

NRDA Supplemental Application

OAR/St Teresa Reef Enhancement -NRDA Project 2017

Artificial Reef Construction Grant Proposal

(1) MAPS AND DEPLOYMENT PLAN LAYOUTS

See Appendix A -Figure 1 showing: a.) the chart name, chart number, and date of chart; b.) The coastline adjacent to the proposed deployment location;

See Appendix A -Figure 2 showing: c.) The bearing and distance (in nautical miles) from a described navigational marker or distinctive topographical feature (e.g. mouth of inlet) to the proposed deployment location.

Appendix B -Figure 3 presents the requested accurate and legible site-specific map/chart of the proposed deployment.

Appendix B -Figure 4 shows the draft proposed reef layout subject to changes due to the competitive bid process.

(2) ST TERESA ARTIFICIAL REEF SITE

The center of the site is located at 29° 47.100' N and 084° 27.995' W (Degrees and decimal minutes format) or 27.17694° and -84.46658° (Decimal degrees format).

Table 1- St. Teresa Artificial Reef Site Geographic Coordinates

(Degrees and decimal minutes format) WGS 1984. NAD 1983

	Corner	Latitude	Longitude
1	Northwest Corner	29° 47.209' N	84° 28.120' W
2	Northeast Corner	29° 47.209' N	84° 27.871' W
3	Southwest Corner	29° 46.991' N	84° 28.120' W
4	Southeast Corner	29° 46.991' N	84° 27.871' W

Table 2- St. Teresa Artificial Reef Site Geographic Coordinates

(Decimal degrees format) WGS 1984. NAD 1983

	Corner	Latitude	Longitude
1	Northwest Corner	29.786812°	-84.468670°
2	Northeast Corner	29.786812°	-84.464509°
3	Southwest Corner	29.783183°	-84.468670°
4	Southeast Corner	29.783183°	-84.464509

Site Surveys

Three types of reef site surveys have been completed by the Organization for Artificial Reefs (OAR) Research Dive Team (RDT) members for this new reef site. The first two assessments were general area reconnaissance trips performed in the summer of 2014 using local knowledge of the marine environment. OAR members utilized the recreational vessel "OAR Boat 2", a 26.5 feet long twin hulled World Cat, with a Garmin GPS Map 540 unit and Furuno FCV 585 Bottom Sonar unit. Initial investigations included an area of sand bottom roughly 2 miles SW of the "Green Can" navigational aid, and due south of St Teresa Beach. This is about 1.5 to 2 n. miles south of Dog Island Reef- and was 6.5 n. miles from the nearest shore to the north. From a known hard bottom area to the north, the OAR team searched areas to the Southwest and found a large area with no "green or red marks" indicating "hard bottom" on the color Furuno bottom machine, and recorded coordinates for further investigation.

Initial Dive Survey

Based on these first vessel surveys, on August 23, 2014, divers conducted bounce dives and short sweeps of two bottom areas of interest that showed no hardbottom features. The first area assessed was located at 29° 48.017' N and 84° 27.972' W. The divers dove on this set of coordinates and decided to do additional investigation to the west after finding a very small patch of live bottom about 200 feet east of the mark. This site was eight-tenths (8/10) nautical mile to the north of the border of the proposed site.

The second area investigated was a 29° 47.985'N and 84° 28.000'W. The divers swam around this point in several directions, and ended up another 200 feet to the west without encountering any sponges, coral, or even "hard pan" bottom. The sand in this area was hard packed, level, and divers observed some shells and a few whelks. The site was 33 feet deep as measured by scuba depth gauge. Based on these assessments, the proposed site was moved about three-quarter (¾) of an n. mile to the south for additional dive assessments.

Detailed Bottom Survey

Methodology

On August 30, 2014, the OAR-RDT divers performed a detailed bottom survey of the area surrounding the center coordinates of the reef site. This benthic survey is attached as Appendix C. The objective of this survey was to select a site near St. Teresa, FL south of Dog Island Reef that can be accessed from Carrabelle, Lanark Village, Dog Island, St Teresa, Alligator Point and Ocklocknee Bay. Site selection is based on locating a preferred sandy substrate which is devoid of live or hard bottom features such as rock outcroppings, natural ledges, or coral/sponge habitat.

Bottom surveys were accomplished by trained OAR-RDT divers using adopted protocols and methods found in OAR's Scientific Dive Standards (OAR, 2004) and methodologies that have been used successfully for many artificial reef projects in the area.

Project requirements called for a team of two RDT personnel to conduct a visual and sediment depth assessment following a radial pattern emanating from differential Global Position Satellite (DGPS unit: Furuno GP-35 with differential beacon) coordinates 29 47.085 N, 84 28.000 W. Radii were on a sixty-degree, extending fifty (50 m) meters per radial. Divers were tasked with performing one substrate fathom at least every ten meters for a minimum total of at least thirty (30) probes. Additionally, divers were to

note the species and abundance of any benthic vertebrates and/or invertebrates. Observations were to be recorded manually on an underwater ledger for interpolation and transposition into RDT archives later.

The preferred location is one which has a relatively thin veneer of sand 4 to 16 in. (10 – 40 cm) covering an underlying layer of rock (hardpan).

The first dives conducted were diver surveys to get general diver observations of substrate and bathymetry. Conditions were rough on the day of the survey with choppy, 2 to 4 ft. seas. Underwater visibility was very good on the bottom with approximately 30 feet (9.1 m) of horizontal visibility. The maximum depth during the dive was 34 feet (10.4 m). The dive team could complete four, 164 ft. (50 meter) radials before the dive event was halted due to safety concerns and a decision was made to head back to shore due to sea conditions. The survey collected 20 data points along the 4 radials (Appendix A).

The average depth of sediment was 11.7 in (29.7 cm) within 164 ft., (50 m) of the center at GPS coordinates 29 47.085 N, 84 28.000 W. with a sandy substrate recorded on each radial. The dive team did not observe any hard bottom, coral, sponge or ledge habitats. There were no benthic fish associated with hard bottom substrate observed on these dives. The dive team did observe several (7 – 10) remoras that accompanied the dive team during the entire dive. Benthic invertebrates included sea stars, sand dollars and a couple dozen mollusks.

The OAR divers' documented a depth at the center of the site as -34 feet of water based on SCUBA diver computers, however it was an incoming tide based on the nearest tide station at FSU Marine Lab at Turkey Point (St. James Island). Maximum height tide recorded for the tide station was +3.6 feet with a low tide minimum of -1.3 feet.

The data shows that the area of interest is a suitable location for the siting of an artificial reef. The RDT dive team did not find hard bottom, coral, sponge or ledge habitat during any of the surveys. The fish observed during the dives were not species associated with hard bottom reefs. The site should prove ideal for the location of a new artificial reef. Depth probes suggest a high degree of confidence for the stable foundation with an acceptable amount of settling due to scouring of wave action. Previous dives had indicated good visibility throughout the surrounding waters. Conditions on site were deemed acceptable for data gathering. There was no notable protrusion of any sea grass or encrusted limestone formations.

(3) ENVIRONMENTAL ASSESSMENT

The objectives of this project is new artificial reef development for the purpose of providing hardbottom habitat enhancement for reef community fish and providing additional recreational fishing and diving opportunities. The project would not result in an adverse modification of any designated critical habitat, and the project is not likely to adversely affect any listed species.

Description of Potential On-site Impacts

The potential on-site impacts are positive providing an opportunity for an increase in marine habitat for fish, invertebrates, and plant life. Fishermen and divers continue to request further development of more artificial reefs to reduce competition for use. Another good observation, we have not detected any evidence of sea turtle entrapment in prefabricated reef modules. In fact, habitat creation for turtles is

also created in that a wide variety of turtles are often observed over and among the reef systems. In fact some reef systems can be found/identified by observing the presence of turtle species which often are in the areas of these reefs. Reef durability after hurricanes has been observed as excellent.

Description of Potential Off-site Impacts

Artificial reefs in the local area produce large amounts of bait fishes and also afford structure for orientation for migratory fish transiting through the areas. Off-site impacts can also include economic impacts.

Analysis of Potential Cumulative Impacts

It is anticipated that the potential cumulative impacts are all positive. The overall predicted environmental effects of the St Teresa patch reef enhancement project are predicted to be extremely positive; both from an environmental and an economical perspective. New reefs structure in this area will increased habitat for marine life, thereby increasing biomass in the immediate area of the reef. Additionally, there will be increased recreational opportunities for fishing and diving, which will lead to increased tourism for the economy for Franklin County and the City of Carrabelle.

Description of Offsite Economic Impacts

The economic impacts of new artificial reef development to Franklin and the surrounding counties will all be positive. Marine recreation in Franklin County is very important segment of the coastal region's economy. Near shore natural and artificial reefs are a vital resource for the area's marine recreational use, often favorite destinations for local saltwater anglers and scuba divers. Franklin County and the small coastal town of the City of Carrabelle have long recognized this with their historical development of artificial reefs and in their continued commitment to promoting artificial reef development in the future. Fisheries conservation in the Big Bend region of the Florida's Gulf coast is consistent with the business community's marketing initiative for this region, with federal fisheries management objectives for reef fishes, and with both State (FWC, 2003) and Federal artificial reef plans (NOAA, 2007).

Goal A of the FWC Strategic Plan is to "assure that long term social, economic, and quality of life values of artificial reefs benefit the local and regional economies of Florida," (FWC, 2003). Since the 1960's artificial reefs have long been an integral part of the region's marine ecosystems. The new St. Teresa Artificial Reef Site will be an important component of the region's marine environment. These reefs are a part of a reef system near Carrabelle and Dog Island, making them easily accessible to a wide variety of users. They are near boat ramps in Carrabelle and Lanark Village that are consistently used by many anglers and divers that frequent the sites.

One of the main goals of future artificial reef development within this area is to provide new boating and fishing destinations for the residents and visitors of coastal Franklin County. Alternatively, new reefs sites may reduce fishing pressure at the existing natural and artificial reef sites of the area and create new additional reef fish habitat.

Economic benefits of artificial reefs include items such as boat sales, fuel sales, marine electronic sales, boat repairs, bait and tackle sales, food, drinks, ice, fishing and diving charters, and recreational and commercial seafood harvesting. Per data produced by the NOAA Coastal Service Center, (NOAA-CSC, 2013), Franklin County's ocean related businesses for 2010 provided 631 employees, 19 million in wages

and 22 million in goods and services accounting for 19.7% of total jobs in the county, much higher than surrounding counties. A recent socio-economic study by Dr. Bill Huth, with the University of West Florida estimated the total fishing and diving economic impact for Franklin County was 393 jobs, 23.34 million and 8.23 million dollars in income to the county in 2005. (Huth, 2015)

Recreational scuba and skin diving activity may also stimulate sales of diving-related equipment and can have an important economic impact on the local community. Per data provided by the Department of Motor Vehicles, the three nearby counties that primarily utilize the Franklin County artificial reefs, there were 22,310 registered boats (OAR, 2011). It is apparent from these numbers that marine recreation is a very important component of the local economies of the area. All the above and more have a direct or indirect impact on the economy of Franklin County. The deployment of this new reef should positively impact the local economy. The economic impacts to the surrounding counties should all be positive.

Cultural Resources or Archaeological Features

Staff from the Florida Department of State's Compliance and Review Section within the Division of Historical Resources, performed a records search to identify any cultural resources recorded at the Florida Master Site File on January 28, 2015. This search found no lists of previously recorded cultural resources within a one-mile radius of the center of proposed St. Teresa Artificial Reef Site.

Dive surveys have not uncovered any archaeological resources in the area of the new St Teresa Artificial Reef site. The OAR-RDT bottom surveys did not document any archaeological resources in the proposed permitted area. If any historical cultural resources are discovered, the FDOS Division of Historical Resources will be notified.

(4) DESCRIPTION OF THE REEF LOCAL ENVIRONMENT

OAR dive surveys in the area at the proposed reef location show no significant benthic resources or natural reef structures. There will be no conceivable negative impacts associated with the placement of the proposed artificial reef. There will be significant positive environmental impacts as the artificial reef will provide habitat for numerous marine species and significantly expand the available habitat. There is no known negative impact to any threatened or endangered species nor to water quality. This project will provide a positive economic impact by increasing recreational opportunities for activities such as fishing and scuba diving, which provide economic benefits to the Franklin County (and adjoining Wakulla County) local economy.

A recent and narrowly focused summary of existing hardbottom resources in the immediate area is found in Kelly Kingon's PHD thesis paper entitled "Mapping, classification and spatial variation of hard bottom habitats in the Northeastern Gulf of Mexico" (Kington, 2013). This very detailed study focused attention in an area of the Gulf bottom between longitudes 84.75° W to the west and 84.00° to the east and out to 65 feet in depth. The proposed reef site is located near the center of this study area. Thirty-three (33) sites with hardbottom were studied in detail with side scan sonar equipment and scientific divers. Approximately 400 x 400 m areas were mapped around each of the 33 sites using sides can system covering a total of 5.84 km².

Three of the hardbottom area were within 6 nautical miles of the St. Teresa reef site. The nearest natural reef site is 1.11 nautical miles one a bearing of 286° from the center of the permitted reef site.

Geomorphology was considered highly variable across sites, with average rock heights which ranged from 0 to 53.5 cm with an average of 10.75 cm and average sand depth varied from 1 to 10.6 cm and averaged 4.81 cm. The percent cover of rock varied by site from only 5% to over 75% at the selected reef sites, with sand ranging from 95% to 25%, depending on the location. Of the total Gulf bottom area mapped during this project, 1.47 km² was determined to be hardbottom habitat, equating to 25.2% hardbottom and with the remaining 74.8% of the area studied documented as sand habitat. This estimate of sand habitat within the study area was considered a low estimate since all sites were chosen because of known hard bottom habitats.

It is clear that in the area of the proposed reef site, the majority of Gulf bottom is sand bottom habitat which is relatively unproductive in relation to the long-term fisheries resources of the area.

Geological Features

Dr. Kingon (Kingon, 2013), describes the seafloor in this region as primarily drowned karst with sand, limestone, and detrital sediments. The continental shelf is wide (up to 188 km) and gently sloped. Nearshore benthic habitats generally consist of sand and hardbottom. Hardbottom refers to rocky substrate or consolidated sediments which are typically exposed but can be covered with a thin veneer of sand (< 5 cm) and still function as hardbottom habitat rather than sand habitat. Hardbottom structures were formed when sea level as much lower by prehistoric reefs composed of organisms with calcium carbonate shells and skeletons.

habitats is natural limestone rock. Within the areas waters, a subsurface layer of limestone bedrock exists just below the layer of sediment and provides an essential source of stabilization for the benthic environment. Sediment depth probes have been obtained at the exact site and are listed in the bottom surveys from the OAR dive team (OAR, 2013).

Because the seafloor depth is greater than 30 feet, under normal seasonal weather conditions, little sand transport is expected to occur at the proposed artificial reef site. Major hurricane events have been documented to transport sand that has resulted in piling up against some reef materials to a depth of 2-3 feet. We also expect the reefs materials to settle slightly over the years into the seafloor. However, since some scouring activity may also occur, the loss of more than about three feet of vertical relief due to major storm and settling processes is not anticipated. Other large artificial reef structures in the area have not been negatively impacted by subsidence. The maximum tidal range at the proposed site is less than two feet. Bottom surveys were accomplished by trained OAR–RDT divers using adopted protocols found in OAR’s Scientific Dive Standards (OAR, 2004) and methodologies that have been used successfully for many artificial reef projects in the area.

Local Existing Biological Resources

Inshore of the proposed reefs location is extensive sea grass habitat identified as important nursery habitat for Gag, *Mycteroperca microlepis*, (Koenig and Coleman 1998). It is probable that near-shore artificial reefs, such as those proposed in this permit, are of high importance to the survival of juvenile Gag. This species spends the first few months of benthic life in northern Gulf’s sea grass beds (Koenig and Coleman 1998), then migrates to offshore reefs in the fall, however does not mature until at least 3 years of age, making them particularly vulnerable to predation. So, natural and artificial reefs offshore of the existing sea grass habitat appear to be a very important habitat for this very important reef fish.

In a recent two-year study of the area's natural and artificial reef, many fish species important to recreational anglers were documented on the local reefs including gag, black sea bass, gray triggerfish and gray snapper (Koenig et. al, 2015). In this study, from 2012 to 2014 the FSU marine lab conducted a study comparing fish and invertebrate populations of selected artificial reefs in the area and with a subset of small natural reefs identified by Dr. Kingon nearby the artificial reefs. They determined that the reefs studies were dynamic in the sense that they are used by a variety of species for a variety of purposes. Marine species included: Gag, Black Sea Bass, Gray Snapper, Hogfish, Gray Triggerfish, White Grunt, Atlantic Spadefish, Tomtate, Greater Amberjack, Goliath Grouper, Red Snapper, porgies and various other small species such as damselfish, filefish, batfish, Slippery Dicks, toadfish etc. and schooling species such as Scad, herring and sardines

Further, an interim report entitled "A Preliminary Report on Artificial and Natural Reef Communities in the NE Gulf of Mexico, Similar or Not?" (Kingon, et. al, 2014) was reviewed. The overall objective of this study was to determine seasonal fish and macro-invertebrate assemblage differences between shallow (6-12 m deep), near-shore natural and artificial reefs to gain insight into how the functions of these reef types differ. This report describes preliminary data on the seasonal distribution and abundance of fishes among 3 reef types; high-relief natural (>0.5 m), low-relief natural (<0.5 m), and artificial reefs in 4 zones, in addition to the living and structural habitat characteristics of those sites. Fish species richness, varied among sites from a low of 2 species to a high of 23 species on artificial reefs. Fish species richness on natural reefs ranged from 9 to 18 species. Abundances for most fish species appeared to be higher on artificial reefs than on natural reefs during the summer of 2012, especially for pelagic species.

Two economically important fishery species in this region are Gag, *Mycteroperca microlepis*, and Black Sea Bass, *Centropristis striata*. By the summer of 2013, Gag were more abundant at some artificial reef sites. Once established on shallow reefs offshore of their sea grass nursery habitat, late juvenile Gag appear to have seasonal reef habitat preferences, although differential mortality on reef sites cannot be ruled out. However, egressing juvenile Gag appear to accumulate on reefs closer to the sea grass habitat in the fall, showing relatively high abundances on both the artificial and natural reef sites in those areas. Black Sea Bass show distinctly different behavior because they were never seen on artificial reefs during these surveys, but were abundant on natural reefs in fall 2012 and spring 2013.

Five natural reef areas in the area were studied with the nearest natural reef about nine-tenths (0.96) n miles to the west of the closest border of the proposed site. (Appendix B-Figure 5)

In addition, Dr. Koenig also speculated that many species may use nearshore artificial reefs for spawning. These species may include estuarine species found on the shallow reefs like: Sheepshead, Gulf Flounder, Red Drum, and Black Drum—some of these species move offshore and spawn on the shallow reefs. Some marine species that may spawn on the shallow reefs include Hogfish, Gray Triggerfish, Atlantic Spadefish. Several smaller reef dependent species, like damselfish and Belted Sandfish, almost certainly spawn on the reefs.

In 2001, as part of an FWC monitoring grant project, the OAR research dive conducted 6 total count fish census event on the two nearest artificial reefs of the area (OAR, 2001). Since these reefs are in similar depths and similar materials (Figure-3), the new proposed reef materials should hold similar fish assemblages.

The Two Dogs Culvert Reef consists of 130 concrete culverts in 25 patch reefs separated by at least 25 feet. It was deployed on June 24, 1999. Based on recent FWC dives, this reef is still functioning well in 37 feet of water and located 3.46 nautical miles at a bearing of 250 °degrees from the new proposed

reef site (Appendix B -Figure-3). Table 1 below is a summary of the fish species observed on this reef. A total of twenty (20) species were observed with 4 of the 5 most common species seen considered recreationally important species.

Table 1 –Fish Census on Two Dogs Culverts Reef

From 2001 (6 fish census events)

SPECIES	# of Sightings	% Sightings	# of fish observed	Average size (inches)
Gag Grouper	6	100.0%	365	14.8
Sheepshead	6	100.0%	84	11.2
Black Seabass	5	83.3%	56	9.2
Gray Triggerfish	5	83.3%	23	8.8
Belted Sandfish	4	66.7%	109	3.0
Slippery Dick	4	66.7%	218	3.0
White Grunt	4	66.7%	42	10.8
Cocoa Damsel	3	50.0%	34	2.7
Cubbyu	3	50.0%	11	4.0
High Hat	3	50.0%	23	2.7
Red Grouper	3	50.0%	7	14.0
Seaweed Blenny	3	50.0%	26	2.7
Tomtate Grunt	3	50.0%	4300	2.7
Banks Seabass	2	33.3%	4	2.0
Flounder	2	33.3%	4	13.0
Lane Snapper	1	16.7%	8	6.0
Lizard Fish	1	16.7%	1	6.0
Sand Perch	1	16.7%	22	5.0
White Spotted Soapfish	1	16.7%	1	6.0
Spanish Mackerel	1	16.7%	8	15.0

The Two Dogs Reefball Reef consists of 130 Reefballs in 25 patch reefs deployed on June 14, 1999. Based on recent FWC dives, this reef is still functioning well in 37 feet of water and located 3.13 nautical miles at a bearing of 253° degrees from the new proposed reef site (Figure-3). Table 2 below is a summary of the fish species observed on this reef. Twenty-two species were observed in total with gag and sheepshead being observed most often.

Table 2 –Fish Census on Two Dogs Reefball Reef Culverts

From 2001 (6 fish census events)

SPECIES	# of Sightings	% Sightings	# of fish observed	Average size (inches)
Gag Grouper	6	100%	230	12.7
Sheepshead	5	83%	88	11.0

White Grunt	5	83%	23	9.4
Belted Sandfish	4	67%	213	2.0
Black Seabass	4	67%	82	8.5
Slippery Dick wrasse	4	67%	302	2.8
Gray Triggerfish	4	67%	58	10.5
Cocoa Damselfish	3	50%	19	2.0
Highhat	3	50%	32	2.0
Sand Perch	3	50%	21	4.0
Seaweed Blenny	3	50%	21	2.7
Soapfish	3	50%	5	5.0
Tomtate Grunt	3	50%	1090	2.3
Banks Seabass	2	33%	6	2.0
Cubbyu	2	33%	4	4.0
Flounder	2	33%	7	16.0
Lane Snapper	2	33%	2	9.5
Red Grouper	2	33%	2	15.5
Batfish	1	17%	1	5.0
Hogfish	1	17%	1	10.0
Spanish Mackerel	1	17%	9	14.5
Spottail Pinfish	1	17%	1	3.0

(5) MARINE ENVIRONMENT

Average monthly and annual wind speed, wave height, and other meteorological and oceanographic data near the proposed artificial reef site are measured by permanently moored buoys (NOAA NBDC). These data in combination with historical oceanographic conditions documented by the OAR-RDT divers over the years is summarized below.

Wind and waves

At buoy #42036 (about 80 n. mi south of Carrabelle, FL), average wind speed is about 10 knots since 1994 from NOAA buoy data (NOAA, 2003). Wave data from the same indicate that wave heights average a little over 4 feet during the same period.

Currents

Water currents at the proposed site range from mild to moderate, mainly dependent on tide stage. Fringes and eddies of the Loop Current (easterly in summer, westerly in winter), wind and tidal action are the predominant sources of horizontal water movement in the northern Gulf of Mexico. Wind driven currents at the site are usually slight (<1/2 knot) and dissipate with depth. Tidal currents can be moderate in the area due to the water depth and proximity to major passes to Apalachicola Bay.

Tides

The nearest tide station to the proposed site is the FSU Marine Laboratory in Turkey Point (St James Island). On the day of the bottom survey, August 30, 2014 the station reported a maximum high tide of

3.0 feet and a maximum low tide of 0.7 feet for a range for the day of 2.3 feet and the tidal coefficient was 70 for the day which is considered high. The maximum tide ever recorded at this station was 3.6 feet and the maximum low tide was -1.3 feet.

Water temperature

Per the OAR-RDT dives logs taken from the 79 fish census surveys since 1992, temperature on the bottom have ranged from a high of 87° F (August-1997) to a low of 57° F (January –1995).

Visibility

Underwater visibility on the local reefs as estimated horizontally on the bottom by the OAR-RDT has ranged from 40 feet (September –1997) to a low of 5 feet (March-2002). The bottom survey conducted on August 30, 2014 at the proposed reef site measured horizontal visibility at 30 feet (OAR, 2014). Visibility is effected greatly by tides in the area, with better visibility being observed at high slack tides and lower visibility at low tide stages. Heavy rainfall in the area and upstream area also can negatively affects the visibility.

Substrate stability

Because the seafloor depth is greater than 30 feet, under normal seasonal weather conditions, little sand transport is expected to occur at the proposed artificial reef site. Major hurricane events have been documented to transport sand that has resulted in piling up against some reef materials to a depth of 2-3 feet. We also expect the reefs materials to settle slightly over the years into the seafloor. However, since some scouring activity may also occur, the loss of more than about three feet of vertical relief due to major storm and settling processes is not anticipated. Other large artificial reef structures in the area have not been negatively impacted by subsidence.

(6) REEF OBJECTIVES

There are two main types of objectives for this new reef, biological and socio-economic. In 2003 the Florida Fish and Wildlife Conservation Commission, Division of Marine Fisheries, Artificial Reefs Program developed an Artificial Reef Strategic Plan (FWC, 2003). The objectives for the placement of this new reef material are planned to meet Goals A (Socio-economic) and C (Biological).

Socio-economic objectives

Marine recreation in Franklin County is very important segment of the coastal region's economy. Near shore natural and artificial reefs are a vital resource for the area's marine recreational use, often favorite destinations for local saltwater anglers and scuba divers. Franklin County and the small coastal town of the City of Carrabelle have long recognized this with their historical development of artificial reefs and in their continued commitment to promoting artificial reef development in the future. Fisheries conservation in the Big Bend region of the Florida's Gulf coast is consistent with the business community's marketing initiative for this region, with federal fisheries management objectives for reef fishes, and with both State (FWC, 2003) and Federal artificial reef plans (NOAA, 2007).

Goal A of the FWC Strategic Plan is to "assure that long term social, economic, and quality of life values of artificial reefs benefit the local and regional economies of Florida," (FWC, 2003). Since the 1960's artificial reefs have long been an integral part of the region's marine ecosystems. The new St. Teresa Artificial Reef Site will be an important component of the region's marine environment. These reefs are

a part of a reef system near Carrabelle and Dog Island, making them easily accessible to a wide variety of users. They are in close proximity to boat ramps in Carrabelle and Lanark Village that are consistently used by many anglers and divers that frequent the sites.

