subpopulations; the Upper St. Johns River (4% of the population); Atlantic Coast (46%); Southwest Florida (38%); and Northwest Florida (12%) (USFWS 2007). Based on published data for the survival

rates, reproduction and population growth, the Upper St. Johns River and Northwest Florida subpopulations are expanding and doing well. The Atlantic Coast subpopulation is likely stable and little information exists on the status of the Southwest Florida subpopulation (USFWS 2007).

Based on the 2001 statewide aerial synoptic survey, it is believed that the minimum population is 3,276 individuals. The manatee population appears to have increased over the past few decades. In the last decade, annual mortality in Florida has averaged nearly 150 animals a year. In 2006, there were 417 manatee deaths in Florida state waters. In 2005, there were 396 manatee deaths (FWCC 2007). These statistics may reflect an increase in population growth, increased mortality or better detection of carcasses. However, the best available sciences indicates that Florida's manatee population is stable or growing in all regions of the state except the Southwest, which may contain more than a third of the statewide population. Red tide continues to threaten manatees on Southwest Florida, with 37-96 deaths annually in four of the past five years. Preliminary findings suggest red tide may have been responsible for the deaths of 61 manatees in 2006.

A large percent of mortality is due to collisions with watercrafts, particularly mortality of calves. The increasing human population growth and visitation in Florida has contributed to a steady increase in the number of watercraft using Florida's waters. In 2001, 943,611 vessels were registered in the State of Florida, a 42% increase since 1993. The Florida Department of Community Affairs estimated that between 300,000 and 400,000 boats registered in other states us Florida waters each year. With the projected increase in Florida's population, coupled with an increase in watercraft usage on Florida's waters, interactions between boats and manatees are expected to significantly increase into the foreseeable future. Another factor in their decline has been the loss of suitable habitat through incompatible coastal, particularly destruction of seagrass beds.

Manatees have few natural predators, and the greatest natural threats are exposure to cold temperatures, hurricanes and poisoning from ref tide (USFWS 2007).

5.7.2 Distribution and Range

During the cooler months between October and April, Florida manatees concentrate in areas of warmer water. Manatees are thermally stressed at water temperatures below 18ºC (64.4ºF), therefore, during winter months, when ambient water temperatures approach 20ºC (68ºF), the manatee population confines itself to the coastal waters of the southern half of peninsular Florida and to springs and warm water industrial outfalls as far north as southeast Georgia. Manatees also winter in the St. Johns River near Blue Spring State Park. Severe cold fronts have been known to kill manatees when the animals did not have access to warm water refuges. During summer months, they may migrate as far north as coastal Virginia on the east coast and the Louisiana coast on the Gulf of Mexico and appear to choose areas based on an adequate food supply, water depth and proximity to freshwater. Annual migratory circuits of some individuals through the intracoastal waterway of the Atlantic Coast are 1,700 km round trips at seasonal travel rates as high as 50km/day.

5.7.3 Habitat

Manatees inhabit both salt and fresh water and can be found in shallow (5ft. to usually <20ft.), slow moving rivers, estuaries, saltwater bays, canals and coastal areas throughout their range. Manatees have been occasionally observed as far as 3.7 miles off the Florida Gulf coast. The West Indian manatee is herbivorous and feeds upon aquatic plants such as hydrilla, eelgrass and water lettuce.

5.7.4 Presence in the Project Area

Since the Florida manatee may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and provided in Attachment G.

The project is not anticipated to affect Florida manatee foraging areas or critical habitat therefore the deployment of artificial reefs within the deployment sites will not likely have an adverse affect on the Florida manatee.

6.0 Status of Not Listed Species and Habitat

6.1 Bottlenose Dolphin

The northern Gulf of Mexico coastal bottlenose dolphin (*Tursiops truncatus*) stock has been defined for management purpose as the bottlenose dolphins occupying the area which extends from approximately 84ºW longitude to the Mississippi River Delta. Coastal waters are defined as those from shore, barrier islands, or presumed bay boundaries to 20 m isobath. As a working hypothesis, it is assumed that dolphins occupying habitats with dissimilar climactic, coastal and oceanographic characteristics might be restricted in their movements between habitats. Bottlenose dolphin abundance for the northern Gulf of Mexico was estimated to be 4,191 dolphins in an assessment preformed in 1993.

The level of direct human caused mortality is unknown. There are a number of difficulties associated with the interpretation of stranding data. Stranding data probably underestimate the extent of fishery related mortality and serious injury because not all of the dolphins which die or are seriously injured wash ashore, nor will all of those that do wash ashore necessarily show signs of entanglement or other fishery interaction.

The status of this stock relative to optimum sustainable population is not known and population trends cannot be determined as a result of insufficient data. This species is not listed as threatened or endangered under the Endangered Species Act, but is protected under the Marine Mammal Protection Act.

Since the Bottlenose dolphin may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals provided in Attachment G.