One of the main goals of future artificial reef development within this area is to provide new boating and fishing destinations for the residents and visitors of coastal Franklin County. Alternatively, new reefs sites may reduce fishing pressure at the existing natural and artificial reef sites of the area and create new additional reef fish habitat.

Economic benefits of artificial reefs include items such as boat sales, fuel sales, marine electronic sales, boat repairs, bait and tackle sales, food, drinks, ice, fishing and diving charters, and recreational and commercial seafood harvesting. According to data produced by the NOAA Coastal Service Center, (NOAA-CSC, 2013), Franklin County's ocean related businesses for 2010 provided 631 employees, 19 million in wages and 22 million in goods and services accounting for 19.7% of total jobs in the county, much higher than surrounding counties. A recent socio-economic study by Dr. Bill Huth, with the University of West Florida estimated the total fishing and diving economic impact for Franklin County was 393 jobs, 23.34 million and 8.23 million dollars in income to the county in 2005. (Huth, 2015)

Recreational scuba and skin diving activity may also stimulate sales of diving-related equipment and can have an important economic impact on the local community. According to data provided by the Department of Motor Vehicles, the three nearby counties that primarily utilize the Franklin County artificial reefs, there were 22,310 registered boats (OAR, 2011). It is apparent from these numbers that marine recreation is a very important component of the local economies of the area. All of the above and more have a direct or indirect impact on the economy of Franklin County. The deployment of this new reef should positively impact the local economy.

Biological Objectives

The first and primary objective is providing bottom structure fish habitat for a variety of marine fish and invertebrates. This new long term, stable marine habitat will be in an area of Gulf of Mexico where the existing bottom condition are relatively unproductive for marine fisheries. The addition of a new reef area would be beneficial to the near shore environment, enhancing an area that has not experienced any reef deployments over the years.

Goal C, of the FWC Strategic Plan states that permit holders should "use artificial reefs as a component of fisheries and ecosystem management." In the waters off Franklin County, gag grouper is one of the most highly targeted fish by anglers for its large size, good eating and historically, relatively high abundance. The inshore waters of Franklin County are home to extensive sea grass beds that function as nursery grounds for gag (Koenig, 1998). Dr. Chris Koenig and others researchers from the FSU Coastal and Marine Laboratory near Turkey Point have documented large densities of small juvenile gag in these sea grass beds. Dr. Bill Lindberg (University of Florida) and others believe that near shore (~40 feet deep) artificial reefs may provide needed habitat for the young gag transitioning out of the sea grass beds to deeper reefs offshore (Lindberg, 2006). It is speculated that any additional habitat in between these reef habitats may provide increased survival rates and would be good for this very economically important species.

Adding new material to the St. Teresa Artificial Reef Site would provide additional habitat for juvenile gag and other species to better survive and grow to adult sizes

The St. Teresa Artificial Reef Site would be the closest artificial reef to several ports, making it easily accessible to a wide variety of users. Due to the proximity to shore, this small reef will receive additional fishing pressure from existing recreational anglers in the area. Adding new artificial reefs to the area would help to relieve stress off the existing natural and artificial reefs, spreading fishing pressures over a larger area while allowing for the establishment of new fish assemblages in a relatively unproductive bottom area.

In addition, many more popular recreational targeted fish species have been documented to inhabit area artificial reefs and will utilize any new structure for habitat (OAR, 2001). This should provide increased survival and longevity for many reef dwelling species of fish and hopefully increase the fisheries productivity of the area.

Dr. Koenig documented a strong preference of juvenile gag for artificial habitat in late summer during their egress from seagrass habitat, and then abundance declines throughout the remaining part of the year, suggesting a dispersal of juveniles to other habitats.

To enhance local fisheries habitat, we propose to deploy only reef materials that have proved to be structurally stable and provide complex interstitial habitat. In this grant, approximately 96 pre-fabricated concrete structures will be placed to provide structurally complex interstitial juvenile fish habitat in several patches in the permitted area. The new reef addition will be created on otherwise barren sandy bottom. The proposed artificial reef will be deployed in a depth of ~33 (MLLW) feet around the perimeter of the reef site and subsidence of the reef system is anticipated to be minimal based on the previous materials deployed and the bottom survey conducted.

(7) MONITORING PLAN

Socio-economic:

OAR and the City of Carrabelle will continue to monitor recreational marine economic indicators such as number of saltwater fishing in license in the county. An increase of license would indicate increased recreation opportunities. Similarly, the number of recreational vessels is also an indicator of increase economic activity. Carrabelle will continue to monitor it economic activity through tracking any new marine related businesses that may set up in Carrabelle in the near future.

OAR will continue to perform fisherman surveys associated with OAR members. These surveys can assist with the evaluation of fish populations and the effectiveness of the deployed reefs in promoting tourism.

Biological

The success criteria for this project will be based on annual monitoring of the physical and biological components of the reef materials for two years. The protocol for monitoring stability and structural integrity will include recording measurements and observations regarding the configuration and structural condition of the artificial reef. Measurements will include maximum relief, spatial expanse and position of the reef modules. Year by year measurements will help document settling of individual reef members or reef subsidence over time. Biological data collection will include fish and invertebrate surveys to help describe colonization patterns and diversity. Epibenthic community characterization will include qualitative video documentation of species composition and presence/absence of commercially important fish and benthic species such as grouper and crabs. These surveys will be conducted annually for a period of not less than two years.

The methods to be used to evaluate the effectiveness of our reef program include the following: The OAR RDT will perform fish counts and marine organism surveys utilizing SCUBA divers and underwater imaging equipment (video and/or camera as appropriate). These activities provide high quality, objective, and verifiable data collections which are easily interpreted. Tethered video equipment deployed from the boat may also be used. These observations will also be used to verify the stability of the deployed reef materials. This information can be used in the choice of materials to be used in future artificial reefs. Oceanographic observations, such as temperature and visibility will also be taken to correlate fish populations with changing water conditions and possibly to detect environmental events.

OAR divers will maintain accurate logs of deployed reefs in order to track the growth of marine habitat on the structures. OAR RDT dive projects are designed to demonstrate that the efforts are successful and effective.

OAR will ensure that all parties associated with the construction of the St. Teresa reef are aware of the importance and priorities set forth in this grand proposal. Strong team efforts by the dedicated volunteers of OAR have set realistic attainable goals for the deployment of this project and will ensure its success.

Measurable: The project's progress will be evaluated monthly to measure the success of the individual tasks outlined in the timeline for the proposed St. Teresa reef. OAR's board of directors meets monthly and will monitor the progress of the project until completion.

OAR and the City of Carrabelle have developed a design for the St. Teresa reef that utilizes prefabricated reef materials that are available from suppliers throughout the region. The complexity of the proposed reef will maximize and provide adequate habitat for marine species.

The creation of the St. Teresa will create much-needed marine habitat that will provide shelter for many marine species. The reef will also create a link with nearshore grass beds. The reef will be built exclusively from prefabricated modules that are both functional in form and material. The modules are designed to be very stable in the marine environment and are composed of concrete providing a good substrate for marine invertebrate and algae growth.

For example, Koenig showed that low-relief artificial reefs provide initial, and presumably important, refuge for Gag soon after their egress from seagrass. However, their density declines in the fall and winter—this pattern suggests that they disperse to other reef habitats during that time. They may remain in the same shallow reef area, but expand to nearby natural habitats thereby decreasing their population density on artificial reefs. They also observed a significantly higher association of juvenile Gag with artificial reefs in the eastern side of the study area such as the 'Gas Transmission reef', 'Two Dog Culverts', and 'Two Dog Reefballs'. These are the nearest artificial reefs to the new reef. They also observed significantly fewer gag on natural reefs or on artificial reefs further to the west (such as 'Carrabelle Three Mile' and 'One More Time' wreck), suggesting that juvenile gag egress out of St George Sound off the eastern end of Dog Island. OAR -RDT diver observations of young gag on this new reef will document this behavior.

In-water monitoring

The OAR RDT shall perform three (3) monitoring dives following the deployment of reef materials.

The initial dive will be for inspecting the orientation of reef materials on the sea floor. Any large discrepancies or deviations from the Deployment Procedures will be noted now.

The following two (2) dives will be conducted annually following deployment to record data on reef maturity as reflected in species observed. The following data will be collected on all marine vertebrates observed:

- 1) Identification of species present
- 2) Number of individuals within a species present
- 3) Minimum size observed of each species
- 4) Maximum size observed of each species
- 5) Average (mode) size of each species observed
- 6) Atmospheric conditions observed including:
 - a) Wave height (amplitude)
 - b) Current (strong-moderate-weak)
 - c) Underwater visibility
 - d) Temperature (surface & underwater)
 - e) Surface weather (e.g. cloudy, sunny etc.)

All data will be delivered to FWC within one month of collection in video, underwater photographs, computer data files and written formats whose exact nature will be coordinated with FWC.

(8) PROJECT DESIGN

Drawing of Permitted Site for Details & Explanation: are presented in Appendix B-Figures 3 and 4.

The new reef area is currently devoid of any exposed hard bottom and offers a large area of opportunity for fisheries enhancement. While the site may be expanded in future projects, the current goal is to use the permitted reef area for a carefully planned and executed reef that balances the needs of a variety of marine species' habitat with access to adequate foraging.

Reef Design and Configuration:

This grant reef project will be competitively bid as a "ready-to-proceed" project. This will ensure that all reef materials will be construction and deployed by the contractor winning the bid. The reef units will be constructed at a staging area provided by the contractor and deployed on a vessel also provided by the contractor. It is impossible to determine the exact dimensions and types of reef units to be deployed until after the bid is awarded. However, all reef units must be long term, stable, no more than 12 feet tall and have high habitat complexity.

It is proposed, based on initial cost estimates, that the 2016 St Teresa grant reef shall include approximately ninety-six (96) reef units total. These will be distributed equally among eight (8) separate and distinct patch reefs of about 12 units each (Appendix B-Figure 4). There are existing reef materials on Patch Reef #5, the Price's Point Reef deployed in 2016.

The center of each patch reef should be about 300 feet from its nearest patch reef neighbor. To allow for adequate forage are between patch reefs. Table 3 below shows the center coordinate of each of the eight (8) patch reefs.

To allow the patch reefs to provide a safe shelter for as many marine species as possible, each reef unit will be spaced about twenty (20 ft) feet apart from it nearest neighbor to provide safe transit from one reef unit to another during foraging and feeding.

Table 3- Patch Reef Center Coordinates

PATCH REEF #	LAT_DM	LON_DM	LAT_DD	LON_DD
Center-Patch Reef #1	29°47.1556' N	84°28.0596' W	29.78593	-84.46766
Center-Patch Reef #2	29°47.1556' N	84°27.9954' W	29.78593	-84.46659
Center-Patch Reef #3	29°47.1556' N	84°27.9311' W	29.78593	-84.46552
Center-Patch Reef #4	29°47.0996' N	84°28.0596' W	29.78499	-84.46766
Center-Patch Reef #6	29°47.0996' N	84°27.9311' W	29.78499	-84.46552
Center-Patch Reef #7	29°47.0436' N	84°28.0596' W	29.78406	-84.46766
Center-Patch Reef #8	29°47.0436' N	84°27.9954' W	29.78406	-84.46659
Center-Patch Reef #9	29°47.0436' N	84°27.9311' W	29.78406	-84.46552

Habitat Complexity

Based on discussions with various experts, experience and careful review of design parameters for artificial reefs by Dr. W. Lindberg and others, OAR decided to create a reef that is complex in both unit structure and deployment pattern. Prospective materials are to be solicited and selected based on an effort to create a truly balanced reef that provides a complex habitat providing shelter for a wide range of marine fishes and invertebrates. Additionally, good habitat provides adequate foraging for the resident fauna in the form of open sand for smaller fishes and invertebrates which in turn supports predation by larger species. The reef spacing and distribution have been designed to maximize this potential. This reef will provide a complex habitat with adequate buffering space between significant reef patches.

Interstitial Spaces

It is important for the reef unit to have a large variety of interstitial spaces of different sizes and complexities. It is anticipated that a variety of fish species will utilize this new reef habitat and each species has different requirements for optimal habitat needs for survival and health. Many types of reef units will be evaluated in the bid process to ensure a variety of interstitial spaces are included in the reef units and patch reefs.

Surface Area

Invertebrate cover is also an important parameter for the health and productivity of an artificial reef. Some species feed directly on the invertebrate cover and other feed indirectly on these fish species in turn. It is important for the reef units to contain sufficient surface ear to encourage invertebrate growth. Many types of reef units will be evaluated in the bid process to ensure the reef units and patch reefs have sufficient surface area.

Material placement and positioning

The deployment zone will be clearly marked by OAR/RDT personnel prior to arrival of the deploying vessel utilizing on-board GPS with WAAS. Special considerations will be taken to ensure the marking of the center of each patch reef (Table 4) and will ensure that a 150-ft. buffer from the permitted borders is enforced. Each individual reef unit will have specific deployment coordinates in Decimal Degrees format to 6 decimal points (+/- 6 inches).

During the deployment of reef modules, the deployment vessel must be effectively moored by using two anchoring devices sufficient to hold the vessel securely in place or the vessel will be required to maintain position with minimal movement (+/- 50 feet) to ensure accurate placement as described in enclosed drawing. Any machinery used to move and deploy the reef materials should be sufficiently powered/maneuverable and be capably operated to ensure timely, effective, and safe off-loading of materials. The tug or transport vessels must be equipped with a functional and accurate GPS with built-in differential correction as well as a separate and functioning VHF radio. Effective and reliable communications must exist between the tug, barge and the designated OAR/City of Carrabelle observer while the deployment vessel is positioning to deploy and during deployment activities. All reef deployment activities will be initiated when sea height is directly observed or reported by the nearest NOAA weather office to be a sustained maximum of four feet or less. The City of Carrabelle and its designees reserve the right to suspend operations when deployment procedures or conditions are deemed incompatible with the outlined project and/or safety goals or parameters.

The materials will be deployed in 8 (eight) patch locations. Each patch reef will consist of twelve (12) reef units of three different types of reef units (Figure 4), with an emphasis on the use of large and small units for complexity. Each module type will make up approximately 30% of the total number in each group and in the overall reef design.

(9) REEF MATERIALS

Since this project needs to go out to bid for reef construction and deployment services, it is impossible to determine exact cost per tons for reef materials. This project is utilizing pre-fabricated artificial reef modules. Since OAR's founding in 1986 many professional relationships have been nurtured through the construction of permanent artificial reefs in the Big Bend area of the Gulf of Mexico. OAR intends to utilize these relationships to coordinate the delivery and deployment of the pre-fabricated artificial reef units. Presently, OAR and its contractors estimate purchase, delivery, and deployment of the units.

Informal a price quotes were requested for various reef materials to estimate reef size. Walter Marine responded while Reefball company did not respond with a price quote.

OAR has explored the capabilities of other contractors in our region to provide durable, stable, and cost effective prefabricated materials since 2004. We have solicited bids for contracts to produce a quantity and high quality of project materials. We OAR and Carrabelle plan to select marine contractors that have repeatedly been superior in quantity, quality, timeliness, and cost effectiveness. We will select contractors based on demonstrated excellent performance in meeting contractual requirements with outstanding flexibility as well as their compliance with all contract requirements, ACOE and DEP requirements, FWC requirements, USCG requirements, and state/federal laws.

All reef units selected for this reef will provide long term, stable, complex habitat based on previous deployments in the area. No new, experimental reefs will be considered for this grant project. Only reef units that have withstood storms, without movement or degradation in as little as 30 feet of water without anchors will be considered. Reef units with multiple side holes that are wider near the center of the walls and narrow near the unit's surface. This feature creates miniature vortexes, which further reduce lifting forces and bring rich nutrients to life on the reef.

Reef units considered will be reefs that have been deployed by OAR in the past successfully. They could be Walter Marine reef units like Florida Limestone tetrahedrons (Tetrahedron or dome reefs), layered, complex Ecosystem Reefs (disk reefs) or hybrid grouper/Ecosystem reefs (ledge and disk reefs). See Appendix H for examples of these three reef units.

Tetrahedron or Dome Reef:

Thirty-six (36) of the reef modules will be a Tetrahedrons or Dome Reefs. This unit will be 6-8 feet tall hollow concrete walled structure with three or more sides and multiple small holes throughout the structure. Modules without a fully enclosed base will have a turtle escape opening created at the top of the structure that must be at least 36 inches in diameter.

Ledge and Disk Reef:

Twenty-four (24) of the modules will be a Ledge and Disk Reefs. This is a 5-9 ft. tall hollow concrete base structure, with at least one side almost entirely open (opening at least 36 in. wide and two feet high). Attached to the top of the base structure is a vertical reef structure with a minimum of three concrete disks securely stacked on a post mounted to the base. The space separation between each disc shall be a minimum of 4 inches to a maximum of 12 inches.

Disk Reef:

Thirty-six (36) of the reef modules are vertical reef structures with a minimum of five concrete disks securely stacked on a post mounted to a concrete base. The space separation between each disc shall be a minimum of 4 inches to a maximum of 12 inches.

(10) PROJECT MANAGEMENT

OAR is a registered 501 (c)(3) nonprofit organization that consists of dedicated volunteers and a dues-paying membership base that is called upon to carry out its various duties. A non-paid coordinator and non-paid board of directors, which hold monthly meetings open to all members, govern the organization. OAR does have a part-time paid staff to manage the office operations. OAR has maintained an office at 2545 Blirstone Pines Drive, Tallahassee for the last 30 years.

OAR strives to operate at every level as a professional organization, as opposed to a club, with ties to key organizations in Florida and leaders in state government and in the local communities they serve.

Central to OAR's operations is the Research Dive Team (RDT); a group of specially trained divers skilled in conducting the types of underwater work essential to the creation and monitoring of well-designed

artificial reefs. This group currently has 12 active members and will oversee the construction of St. Teresa Artificial Patch reef project. Some of these volunteer leaders are identified in section 17 below.

Most the administrative tasks associated with the construction of the St. Teresa reef will be performed by the OAR board of directors. Both members of the board as well as members of RDT will attend the deployment of the reef. Members of RDT will conduct the post deployment survey and the data collected will be presented to the board of directors for submission to FWC. OAR has a strong history of successful reef building having completed 26 local government construction grants and 7 monitoring grants from the FWC's artificial reef program since 1985.

Additionally, OAR has recently engaged the services of a local marine resources consulting firm, Fish Haven Services, LLC for assistance in generating deployment plans, field reports, grant applications, permit applications and onsite deployment activities. Chief Biologist for Fish Haven Services is Bill Horn, a retired FWC Marine Fisheries Biologist IV, with 22 years of hands-on experience with the state of Florida's artificial reef program

(11) LOCAL ARTIFICIAL REEF PLANNING

OAR has developed and updated an artificial reef management plan on behalf of local coastal counties and cities. This plan includes information about artificial reefs off Franklin and Wakulla Counties. Historically, since 1985, the majority of the two-county area's artificial reef construction and monitoring has been coordinated by the Tallahassee-based, nonprofit, Organization for Artificial Reefs (OAR) and they have developed an artificial reef management plan for the area (OAR, 2016). OAR is a group of marine enthusiasts and artificial reef advocates dedicated to constructing reefs in Florida's Big Bend. Since its foundation in 1985, the organization has been involved in over 44 reef deployments off Franklin County including the Rose City Reef, Carrabelle 3 Mile Reef, St. George Island Bridge, One More Time enhancement, Two Dogs Reef and the Carrabelle 10 Mile Reef. OAR and the City of Carrabelle further expanded Carrabelle 10 Mile Artificial Reef Site recently but after 12 years and 12 major reef deployments (FWC, 2016), that older reef site has limited additional area for new reef deployments, hence the need for new permitted reef sites in the area. OAR will continue to coordinate stakeholder input on the need for new reef development in the area and will continue to be an invaluable asset for future developments, especially in terms of identifying material donations, conducting pre-deployment surveys, providing deployment oversight, and conducting pre-and post-deployment dive assessments.

The OAR artificial reef management plan Version 1.7 of 3/15/2016 includes linkage to this proposed project on page 19, in the Planning Section. The OAR management plan does addresses reef development in these local waters and is attached at Appendix D. Creating new artificial reefs in state waters in management Zone F-1, where there are no historical reefs, fulfills several objectives for OAR. Primarily, the location of the reef is within easy access of several popular ports of entry, such as Lanark Village, St. Teresa, East Point, Apalachicola, Ochlocknee River and the Carrabelle River. The location also is a link to the chain of artificial reefs that OAR intends to create; extending from Dog Island Reef and beyond into deeper waters.

Avoidance of Marine User Conflicts

According to the "Guidelines and Management Practices for Artificial Reef Siting, Use, Construction, and Anchoring in Southeast Florida" (Lindberg and Seaman, 2011), conflicting uses should be evaluated

when establishing a permitted artificial reef area. Possible conflicts over sea bottom use could include telecommunication cables, pipelines, energy projects, U.S. Bureau of Ocean Energy Management, Regulation and enforcement (BOEMRE) (formerly the Minerals Management. Service) lease areas, sand borrow areas, and restricted areas for military activities. Historical trawling areas and known shipping lanes should also be considered.

OAR and the City of Carrabelle have taken steps to determine if there are any user conflicts in the area by polling its extensive local membership on the new site locations. Additionally, OAR also contacted Bob Jones, the Executive Director of Southeastern Fisheries Association to determine if there were any know conflicts with shrimping grounds in the area. In an Email attached as Appendix C, Mr. Jones did not have an issue with the new site location. Also contacted were the Panama City Boatman's Association and local commercial fishermen without any objections to the reef's proposed location.

Notes from OAR's meeting which specifically presents info on each municipality is presented (Appendix E). Numerous discussions and support for the St Teresa reef project have been conducted with the City of Carrabelle via Email and phone messages with the City Manager.

(12) PERMITS

Please reference:

Appendix E presents the FDEP General Permit #File No.: 19-0333554-001-EG .

Appendix F-presents the USACOE permit SAJ-2015-00966 (SP-SWA)

(13) LOCAL DEMAND AND PUBLIC ACCESS

Please reference Appendix G. Strong public support for this artificial project is presented via letters of support from businesses and individuals from this area.

Attached are 5 letters or emails from local entities demonstrating strong support and concurrence with this proposed artificial reef project off St. Teresa, Franklin County.

(14) CONTRACT OVERSIGHT

It is the intent of OAR to select a contractor to complete the following saltwater artificial reef project activities for the St. Teresa reef.

1. Procurement and transportation of approximately ninety-six (96) engineered artificial reef modules.
2. Load the modules onto a suitable conveyance (i.e. barge) and transport to the designated reef site. Provide a sufficiently powered transport or towing vessel, personnel, and all the necessary equipment to transport and deploy the material to the intended site. Reef material loaded onto a transporting vessel must be secured to allow for its safe transport during both the inshore and offshore transits. An inventory must be provided to the Contract Manager of the FWC as part of the Materials Placement Report of the amount, type and dimensions of all materials deployed as part of the project. Additionally, the barge/deploying vessel dimensions, the draft of the barge

dockside without materials on board and the draft of the barge/deploying vessel with the reef materials must be provided.

3. A representative from OAR will be on site during all reef deployment activities to monitor the construction of the 8 patch refs and coordinate activities with the selected marine contractor.

Appendix A

General Location Nautical Charts

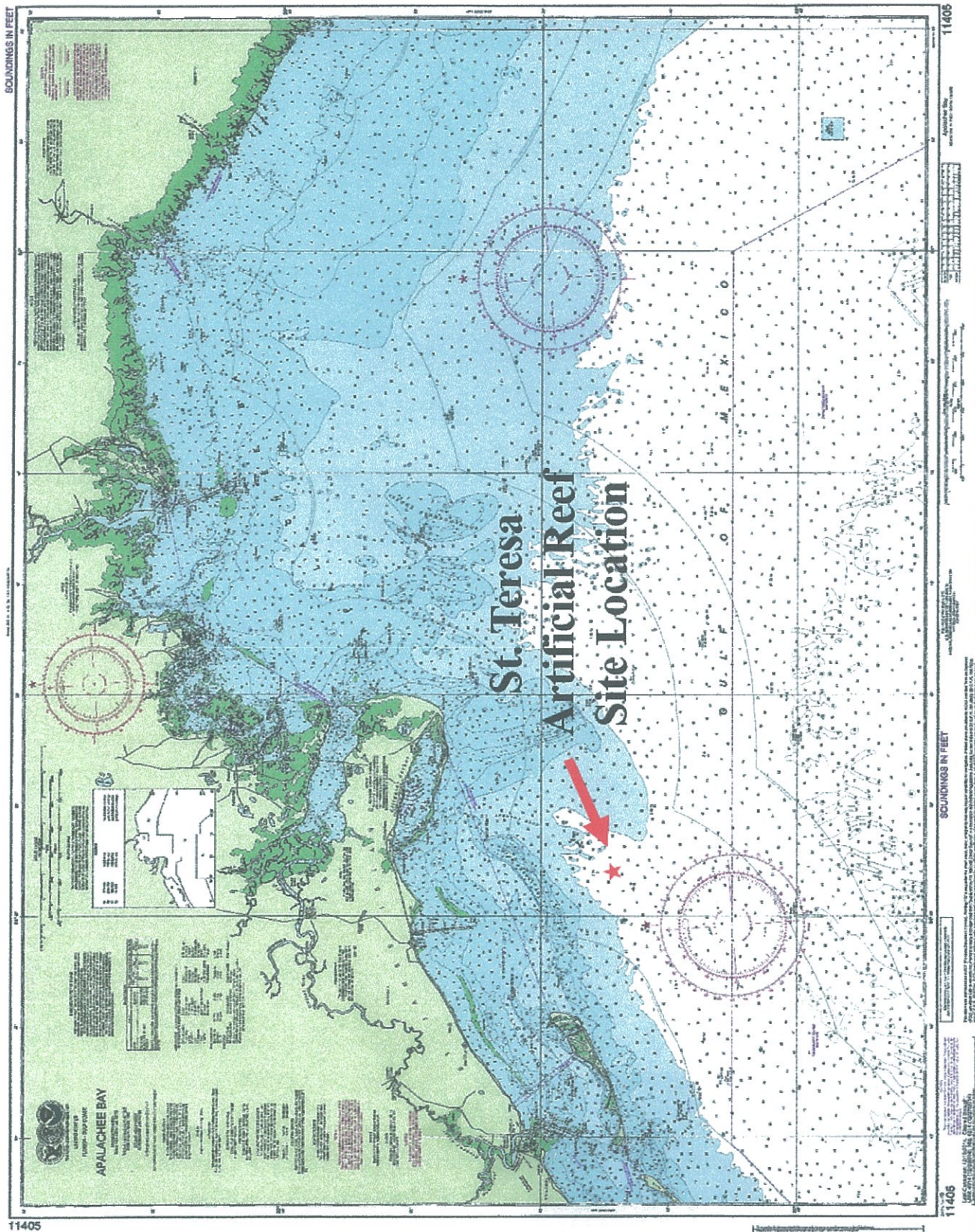


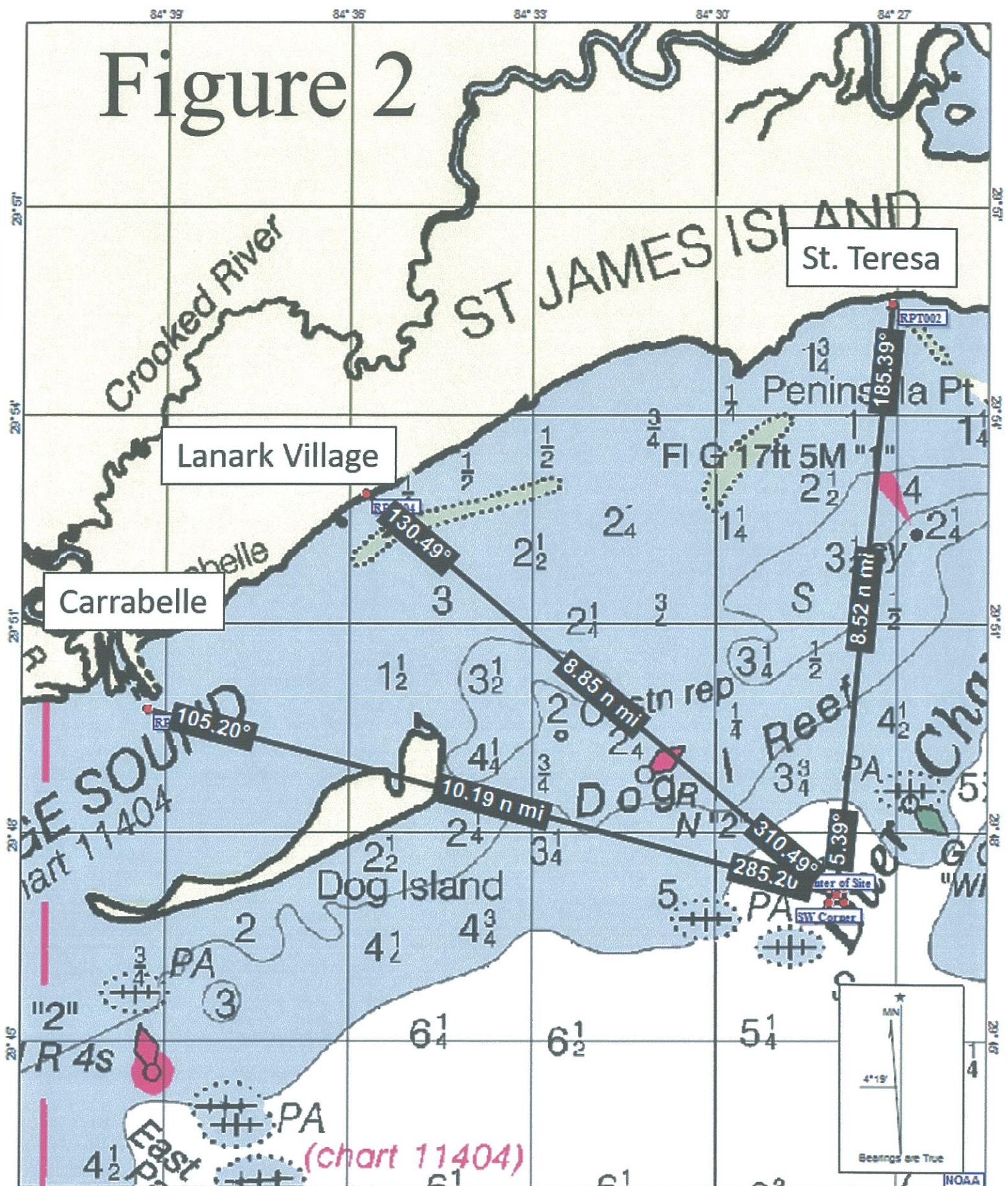
Figure - 1

St. Teresa Artificial Reef Permit Site
Regional Nautical Chart #11405

Map produced for OAR
by Fish Haven Services



Figure 2



Map produced
for OAR



Scale: 1:125362



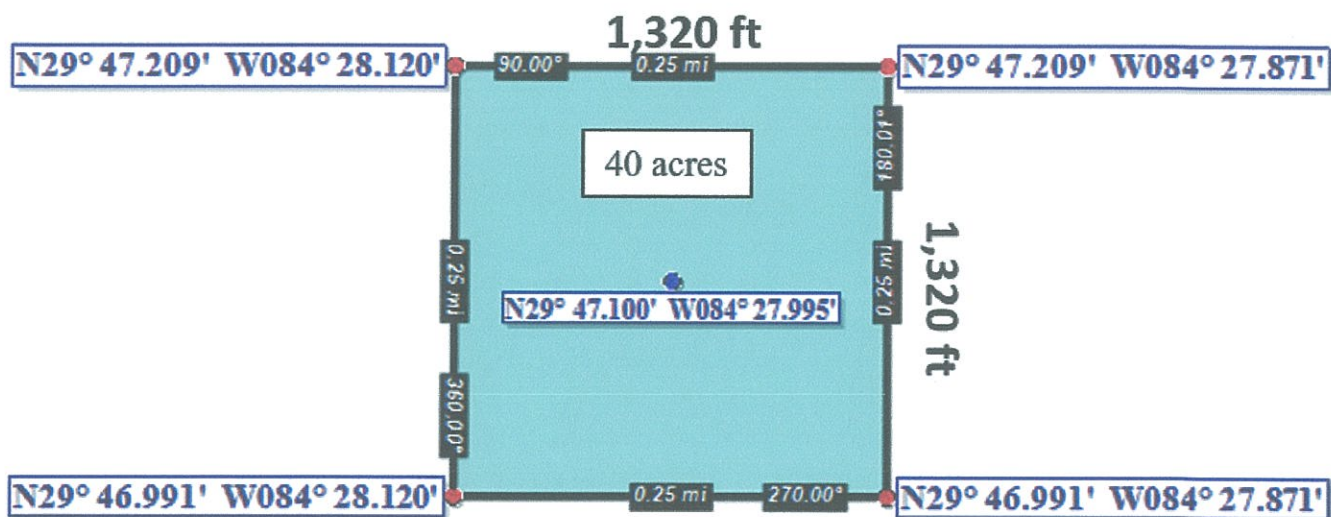
By Fish Haven
Services

New St Teresa Artificial Reef Site Area

Appendix B

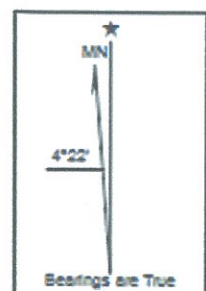
Site Specific Detailed Map/Charts

Figure 3



36

NOAA Chart 11405



NOAA

Map produced
for OAR



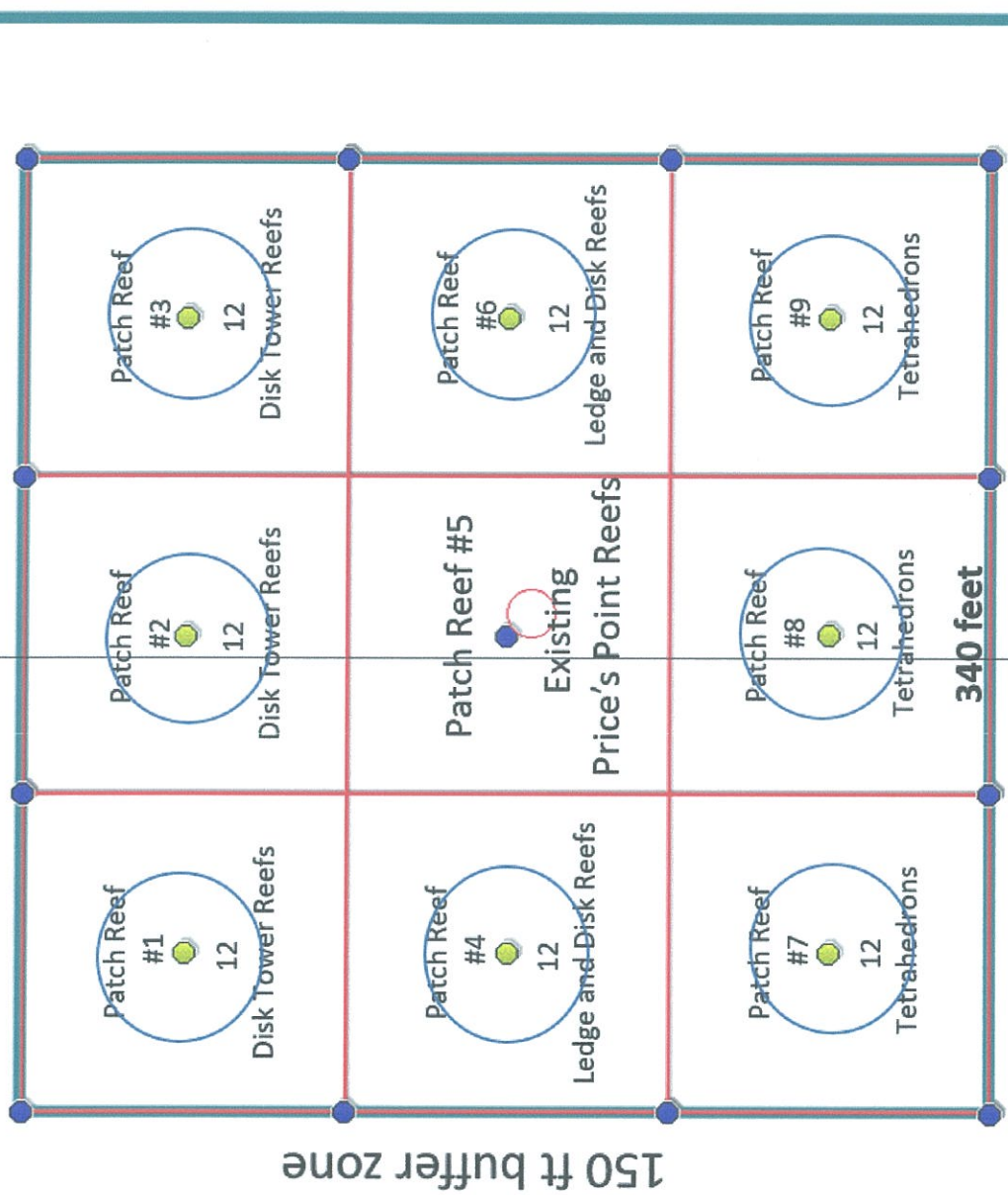
St Teresa Permitted Site



**By Fish Haven
Services**

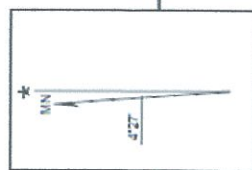
Figure 4

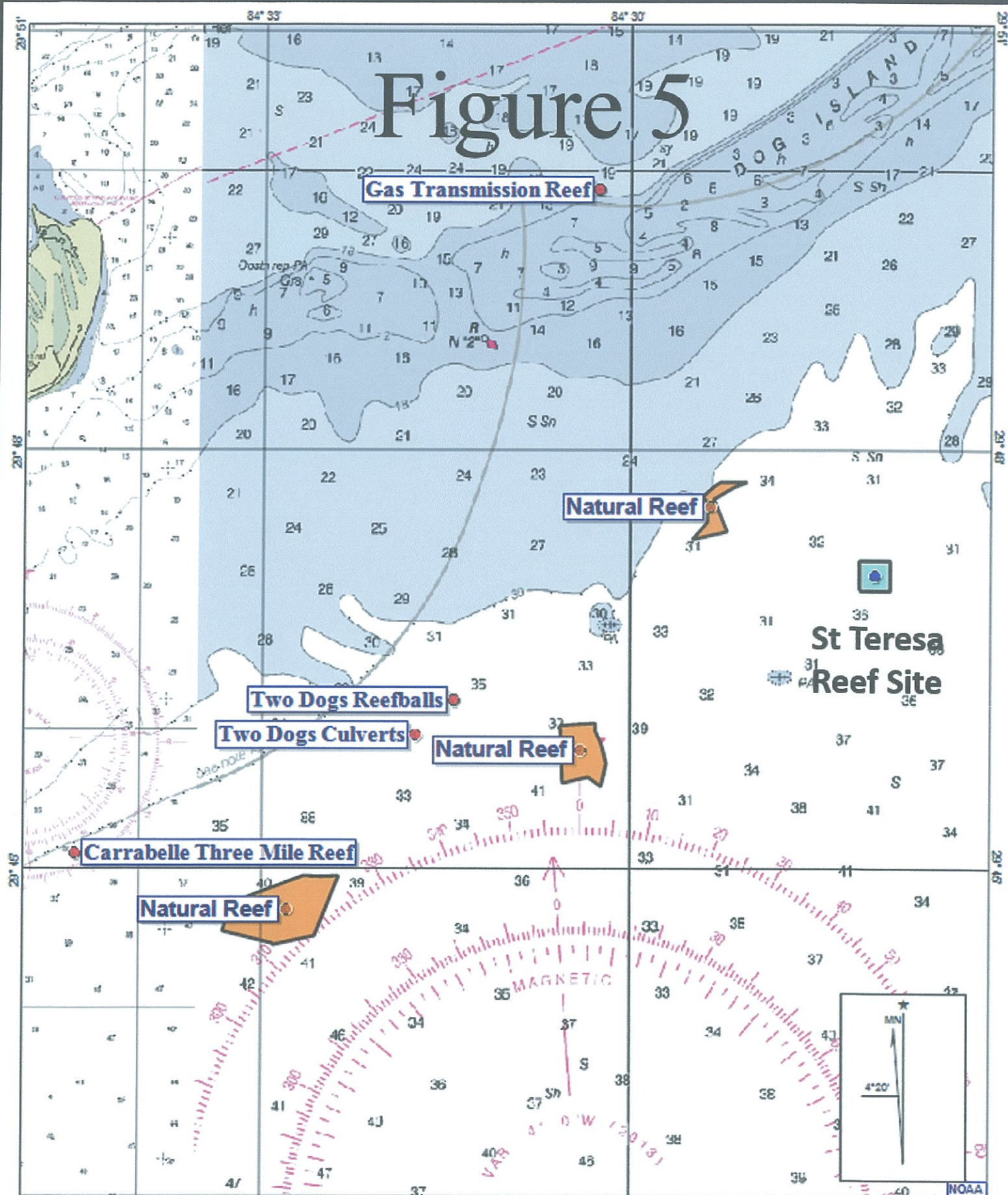
96 Reef Units, of 3 types, in 8 Patch Reefs



OAR/St. Teresa NRDA Reef Layout

1,320 feet





Map produced
for OAR



By Fish Haven
Services

St. Teresa Artificial Reef Area

Appendix C
Dive Assessment Report
St Teresa Reef Site

**SITE SELECTION AND BENTHIC SURVEY REPORT
FOR AN ARTIFICIAL REEF NEAR ST. TERESA, FL**

Organization for Artificial Reefs
2545 Blair Stone Pines Drive
Tallahassee, FL 32301

September 2014

1.0 INTRODUCTION

Current regulations require a survey to be conducted in the area of a proposed artificial reef site prior to reef construction. A benthic survey was conducted in the nearshore waters of the Gulf of Mexico off the coast of Franklin County, FL (Appendix A). The objective of this survey was to select a site near St. Teresa, FL south of Dog Island Reef that can be accessed from Carrabelle, Lanark Village, Dog Island, St Teresa, Alligator Point and Ocklocknee Bay. Site selection is based on locating a preferred sandy substrate which is devoid of live or hardbottom features such as rock outcroppings, natural ledges, or coral/sponge habitat. The preferred location is one which has a relatively thin veneer of sand (10 – 40 cm) covering an underlying layer of rock (hardpan). This report summarizes data on bottom characteristics, sediment depths and diver observations made during the survey.

2.0 MATERIALS AND METHODS

The first phase of site selection is to gather information on the area of interest and determine a general location for performing the survey. After planning and selecting the area of interest using nautical charts and local knowledge, a physical survey of the area is planned for the second phase of site selection.

During the second phase, the area of interest is investigated by boat using a bottom machine or depth finder. The general area is searched and any potential locations are marked with GPS coordinates based on the soundings of the depth finder. This reconnaissance phase will rule out any areas based on the bathymetry of the bottom before conducting dives on the site.

After marking several GPS locations within the area of interest, divers are sent down on short (bounce) dives. The third phase of the survey consists of performing preliminary diver observations to assess bottom substrate and bathymetry. The purpose of this phase is to get visual information on the bottom conditions to determine if the location is suitable to begin the fourth phase.

The fourth phase consists of recording sediment depth data and bottom conditions by a dive team using a sediment probe, 50-meter measuring tape, dive slate with compass and datasheets printed on waterproof paper. The method consists of divers attaching a 50-meter tape measure to the anchor on the selected coordinates. The survey begins by anchoring the boat on coordinates closest to the center of site. The dive team attaches a 50-meter tape measure to the anchor and swims a series of compass radials from the anchor. These radials are typically 0, 60, 120, 180, 240, and 300 degrees. One dive team member swims the compass heading and another diver follows while unreeling the measuring tape. When the tape reaches the 50-meter end point, the dive team turns around and swims back along the measuring tape toward the anchor.

On the return trip, the depth probe is pushed into the sediment every 10 meters along the measuring tape. The probe is a fiberglass or metal rod marked in 10-centimeter increments. The probe is pushed into the sediment until refusal and the depth of sediment is recorded to the closest centimeter. If any rock or ledges are found during the survey, the probe is used to measure the distance above the surface layer of sand. Substrate type is recorded between 10-meter segments. This procedure is continued for the remaining radials and all information is recorded on a waterproof datasheet. The location and date of survey is recorded on the datasheet along with any general diver observations.

3.0 RESULTS

Dive team members from the Organization for Artificial Reefs (OAR) Research Dive Team (RDT) performed a series of dives within the vicinity of the selected coordinates. The first dives conducted were diver surveys to get general diver observations of substrate and bathymetry.

A formal benthic survey to record sediment depth was conducted on August 30, 2014 by RDT divers. Conditions were rough on the day of the survey with choppy, 3-4 ft seas. Underwater visibility was very good on the bottom with a distance of approximately 30 feet (9 m) of horizontal visibility. The maximum depth during the dive was 34 feet (10.4 m). The dive team was able to complete four, 50-meter radials before the dive event was called and a decision was made to head back in. The survey collected 20 data points along the 4 radials (Appendix B).

The average depth of sediment was 29.7 centimeters with a sandy substrate recorded on each radial. The dive team did not observe any hardbottom, coral, sponge or ledge habitats. There were no observations made of benthic fish associated with hardbottom substrate. The dive team did observe several (7 – 10) remoras that accompanied the dive team during the entire dive. Benthic invertebrates included sea stars and a couple dozen individuals of an unidentified mollusk.

4.0 CONCLUSIONS AND RECOMMENDATIONS

The OAR-RDT dive team conducted a formal benthic survey on August 30, 2014. The surveys found the average sediment depth was 29.7 centimeters at GPS coordinates 29 47.085 N, -84 28.000 W. The data shows that the area of interest is a suitable location for the siting of an artificial reef. The RDT dive team did not find hardbottom, coral, sponge or ledge habitat during any of the surveys. The fish observed during the dive were a pelagic species.

This report was completed for the application of State and Federal regulatory permits for the placement of an artificial reef. The distance from St. Teresa, FL to center of site is approximately 7.1 nautical miles. The distance from the green navigation buoy "WR 1" to the center of site is approximately 1.25 nautical miles. It is the recommendation of this report that an application for permit to construct an artificial reef be submitted for this location.

APPENDIX A: Location Map



APPENDIX B: Data Summary Tables

Date: August 31, 2014
Divers: Rob Buda, Linda Teifel, Nathan Dunfee
Crew: Alan Richardson, Kathy Richardson
Air Temp: 81 F
Water Temperature: 83.5 F
Sea State: Choppy, 3-4 ft
Underwater Visibility: 30 ft (9.1 m)
Maximum Depth: 34 ft (10.4 m)
LOCATION: 29 47.085 N, -84 28.000 W

RADIAL (deg)	DISTANCE (m)	BOTTOM TYPE	PROBE DEPTH (cm)
0	10	Sand	30
0	20	Sand	35
0	30	Sand	31
0	40	Sand	36
0	50	Sand	30
60	10	Sand	32
60	20	Sand	28
60	30	Sand	30
60	40	Sand	30
60	50	Sand	30
120	10	Sand	28
120	20	Sand	25
120	30	Sand	28
120	40	Sand	30
120	50	Sand	40
180	10	Sand	29
180	20	Sand	22
180	30	Sand	25
180	40	Sand	27
180	50	Sand	28

Mean

29.7

Appendix D

OAR Artificial Reef Plan (Version 1.7, March 2016)

**ORGANIZATION FOR ARTIFICIAL REEFS
(OAR)
ARTIFICIAL REEF PLAN**



**Version 1.7
03/10/2016**

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1. INTRODUCTION

The Organization for Artificial Reefs (OAR) , Inc. is a private, 501(c)(3) nonprofit group of marine enthusiasts and artificial reef advocates based in Tallahassee, Florida. Founded in 1985, OAR serves the marine recreational interests of Florida's Big Bend Gulf Coast by promoting the professional development of public artificial reefs.

Since 1985, OAR has work closely to assist Wakulla and Franklin counties to design and built several new artificial reefs in the Big Bend Gulf and has extensively refurbished many other large manmade marine habitats in the region (**Appendix 1 and 2**). This work represents the expenditure of thousands of dollars in funds that OAR has raised directly or indirectly for reef development.

Primarily relying on volunteers, OAR is made up of a dues-paying membership base that is called upon to carry out its various duties. A non-paid coordinator and an 11-member, non-paid board of directors, which holds monthly meetings open to all members, govern the organization. OAR thus strives to operate at every level as a professional organization, as opposed to a club, with highly cultivated ties to key organizations in Florida and leaders in state government and in the university community.

OAR supports itself through membership dues, grants, donations, sale of promotional items and through proceeds raised by The Big Bend Saltwater Classic, the Big Bend Gulf's largest, professionally run fishing tournament held each Fathers Day Weekend and headquartered in the port city of Carrabelle in Franklin County.

An important component in OAR success over the years is its Research Dive Team (OAR-RDT). The OAR-RDT performs all monitoring diving activities. The tasks include bottom surveys, fish census and materials evaluations. The OAR RDT was founded in 1990 under the initial training of Joe Halusky of Jacksonville Sea Grant Extension Service. He was generally responsible for many of the volunteer dive teams around the state. The OAR-RDT is a team of volunteer divers trained in underwater data collection and reporting.

They have also completed bottom surveys in conjunction with COE and FDEP permits for 20 reefs off Big Bend waters. The OAR-RDT has developed and use a set of Dive Standards developed to meet the requirements of the Scientific Dive exemption found in the OSHA standards CFR-1910.401 and Appendix B-Science Exemption. The OAR-RDT also maintains a dive control board to oversee the safe operations of the dive activities.

OAR is a staunch advocate of responsibly designed and deployed artificial reefs as a means of protecting and enhancing a variety of marine life for the sake of both biodiversity and for promoting the enjoyment of saltwater environments by sport-fishing and sport-diving enthusiasts. OAR is dedicated to using the best science and technologies available in pursuing its goals.

A. History of reef building for Wakulla and Franklin Counties

The earliest documented cases of organized reef construction in Franklin and Wakulla Counties are from the early 1960' s. Recreational anglers who were interested in

improving their fishing success pooled their resources through the formation of informal clubs. These clubs built, with the assistance of Florida State University staff and Sea Grant agent's, reefs primarily out of the least expensive materials available, and placed them in locations with the most convenient access. Commonly used materials included tires, car and truck bodies, construction debris, and appliances. Some of these quickly proved to be short lived in the marine environment. The location of these materials at convenient sites generally meant that they were in relatively shallow water. This compounded early reef building problems as wave energy pounded the materials, often causing them to shift or break apart. Some near shore sites were also problematic because of the high load of suspended solids. These solids limited the growth of organisms on the reef. They also made the reefs susceptible to periodic siltation, where they may have been buried for months at a time.

By the 1970's, reef-building organizations had learned from their mistakes and were pursuing better materials and sites. The locations of the sites, however, were often closely guarded secrets among the private reef builders. The inherent error of marine navigational equipment also meant that materials were not always placed exactly where the builders had intended. When marker buoys were installed, natural forces and vandalism limited their life span.

By the mid 1980's, OAR was formed to assist local county governments to become more involved in local reef building efforts. Through their Sea Grant Extension Agent, improvements were made in site and material selection criteria, permitting and compliance, and transfer of reef information to the general public. The history of reef development in Franklin and Wakulla Counties continues to go through an evolutionary process.