The project is not anticipated to affect Bottlenose dolphin foraging areas or habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Bottlenose dolphin.

6.2 Alligator Gar

The range of the alligator gar (*Atractosteus spatula*) extends from the Florida Panhandle, through the Gulf Coastal Plain and the Mississippi River Basin extending north to the lower portions of the Ohio and the Missouri River, and ranges southwest through Texas down to Veracruz, Mexico. There is a population in the Mississippi Sound and the brackish waster of the Gulf Coast and Mobile-Tensaw Delta.

The alligator gar is disappearing from many parts of the range and declining population everywhere due to over fishing and the construction of dikes, dams, and other flood control devices, resulting in the loss of key breeding.

The gar inhabits large, slow moving rivers, reservoirs, oxbow lakes, bayous and bays, in fresh and brackish water. The alligator gar is the most tolerant gar species of high salinity and occasionally strays into salt water. Young gars may be seen at the surface in debris such as leaves and twigs. They prefer large rivers that have a large overflow floodplain, but these rivers have all but disappeared in North America sue to the use of dredging, dams, dikes, and levees.

Since the Alligator gar may occur in the project area, the applicant will comply with the "Vessel Strike Avoidance Measures and Injured or Dead Protected Species Reporting" guidance for marine turtles and marine mammals and "Sea Turtle and Smalltooth Sawfish Construction Conditions", provided in Attachment G and H.

The project is not anticipated to affect Alligator gar foraging areas or habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Alligator gar.

7.0 Conclusions

Based on the previously mentioned findings, it has been determined that the proposed project may affect, but is not likely to adversely affect the following species

- Loggerhead sea turtle
- Green sea turtle
- Kemp's ridley sea turtle
- Leatherback sea turtle
- Hawksbill sea turtle
- Gulf sturgeon
- West Indian manatee
- Bottlenose dolphin
- Alligator gar

There is no designated critical habitat for the Florida manatee; therefore there will be no adverse modifications to critical habitat for this species as a result of the proposed action.

The reef site is located within Unit 11 critical habitat area for the Gulf Sturgeon. This assessment contains a discussion of the project relative to the seven elements considered essential for the conservation of the species. The project is not anticipated to affect Gulf sturgeon foraging areas or critical habitat therefore the deployment of artificial reefs within the project area will not likely have an adverse affect on the Gulf sturgeon.

The project is not expected to adversely impact water quality. For a short duration after initial reef deployment there will be some re-suspension of the in-situ sediments, and are expected to settle out naturally. Turbidity reduction devices would not be effective and cannot be utilized under this circumstance.

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Vessel Strike Avoidance Measures and Reporting for Mariners NOAA Fisheries Service, Southeast Region

Background
The National Marine Fisheries Service (NMFS) has determined that collisions with vessels can injure or kill protected species (e.g., endangered and threatened species, and marine mammals). The following standard measures should be implemented to reduce the risk associated with vessel strikes or disturbance of these protected species to discountable levels. NMFS should be contacted to identify any additional conservation and recovery issues of concern, and to assist in the development of measures that may be necessary.

Protected Species Identification Training
Vessel crews should use an Atlantic and Gulf of Mexico reference guide that helps identify protected species that might be encountered in U.S. waters of the Atlantic Ocean, including the Caribbean Sea, and Gulf of Mexico. Additional training should be provided regarding information and resources available regarding federal laws and regulations for protected species, ship strike information, critical habitat, migratory routes and seasonal abundance, and recent sightings of protected species.

Vessel Strike Avoidance
In order to avoid causing injury or death to marine mammals and sea turtles the following measures should be taken when consistent with safe navigation:

1. Vessel operators and crews should maintain a vigilant watch for marine mammals and sea turtles to avoid striking sighted protected species.

2. When whales are sighted, maintain a distance of 100 yards or greater between the whale and the vessel.

3. When sea turtles or small cetaceans are sighted, attempt to maintain a distance of 50 yards or greater between the animal and the vessel whenever possible.

4. When small cetaceans are sighted while a vessel is underway (e.g., bow-riding), attempt to remain parallel to the animal's course. Avoid excessive speed or abrupt changes in direction until the cetacean has left the area.

5. Reduce vessel speed to 10 knots or less when mother/calf pairs, groups, or large assemblages of cetaceans are observed near an underway vessel, when safety permits. A single cetacean at the surface may indicate the presence of submerged animals in the vicinity; therefore, prudent precautionary measures should always be exercised. The vessel should attempt to route around the animals, maintaining a minimum distance of 100 yards whenever possible.

6. Whales may surface in unpredictable locations or approach slowly moving vessels. When an animal is sighted in the vessel's path or in close proximity to a moving vessel and when safety permits, reduce speed and shift the engine to neutral. Do not engage the engines until the animals are clear of the area.

Additional Requirements for the North Atlantic Right Whale

1. If a sighted whale is believed to be a North Atlantic right whale, federal regulation requires a minimum distance of 500 yards be maintained from the animal (50 CFR 224.103 (c)).