OAR has successfully partnered with local county and city governments to deploy many reef using grant funds provided by the Florida Fish and Wildlife Conservation Commission. **Table 1** below lists 25 construction grants competed on behalf of Franklin and Wakulla counties for since 1982. These grants totaled \$725,000 for reef construction funding directly toward artificial reef off shore of the Big Bend waters. This list includes a new reef for St. Marks to be deployed in the summer of 2016

TABLE 1 – OAR Managed Construction Grant Projects for Big Bend area

COUNTY	CONTRACT	FUNDING	MANAGER	GRANTEE	AMOUNT FUNDED	DEPLOYDATE	REEFNAME
Wakulla	FWC-15101	STATE	BE	St Marks, City of	\$50,000	N/A	ST MARKS-2106
Franklin	FWC-14015	F42-29/STATE	KM	Carrabelle, City of	\$55,000	07/26/15	CURETON REEF-2014
Wakulla	FWC-13245	STATE	BH	St Marks, City of	\$55,000	10/23/14	ST MARKS-2104
Franklin	FWC-13240	STATE	BH	Carrabelle, City of	\$55,000	06/17/14	DIXON CAMP MEMORIAL REEF
Franklin	FWC-02100	F42-17	KM	Carrabelle, City of	\$25,000	05/25/03	ROSE CITY
Franklin	FWC-00115	F42-15	BILL	Carrabelle, City of	\$25,000	06/21/01	YAMAHA REEF
Wakulla	FWC-99116	F42-14	JD	Wakulla County	\$25,000	06/22/00	OAR2K
Franklin	FWC-99080	STATE	BH	Carrabelle, City of	\$20,000	06/22/00	ONE MORE TIME SITE
Wakulla	OFMAS-130	F42-13	JD	Wakulla County	\$25,000	06/16/99	MARKER 24 BARGE SITE
Franklin	OFMAS-133	STATE	BH	Carrabelle, City of	\$40,000	06/15/99	2 DOGS REEF
Franklin	OFMAS-099	F42-12	JD	Carrabelle, City of	\$25,000	06/26/98	BRYSON ADDITIONS
Wakulla	OFMAS-070	F42-11	JD	Wakulla County	\$20,000	05/20/97	OAR/WAKULLA DZ#1 (4)
Franklin	OFMAS-068	F42-11	JD	Carrabelle, City of	\$25,000	02/11/97	BRYSON MEMORIAL REEF
Wakulla	OFMAS-047	F42-10	JD	St. Marks, City of	\$25,000	06/18/96	DOG BALLARD PHASE 3
Franklin	OFMAS-001	F42-09	JD	Carrabelle, City of	\$25,000	05/04/95	YAMAHA REEF ADDITION
Wakulla	C-8301	F42-08	CA	Wakulla County	\$25,000	06/04/94	OAR/WAKULLA DZ#3 (1)
Franklin	C-8263	F42-08	VV	Carrabelle, City of	\$25,000	12/27/93	YAMAHA REEF
Wakulla	C-8176	STATE	BH	St. Marks, City of	\$25,000	08/08/94	DOG BALLARD PHASE 1
Wakulla	C-7810	F42-07	VV	Wakulla County	\$25,000	06/01/93	OAR/WAKULLA DZ#3 (8)
Franklin	C-7803	F42-07	VV	Carrabelle, City of	\$20,000	06/20/93	CARRABELLE 3 MILE REEF(6)
Wakulla	C-7264	F42-06	VV	Wakulla County	\$25,000	06/21/92	OAR/WAKULLA DZ#3 (7)
Franklin	C-7275	F42-06	VV	Carrabelle, City of	\$25,000	06/17/92	CARRABELLE 3 MILE REEF (1)
Wakulla	C-6568	F42-05	VV	Wakulla County	\$20,000	12/06/90	OAR/WAKULLA DZ#2 (2)
Wakulla	C-5896	F42-04	VV	Wakulla County	\$20,000	07/03/90	OAR/WAKULLA DZ#3 (6)
Franklin	10-82-7-1	GENREV	JB	Apalachicola, City of	\$20,000	07/11/84	APALACHICOLA CITY
				TOTAL -25 GRANTS	\$725,000		

The Big Bend is blessed with abundant and productive inshore and nursery habitats, but the demands and pressures on fisheries resources grow daily. Although there now exists new stricter permitting criteria, with the assistance from the Florida Fish and Wildlife Conservation Commission (FWC) and partnerships with private organizations, new artificial reefs continue to be developed. Franklin and Wakulla County reef building today is an effort to meet the growing demand for marine recreational opportunities in an environmentally compatible fashion. As detailed in this plan, reefs are built to provide opportunity for fish and marine invertebrates as well as anglers and divers. Reef sites and materials are chosen systematically and in consultation with the local fishing and environmental communities. Projects are carefully planned and built in coordination with permitting agencies and FWC. Existing and new projects are systematically being tracked and evaluated. A multifaceted approach to public outreach ensures that anglers will know about the reef projects and how to use them responsibly. OAR maintains a web site that has coordinates and information about the artificial reefs in the area. OAR also produces a nautical chart that has been updated three times over the years, and has a revision in the works at present that displays the graphic locations of the artificial reefs of the Big Bend Gulf of Mexico. Reef building in Franklin and Wakulla Counties will certainly continue to change. This plan, which will also change over time, will provide a tool to guide present development and maximize future success.

B. The Marine Habitats of Franklin and Wakulla Counties.

The Big Bend is blessed with an extensive inshore and offshore marine ecosystem. Its temperate climate affords a diverse compilation of aquatic specimens. Coastal barrier islands provide the nutrients, refuge and foundation for the shallow sea grass meadows that carpet the many bays, estuaries and lagoons. In Franklin County alone, major aquatic ecosystems such as Apalachicola Bay, Alligator Harbor and St. George Sound provide the means to mix the freshwater upland runoff with the tidal saltwater of the Gulf of Mexico.

Numerous salt marshes promote sedimentation by trapping fine particles. This relatively shallow estuarine system drains hundreds of square miles of watershed and encompasses many square miles of surface water. Much of the inshore waters contain healthy sea grass meadows. However, it has been estimated that only about 20% of the offshore bottomland of the Big Bend area contain "live bottom" or natural reef habitat (Continental Shelf Associates, Inc. 1992). Because natural reefs are rare in the Big Bend, artificial reefs become a very important addition to the useable habitat for the marine resources of the area.

This system is inhabited by approximately 80 species of fish (**Appendix 3**). This data is taken from 79 fish census surveys performed by the OAR-RDT since 1992 (**Appendix 4**). These include many species important to the commercial and sport fishing industries, however some of these species are important forage for other species as well. Many of these fish species utilize both the inshore habitat afforded by the estuarine system and the open waters of the Gulf during their life cycle. The adult spawning stock living in the Gulf reproduce, broadcasting ichthyoplankton, which migrate by way of tidal surges into the upper reaches of the estuarine system. Specific species have specific criteria, such as shoreline features, sea grass meadows, salinity and tidal energy, for juvenile habitat.

Offshore habitat includes hard substrate and shifting sandy and/or shell bottom. Areas with limestone outcropping provide the substrate for soft and hard corals, encrusting invertebrates and algae. The vast majority of the Big Bend's offshore waters are absent of ledges and hard bottom outcroppings. Many reef fish species require some variety of structure to their offshore surroundings to thrive as adults. Consequently, for there to be a healthy, diverse reef fish assemblage, attention must be given to both the inshore and offshore components of their life cycles.

The primary recreational and commercial targeted fish species in the area is gag grouper. Analysis from fish census surveys by the OAR-Research Dive Team (RDT) indicate that gag is the most common fish species seen on area reefs. Gag were observed in 75 of the 79 fish census surveys by the OAR-RDT (**Appendix 3**). After spawning gag settle out in inshore grass bed to develop into juveniles capable of moving offshore to the reefs structures. Very large numbers of gag can have been documented to use the grass beds off Turkey Point in St. George Sound (Koenig, 1998). Artificial reefs in the area are planned and designed help these young of the year gag survive by creating habitat between the natural reefs offshore and the grass bed nursery areas.

2. ARTIFICIAL REEF OBJECTIVES

A. Overview

Franklin County has a network of 17 artificial reef sites, composed of 61 individual deployments (**Appendix 1**) which are either currently permitted or have held permits since the 1960's.

Wakulla County has 7 artificial reef sites, composed of 36 deployments that have been permitted over the years (**Appendix 2**). In addition, there are many artificial reefs that have been placed without the proper permits by well meaning, but unauthorized individuals. Materials on these reefs portray the history of reef building in Florida.

These materials include concrete culverts, white goods; steel hulled and wooden ships, tanks, pipes, barges, bridge rubble, tires and cement mixers. Permitted artificial reefs

have been placed in the inshore waters of St. George Sound, and as far out as 30 miles offshore. With the majority of the bottom composed of relatively barren sand, the addition of properly constructed artificial reefs can positively impact the inshore, near shore and offshore populations of a variety of reef fish. These reefs can provide safe haven, as well as forage area, for a variety of reef fishes. The science of artificial reef construction has progressed in recent years and it has become increasingly important to clearly define the reasons behind building an artificial reef. OAR has a variety of objectives for constructing reefs. The desired outcome of all objectives is to enhance the standing stock of many different species of reef fish, while improving the quality of life for the citizens of Franklin, Leon and Wakulla County in the process.

B. Reef Objectives

1. Fishery Enhancement

The enhancement of a fishery could take several different paths. One path could be the production of a single target species. Another could target an entire guild of fish species. The production of a primary food source (baitfish) for targeted species could also be a sought-after goal.

The creation of a reef that may be difficult to locate or whose coordinates are not released to the public may allow that reef to increase a fishery stock without the substantial take of targeted fishing pressure. In turn, fish that grow on this reef would presumably move to other sites as the reef reached its carrying capacity. The reef would need to address certain limiting factors such as shelter, primary food production, etc., specific for the targeted fishery.

2. Habitat Enhancement

Habitat enhancement focuses on designing a reef that would create an environment suitable for a wide variety of fish and benthic invertebrates to survive and flourish. It would need to address aspects of the animals' life cycles that have an offshore component. It would also need to provide adequate protection against predation, human or otherwise. The reef should attempt to complement or improve upon the natural habitat of local waters, i.e. live bottom and ledge areas.

3. Diving Attraction

Artificial reefs provide interesting SCUBA diving locations in and of themselves. However, there are certain types of material that can provide a unique diving experience. Large, steel hulled ships are a big draw for SCUBA divers and the addition of a few large vessels in Big Bend waters would enhance the diving experience for many local divers. There may be certain species of fish, such as goliath grouper, common to this area that could provide a diving attraction. Reefs could be built specifically to provide habitat for these species, thereby increasing diving activities in the area.

4. Scientific Study

There are many unanswered questions regarding artificial reefs and their role in the marine environment. Deploying reefs to provide a study area for scientists to answer these questions would aid the future of reef building. OAR has intentionally placed a variety of materials in different footprint configuration with the intent to compare material a habitat for local species of fish. An example of this type of study include the two cube reefs of 16 and 4 cube configurations of the Wakulla Big Bend Reefs #1 and #2. The Two Dogs reefs were placed one-quarter mile apart and consist of one reef of Reef balls and other of similar number of concrete culverts. OAR-RDT divers assessed this for two years.

5. Material Diversity

Most Big Bend reef sites have a variety of reef materials within their boundaries. OAR wants all active sites to have the highest degree of variability in material types. This provides the best comparison data for staff to judge the relative productivity of material types and provides a variety of fishery habitats.

6. Mitigation

Occasionally, county projects, such as beach re-nourishment, may impact near-shore habitat. Franklin County always attempts to minimize impacts to natural habitat in any coastal project. The proper construction of an artificial reef may offset, or mitigate unavoidable impacts by creating new habitat close to the impacted areas.

C. Attraction VS. Production

There has always been a debate on whether or not artificial reefs provide a site which attracts large numbers of fish from natural areas, exposing them to greater fishing pressures, or if the reef actually creates additional "natural" habitat, thereby directly or indirectly increasing the populations of reef fish. Large aggregations of fish can provide an easy target for anglers. The ramifications of the human impacts on reef fish populations that surround artificial reefs are not clearly understood.

Along the Big Bend coastline, it can be argued that the quantity of natural live bottom areas that provide a home for reef fish is the limiting factor in the "reef fish reproduction" reaction. There is little live bottom available when compared to relatively unproductive sand bottom. With the proper construction of an artificial reef, creating viable long-term live bottom, the limiting factor of the "reef fish reproduction" reaction is increased, positively impacting the populations of local reef fish.

Also, the addition of artificial reefs may actually reduce fishing pressure on both natural and artificial sites by simply providing an additional location for fishermen to access. This dilution of fishing pressure is becoming an increasingly important consideration as fishing pressure in North Florida continues to grow. If there were little or no artificial reefs locally, then, in all likelihood, the few existing natural hard bottom or ledge habitats would be bearing the full brunt of the increased fishing pressure.

Both sides of the issue will continue to be debated as the body of scientific data improves. Recent research in the Gulf of Mexico has indicated that properly constructed reefs do attract fish, but also have the ability to enhance productivity (Lindberg, 1998). The studies, however, also indicate that directed fishing pressure could contribute to reduced net productivity by out-harvesting the reefs ability to produce fish. Unknowns, such as environmental conditions, complete species life history requirements, and the human interaction factor should all be addressed in the near future by the scientific community. OAR will update their reef policies and procedures; as new information becomes available.

3. ECONOMIC ASPECTS OF ARTIFICIAL REEFS

To date, a detailed analysis of the economic benefits of artificial reefs for the Big Bend area has not been completed. In fact, the economic benefits of artificial reefs are difficult to quantify. Factors to consider are quite diverse.

However, for comparison, a socio-economic study of the impacts of neighboring North West Florida counties' artificial reefs was performed in 1998. Results of that study show that artificial reefs provide the following economic benefits to Escambia, Santa Rosa, Okaloosa, Walton, and Bay Counties:

Total Annual Use Value:	\$19.68 – 31.24 million
Asset Value:	\$656 – 1,168 million
Expenditures Generated:	\$415 million
Wages Generated	\$84 million
Employment:	8163 jobs

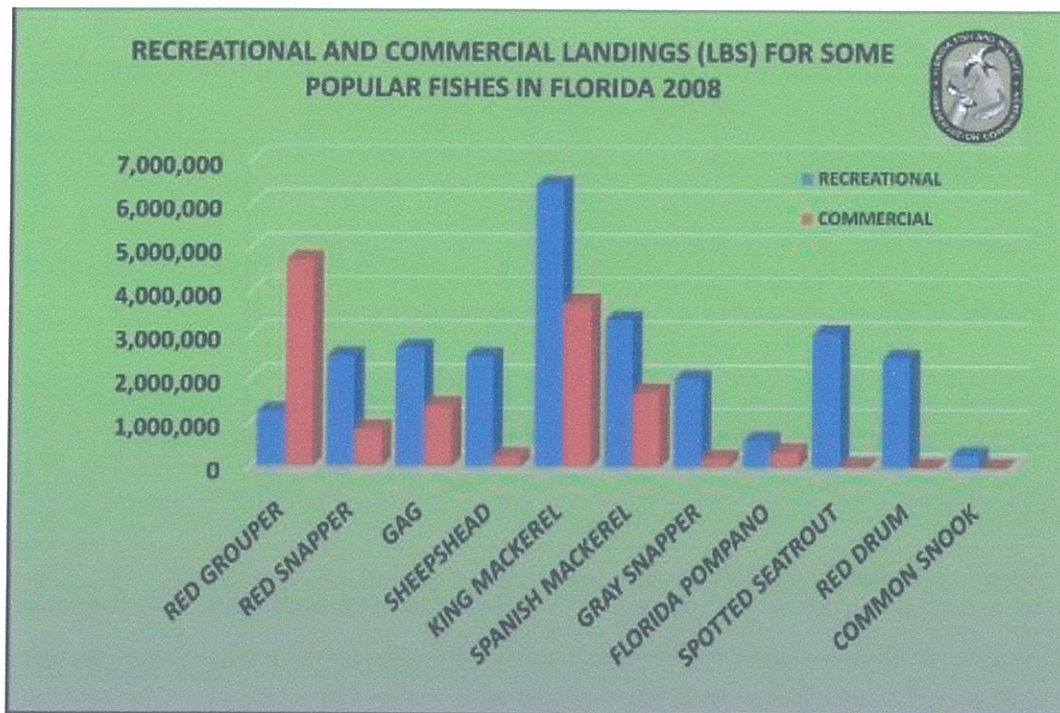
It was estimated that for every one dollar invested in the construction and deployment of artificial reefs, it has returned \$131 in recreational value to fishers and divers (Bell *et. al* 1998, page 387).

Economic benefits of artificial reefs include items such as boat sales, fuel sales, marine electronic sales, boat repairs, bait and tackle sales, food, drinks, ice, fishing and diving charters, and recreational and commercial seafood harvesting. According to data produced by the NOAA Coastal Service Center, (NOAA-CSC, 2013), Franklin County's ocean related businesses for 2010 provided 631 employees, 19 million in wages and 22 million in goods and services accounting for 19.7% of total jobs in the county, much higher than surrounding counties. A recent socio-economic study by Dr. Bill Huth, with the University of West Florida estimated the total fishing and diving economic impact for Franklin County was 393 jobs, 23.34 million and 8.23 million dollars in income to the county in 2005. (Huth, 2015)

Recreational SCUBA diving should also be considered when discussing local and regional economic impacts. All of the above and more have a direct or indirect impact on the economies of Franklin, Leon and Wakulla Counties.

Local Marine Fisheries

Most artificial reefs are deployed and developed for recreational angling and diving. However, data on recreational catch rates is not readily available for Florida counties. Commercial catch data is readily available on an annual basis from FWC through the trip ticket program. Commercial fishing data can serve as a proxy for recreational fishing since the same reef areas, depths and ports are being used by both segments. In fact recreational catch can be much higher than commercial catch for many important species such as gag and red snapper. See Graph 1 below from FWRI below.



A. 1. Wakulla County Commercial Landings

Franklin and Wakulla County coastal waters are homeport to many commercial fishermen, fishing a wide array of gear for many economically important species. Apalachicola Bay is home to one of the largest oyster fishing fleets in Florida.

Large amounts of finfish are landed in Wakulla County. The following table summarizes commercial values for gag and red snapper harvested Wakulla County for the period from 2004 through 2014 (FWRI,2016).

Table 2- Wakulla landings in pounds and dockside values of selected species.

Year	County Landed	Red Snapper (lbs)	Estimated Value	Gag Grouper(Lbs)	Estimated Value
2014	WAKULLA	37,905.00	\$133,845.00	30,631.00	\$117,632.00
2013	WAKULLA	33,611.00	\$113,040.00	28,276.00	\$104,019.00
2012	WAKULLA	37,145.00	\$129,349.00	32,764.00	\$123,450.00
2011	WAKULLA	35,275.00	\$123,518.00	20,862.00	\$77,613.00
2010	WAKULLA	15,525.00	\$60,664.00	10,754.00	\$38,586.00
2009	WAKULLA	5,026.00	\$17,947.00	29,444.00	\$96,366.00
2008	WAKULLA	5,070.00	\$17,836.00	72,430.00	\$238,339.00
2007	WAKULLA	2,772.00	\$10,057.00	56,462.00	\$187,942.00
2006	WAKULLA	5,009.00	\$14,228.00	47,053.00	\$147,493.00
2005	WAKULLA	3,690.00	\$8,590.00	103,495.00	\$275,618.00
2004	WAKULLA	3,690.00	\$9,597.00	114,136.00	\$284,577.00
	TOTALS	184,718.00	\$638,671.00	546,307.00	\$1,691,635.00

For the last 11 years (2004-2014) the landings of red snapper have generally increased for red snapper (Table 2). These landings are second only to shrimp and oysters in a

list of the top 73 saltwater product species. The catch rate trends have been increasing the last 4 years since a low in 2010 for gag grouper over this period.

The catch of value of 55 species of marine fisheries caught commercially off Wakulla in County averages to be \$2,697,913 per year or \$ 29,677,039 over the last 11 years according to the FWRI data. as is attached as **Appendix 5** (FWRI,2016).

A. 2. Franklin County Commercial Landings

Large amounts of finfish are landed in Franklin County. The following table summarizes commercial values for gag and red snapper harvested Franklin County for the period from 2004 through 2014.

Table 3- Franklin landings in pounds and dockside value of selected finfish species.

Year	County La	Red Snapper (lbs)	Estimated Value	Gag (lbs)	Estimated Value
2014	FRANKLIN	199,717.00	\$889,184.00	77,209.00	\$328,322.00
2013	FRANKLIN	144,026.00	\$601,672.00	77,304.00	\$327,954.00
2012	FRANKLIN	111,193.00	\$448,327.00	75,219.00	\$315,901.00
2011	FRANKLIN	112,071.00	\$446,632.00	40,567.00	\$166,769.00
2010	FRANKLIN	146,158.00	\$588,313.00	82,268.00	\$310,417.00
2009	FRANKLIN	57,024.00	\$216,395.00	134,258.00	\$458,681.00
2008	FRANKLIN	38,865.00	\$144,904.00	292,196.00	\$996,577.00
2007	FRANKLIN	31,433.00	\$109,042.00	224,084.00	\$751,645.00
2006	FRANKLIN	73,532.00	\$222,697.00	205,742.00	\$609,661.00
2005	FRANKLIN	76,503.00	\$219,970.00	466,731.00	\$1,259,995.00
2004	FRANKLIN	50,887.00	\$134,935.00	517,737.00	\$1,332,494.00
	TOTALS	1,041,409.00	\$4,022,071.00	2,193,315.00	\$6,858,416.00

For the last 11 years (2004-2014) the dockside value and landing of gag grouper for Franklin County have been \$6,858,416 (Table 3). The value of this fishery while greater than red snapper has been decreasing for the last 11 years.

The values of the red snapper catch on the other hand has been increasing every year since 2004, showing the importance of this species to anglers off Franklin County.

The catch of value of 78 species of marine fisheries caught commercially off Franklin County averages to be \$10,607,312 per year or \$116,680,440 over the last 11 years according to the FWRI data as is attached as **Appendix 5** (FWRI,2016). Marine fisheries associated with artificial reefs have a very large, positive economic impact on these two counties of the big bend

B. Saltwater fishing license revenues

According to data provided by the FWC, there are 19,352 anglers holding some type of fishing license in Wakulla, Franklin and Leon counties (**Appendix 6**). There are 13 different types of saltwater licenses available to anglers. This equates to \$527,298.50 in revenue that is generated from saltwater angling off the Big Bend. This is the source of funding for the artificial reef grant s program as well as marine enforcement of fishing regulations in the area. Marine angling is a large part of the area's economy.

C. Registered vessels

According to data provided by the Department of Motor Vehicles FOR 2015, the three counties that primarily utilize the artificial reefs managed by OAR, there were 21,620 registered boats. It is apparent from these numbers that marine recreation is a very important component of the local economies of the area.

Table 4 -Registered vessels-2015

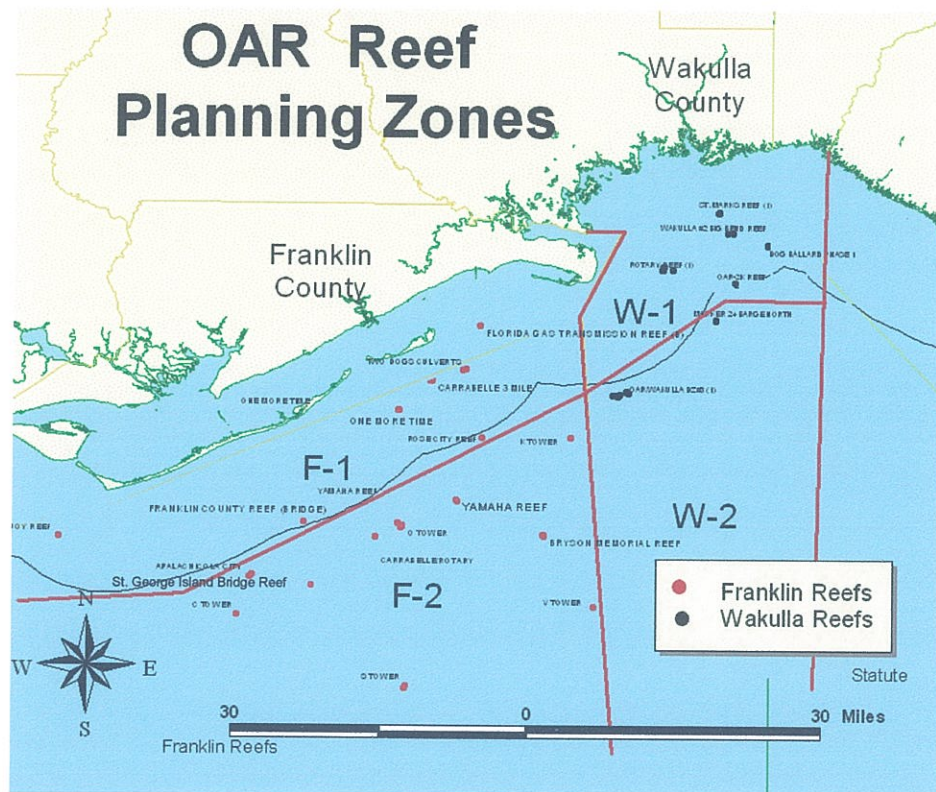
COUNTY	DEALER	PLEASURE	COMMERCIAL	TOTAL
FRANKLIN	13	2,323	983	3,319
WAKULLA	7	4,722	309	5,038
LEON	3	13,070	190	13,263
			total	21,620

4. ARTIFICIAL REEF PLANNING

A. Reef Zone Map

One of the primary tools in artificial reef planning will be the OAR Reef Planning Zones Map (Figure 1). Four management zones were created off the Big Bend area to ensure that equal distribution of reefs in the area. The four zones are divided into deep and shallow reefs zones. The two deep zones, one off each county W-2 (Wakulla) and F-2 (Franklin County) are located beyond a line approximately 10 nautical miles offshore. The two inshore reef zones F-1 and W-1 are within 10 nautical miles of shore.

Figure 1 .OAR Reef Planning Zones



The zone map will be used in conjunction with the site selection flow chart to determine if new reef sites are appropriate. Sites and specific material placements will be designed to minimize the potential for known user conflicts.

B. OAR Advisory Board

The OAR Board of Directors serves as the local advisory board for all reef activities. This volunteer non-paid board of 42 6 members come from various backgrounds and brings to the table various points of view regarding the marine resources of the Big Bend area. They meet once per month to discuss local reef building and monitoring projects and activities.

C. Reef Construction Permits

No reef shall be built without all applicable local, state and federal permits. In general, reef sites shall be permitted and developed so as to be in compliance with ACOE Standard General or Individual Permits, and FDEP General Permit for artificial reefs (section 62-341.600, F.A.C.), if applicable. If particular circumstances, such as depth or material type, preclude use of the general permit, then permitting shall be through a joint application for an environmental resource permit (ERP). For permits outside the jurisdiction of the State, a copy of all permits shall be supplied to FFWCC as the central repository of artificial reef information for this region. Permitting procedures will be updated or modified as dictated by changes in the regulatory process.

Table 5- Artificial reef permits for Franklin County

ZONES	ISSUE DATE	REEFNAME	COE PERMIT NUMBER	PERMITTEE	SIZE	STATUS
F-1	PENDING	ST TERESA REEF	SAJ-2015-00966(SP-SWA)	CITY OF CARRABELLE	.25 mile x .25 mile	PENDING
F-2	9/13/2013	CARRABELLE 10 MILE REEF	200100310 (IP-JML)	CITY OF CARRABELLE	1 n mile x .1 n mile	ACTIVE-9/13/2023
F-2	2/12/2004	ST GEORGE ISLAND BRIDGE REEF	200308709 (IP-JWS)	FRANKLIN COUNTY	1 n mile x .2 n mile	IN-ACTIVE
F-1	4/9/2003	ROSE CITY REEF	200100310 (IP-KO)	CITY OF CARRABELLE	608 ft X 608 ft	IN-ACTIVE
F-2	6/21/2001	YAMAHA REEF -SOUTHERN ADDITION	199406634 (GP-TZ)	CITY OF CARRABELLE	600 ft X 600 ft	IN-ACTIVE
F-1	4/29/1997	FLORIDA GAS TRANSMISSION REEF	199601417 (GP-NF)	CITY OF CARRABELLE	1000' X 1000'	IN-ACTIVE
F-1	4/29/1997	TWO DOGS CULVERTS	199702453	CITY OF CARRABELLE	608 ft X 608 ft	IN-ACTIVE
F-1	4/29/1997	TWO DOGS REEFBALLS	199702453	CITY OF CARRABELLE	608 ft X 608 ft	IN-ACTIVE
F-2	4/29/1997	BRYSON MEMORIAL REEF	199601418 (GP-NF)	CITY OF CARRABELLE	1000' X 1000'	IN-ACTIVE
F-1	4/3/1992	ONE MORE TIME	199261130(GP-KF)	CITY OF CARRABELLE	390' X 780', NE-SW	IN-ACTIVE
F-1	8/6/1990	CARRABELLE 3 MILE	90IPL0047	CITY OF CARRABELLE	1000' X 1000'	IN-ACTIVE
F-1	12/10/1988	CITY OF APALACHICOLA SITE	83T-0480 AND 88GP60197	CITY OF APALACHICOLA	400' X 1000'	IN-ACTIVE
F-2	6/5/1987	FRANKLIN COUNTY REEF (BRIDGE)	87GP80238 AND 88GP60197	FRANKLIN COUNTY	400' X 1000'	IN-ACTIVE
F-2	9/9/1983	CARRABELLE REEF BARGE	80F-1169	CITY OF CARRABELLE	400' X 1000'	IN-ACTIVE
F-2	4/24/1981	CARRABELLE/ROTARY	80F-1169 (SAJOD-RP-S)	CITY OF CARRABELLE	400' X 1000'	IN-ACTIVE

Table 6- Artificial reef permits for Wakulla County

ZONE	ISSUE DATE	REEFNAME	COE PERMIT NUMBER	PERMITTEE	SIZE	STATUS
W-1	6/17/2013	ST. MARKS REEF (3)	.SAJ-1987-60014 (IP-JML)	CITY OF ST MARKS	1,555' X 989'	ACTIVE-6/17/2023
W-1	6/20/2000	OAR-2K REEF	200000947(IP-TZ)	WAKULLA COUNTY	608' X 608'	IN-ACTIVE
W-2	4/28/1997	MARKER 24 BARGE NORTH & SOUTH	199702451	WAKULLA COUNTY	608' X 608'	IN-ACTIVE
W-2	1/20/1994	OAR/WAKULLA DZ#1 (4)	199301951	WAKULLA COUNTY	0.5 NM X 1.5 NM	IN-ACTIVE
W-1	11/29/1993	DOG BALLARD PHASE 3	199301520 (IP-SS)	CITY OF ST MARKS	500' X 500'	IN-ACTIVE
W-2	3/7/1995	WAKULLA #1 BIG BEND REEF	199500771(GP-RH)	WAKULLA COUNTY	608' X 608'	IN-ACTIVE
W-2	3/7/1995	WAKULLA #2 BIG BEND REEF	199500771(GP-RH)	WAKULLA COUNTY	608' X 608'	IN-ACTIVE
W-2	3/2/1989	OAR/WAKULLA DZ#1 (1)	89GP60058	WAKULLA COUNTY	0.5 NM X 1.5 NM	IN-ACTIVE
W-1		ST. MARKS REEF (3)	87GP60014	CITY OF ST MARKS		IN-ACTIVE
W-1	5/13/1981	ROTARY REEF (7)	80F-1644	WAKULLA COUNTY	300' X 2000'	IN-ACTIVE
W-1		ST. MARKS REEF TIRES	82T-0670	CITY OF ST MARKS		IN-ACTIVE
W-1	5/13/1981	ROTARY REEF (1)	1522-15 MOB008252	WAKULLA COUNTY	300' X 2000'	IN-ACTIVE

D. Materials. Type and Deployment Procedure

All permit general conditions shall be considered while developing material placement project scopes. Only allowable materials shall be used. No material shall be placed on a reef site without direct on-site supervision by a representative of OAR or the counties. No material shall be placed without obtaining any necessary inspection of material from

regulatory agencies or their representatives. No material shall be placed without onsite GPS documentation and a survey dive of the drop location immediately after the materials placement. These procedures will be used as the primary method to minimize any potential liability exposure to the Counties. The Counties Risk Managers shall also be consulted to assign necessary insurance coverage for contractors involved in reef construction.

E. Project Frequency

OAR attempts to build at least one project per year. New reef projects will target areas with known user conflicts or crowding problems. Priority shall be given to projects in zones without existing reefs or in sites in need of corrective action, subject to any active permit limitations (see Tables 6 & 7).

In addition, OAR will assist any non-profit or private organizations attempt to build reefs in Big Bend waters. OAR will ensure that the materials used are appropriate for the location, and are placed on a permitted reef site in accordance with all regulatory requirements with direct staff supervision.

F. Grant Funded Projects

Grant funding shall be sought for at least one project annually. Private contributions shall be sought on all projects. Private contributions could include donation of materials, transportation, material preparation, and cash and in-kind contributions. When grant funds are used, any special conditions associated with the grant funding shall be incorporated into the project specifications used to select and choose a contractor. Every effort is made to provide recognition to reef donors and granting agencies.

5. ARTIFICIAL REEF MATERIALS

OAR has historically utilized a variety of materials in constructing its reefs. All materials utilized are in compliance with all standards and applicable permits. All materials used must show long-term durability, stability, bio-fouling potential, and be readily available.

A. Material Criteria

OAR may utilize any of the following materials:

- Concrete or steel vessels: cleaned of all petroleum products, loose debris, etc. Inspected and approved by USCG;
- Concrete: culverts, junction boxes, power poles, slab, rubble -all concrete must be clean, and lacking any potentially hazardous protrusions, such as rebar;
- Heavy gauge steel: such as pipe or structural beams;
- Limestone rubble or natural rock;
- Structures specifically designed as artificial reefs: provided all materials used in structures comply with guidelines of the Reef Plan.

All of the above material must demonstrate sufficient stability to remain in its' original deployment provided by the FFWCC as a planning tool in judging a material's suitability for use at the permitted deployment site.

OAR will not utilize the following materials:

- Vehicular tires;
- Household or commercial appliances, i.e., "white goods";
- Furniture, fiberglass boat molds, fiberglass vessels;
- Any surface holding asphalt;
- Any toxic or polluting material;
- Wooden vessels.

B. Bio-fouling Potential of Material Types

The term bio-fouling relates to the process by which sessile, and/or anchoring organisms, attach to hard substrates. Numerous marine organisms, in their early life stages, drift with the ocean currents. Ultimately, they will settle out of the water column and attach onto an available hard surface. In Big Bend waters, natural hard Bottom is most often comprised of exposed limestone areas. Ideally, materials that mimic this habitat and provide the same or similar hard surface for attachment are the best materials for use as artificial reefs. Concrete fouls almost immediately in the marine environment. Barnacles colonize concrete often within the first week of immersion. Limestone rubble is also an excellent material for colonization. Its natural characteristics lend itself to the rapid and diverse growth shown on natural ledges. Steel materials do show some bio-fouling potential, however, diversity and quantity of fouling organisms are sometimes less than concrete and limestone.

C. Prioritization of Material

OAR's first priority in obtaining materials is suitability; second, is cost effectiveness. Concrete manufacturers often have surplus materials, such as culvert pipe or boxes. Disposing of this material can be very expensive for the manufacturer. If possible, the option of donating the material to OAR offers a low cost, high benefit alternative. An added benefit of using these materials for the construction of an artificial reef is the recycling benefit of using the discarded concrete pieces. Rather than filling the landfill with broken concrete, the material is reused and turned into long-term viable habitat. Franklin County has many local concrete manufacturers that offer a wide variety of heavy, pre-cast concrete materials. These "materials of opportunity" are the large majority of materials that Franklin County utilizes.

With no large port nearby, large steel-hulled vessels have not been readily available to Franklin or Wakulla Counties for use in their reef programs. However, OAR does have an interest in obtaining a large vessel as a high profile, major feature of its reef system, and is taking steps towards procuring one. Occasionally, steel barges have been utilized as reef material. Other heavy gauge steel, such as pipes or crane superstructure and recently, tow tugboats, has been used to construct reefs in the past and, under certain circumstances, can be effective material.

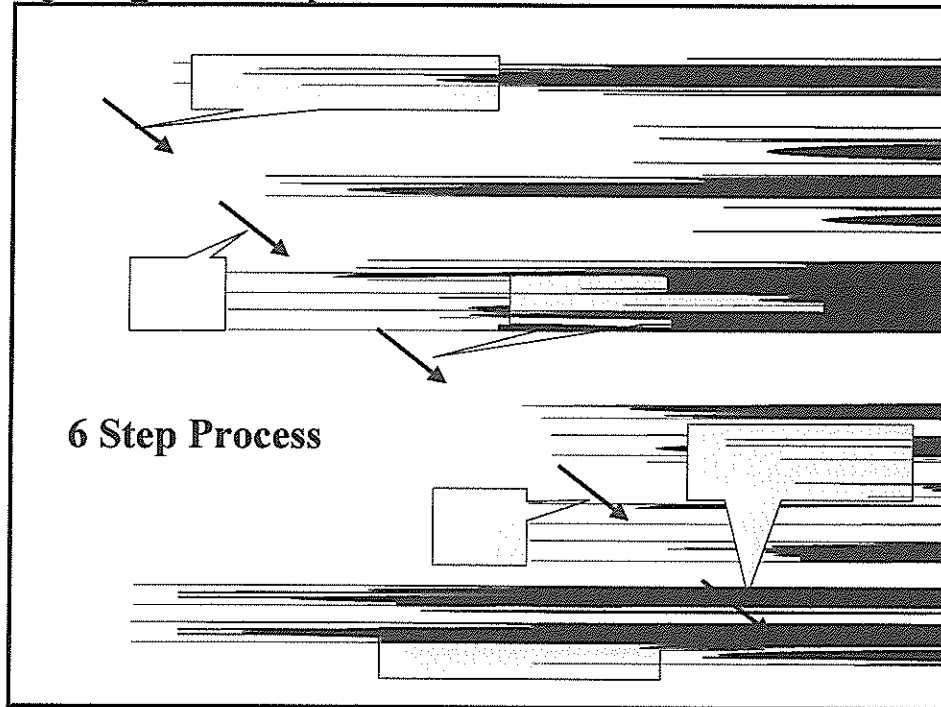
6. SITE SELECTION CRITERIA

A. Site Selection Flowchart

Many of the benefits and potential pitfalls of artificial reef construction are directly related to site selection. History has also demonstrated how important site selection is for material compatibility. The Site Selection Flowchart (**Figure 2**) has been designed to provide a stepwise process for site selection. The steps will ensure that conflicts with existing fisheries uses are minimized and permitting criteria are met. The flowchart will

be reviewed and updated as necessary to accommodate any permit conditions or concerns from the regulatory agencies.

Figure 2 Reef Development Flowchart



B. Selection Procedure

The flowchart indicates that in addition to written reference materials, such as charts and the Reef Plan, at least one assessment dive will be conducted prior to permit application for all new sites. The first dive will provide an assessment of the physical properties of the site and will be performed according to adopted bottom survey dive protocols (**Appendix 7**). Several areas of the Big Bend near shore waters have been found to have sediment too soft to support reef material. These areas will be avoided based on a probe penetration standard. If it is found that the substrate is too soft, the remaining dive will be called off and a new site will be selected. Provided the sediment is conducive to reef deployment, the dives will provide a preliminary assessment of any existing benthic communities, protected species and cultural resources that may exist on site. The bottom survey will also include a radial transect of the area to be inspected on north, south, east and west compass headings for a minimum of 150' in each direction. Areas with extensive benthic communities or cultural resources may result in selection of a new site. If any protected species are observed during either assessment dive, a management plan will be developed to address their presence.

7. ARTIFICIAL REEF MANAGEMENT

A. Maintenance

An attempt is made to visit each reef site at least once a year to survey the reef material and monitor its performance. Determinations are made on each site concerning its success in meeting its intended objectives, material viability, use by recreational anglers

and divers, and the need for re-nourishment. It was determined that area reefs would not be marked with permanent buoys. Buoys will be installed and maintained at all sites where required by permit conditions.

B. Monitoring

Since 1990 OAR has maintained a team of trained advanced divers to monitor these artificial reefs. The OAR-Research Dive team (RDT) has been extensively trained in underwater techniques to monitor artificial reefs using SCUBA equipment and underwater monitoring tools.

A fifteen-lecture hour course along with four training dives has been developed by OAR with assistance from Florida Sea Grant program and the FWC Artificial Reef Program. Since 1990 they have been offering this class to interested advanced divers in the Big Bend area, primarily Tallahassee. This course includes five instructional modules. They are:

1. Introduction to Reef Research Diving
2. Artificial Reef Design and Development
3. Artificial Reef Mapping
4. Invertebrate Identification and Census
5. Vertebrate Identification and Census.

Over 121 divers have been trained by OAR using this training protocol. (Appendix 8). The OAR RDT has successfully completed 8 monitoring grants for the FWC since 1995, totaling more than \$ 56,727.23 (Table 7 below).

Table 7- Monitoring grants managed by OAR

COUNTY	CONTRACT	TYPE	GRANTEE	AMOUNT	YEAR	PAID	REEF NAME	DESCRIPTION
WAKULLA	FWC-1267	MONITOR	OAR	10,000	2013-14	\$10,000.00	WERRING'S DOG BALLARD	12 fish census 3 medops
FRANKLIN	FWC-08019	MONITOR	OAR	\$0.000	2008-09	\$0.000.00	CARRABELLO ROTARY REEFS	OLD REEF SITES MATERIALS ASSESSMENT
WAKULLA	FWC-01108	MONITOR	OAR	\$0.000	2001-02	\$0.000.00	CARRABELLO ROTARY REEFS	COMPARE CUBES VERSUS FISH HAVENS
FRANKLIN	FWC-09077	SOB SCAN	OAR	\$0.000	1999-01	\$0.727.23	ELIENEN SITES	SOB SCAN ON 11 OAR REEFS OFF BIG BEND
FRANKLIN	OWAS-108	MONITOR	OAR	\$10,000	1995-99	\$7,499.99	2 DOGS REEF	32 SAMPLING EVENTS, ANCHORAGE, FISH COUNTS
FRANKLIN	OWAS-108	MONITOR	OAR	\$0.000	1991-95	\$0.000.00	VARIOUS SITES IN APALACHEE BAY	SOB SCAN SONAR STUDY
TAYLOR	OWAS-081	MONITOR	TAYLOR COUNTY	\$10,000	1995-98	\$10,000.00	BIG BEND REGIONAL REEFS	FISH CENSUS 30 EVENTS IN 3 COUNTIES
WAKULLA	OWAS-107	MONITOR	CITY OF ST. MARKS	\$0.000	1991-95	\$0.000.00	WERRING'S DOG BALLARD	FISH CENSUS 24 EVENTS
			TOTAL			\$56,727.23	8 monitoring grant projects	

Each time the OAR-RDT divers visits a reef site, a survey is performed. Over 79 fish census surveys have been completed by the OAR-RDT on Big Bend reefs (Appendix 4). This survey includes an inspection of the reef material to determine its physical status and condition. Also, an inventory of fish species is taken. A copy of the survey form is included in Appendix 9. These surveys allow OAR to track a particular reefs performance over time. They may help answer questions such as; what fish species prefer which material type, or what material appears to be the most suitable for benthic organism growth, and so on. It is important to track reefs performance over time, as material longevity plays a key role in how productive a reef can be.

As artificial reef structure becomes more complicated, and more time, money, and effort is put into constructing reefs, it behooves the OAR to determine the most effective methods of building reefs.

C. Education

OAR holds monthly meetings to discuss various issues concerning artificial reefs. The members of the OAR Board of Directors come from a variety of user groups. These groups include recreational fishing clubs, professional fishing guides, SCUBA dive clubs, dive shops, and commercial fishermen. The Board is a conduit to the general public and special interest groups that are concerned with artificial reefs and their management. With the committee's assistance, OAR is better able to make decisions regarding the planning and management of reefs, as well as the education of the public regarding different aspects of local waters.

Artificial reef management covers a variety of areas. Maintenance of existing reef sites, monitoring of reef depositions, and education of reef users, are all-important considerations when managing an artificial reef community. This committee also is kept informed on the progress of any ongoing artificial reef projects and asked for input.

An open line of communication between the OAR, the counties and other local, state, and federal agencies that may be researching artificial reefs is an ongoing area of concern. OAR stays up to date with newsletters and journals that deal with artificial reefs. OAR staff will also attempt to attend and participate in any applicable reef meetings or conferences.

OAR operates and maintains a website that offers a variety of information on artificial reefs. The Web address is <http://www.oar-reefs.org/>. All of the aforementioned educational materials are updated in a timely fashion and made available to the public. A printout listing the coordinates to each site is also available upon request from OAR.

8. PROJECT IMPLEMENTATION AND MANGEMENT

A. Material Acquisition

OAR's first choice in materials is either heavy pre-cast concrete or limestone rock. The advantages to concrete are its weight, size, rough texture, and ease of acquisition. There are many local manufactures of pre-cast concrete such as culvert, power poles and junction boxes. Often, these manufacturers will donate unwanted material to the local counties. This material may not meet manufacturing specifications. It may be cracked or broken, or simply be surplus material. Either way, concrete makes first class reef material. The availability of surplus concrete material far exceeds the demand and manufacturers would prefer to donate their surplus goods rather than dispose of them at the landfill due to obvious cost differences. Limestone rock is also an ideal material for obvious reasons. At one time in its history it was the basis for all Florida's natural reefs. Therefore, its reuse as reef material makes perfect sense. In recent years, a variety of pre-fabricated artificial reef materials have come on the market. OAR has begun to address the question of cost-effectiveness of the materials by deploying prefabricated Reef Balls™, Fish Havens™ or Florida Special Walter's units near similar piles of donated pre-cast concrete pipes. Future monitoring at these sites may determine if purchasing prefabricated, designed reef materials is cost-effective.

During project planning, OAR will investigate possible sources and secure subsequent agreements with the donators for the use of their material. When possible, free materials may be adapted or modified maximize their effectiveness.

B. Site Selection

As described in Section 4, site selection will be based on a Site Selection Flowchart. Please refer to Flowchart for details. The basic criteria for site selection are seafloor

type, depth of water, proximity to surrounding reefs and accessibility by boaters. A permit to place materials on the site is necessary from the ACOE and, if the site is located within state waters, FDEP. Information to be placed on the application includes, but is not limited to; Reef Site Bottom Survey Report with benthic conditions, Reef Site Chart let describing locale, area coverage of reef site, reef material profile (maximum height of material off bottom), material description, and Uniform Waterway Marker Application for buoy placement, if applicable.

Avoidance of Marine User Conflicts

According to the "Guidelines and Management Practices for Artificial Reef Siting, Use, Construction, and Anchoring in Southeast Florida" (Lindberg and Seaman, 2011), conflicting uses should be evaluated when establishing a permitted artificial reef area. Possible conflicts over sea bottom use could include telecommunication cables, pipelines, energy projects, U.S. Bureau of Ocean Energy Management, Regulation and enforcement (BOEMRE) (formerly the Minerals Management Service) lease areas, sand borrow areas, and restricted areas for military activities. Historical trawling areas and known shipping lanes should also be considered.

OAR and its coastal partners will take steps to determine if there are any user conflicts in the area by polling its extensive local membership on the new site locations. Additionally, the Southeastern Fisheries Association to determine if there were any known conflicts with shrimping grounds in the area of new reefs and any organized boat associations in the area. Additionally, local commercial fishermen are contacted to determine if there are any objections to a new reef's proposed location.

New Site Selection

OAR develops new reef artificial reef sites primarily through input from the local angling and diving communities. Reef locations are determined through gaging the needs and desires of the local marine user groups. The OAR board and OAR members are in constant communication with these groups to determine if the current reefs are meeting their needs and where they would like new reefs. Spreading the reefs out graphically to dilute user pressure in any one area is also a concern when developing new reefs sites.

Wakulla County

For St. Marks based anglers, reefs with good nearshore access in their very shallow waters was a priority. Since it had been many years since new reef development in this area, it was decided to re-permit and expand the old St. Marks Reef, the nearest reef to the town of St. Marks. In 2014, 18 new patch reefs were deployed on the St Marks reef and in the summer of 2016 another 20 new patch reefs will be built under a grant from the FWC, through the City of St. Marks.

After this 2016 deployment, the site will be essentially completed and OAR will look to permit a new reef site in planning Zone W-2, further offshore since only 2 existing reefs are in this zone.

Franklin County

Most recent reef deployments for Franklin county through the City of Carrabelle have been in the Carrabelle 10 Mile Reef in planning zone F-2, which is nearing capacity. Local anglers wanted a closer reef the popular marinas like Carrabelle and Lanark Village, so the St. Teresa Site was located and permitted. It is anticipated that three years of deployment can be made on this small site in Planning Zone-F1.

Since red snapper is a very important local fishery that has been increasing over the past 11 years (Table 3), new reefs just inside the state waters line in more than 60 feet of water or greater will be developed next for Franklin County to enhance the red snapper opportunities.

C. Funding

An Artificial Reef Construction and Monitoring Grant Application are necessary to receive funding from the FWC. The Grant cycle begins with the application submittal date in March. The ending period for this cycle is June 30th, the following year. Pertinent information needed includes site location, project description, demand, and purpose. Included in the packet will be a charted showing the site and proximity to a recognized land based feature such as an island, Pass or marina, and a drawing of the proposed reef configuration.

Funding provided by the FWC is either through the U.S. Fish and Wildlife Federal Aid in Sport Fish Restoration program or the Florida saltwater fishing license revenues. Grants are awarded on a competitive basis without bias. Proposals are ranked by the information provided within the application. It is typically about eight months before grant awards are finalized and Project Agreements are signed. OAR will adhere to Florida Statute 370.25 and F.A.C. Rule 68E-9 that are noted in the grant agreement.

Another source of revenue for reef building is from OAR itself. Every year OAR designates thousands of dollars to go towards building and monitoring artificial reefs. Much of this funding comes from yearly the Big Bend Saltwater Classic.

D. Solicitation of Bids for the Construction of Artificial Reef

Pending appropriation of funds, OAR will work with County staff to create a formal bid packet and advertises for bids, if applicable. This packet describes the project scope and construction specifications. This packet also details insurance and liability issues. The time period between grant awards, formulation of bid specifications, advertising and bid opening is approximately two months.

E. Reef Construction

Concurrent with award of a County Construction Contract, reef materials will be secured. Delivery of materials to the staging area will be coordinated between the OAR, the contractor, and material suppliers. The contractor will load the barge with the material to be deployed. The OAR Project Manager will maintain an accurate count of the reef material tonnage that is loaded for transport to the permitted site, and ensure that the material is placed within the reef site perimeter on the designated coordinates. The County or OAR will place no materials onsite without supervision. All placements will be immediately confirmed with GPS. The timeline on this schedule of events runs approximately two to four months.

F. Contract Close-out/Site Inspection

Upon completion of construction, final construction documentation and county reimbursement paperwork must be completed. A final survey is performed to confirm proper placement of materials and obtain photo or video documentation if possible. Material Placement Reports will be provided as required.

9. PLAN GOALS

Continue to maintain and develop artificial reefs in Big Bend waters, improving the existing sites and marine recreation opportunities for the benefit of residents and visitors alike.

- * Design reef projects to provide long-term habitat benefits and enhanced fishery productivity to the extent possible based on research findings and specific project objectives.
- * Provide assistance to others who create properly constructed reefs in local waters.
- * Coordinate with and assist any artificial reef activities conducted by other governmental agencies working in Franklin or Wakulla Counties.
- * Review any Economic Impact Studies of artificial reefs conducted by other entities for applicability to Franklin or Wakulla County.
- * Continue the categorization and verification of existing materials, and the subsequent publishing of educational materials for the public benefit.
- *
- *Continue applying for grant assistance from state and federal sources at least once per year.
- * Assure there are sufficient active federal and state (where applicable) permits for reef sites to meet the improvement needs for reefs shown in the Reef Site/Zone Summary Chart (see **Appendix 1**). It is planned to have at least one active permitted site within each of the four management zones to facilitate the controlled development of the area reefs.
- * Survey each reef site at least one time per year to monitor the site's material for durability, longevity, and effectiveness as productive habitat and consistency with stated objectives.
- * Permit new reef sites in accordance with the Site Selection Flowchart (**Figure 2**), Zone Map (**Figure 1**), and Reef Site/ Zone Summary Chart (**Appendix 1 & 2**).
- * Update this Reef Plan on an annual basis to incorporate new or changed conditions relative to reef construction.

As the unofficial stewards of the waters off the Big Bend's coast, it is also important ecologically to construct reefs that do not impact any pre-existing nearby natural live bottom, either directly or indirectly. Material moving off the permitted site due to storm events or other factors may directly impact nearby live bottom. Indirect impacts may include the "attraction" of resident fish species from a natural area to an artificial reef area. These types of impacts can be reduced, if not eliminated, by proper planning and building of artificial reefs. However, before the planning and building takes place, proper monitoring of existing materials and sites are vitally important. Having this information available can improve future reef development by optimizing site selection and material choice.