2. Vessels entering North Atlantic right whale critical habitat are required to report into the Mandatory Ship Reporting System.

3. Mariners should check with various communication media for general information regarding avoiding ship strikes and specific information regarding North Atlantic right whale sighting locations. These include NOAA weather radio, U.S. Coast Guard NAVTEX broadcasts, and Notices to Mariners. Commercial mariners calling on United States ports should view the most recent version of the NOAA/USCG produced training CD entitled "A Prudent Mariner's Guide to Right Whale Protection" (contact the NMFS Southeast Region, Protected Resources Division for more information regarding the CD).

4. Injured, dead, or entangled right whales should be immediately reported to the U.S. Coast Guard via VHF Channel 16.

Injured or Dead Protected Species Reporting

Vessel crews should report sightings of any injured or dead protected species immediately, regardless of whether the injury or death is caused by your vessel.

Report marine mammals to the Southeast U.S. Stranding Hotline: 877-433-8299
Report sea turtles to the NMFS Southeast Regional Office: 727-824-5312

If the injury or death of a marine mammal was caused by a collision with your vessel, responsible parties should remain available to assist the respective salvage and stranding network as needed. NMFS' Southeast Regional Office should be immediately notified of the strike by email (takereport.nmfsser@noaa.gov) using the attached vessel strike reporting form.

For additional information, please contact the Protected Resources Division at:

NOAA Fisheries Service
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701
Tel: (727) 824-5312
Visit us on the web at http://sero.nmfs.noaa.gov

Print Form | Submit by Email

NOAA Fisheries Service

Southeast Region Ship Strike Report

Reporter Information

Reporting Vessel/Aircraft Name or #

Reporter's Name

Reporter's phone

Date of Report

Strike Vessel Information *(complete all that apply)*

TYPE OF VESSEL: Check all that apply

- ☐ Container
- ☐ Tanker
- ☐ Freight
- ☐ Research
- ☐ Fishing
- ☐ Towing
- ☐ Government
- ☐ Whale watch
- ☐ Ferry
- ☐ Recreational
- ☐ Other

Specify _____

Draft _____ ◯ Feet ◯ Meters

Forward _____

Aft _____

Mean _____

Name of Vessel involved in Strike

Gross Tonnage

Vessel Length ◯ Feet ◯ Meters

Vessel Make

Vessel Model

Propulsion

Engine Make

Distance between shafts

Horsepower

Prop Diameter

Prop Pitch

Observed or Noted Strike Information *(strike was noted visually or impact felt)*

Date of Strike

Time of Strike ◯ Local ◯ GMT

General Location

North Latitude

West Longitude

ENVIRONMENTAL CONDITIONS AT TIME OF STRIKE

Lighting

Weather

Visibility

Distance of Visibility ◯ Kilometers ◯ Miles

Air Temperature ◯ Degrees F ◯ Degrees C

Wind Speed

Direction (degrees)

Current Speed

Direction (degrees)

Water depth

Wave Height ◯ Feet ◯ Meters

Swell Height ◯ Feet ◯ Meters

Water Depth ◯ Feet ◯ Meters

NOAA Fisheries Service

Southeast Region Ship Strike Report - Continued

NAVIGATION INFORMATION AT TIME OF STRIKE

Vessel Activity

Engine RPMs

Engine Speed (Knots)

Vessel Course (Degrees)

Autopilot ON

Autopilot OFF

Total # of watchstanders

on Navigation Bridge

on Observation Bridge

on Bow

Other

INCIDENT INFORMATION

Part of vessel struck by whale

Describe what was seen, felt, heard, etc.

Was avoidance action taken

Describe action taken, or reasons why avoidance not possible

Comments on damage to vessel

NOAA Fisheries Service

Southeast Region Ship Strike Report - Continued

ANIMAL INFORMATION

Time elapsed between sighting and collision

Distance from vessel when first sighted

Animal's orientation to the vessel

Estimated size/species of whale

Other marine mammals present?

Approximate number

Species

What direction was the whale traveling

Briefly describe whale's behavior prior to strike

Briefly describe whale's behavior after collision *(if seen)*

Portion of animal struck

Condition post-strike

Blood seen in water after strike

Description of wounds on animal. Use drawings to mark the location of wound(s). Include estimates of length and depth of wounds.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701

SEA TURTLE AND SMALLTOOTH SAWFISH CONSTRUCTION CONDITIONS

The permittee shall comply with the following protected species construction conditions:

a. The permittee shall instruct all personnel associated with the project of the potential presence of these species and the need to avoid collisions with sea turtles and smalltooth sawfish. All construction personnel are responsible for observing water-related activities for the presence of these species.

b. 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.

c. 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.

d. 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.

e. If a sea 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 sea 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.

f. Any collision with and/or injury to a sea 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.

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

Revised: March 23, 2006
O:\forms\Sea Turtle and Smalltooth Sawfish Construction Conditions.doc