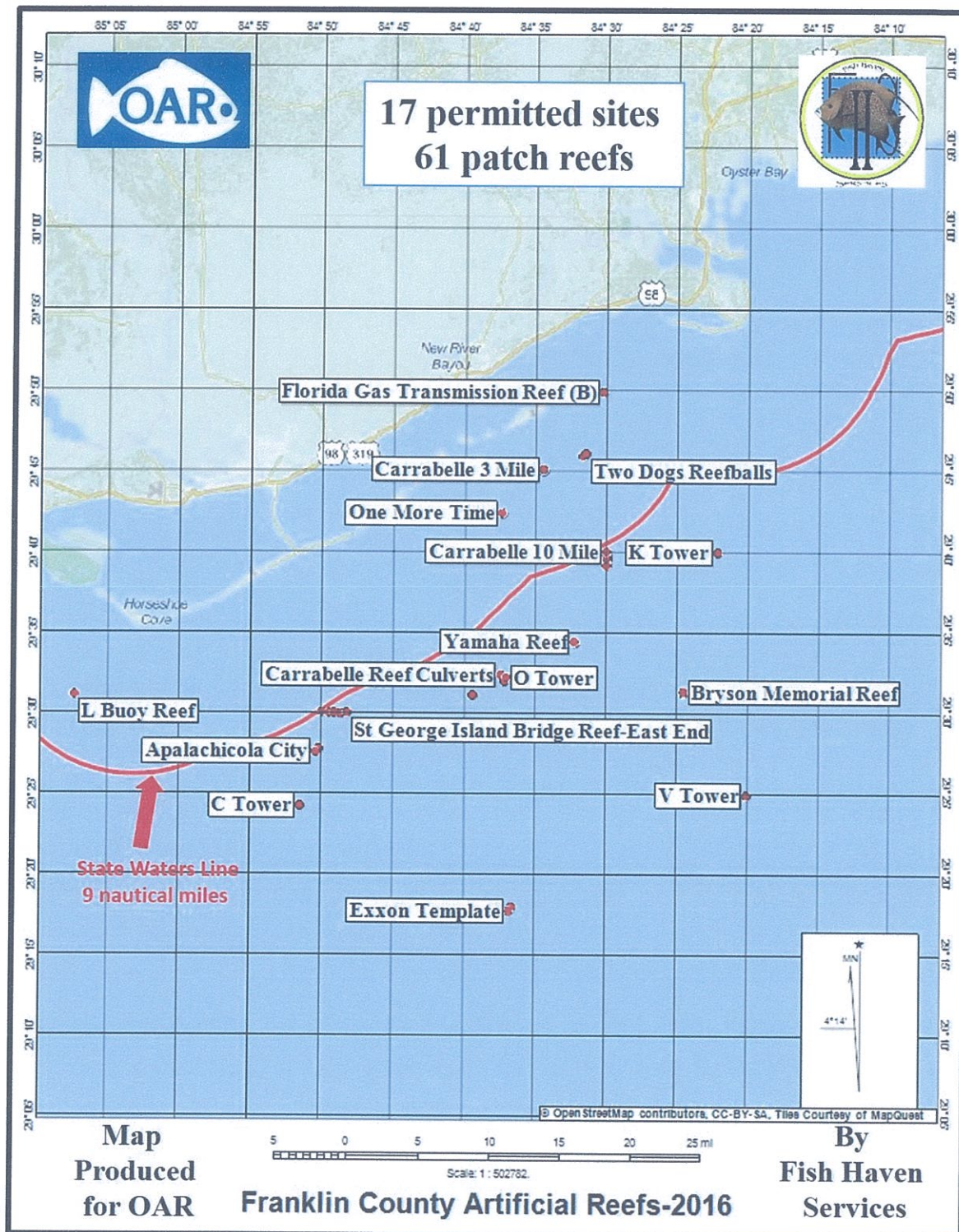
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APPENDIX 1-A

OAR- Reef Plan
Ver. 1.7 (2016)

Franklin County Artificial Reef Map



APPENDIX 1-B

OAR- Reef Plan
Ver. 1.7 (2016)

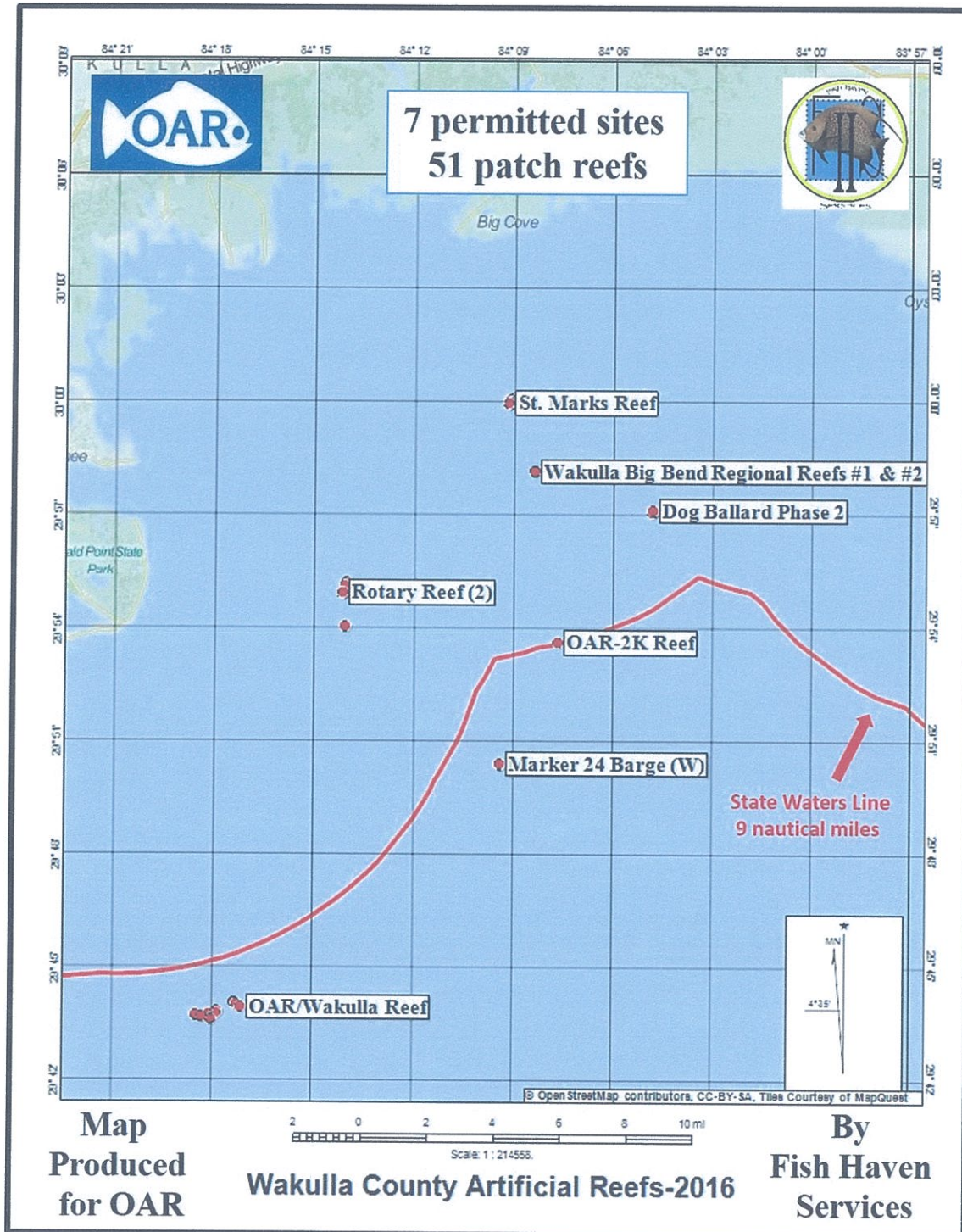
Franklin County Artificial Reef List

DeployID	Zone	DeployDate	Deployment Name	Description	Primary Material	Tons	Relief	Depth	Jurisdiction	Lat (DM)	Long (DM)
FR0006	F-2	07/26/2015	Cureton Reef	3 sets of 4 Lindbergh Cube Reef Modules Running North/South	MODULE - Lindbergh Cube (12)	12	3	50	Federal	29° 30.789' N	84° 30.003' W
FR0009	F-2	7/26/2015	Cureton Reef North	3 Florida Limestone Reef and 4 Ecosystem Reef Modules Spaced 25ft Apart	MODULE - Walter Marine Florida Limestone Reef (3)	17	0	50	Federal	29° 30.602' N	84° 29.999' W
FR0010	F-2	07/26/2015	Cureton Reef South	3 Florida Limestone Reef and 4 Ecosystem Reef Modules Spaced 25ft Apart	MODULE - Walter Marine Florida Limestone Reef (3)	17	0	50	Federal	29° 30.703' N	84° 29.999' W
FR0056	F-2	06/18/2014	Robby Redding Memorial Reef #7	4 Walter Florida Limestone Reef Modules And 1 Ecosystem Reef Funded By Donations To OAR	MODULE - Walter Marine Florida Limestone Reef (4)	14	0	50	Federal	29° 30.620' N	84° 29.970' W
FR0055	F-2	06/18/2014	Robby Redding Memorial Reef #6	4 Walter Ecosystem Reefs On Pads Funded By Donations to OAR	MODULE - Walter Marine Ecosystems Base (4)	6	0	50	Federal	29° 30.502' N	84° 29.980' W
FR0054	F-2	06/18/2014	Dixon Camp Memorial Reef #3	10 Walter FL Limestone Reefs W A Super Reef W 1 Limestone Reef Inside Funded By OAR Donation	MODULE - Walter Marine Florida Limestone Reef (11)	51	15	50	Federal	29° 30.207' N	84° 30.010' W
FR0053	F-2	06/18/2014	Dixon Camp Memorial Reef #2	10 Walter FL Limestone Reefs W A Super Reef W 1 Limestone Reef Inside Funded By OAR Donation	MODULE - Walter Marine Florida Limestone Reef (11)	51	15	50	Federal	29° 30.224' N	84° 30.003' W
FR0052	F-2	06/18/2014	Dixon Camp Memorial Reef #1	10 Walter Florida Limestone Reef Modules With A Super Reef W 1 Limestone Reef Inside	MODULE - Walter Marine Florida Limestone Reef (11)	51	15	50	Federal	29° 30.161' N	84° 30.008' W
FR0051	F-2	05/11/2011	Robby Redding Memorial Reef #5	The Orbiter - A Steel Sculpture Prefabricated Steel 10'X4'X10' WX 30' Long	METAL - Sculpture	5	10	50	Federal	29° 30.613' N	84° 30.016' W
FR0050	F-2	05/11/2011	Robby Redding Memorial Reef #4	15 Concrete Culverts of Various Sizes	CONCRETE - Culverts (15)	27	4	50	Federal	29° 30.613' N	84° 30.000' W
FR0049	F-2	05/05/2011	Robby Redding Memorial Reef #1	5 Walter Florida Limestone Reef Modules	MODULE - Walter Marine Florida Limestone Reef (5)	13	10	50	Federal	29° 30.600' N	84° 30.016' W
FR0048	F-2	05/05/2011	Robby Redding Memorial Reef #2	5 Walter Florida Special Steel Reef Modules	MODULE - Walter Marine Florida Special (5)	14	10	50	Federal	29° 30.600' N	84° 30.000' W
FR0047	F-2	05/05/2011	Robby Redding Memorial Reef #3	5 Walter Grouper Box Modules	MODULE - Walter Marine Grouper Reef (5)	13	2	50	Federal	29° 30.614' N	84° 29.995' W
FR0046	F-2	06/03/2004	St George Island Bridge Reef-West End	40 Concrete Bridge Rings 20'X20'X20' 80 of 108 Drops	CONCRETE - Rings Bridge (40)	80	10	75	Federal	29° 29.995' N	84° 49.937' W
FR0045	F-2	05/13/2004	St George Island Bridge Reef-West Central	Single Concrete Bridge Span 55'X28'X6' 77 of 108 Drops	CONCRETE - Bridge Spans	130	10	75	Federal	29° 29.995' N	84° 49.426' W
FR0044	F-2	04/23/2004	St George Island Bridge Reef-East Central	Single Concrete Bridge Span 55'X28'X6' 94 of 108 Drops	CONCRETE - Bridge Span	130	10	75	Federal	29° 29.995' N	84° 49.656' W
FR0043	F-2	04/09/2004	St George Island Bridge Reef-Center	Single Concrete Bridge Span 55'X28'X6' 53 of 108 Drops	CONCRETE - Bridge Span	130	10	75	Federal	29° 30.000' N	84° 49.065' W
FR0042	F-2	03/23/2004	St George Island Bridge Reef-East End	Single Concrete Bridge Span 55'X28'X6' 35 of 108 Drops	CONCRETE - Bridge Span	130	10	75	Federal	29° 30.014' N	84° 49.178' W
FR0041	F-2	05/25/2003	Rose City Reef	20 Fish Haven Towers And 30 Fish Havens	MODULE - Artificial Reef Inc Fish Haven (50)	50	6	50	Federal	29° 40.000' N	84° 30.000' W
FR0040	F-2	05/21/2001	Yamaha Reef - Southern Addition	41 Total Large Concrete H-Beams - OAR 2 Drops This Location Also 6/18/2001	CONCRETE - L-Beams (54)	377	20	76	Federal	29° 34.355' N	84° 32.192' W
FR0039	F-1	05/22/2000	One More Time Addition	75 Pieces of 20 To 25 Feet Long (3.5 FT X 2 FT) Concrete Beams	CONCRETE - L-Beams (75)	250	3	40	State	29° 42.300' N	84° 37.360' W
FR0037	F-1	01/08/2000	Florida Gas Transmission Reef (B)	Concrete Debris Donated By Florida Gas Transmission Company	CONCRETE - Rubble	600	6	21	State	29° 43.008' N	84° 30.249' W
FR0036	F-1	06/24/1999	Two Days Culverts	130 Culverts 8'X18" In 25 Patches 50 Feet Apart	CONCRETE - Culverts (130)	117	4	37	State	29° 45.920' N	84° 31.685' W
FR0035	F-1	06/14/1999	Two Days Reefballs	130 Pallet Bales In 25 Patches 50 Feet Apart	MODULE - Reef Ball Pallet (130)	117	4	37	State	29° 46.072' N	84° 31.478' W
FR0034	F-2	06/28/1998	Bryson Additions	250 Tons of Miscellaneous Concrete Toward Stern of "Atlas"	CONCRETE - Rubble	250	6	79	Federal	29° 31.329' N	84° 24.562' W
FR0033	F-2	06/18/1998	Bryson Additions	150 Tons of Miscellaneous Concrete Between Two Tugs	CONCRETE - Culverts	150	6	79	Federal	29° 31.312' N	84° 24.558' W
FR0032	F-2	02/11/1997	Bryson Memorial Reef	108 Foot Tugboat The "Moonlighter" 35 Feet Wide	VESSEL - Tugboat 108'	20	75	Federal	29° 31.244' N	84° 24.526' W	
FR0031	F-2	02/11/1997	Bryson Memorial Reef	95 Foot Tugboat The "Atlas" 35 Feet Wide	VESSEL - Tugboat 85'	200	22	79	Federal	29° 31.327' N	84° 24.523' W
FR0030	F-2	05/04/1995	Yamaha Reef Addition	Addition To Existing Barge Reef 95 Pieces Total	CONCRETE - Rings	12	85	Federal	29° 34.450' N	84° 32.260' W	
FR0029	F-2	05/02/1995	Yamaha Site Addition	First Load of Two	CONCRETE - Rings	305	10	65	Federal	29° 34.421' N	84° 32.260' W
FR0028	F-2	12/27/1993	Yamaha Reef	105' X 35' X 15' Steel Barge	VESSEL - Barge	15	65	Federal	29° 34.420' N	84° 32.260' W	
FR0027	F-1	08/20/1993	Carrabelle 3 Mile Reef (6)	4th Load of 6 Deployment Dates 19 Pieces off Site Pile	CONCRETE - Culverts (19)	46	7	39	State	29° 45.040' N	84° 34.671' W
FR0026	F-1	05/13/1993	Carrabelle 3 Mile Reef (5)	4th Load of 6 Deployment Dates 23 Pieces	CONCRETE - Culverts (23)	59	7	39	State	29° 45.024' N	84° 34.464' W
FR0025	F-1	05/11/1993	Carrabelle 3 Mile Reef (4)	4th Load of 6 Deployment Dates 37 Pieces	CONCRETE - Culverts (15)	109	7	39	State	29° 45.046' N	84° 34.494' W
FR0024	F-1	05/09/1993	Carrabelle 3 Mile Reef (3)	3rd Load of 6 Deployment Dates 30 Pieces	CONCRETE - Culverts (15)	64	7	39	State	29° 45.049' N	84° 34.494' W
FR0023	F-1	05/07/1993	Carrabelle 3 Mile Reef (2)	2nd Load of 6 Deployment Dates 30 Pieces	CONCRETE - Culverts (30)	60	7	39	State	29° 45.063' N	84° 34.517' W
FR0022	F-1	05/05/1993	Carrabelle 3 Mile Reef (1)	1st Load of 6 Deployment Dates 30 Pieces	CONCRETE - Culverts (30)	60	7	39	State	29° 45.065' N	84° 34.547' W
FR0021	F-1	05/17/1992	Carrabelle 3 Mile Reef (1)	1st of 4 Loads This Date 200 Tons of Concrete Culverts	CONCRETE - Culverts	50	10	30	State	29° 45.079' N	84° 34.530' W
FR0020	F-1	05/17/1992	Carrabelle 3 Mile	3rd Load This Date 200 Total	CONCRETE - Culverts	50	0	39	State	29° 45.061' N	84° 34.483' W
FR0019	F-1	05/17/1992	Carrabelle 3 Mile	4th Load This Date 200 Total	CONCRETE - Culverts	50	7	39	State	29° 45.046' N	84° 34.463' W
FR0018	F-1	05/17/1992	Carrabelle 3 Mile	2nd Load This Date 200 Total	CONCRETE - Culverts	50	7	39	State	29° 45.068' N	84° 34.494' W
FR0017	F-1	03/08/1992	One More Time	75 Foot Long Steel Shrimp Boat Deployed By Oar Sunk On Way Out	VESSEL - Shrimp Boat 75'	12	36	State	29° 42.357' N	84° 37.422' W	
FR0016	F-1	12/10/1988	Franklin County Reef (Bridge)	Part of Bay Bridge County Reef Mainly Slabs	CONCRETE - Bridge Slabs	65	76	Federal	29° 27.775' N	84° 50.161' W	
FR0015	F-2	12/10/1988	City Of Apalachicola Site	Bridge Rubble From High Part of Apalachicola Bridge	CONCRETE - Rubble Bridge	8	76	Federal	29° 27.775' N	84° 50.161' W	
FR0014	F-2	07/11/1984	Apalachicola City	Two Barges 140'X28'X12' & 140'X35'X9' Filled With 50 Tires Each	VESSEL - Barges	12	80	Federal	29° 27.558' N	84° 50.378' W	
FR0011	F-2	11/10/1982	Carrabelle/Rotary	Concrete Culverts & Steel Storage Tanks - 4 Drops This Location Also 10/27 10/11 & 9/27/1982	CONCRETE - Culverts			Federal	29° 31.115' N	84° 30.443' W	
FR0013	F-2	00/00/1982	O-Tower Barge AKA Carrabelle Reef Barge	Metal Barge	VESSEL - Barge	6	74	Federal	29° 31.964' N	84° 37.290' W	
FR0012	F-2	00/00/1982	Carrabelle Reef Culverts	Concrete Rubble Fuel Storage Tanks Old Site	CONCRETE - Rubble	70	70	Federal	29° 32.371' N	84° 37.460' W	
FR0007	F-2	00/00/1981	K Tower	Navigational Tower 100 Ft Above Water Sitting Inside Hopper Barge	VESSEL - Barge	60	70	Federal	29° 30.066' N	84° 22.152' W	
FR0006	F-2	00/00/1981	V Tower	Navigational Tower 100 Ft Above Water Sitting Inside Hopper Barge	VESSEL - Barge	70	70	Federal	29° 24.030' N	84° 20.000' W	
FR0005	F-2	00/00/1980	S Tower	Navigational Tower 100 Ft Above Water Sitting Inside A Barge	VESSEL - Barge	105	105	Federal	29° 17.930' N	84° 36.655' W	
FR0004	F-2	00/00/1980	Exxon Template	Oil Rig Structure	METAL - Oil Rig Structure (1)	40	108	Federal	29° 17.720' N	84° 36.924' W	
FR0003	F-2	00/00/1977	O Tower	Navigational Tower 100 Ft Above Water Sitting In A Barge	VESSEL - Barge	70	70	Federal	29° 32.200' N	84° 37.068' W	
FR0002	F-2	00/00/1973	C Tower	Navigational Tower 100 Ft Above Water Sitting In A Barge	VESSEL - Barge			Federal	29° 24.230' N	84° 51.400' W	
FR0001	F-1	00/00/1965	Buoy Reef	Concrete Rubble	CONCRETE - Rubble	45	45	State	29° 31.116' N	84° 37.350' W	
WA0016	F-2	07/14/2007	Cureton Reef - Hopper	Metal hopper deployed by OAR	VESSEL - Barge Hopper			Federal	29° 39.800' N	84° 29.957' W	
WA0055	F-2	07/14/2007	Cureton Reef - Support Beams	Concrete roof support beams deployed by OAR	CONCRETE - Roof Support Beams			Federal	29° 39.848' N	84° 29.958' W	
WA0056	F-2	07/14/2007	Isampa 1	40 Concrete culverts split between three sites deployed by OAR	CONCRETE - Culverts (13)			Federal	29° 39.930' N	84° 29.935' W	
WA0057	F-2	07/14/2007	Isampa 2	40 Concrete culverts split between three sites deployed by OAR	CONCRETE - Culverts (13)			Federal	29° 39.924' N	84° 29.961' W	
WA0058	F-2	07/14/2007	Isampa 3	40 Concrete culverts split between three sites deployed by OAR	CONCRETE - Culverts (13)			Federal	29° 39.916' N	84° 29.978' W	
WA0017	F-2	02/00/2007	Cureton Reef - Concrete Vals	2 concrete vals deployed by OAR	CONCRETE - Vals 4x6x4' (2)	4	50	Federal	29° 39.853' N	84° 29.958' W	

APPENDIX 2-A

OAR- Reef Plan
Ver. 1.7 (2016)

Wakulla County Artificial Reef Mmap



APPENDIX 2-B

OAR- Reef Plan

Ver. 1.7 (2016)

List of Wakulla County Artificial Reefs

DeployID	Zone	DeployDate	Deployment Name	Description	Primary Material	Tons	Relief	Depth	Jurisdiction	Lat (DM)	Long (DM)
WK0054	W-1	10/23/2014	St Marks Reef A1	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.162' N	84° 9.175' W
WK0053	W-1	10/23/2014	St Marks Reef C1	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.162' N	84° 9.117' W
WK0052	W-1	10/23/2014	St Marks Reef E1	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.160' N	84° 9.055' W
WK0051	W-1	10/23/2014	St Marks Reef B2	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.140' N	84° 9.146' W
WK0050	W-1	10/23/2014	St Marks Reef D2	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.138' N	84° 9.085' W
WK0049	W-1	10/23/2014	St Marks Reef A3	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.113' N	84° 9.173' W
WK0048	W-1	10/23/2014	St Marks Reef C3	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.113' N	84° 9.116' W
WK0047	W-1	10/23/2014	St Marks Reef E3	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.114' N	84° 9.051' W
WK0046	W-1	10/23/2014	St Marks Reef B4	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.088' N	84° 9.146' W
WK0045	W-1	10/23/2014	St Marks Reef D4	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.086' N	84° 9.146' W
WK0044	W-1	10/23/2014	St Marks Reef A5	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.066' N	84° 9.177' W
WK0043	W-1	10/23/2014	St Marks Reef C5	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.065' N	84° 9.121' W
WK0042	W-1	10/23/2014	St Marks Reef E5	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.013' N	84° 9.057' W
WK0041	W-1	10/23/2014	St Marks Reef D6	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.043' N	84° 9.088' W
WK0040	W-1	10/23/2014	St Marks Reef A7	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.013' N	84° 9.187' W
WK0039	W-1	10/23/2014	St Marks Reef C7	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.021' N	84° 9.120' W
WK0038	W-1	10/23/2014	St Marks Reef E7	4 Lindberg-Type Cubes And 1 Walter Ecosystem Reef	MODULE - Lindberg Cube (4)	6	3	22	Federal	30° 0.017' N	84° 9.049' W
WK0037	W-1	10/23/2014	Colin Macdonald Memorial Reef	1 Walter Ecosystem Reef	MODULE - Walter Ecosystem on Base (1)	2	3	22	Federal	29° 53.605' N	84° 9.149' W
WK0035	W-2	06/22/2000	OAR-2K Reef	30 Towers & 12 Fish Havens In A 50 Meter Pentagon Shape	MODULE - ARJ-Fish Havens (42)	73	6	27	Federal	29° 50.415' N	84° 9.408' W
WK0034	W-2	06/30/1999	Marker 24 Barge North & South	3rd of 3 Drops This Grant 65 Pieces 8'X18" 8'X30" 8'X36"	CONCRETE - Culverts (65)	146	5	29	Federal	29° 50.358' N	84° 9.401' W
WK0033	W-2	06/28/1999	Marker 24 Barge South	2nd of 3 Drops This Grant 80 Pieces 8'X15" 8'X30" 8'X36" 8'X48"	CONCRETE - Culverts (80)	127	5	31	Federal	29° 50.411' N	84° 9.408' W
WK0032	W-2	06/18/1999	Marker 24 Barge North	First of Three Drops This Grant 93 Pieces 8'X15" 8'X30" 8'X36"	CONCRETE - Culverts (93)	114	5	29	Federal	29° 50.411' N	84° 9.408' W
WK0031	W-2	05/20/1997	OAR/Wakulla DZ#1 (4)	140 Tons of Culverts 3rd of Three Deployments This Site	CONCRETE - Culverts	140		52	Federal	29° 43.825' N	84° 17.854' W
WK0030	W-2	05/14/1997	OAR/Wakulla DZ#1 (3)	2nd Load of Three Deployments This Grant	CONCRETE - Culverts	112		53	Federal	29° 43.763' N	84° 17.874' W
WK0029	W-2	05/06/1997	OAR/Wakulla DZ#1 (2)	1st of Three Two Distinct Sets	CONCRETE - Culverts	123	13	52	Federal	29° 43.725' N	84° 18.101' W
WK0028	W-1	06/18/1996	Dog Ballard Phase 3	108 - 1 Meter Square Cubes Placed in a Tight Square	MODULE - Lindberg Cube (108)	135	3	26	State	29° 57.053' N	84° 8.817' W
WK0027	W-1	08/17/1995	Wakulla Big Bend Regional Reef #1	24 Pre-Fabricated Cubes One Meter On A Side-50M Spaced Hexagon	MODULE - Lindberg Cube (24)	30	3	22	State	29° 58.160' N	84° 7.920' W
WK0026	W-1	08/17/1995	Wakulla Big Bend Regional Reef #2	96 Pre-Fabricated Cubes One Meter On A Side-50M Spaced Hexagon	MODULE - Lindberg Cube (96)	120	3	22	State	29° 58.140' N	84° 8.377' W
WK0025	W-1	08/08/1994	Dog Ballard Phase 1	253 Tons of Concrete Culverts.	CONCRETE - Culverts		5	26	State	29° 57.051' N	84° 8.852' W
WK0024	W-1	08/08/1994	Dog Ballard Phase 2	Non-Grant Project Large Concrete Poles	CONCRETE - Poles		10	25	State	29° 57.112' N	84° 8.819' W
WK0023	W-1	06/04/1994	OAR/Wakulla DZ#1 (1)	297 Tons of Concrete Culverts.	CONCRETE - Culverts	297	6	05	Federal	29° 43.609' N	84° 18.033' W
WK0022	W-1	06/01/1993	OAR/Wakulla DZ#3 (8)	Concrete Culverts-Concrete Tanks And Miscellaneous Concrete.	CONCRETE - Culverts			56	Federal	29° 44.043' N	84° 17.333' W
WK0021	W-1	06/21/1992	OAR/Wakulla DZ#3 (7)	280 Tons of Concrete Culverts And Concrete Boxes.	CONCRETE - Culverts	200	6	55	Federal	29° 44.010' N	84° 17.280' W
WK0015	W-1	01/30/1991	Rotary Reef Bridge North	Concrete Spans From Old Ochlockonee Bay Bridge	CONCRETE - Deck Spans Bridge		8	20	State	29° 55.208' N	84° 14.035' W
WK0014	W-1	01/30/1991	Rotary Reef Bridge Center	Concrete Spans From Old Ochlockonee Bay Bridge	CONCRETE - Deck Spans Bridge		6	20	State	29° 55.046' N	84° 14.077' W
WK0013	W-1	01/30/1991	Rotary Reef Bridge South	Concrete Spans From Old Ochlockonee Bay Bridge	CONCRETE - Deck Spans Bridge		6	20	State	29° 54.933' N	84° 14.158' W
WK0020	W-2	01/26/1991	OAR/Wakulla DZ#2 (2)	Fiberglass Boat Molds And Bridge Materials.	OTHER - Fiberglass Boat Molds		6	58	Federal	29° 43.719' N	84° 18.500' W
WK0019	W-2	12/08/1990	OAR/Wakulla DZ#2 (1)	Second Set of 3 Boat Molds 4 Bridge Slabs	OTHER - Fiberglass Boat Molds		8	58	Federal	29° 43.679' N	84° 18.311' W
WK0018	W-2	07/03/1990	OAR/Wakulla DZ#3 (6)	315 Culverts 67 Concrete Slabs & 5 Cement Mixers 6 Loads	CONCRETE - Culverts (315)			65	Federal	29° 43.928' N	84° 17.142' W
WK0012	W-1	06/23/1988	St. Marks Reef (3)	Concrete Culverts 3rd of 3 Loads This Reefs (8 Loads For The Grant)	CONCRETE - Culverts		5	20	State	29° 59.078' N	84° 9.115' W
WK0011	W-1	06/21/1988	Rotary Reef (7)	Concrete Culverts 5th of 5 Loads This Reef (8 Loads This Grant)	CONCRETE - Culverts		5	25	State	29° 55.160' N	84° 14.065' W
WK0010	W-1	06/17/1988	Rotary Reef (6)	Concrete Culverts 4th of 5 Loads This Reef (8 Loads This Grant)	CONCRETE - Culverts		5	25	State	29° 54.891' N	84° 14.152' W
WK0009	W-1	06/15/1988	St. Marks Reef (2)	Concrete Culverts 2nd of 3 Loads This Reef (8 Loads For The Grant)	CONCRETE - Culverts		5	20	State	29° 59.929' N	84° 9.162' W
WK0008	W-1	06/08/1988	St. Marks Reef (1)	Concrete Culverts 1st of 3 Loads This Reef (8 Loads For Grant)	CONCRETE - Culverts		5	20	State	29° 59.909' N	84° 9.188' W
WK0007	W-1	06/04/1988	Rotary Reef (5)	Concrete Culverts 3rd of 5 Loads This Reef (8 Loads This Grant)	CONCRETE - Culverts		5	20	State	29° 55.106' N	84° 14.088' W
WK0006	W-1	06/01/1988	Rotary Reef (4)	Concrete Culverts 2nd of 5 Loads This Reef (8 Loads This Grant)	CONCRETE - Culverts		5	25	State	29° 54.920' N	84° 14.144' W
WK0005	W-1	05/30/1988	Rotary Reef (3)	Fuselage of DC-3 Concrete Slabs 1st of 5 For Reef (8 This Grant)	METAL - Airplane DC3 (1)		5	20	State	29° 54.919' N	84° 14.134' W
WK0004	W-1	05/00/1986	Marker 24 Barge (W)	Steel Barge Upside Down Near Marker 24 Non Permitted Site	VESSEL - Barge		8	29	Federal	29° 50.390' N	84° 9.408' W
WK0003	W-1	03/24/1982	Rotary Reef (2)	9 Separate Loads of Pipes This Location From 7/12/82 To 8/24/82	CONCRETE - Culverts		5	25	State	29° 54.927' N	84° 14.136' W
WK0002	W-1	03/00/1984	St. Marks Reef Tires	St. Marks Reef Tires From A 1964 Deployment	OTHER - Tires		3	20	State	29° 59.049' N	84° 9.165' W
WK0001	W-1	03/00/1984	Rotary Reef Tires	Rotary Reefs 2500 Tires 200 X 300 Feet About Center Coordinates	OTHER - Tires (2500)		3	25	State	29° 54.030' N	84° 14.080' W

APPENDIX 3

OAR- Reef Plan
Ver. 1.7 (2016)
Species List –
Fish Species Observed on Wakulla or Franklin Reefs

NUMBER	SPECIES	# Surveys	NUMBER	SPECIES	# Surveys	NUMBER	SPECIES	# Surveys
1	gag grouper	75	30	lane snapper	9	59	bandtail puffer	1
2	black sea bass	66	31	striped burrfish	9	60	beaugregory	1
3	belted sandfish	62	32	Sand Diver	8	61	bigeye scad	1
4	white grunt	56	33	blue angelfish	7	62	filefish spp.	1
5	slippery dick	54	34	jackknife-fish	7	63	grouper spp.	1
6	tomtate grunt	49	35	porgy spp.	7	64	guitarfish	1
7	spottail pinfish	48	36	cobia	6	65	jack spp.	1
8	sand perch	44	37	great barracuda	6	66	juvenile grunt	1
9	sheepshead	44	38	toadfish spp.	6	67	king mackerel	1
10	gray triggerfish	42	39	orange filefish	5	68	leopard toadfish	1
11	cubbyu	37	40	blenny spp.	4	69	little tunny	1
12	cocoa damselfish	32	41	Lookdown	4	70	ocellated frogfish	1
13	seaweed blenny	32	42	menhaden	4	71	pigmy seabass	1
14	Atlantic spadefish	31	43	nurse shark	4	72	red drum	1
15	Spanish sardine	30	44	pigfish	4	73	redlip blenny	1
16	flounder spp.	26	45	crevalle jack	3	74	scad spp.	1
17	round scad	22	46	dwarf sandperch	3	75	scamp	1
18	highhat	21	47	lizard fish spp.	3	76	scorpionfish	1
19	red grouper	18	48	scrawled cowfish	3	77	southern stingray	1
20	amberjack spp.	17	49	vermillion snapper	3	78	stingray	1
21	Goliath grouper	17	50	whitespotted soapfish	3	79	trunk fish spp.	1
22	gray snapper	17	51	clearnose skate	2	80	zebratail blenny	1
23	hogfish	17	52	cowfish spp.	2		Species Total	80
24	batfish spp.	15	53	goby spp.	2			
25	bank sea bass	14	54	gulf batfish	2			
26	blue runner	13	55	gulf toadfish	2			
27	planehead filefish	12	56	herring spp.	2			
28	soapfish spp.	12	57	pinfish	2			
29	shark sucker	10	58	scaled sardine	2			

APPENDIX 4

OAR- Reef Plan

Ver. 1.7 (2016)

List of RDT Dive Projects (2011)

#	SPECIES	DATE	COUNTY	TEMP(F)	DEPTH(ft)	VIS(ft)	Reef Name	REEF MATERIALS	R. AGE(yrs)	R. RELIEF(ft)
31		06/01/95	Wakulla	74	59	30	OAR/Wakulla #3	boatmolds-OW#3	4.49	6
29		7/20/2002	WAKULLA	85	35	25	OAR2K	6' Fish Haven	2.07	6
28		10/5/2002	WAKULLA	84	35	20	OAR2K	6' Fish Haven	2.28	6
27		6/28/1999	WAKULLA	84	30	30	MARKER 24 BARGE	BARGE STEEL 100 FT.	12.50	8
27		9/10/1996	Wakulla	84	25	25	Dog Ballard Poles	concrete poles	2.09	10
26		4/18/2002	WAKULLA	76	22	15	WBBR#2	Concrete Cubes	6.86	3
26		8/17/1996	Wakulla		27	10	WBBRR#1	concrete cubes - 24	1.00	3
25		9/13/1997	FRANKLIN	85	60	40	BRYSON MEMORIAL REEF	SHIP STEEL TUG 85'	0.59	22
23		6/29/2002	WAKULLA	82	22	25	WBBR#2	Concrete Cubes	7.06	3
23		6/30/1998	WAKULLA	87	24	15	DOG BALLARD PHASE 3	CONCRETE CUBES (108)	2.03	3
22		6/29/2002	WAKULLA	80	35	30	OAR2K	6' Fish Haven	2.02	6
22		4/18/2002	WAKULLA	76	35	15	OAR2K	6' Fish Haven	1.82	6
22		6/14/1999	FRANKLIN	85	39	20	CARRABELLE 3 MILE	CONCRETE CULVERTS	8.00	
22		5/22/1999	FRANKLIN	78	39	25	CARRABELLE 3 MILE (5)	CONCRETE CULVERTS (19)	5.92	10
21		8/25/2002	WAKULLA	86	35	20	OAR2K	6' Fish Haven	2.17	6
21		8/25/2002	WAKULLA	86	22	15	WBBR#2	Concrete Cubes	7.21	3
20		5/25/2002	WAKULLA	77	22	30	WBBR#2	Concrete Cubes	6.96	3
20		8/12/1998	WAKULLA	87	19	8	WBBR#2	CONCRETE CUBES (96)	2.99	3
20		9/13/1997	FRANKLIN	85	78	40	BRYSON MEMORIAL REEF	SHIP STEEL TUG 105'	0.59	29
19		11/11/2001	FRANKLIN	67	30	20	Two Dogs - Reefballs	Reefballs	2.41	4
18		7/20/2002	WAKULLA	86	22	25	WBBR#2	Concrete Cubes	7.12	3
18		5/25/2002	WAKULLA	77	35	10	OAR2K	6' Fish Haven	1.82	6
18		8/25/2001	FRANKLIN	83	38	15	Two Dogs - Culverts	Culverts	2.16	4
18		05/07/93	Wakulla	67	54	40	OAR/Wakulla #3	concrete culverts	0.88	6
17		6/3/2001	FRANKLIN	82	38	25	Two Dogs - Culverts	Culverts	1.95	4
17		6/30/1997	FRANKLIN	77	75	40	BRYSON MEMORIAL REEF	SHIP STEEL TUG 108'	0.38	29
16		11/11/2001	FRANKLIN	68	38	20	Two Dogs - Culverts	Culverts	2.41	4
16		8/25/2001	FRANKLIN	83	35	15	Two Dogs - Reefballs	Reefballs	2.16	4
16		6/24/2000	FRANKLIN	86	36	10	Two Dogs - Reefballs	Reefballs	1.01	4
16		6/24/2000	FRANKLIN	85	38		Two Dogs - Culverts	Culverts	1.01	4
16		6/30/1998	WAKULLA	87		10	WBBR#2	CONCRETE CUBES (96)	2.87	3
16		6/30/1997	FRANKLIN	77	79	40	BRYSON MEMORIAL REEF	SHIP STEEL TUG 85'	0.38	22
16		05/07/93	Wakulla	67	57	40	OAR/Wakulla #2	boatmolds	1.78	8
15		12/2/2000	FRANKLIN	60	38	10	Two Dogs - Culverts	Culverts	1.45	4
15		8/12/1998	WAKULLA	87	24	15	DOG BALLARD SLABS	CONCRETE RUBBLE	4.01	5
14		7/29/2000	FRANKLIN	84	38	10	Two Dogs - Culverts	Culverts	1.11	4
14		5/15/1997	WAKULLA	71	58	30	OAR/WAKULLA DZ#2 (2)	FIBERGLASS BOATMOLDS	6.44	6
14		09/12/95	Wakulla	82	20	20	WBBR#2	concrete cubes #16	0.07	3
13		6/30/2001	FRANKLIN	83	35	25	Two Dogs - Reefballs	Reefballs	2.03	4
13		5/12/2001	FRANKLIN	74	38	25	Two Dogs - Culverts	Culverts	1.91	4
13		10/15/2000	FRANKLIN	74	36	25	Two Dogs - Reefballs	Reefballs	1.32	4
13		10/15/2000	FRANKLIN	74	38	20	Two Dogs - Culverts	Culverts	1.32	4
13		7/29/2000	FRANKLIN	85	36	25	Two Dogs - Reefballs	Reefballs	1.11	4
13		8/4/2000	FRANKLIN	80	38		Two Dogs - Culverts	Culverts	0.96	4
13		12/04/92	Wakulla	60	25	20	New St. Marks	concrete culverts	4.45	5
12		10/5/2002	WAKULLA	84	22	20	WBBR#2	Concrete Cubes	7.33	3
12		6/4/2000	FRANKLIN	78	36	10	Two Dogs - Reefballs	Reefballs	0.96	4
12		9/10/1996	Wakulla	84	25	20	Dog Ballard Culverts	concrete culverts	2.09	8
11		11/7/1999	FRANKLIN	72	38	10	Two Dogs - Culverts	Culverts	0.38	4
11		05/16/95	Franklin	75	75	30	Yamaha Poles	concrete poles	0.03	4
10		5/12/2001	FRANKLIN	74	35	25	Two Dogs - Reefballs	Reefballs	1.91	4
10		4/14/2001	FRANKLIN	69	35	15	Two Dogs - Reefballs	Reefballs	1.83	4
10		12/2/2000	FRANKLIN	60	36	10	Two Dogs - Reefballs	Reefballs	1.45	4
9		11/7/1999	FRANKLIN	72	36	10	Two Dogs - Reefballs	Reefballs	-0.38	4
9		04/10/96	Wakulla	64	18	15	St. Marks	concrete culverts	7.84	
9		01/11/95	Wakulla	54	25	25	Dog Ballard #2	concrete poles	0.45	10
8		12/12/1999	FRANKLIN	65	38	10	Two Dogs - Culverts	Culverts	0.48	4
8		12/07/95	Wakulla	64	20	8	Big Bend RR #2	concrete cubes #16	0.31	3
7		4/30/2000	FRANKLIN	73	38	10	Two Dogs - Culverts	Culverts	0.86	4
7		3/26/2000	FRANKLIN	59	36	15	Two Dogs - Reefballs	Reefballs	0.76	4
6		3/11/2001	FRANKLIN	62	35	5	Two Dogs - Reefballs	Reefballs	1.75	4
6		2/11/2001	FRANKLIN	54	38	15	Two Dogs - Culverts	Culverts	1.58	4
6		12/12/1999	FRANKLIN	65	36	10	Two Dogs - Reefballs	Reefballs	0.48	4
6		5/15/1997	WAKULLA	71	52	30	OAR/WAKULLA DZ#1 (2)	CONCRETE CULVERTS	0.02	13
6		09/12/95	Wakulla	82	20	20	Big Bend RR #1	concrete cubes #4	0.07	3
5		4/14/2001	FRANKLIN	68	38	20	Two Dogs - Culverts	Culverts	1.83	4
5		1/14/2001	Franklin	56	38	15	Two Dogs - Culverts	Culverts	1.57	4
5		4/30/2000	FRANKLIN	69	36	10	Two Dogs - Reefballs	Reefballs	0.86	4
5		3/26/2000	FRANKLIN	64	38		Two Dogs - Culverts	Culverts	0.76	4
5		3/25/1998	WAKULLA	60	20	15	ROTARY REEF (5)	CONCRETE CULVERTS	9.81	5
5		4/20/1997	Wakulla		27		WBBRR#1	concrete cubes - 24	1.68	3
5		12/07/95	Wakulla	64	20	30	Big Bend RR #1	concrete cubes #4	0.31	3
4		2/26/2000	FRANKLIN	60	36	25	Two Dogs - Reefballs	Reefballs	0.68	4
3		3/11/2001	FRANKLIN	62	38	5	Two Dogs - Culverts	Culverts	1.75	4
3		2/26/2000	FRANKLIN	60	38	25	Two Dogs - Culverts	Culverts	0.68	4
2		2/11/2001	FRANKLIN	55	35	15	Two Dogs - Reefballs	Reefballs	1.58	4
2		1/14/2001	FRANKLIN	56	35	15	Two Dogs - Reefballs	Reefballs	1.57	4
1		4/30/2000	FRANKLIN	73	38	10	Two Dogs - Culverts	Culverts	0.86	4
1		05/16/95	Franklin	75	75	30	Yamaha Poles	concrete poles	0.03	4

APPENDIX 5

OAR- Reef Plan

Ver. 1.7 (2016)

Franklin and Wakulla Total Dockside

Commercial Fisheries Landings

for 2004 to 2014

County	# Commerical Species	Total Catch (lbs)	Total Dockside Value (11 years)	Dockside Value (average per year)
WAKULLA	55 species	20,571,207	\$29,677,039.00	\$2,697,912.64
FRANKLIN	78 species	64,598,369	\$116,680,440.00	\$10,607,313.00
	TOTAL	85,169,576	\$146,357,479.00	\$13,305,225.64

APPENDIX 6

OAR- Reef Plan

Ver. 1.7 (2016)

Wakulla, Franklin and Leon Fishing Licenses

2011-12

County	License	Units Sold	Total Sales
19 FRANKLIN	164 RESIDENT SALTWATER FISHING	496	\$8,623.00
19 FRANKLIN	167 RESIDENT FRESHWATER/SALTWATER FISHING	336	\$11,027.00
19 FRANKLIN	168 RESIDENT FRESHWATER/SALTWATER/HUNT	27	\$1,298.00
19 FRANKLIN	17 RESIDENT SPORTSMAN 64 OR OLDER	11	\$149.00
19 FRANKLIN	170 RESIDENT GOLD SPORTSMAN	92	\$9,217.50
19 FRANKLIN	195 RESIDENT SALTWATER SHORELINE LICENSE	473	\$0.00
19 FRANKLIN	175 NONRESIDENT SALTWATER FISHING	1,607	\$76,204.00
FRANKLIN COUNTY TOTAL		3,042	\$106,518.50
65 WAKULLA	164 RESIDENT SALTWATER FISHING	2,520	\$44,054.50
65 WAKULLA	167 RESIDENT FRESHWATER/SALTWATER FISHING	1,449	\$47,756.50
65 WAKULLA	168 RESIDENT FRESHWATER/SALTWATER/HUNT	114	\$5,513.00
65 WAKULLA	17 RESIDENT SPORTSMAN 64 OR OLDER	17	\$231.50
65 WAKULLA	170 RESIDENT GOLD SPORTSMAN	256	\$25,684.00
65 WAKULLA	195 RESIDENT SALTWATER SHORELINE LICENSE	1,440	\$0.00
65 WAKULLA	175 NONRESIDENT SALTWATER FISHING	1,365	\$64,830.00
WAKULLA COUNTY TOTAL		7,161	\$188,069.50
37 LEON	164 RESIDENT SALTWATER FISHING	3153	\$55,084.00
37 LEON	167 RESIDENT FRESHWATER/SALTWATER FISHING	2677	\$88,197.50
37 LEON	168 RESIDENT FRESHWATER/SALTWATER/HUNT	360	\$17,421.50
37 LEON	17 RESIDENT SPORTSMAN 64 OR OLDER	37	\$504.50
37 LEON	170 RESIDENT GOLD SPORTSMAN	520	\$50,797.50
37 LEON	195 RESIDENT SALTWATER SHORELINE LICENSE	1965	\$0.00
37 LEON	175 NONRESIDENT SALTWATER FISHING	437	\$20,705.50
LEON COUNTY TOTAL		9,149	\$232,710.50
Three County Total		19,352	\$527,298.50

APPENDIX 7

OAR- Reef Plan

Ver. 1.7 (2016)

OAR Bottom Survey Method

Material & Methods for Pre-Deployment Bottom Surveys Drafted by the OAR-Research Dive Team

SCOPE: This method is intended to assess bottom conditions for its suitability for an artificial reef site. This method quantifies this assessment by taking measurable and recordable data, though probes, samples and distance measurements. This is in addition to visual observation (Halusky, 1991).

TASK #1 -SITE BOTTOM SURVEYS:

1. **Divers needed:** 6 divers total, 2 teams to be in the water simultaneously, and one team of safety divers.
2. **Dives needed:** 3 dives total, 1 dive per pair of radials of about 30 minutes for each transect of 50 meters (164 ft.), 3 total dives per site, depending on the depth of water.
3. **Equipment needed:** 2 - 50 meter measuring tapes, 4 slates with compasses, 2 sediment probes, 2 sediment corers, underwater camera or video (optional), 6 diver deployable buoys (optional). All safety equipment as required by the OAR-RDT Standards (Horn, 1995).
4. **Sampling Frequency:**
 - (1) Point intercept- every 1 M (3.28 ft.) = total of 50 data points per radial,
 - (2) Depth to bedrock probes - every 10 M (32.8 ft.) = total of 5 per radial
 - (3) Sediment samples - center of site only, 2 samples
 - (4) Photos (optional) - Center of the site only, unless hard bottom observed
5. **Procedure:**
 - a. A buoy will be deployed on the center of the site with a heavy (>50 lb.) Anchor or if bottom conditions permit, deploy a sand auger.
 - b. Team 1 will begin at the center buoy and proceed due north 360° for 50 meters, with diver 'A' plotting the appropriate heading, while diver 'B' plays out the tape measure.
 - c. The divers continue out, to the 50-meter mark and record the depth.
 - d. As the tape is being reeled in, Diver 'A' checks the bottom conditions will be logged for **every 1 meter** of radial, marking the status of the bottom for either sand, low rock, or high rock, according to the criteria below.
 - e. **Every 10 meters**, Diver 'B' uses a fiberglass probe, pushed into the sediment to measure the depth to bedrock. Three probe measurements will be used, the deepest measurement is written down.

- f. This continues with probes every 10 meters and bottom data point every meter. There 50 data points for bottom condition and 5 for probes.
- g. Upon arrival back at the center point two sediment samples shall be collected by pushing the sediment corer into the bottom and then transferring the sand to a plastic zip-lock bag. Then the procedure is repeated for the next radial according to TABLE1 below.
- h. Upon the final dive team surfacing the vessel will recover any buoys and take accurate GPS coordinates of each of the center location, and deploy labeled concrete blocks or screw type augers on the site for future deployments.
- i. Observations of the bottom will be recorded by the divers on their slates or the OAR Bottom Survey Underwater Data Form (Attachment #1) and depth probes and sediment cores will be sampled according to the sampling design above. Bottom types will be classified as sand, low rock, or high rock, according to the following criteria;

SAND = Depths of the probes greater than 5 cm

LOW ROCK = depths of the probes < 5 cm. or
exposed rock no higher than 10 cm

HIGH ROCK = exposed rock greater than 10 cm.

It will be recorded on the data sheet as SAND if the probes go deeper than 5 cm. into the sediment. HIGH ROCK will be recorded if exposed rock has more that 10 cm. of relief. LOW ROCK will be anything in between, that is, sediment less than 5 cm. or exposed rock less than 10 cm. high. Continuity or discontinuity of bottom type between intercept points can be recorded as an arrow connecting the points.

TABLE1 The following bearings should be used (See attachment #2- drawing)

TEAM #	RADIAL # *	BEARING	DISTANCE
#1	12	360°	50 M (164 FT.)
#1	2	60°	50 M (164 FT.)
#2	4	120°	50 M (164 FT.)
#2	6	180°	50 M (164 FT.)
#3	8	240°	50 M (164 FT.)
#3	10	300°	50 M (164 FT.)

* Radial numbers are the ordinals of a clock.

TASK #2 - Data Collection, Analysis and Reports

a. The data taken from the 1-meter bottom observations should be totaled and percent cover should be plotted for each of the three bottom types observed. This can be displayed graphically in a pie chart format and as a circular map should show the locations of the different types of bottom encountered. The coordinates of the center and the corners of the area above should be included to give an accurate map of the proposed reef site.

b. Data taken from the sediment probes can also be plotted in a circular map as well as a percent of probe depth to the overall site. An average probe depth across the site is also important.

c. The sediment samples should be triple rinsed in fresh water; large shell pieces discarded, and then carefully decant the water as to not allow any fine sediment to flow out. These samples should then be totally dried and the processed through a standard set of 6 metal screen sieves. Each segment of sediment sample should be weighed and recorded and a total weight taken from the addition of each segment. A percent should be applied to each segment and a bar graph generated from the data. This information will determine the stability of the site. Sediment too fine will allow the settlement of the materials into the bottom and if the bedrock is deep, the reef materials may be covered up. Attachment #3 show the data form to be used for the recording of this data (Strawbridge, 1991).

d. The reports generated from this site survey should include:

Site locations and coordinates

Distances and bearings to shore and port locations

Dates and times of the data collection

Sea conditions

Temperatures (water and air)

Visibility (surface and depths)

Bottom depths (center and 6 points)

Bottom conditions as discussed above.

REFERENCES

Halusky, J.G., Editor, Artificial Reef Research Diver's Handbook, Sea Grant TP-63, October 1991, 195 pages.

Horn, W. M., Editor, Scuba Diving Standards for the Organization for Artificial Reef's Research Dive Team, September 1, 1995, 18 pages.

Strawbridge, E.W., Et. Al, Underwater Methods for the Scubans Not-for-profit, Inc., Reef Research Team, November 15, 1991, 1992, 41 pages.

August 17, 2011

DATE: ___/___/___ LOCATION: _____ DIVERS: ___/___

METER	BOT.	PROBE	METER	BOT.	PROBE	METER	BOT.	PROBE	METER	BOT.	PROBE
1			26			1			26		
2			27			2			27		
3			28			3			28		
4			29			4			29		
5			30			5			30		
6			31			6			31		
7			32			7			32		
8			33			8			33		
9			34			9			34		
10			35			10			35		
11			36			11			36		
12			37			12			37		
13			38			13			38		
14			39			14			39		
15			40			15			40		
16			41			16			41		
17			42			17			42		
18			43			18			43		
19			44			19			44		
20			45			20			45		
21			46			21			46		
22			47			22			47		
23			48			23			48		
24			49			24			49		
25			50			25			50		

APPENDIX 8

OAR- Reef Plan
Ver. 1.7 (2016)
OAR RDT History

History of The Organization for Artificial Reefs OAR Research Dive Team

Significant Events

- 1989 - August, 3 day Sea grant training by Joe Halusky held in Marineland.
(Bill Horn & Janet Klemm attended on behalf of OAR)
- 1989 - November, first meeting held to draft OAR SOP's (dive Standards) and set up scientific diver training program.
- 1990 - March, first training class initiated.
- 1990 - July, final project dive for first training class (9 divers)
- 1991 - August, final project dive for 2nd training class (7 divers).
- 1991 - September, Dive Standards Drafted
- 1992 - September, final project dive for 3rd training class (7 divers).
- 1993 - September, final project dive for 4th training class (4 divers).
- 1994 - April, final dive project dive for 5th training class (2 divers, 2 in process).
- 1994 - October, completed 10 bottom surveys for 5 county project BBRR*,
received \$5,000.
- 1995 - May, final project for 6th training class (4 divers).
- 1995 - May RDT Dive Control Board meeting, Dive Standards Modified.
- 1996 - June, five county, 9 reef monitoring projects (fish census) for BBRR
completed, received \$4,500.
- 1997 - March, five county, 8 reef monitoring projects (fish census) for BBRR
completed, received \$4,000.
- 1997 - May 30, five county, 10 reef monitoring projects (fish census) for BBRR
completed, received \$5,000.
- 1997 - August, Awarded grant, through St. Marks to Monitor, WBBRR#2 and
the Dog Ballard Reefs.
- 1997 - September 13, final project for 7th training class (4 divers).
- 1998 - March 30, completed last round of fish census for St. Marks Monitoring
Grant Project, received \$5,000 (OFMAS-107).
- 1998 - August 23, final project for 8th training class (5 divers).
- 1998 - September, Dive Control Board, Dive Standards Modified
- 1999 - July 17, completed first round of monitoring for 2 Dogs Reefs comparisons
grant project (OFMAS-136).
- 1999 - July 17, final project for 9th training class (6 divers)

2000- July 29, final project for 10th training class (7divers).
2001 - June, awarded new grant to compare OAR-2K reef to WBBRR#2 reef.
2004 – August 4, final project for 11th training class (11 divers)
2005 – June, awarded new grant to get historical data on Old Carrabelle Rotary
and OAR/Wakulla Reefs
2006- December –Completed monitoring grant with FWC
2007- June 20, final project for 12th training class (8 divers)
2009-October 8, final project for 13th training class (3 divers)
2011-May 11, Robby Redding Memorial Reef completed on Rose City Reef site.
2012-September 19, final project for 14th training class (4 divers)
2015-July completed St. Marks monitoring grant project # FWC-12167.
2015-August 5, 2015, final exam for 15th training class (8 divers)

TO DATE: 121 divers have been trained through the RDT training program. The RDT has performed bottom surveys, mapping and fish census for 40 county or city artificial reef grant projects, (33 construction and 11 monitoring grants) with over 100 successful dive projects without incident.

*Big Bend Regional Reef system

APPENDIX 9

OAR- Reef Plan

Ver. 1.6 (2011)

OAR RDT Fish Census Form

OAR-RDT FISH CENSUS FORM

NAME _____ DATE _____ LOCATION _____
 A = Abundant >100 , M = Many 11 to 100, F = Few 2 to 10, S = Single Individual
 TEMPERATE SPECIES

C:\MyDocs\2001\TRAINING\FSHTEMP-OAR.wpd

Reef Species	A	M	F	S	Pelagic	A	M	F	S
Banks seabass					Amberjack				
Belted sandfish					Barracuda				
Black seabass					Cobia				
Blue angelfish					King mackerel				
Cocoa damselfish					Redfish				
Cubbyu					Skates /Rays				
Flounder					Spanish Mackerel				
Gag grouper					Sharks				
Gray snapper					Not listed				
Herring									
Hogfish									
Jackknife fish									
Pigfish									
Pinfish									
Porgy									
Red grouper									
Red snapper									
Round scad									
Sand perch									
Sheepshead									
Slippery dick									
Spadefish									
Spotfin butterfly									
Spottail pinfish									
Tomlate grunts									
Triggerfish									
White Grunt									

May 4, 2004

Draw in distinctive features (spots, lines, fins) for unidentified species on drawings below.



Appendix E

FDEP Approved Permit



William Horn <fishhaven07@gmail.com>

Franklin County Artificial Reef - General Permit No. 19-0333554-001-EG

Dandridge, Wade <Wade.Dandridge@dep.state.fl.us>
To: "fishhaven07@gmail.com" <fishhaven07@gmail.com>
Cc: "Pedersen, Andrea Z." <Andrea.Z.Pedersen@dep.state.fl.us>

Fri, Feb 5, 2016 at 8:41 AM

Good Morning Mr. Horn,

Thank you for calling yesterday to discuss the proposed modification to the artificial reef authorized by DEP General Permit No. 19-0333554-001-EG.

Yesterday, you described the proposed modification to me as a reduction of the project area and the relocation of the center point of the project area. You also confirmed that the boundaries of the smaller, relocated project area will be completely within the previously authorized area.

The Department cannot modify a General Permit. A significant change to the project would be reviewed under a new application for another General Permit. Modifying the project as described above does not require a new General Permit from the Department because the entire modified project area is still within the originally authorized area.

If you have any further questions about the project or the Department's permit review process please feel free to call or email me.

Thanks again,



Wade Dandridge

Environmental Specialist

Florida Department of Environmental Protection

Submerged Lands and Environmental

Resources Program

160 W. Government Street, Suite 301

Pensacola, Florida 32502

Wade.Dandridge@dep.state.fl.us

Office: 850-595-0655



FLORIDA DEPARTMENT OF
ENVIRONMENTAL PROTECTION

160 W. GOVERNMENT STREET, SUITE 308
PENSACOLA, FLORIDA 32502-5740

RICK SCOTT
GOVERNOR

CARLOS LOPEZ-CANTERA
LT. GOVERNOR

JONATHAN P.
STEVERSON
SECRETARY

April 03, 2015

BY ELECTRONIC MAIL:

citycbel@gtcom.net

City of Carabelle
c/o Courtney Dempsey
1001 Gray Avenue
Carabelle, Florida 32322

Project Name: City of Carabelle-St. Teresa artificial reef complex
File No.: 19-0333554-001-EG
Franklin County

Dear Ms. Dempsey:

This is to acknowledge receipt of your notice on **March 23, 2015** of intent to use a General Permit (GP), pursuant to Rule 62-330.600, Florida Administrative Code (F.A.C.) to construct an artificial reef complex with boundaries not exceeding $\frac{1}{4}$ nautical miles on any side in an area free of submerged resources, such as natural hard bottom or corals, and not exceeding a relief greater than half the distance from the bottom to the surface of the water. Reef materials will consist of clean concrete and limestone, heavy gauge steel products with a thickness of $\frac{1}{4}$ inch or greater, and prefabricated structures that are a mixture of clean concrete and heavy gauge steel. Reef deployments will occur over the life of the permit in a minimum of 3 installations.

The initial reef deployment will be centrally located within the permitted boundaries and will consist of at least one central metal sculpture composed of approved materials and four patch reefs situated in a square around the central sculpture. The patch reefs will consist of prefabricated tetrahedral structures known as Florida Limestone Specials and stacked disk Ecosystem Reefs or a combination of the low relief Grouper Reef with an Ecosystem Reef situated on top.

The second component of the St. Teresa artificial reef complex will be comprised 12 patch reefs of the same composition as described above. The reefs will be deployed by vessel and crane 100 feet inside the perimeter of the proposed boundaries of the overall complex. The patch reefs will be spaced every 500 feet to maximize the foraging zone.

The last element of the St. Teresa artificial reef complex will consist of four large deployments of reuse concrete (culverts) or limestone totaling between 400 and 500 tons. The four reefs will be located between the initial deployment that is centrally located within the permitted boundaries and the perimeter patch reefs. The maximum relief of the reefs is not to exceed 16 feet from bottom. Authorized activities as depicted in the attached exhibits. The deployments

will occur off of Franklin County in the Gulf of Mexico, Class III Waters of the State. The project is located within the boundaries of the coordinates listed in the following table:

St. Teresa Artificial Reef Complex	Latitude	Longitude
Northwest Corner	29° 47.2103' N	84° 28.1436' W
Northeast Corner	29° 47.2103' N	84° 27.8564' W
Southeast Corner	29° 46.9587' N	84° 27.8564' W
Southwest Corner	29° 46.9587' N	86° 28.1436' W

In addition to regulatory authorization under Rule 62-330.600, F.A.C., this type of activity may also require both proprietary and federal authorizations. Proprietary authorization is required pursuant to Chapters 253 and 258, Florida Statute (F.S.), to use state-owned submerged lands for private purposes. Federal authorization is needed for works in waters of the United States through the State Programmatic General Permit (SPGP) program.

Your intent to use a general permit has been reviewed by Department staff for all three types of authorizations: (1) regulatory authorization, (2) proprietary authorization (related to state-owned submerged lands), and (3) federal authorization. The authority for review and the outcomes of the reviews are listed below. Please read each section carefully.

Your project **may not** have qualified for all three forms of authorization. If your project did not qualify for one or more of the authorizations, the specific section dealing with that authorization will advise you on how to obtain it. **You may NOT commence your project without all three authorizations.** If you change the project from what you submitted, the authorization(s) granted may no longer be valid at the time of commencement of the project. Please contact us prior to beginning your project if you wish to make any changes.

Your project did not qualify for the federal authorization, therefore, additional authorization must be obtained prior to commencement of the proposed activity. This letter does not relieve you from the responsibility of obtaining other federal, state, or local authorizations that may be required for the activity. Please refer to the specific section(s) dealing with that portion of the review below for advice on how to proceed.

If you change the project from what you submitted, the authorization(s) granted may no longer be valid at the time of commencement of the project. Please contact us prior to beginning your project if you wish to make any changes.

Please note: This letter confirms that your proposed project qualifies for the General Permit identified herein, but does not constitute the Department's determination of the wetland boundary depicted in the attached drawings of the property.

1. Regulatory Review – Approved

Based on the forms, drawings, and documents submitted with your notice, it appears that the project meets the requirements for the General Permit under Rule 62-330.600, F.A.C. Any activities performed under a general permit are subject to general conditions required in Rule 62-330.405, F.A.C. (attached), and the specific conditions of Rule 62-330.600, F.A.C. (attached). Any deviations from these conditions may subject the permittee to enforcement action and possible penalties.

Please be advised that the construction phase of the GP must be complete within five years commencing from the date notice is received by the Agency, or the date the Agency verifies compliance with the terms and conditions of the general permit in accordance with Rule 62-330.402, F.A.C., whichever is later. If you wish to continue this GP beyond the expiration date, you must notify the Department at least 30 days before its expiration.

Authority for review - Part IV of Chapter 373, F.S., Title 62, F.A.C. and in accordance with the operating agreements executed between the Department and the water management districts, as referenced in Chapter 62-113, F.A.C.

2. Proprietary Review – Granted

The Department acts as staff to the Board of Trustees of the Internal Improvement Trust Fund (Board of Trustees) and issues certain authorizations for the use of sovereign submerged lands. The Department has the authority to review activities on sovereign submerged lands under Chapter 253 of the Florida Statutes (F.S.) and 258, F.S. if located within an aquatic preserve, and Chapters 18-20 and 18-21 of the Florida Administrative Code.

The activity appears to be located on sovereign submerged lands owned by the Board of Trustees. The activity is not exempt from the need to obtain the applicable proprietary authorization. As staff to the Board of Trustees, the Department has reviewed the activity described above, and has determined that the activity qualifies for a Letter of Consent under Rule 18-21.005(1)(c).9 of the Florida Administrative Code and Section 253.77 of the Florida Statutes to construct and use the activity on the specified sovereign submerged lands, as long as the work performed is located within the boundaries as described herein and is consistent with the terms and conditions herein. No further application is required for this.

During the term of this Letter of Consent you shall maintain satisfactory evidence of sufficient upland interest as required by paragraph 18-21.004(3)(b), Florida Administrative Code. If such interest is terminated or the Board of Trustees determines that such interest did not exist on the date of issuance of this Letter of Consent, this Letter of Consent may be terminated by the Board of Trustees at its sole option. If the Board of Trustees terminates this Letter of Consent, you agree not to assert a claim or defense against the Board of Trustees arising out of this Letter of Consent.

Authority for review - Chapter 253 F.S., Chapter 18-21, F.A.C., and Section 62-330.075, F.A.C. as required.

3. Federal Review - SPGP Not Approved

A copy of your notice also has been sent to the U.S. Army Corps of Engineers (USACOE) for review. The USACOE may require a separate permit. Failure to obtain this authorization prior to construction could subject you to enforcement action by that agency.

Additional Information

Please retain this general permit. The activities may be inspected by authorized state personnel in the future to ensure compliance with appropriate statutes and administrative codes. If the activities are not in compliance, you may be subject to penalties under Chapter 373, F.S., and Chapter 18-14, F.A.C.

NOTICE OF RIGHTS

This action is final and effective on the date filed with the Clerk of the Department unless a petition for an administrative hearing is timely filed under Sections 120.569 and 120.57, F.S., before the deadline for filing a petition. On the filing of a timely and sufficient petition, this action will not be final and effective until further order of the Department. Because the administrative hearing process is designed to formulate final agency action, the hearing process may result in a modification of the agency action or even denial of the application.

Petition for Administrative Hearing

A person whose substantial interests are affected by the Department's action may petition for an administrative proceeding (hearing) under Sections 120.569 and 120.57, F.S. Pursuant to Rule 28-106.201, F.A.C., a petition for an administrative hearing must contain the following information:

- (a) The name and address of each agency affected and each agency's file or identification number, if known;
- (b) The name, address, any email address, any facsimile number, and telephone number of the petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests are or will be affected by the agency determination;
- (c) A statement of when and how the petitioner received notice of the agency decision;
- (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate;
- (e) A concise statement of the ultimate facts alleged, including the specific facts that the petitioner contends warrant reversal or modification of the agency's proposed action;
- (f) A statement of the specific rules or statutes that the petitioner contends require reversal or modification of the agency's proposed action, including an explanation of how the alleged facts relate to the specific rules or statutes; and
- (g) A statement of the relief sought by the petitioner, stating precisely the action that the petitioner wishes the agency to take with respect to the agency's proposed action.

The petition must be filed (received by the Clerk) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-

3000. Also, a copy of the petition shall be mailed to the applicant at the address indicated above at the time of filing.

Time Period for Filing a Petition

In accordance with Rule 62-110.106(3), F.A.C., petitions for an administrative hearing by the applicant must be filed within 14 days of receipt of this written notice. Petitions filed by any persons other than the applicant, and other than those entitled to written notice under Section 120.60(3), F.S., must be filed within 14 days of publication of the notice or within 14 days of receipt of the written notice, whichever occurs first. Under Section 120.60(3), F.S., however, any person who has asked the Department for notice of agency action may file a petition within 14 days of receipt of such notice, regardless of the date of publication. The failure to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under Sections 120.569 and 120.57, F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention (in a proceeding initiated by another party) will be only at the discretion of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205, F.A.C.

Extension of Time

Under Rule 62-110.106(4), F.A.C., a person whose substantial interests are affected by the Department's action may also request an extension of time to file a petition for an administrative hearing. The Department may, for good cause shown, grant the request for an extension of time. Requests for extension of time must be filed with the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station 35, Tallahassee, Florida 32399-3000, before the applicable deadline for filing a petition for an administrative hearing. A timely request for extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

Mediation

Mediation is not available in this proceeding.

FLAWAC Review

The applicant, or any party within the meaning of Section 373.114(1)(a) or 373.4275, F.S., may also seek appellate review of this order before the Land and Water Adjudicatory Commission under Section 373.114(1) or 373.4275, F.S. Requests for review before the Land and Water Adjudicatory Commission must be filed with the Secretary of the Commission and served on the Department within 20 days from the date when this order is filed with the Clerk of the Department.

Judicial Review

Once this decision becomes final, any party to this action has the right to seek judicial review pursuant to Section 120.68, F.S., by filing a Notice of Appeal pursuant to Rules 9.110 and 9.190, Florida Rules of Appellate Procedure, with the Clerk of the Department in the Office of General Counsel, 3900 Commonwealth Boulevard, M.S. 35, Tallahassee, Florida 32399-3000; and by filing a copy of the Notice of Appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The Notice of Appeal must be filed within 30 days from the date this action is filed with the Clerk of the Department.

Thank you for applying to the Submerged Lands and Environmental Resource Permit Program. If you have any questions regarding this matter, please contact **Jason Purdy** at the letterhead address, at **850.595.0579**, or at Jason.R.Purdy@dep.state.fl.us.

Executed in Escambia County, Florida

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION



Jason Purdy
Environmental Specialist
Submerged Lands and Environmental
Resources Program

Attachments:

Project Drawings, 8 pages

Ch. 62-330.600, F.A.C.

General Conditions for All General Permits, Ch. 62-330.405, F.A.C.

General Consent Conditions for Use of Sovereignty Submerged Lands

cc:

U.S. Army Corps of Engineers

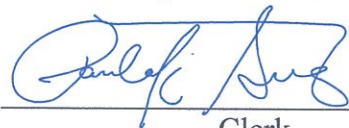
Alan Richardson-agent, grouperboy@yahoo.com

CERTIFICATE OF SERVICE

The undersigned hereby certifies that this permit and authorization to use sovereignty submerged lands, including all copies, were mailed/emailed before the close of business on
April 03, 2015, to the above listed persons.

FILING AND ACKNOWLEDGMENT

FILED, on this date, under 120.52(7), F.S.,
with the designated Department Clerk,
receipt of which is hereby acknowledged.


Clerk

April 03, 2015
Date

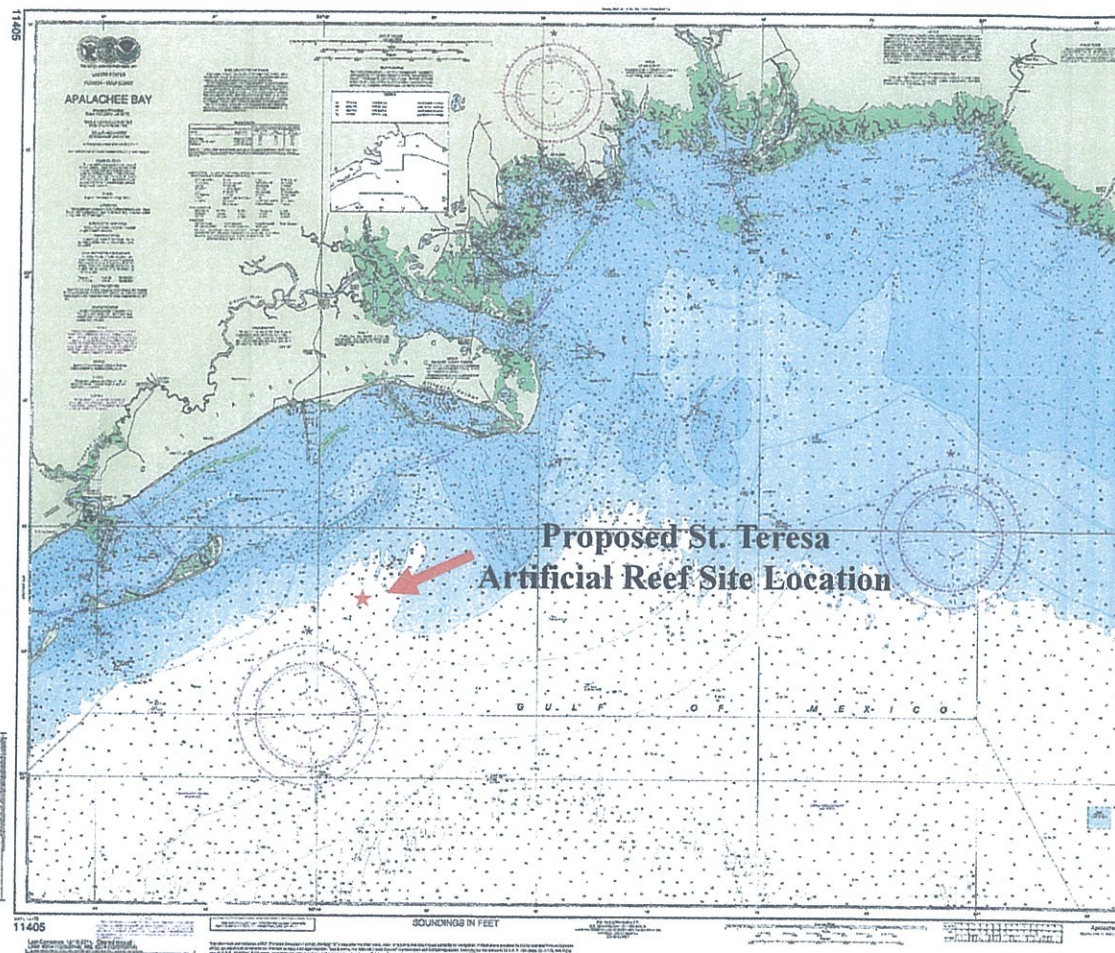


Figure - 1

St. Teresa Artificial Reef Permit Site
Regional Nautical Chart #11405

Map
by F



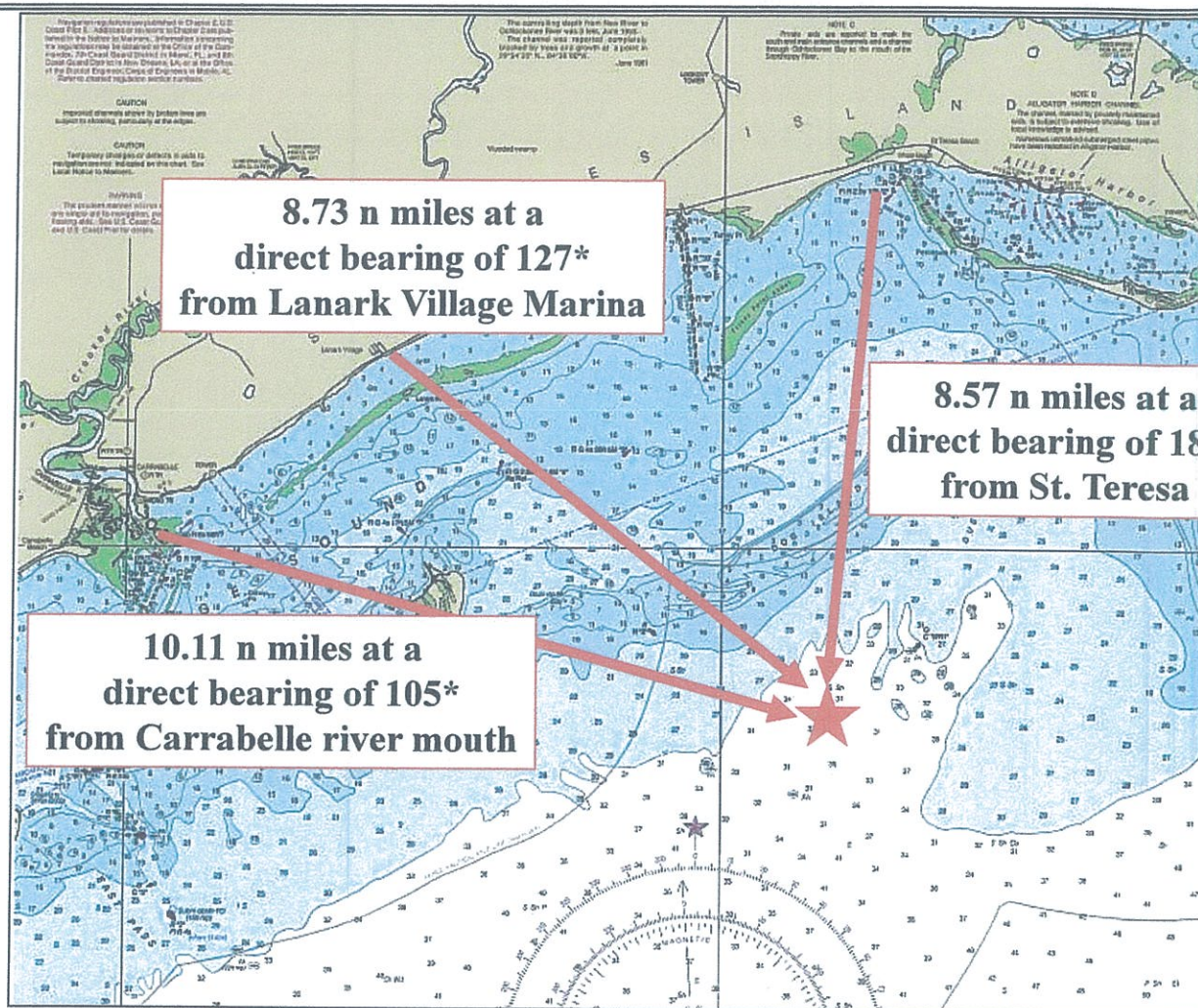


Figure - 2

St. Teresa Artificial Reef Site Region Area Map

Map f
By Fis



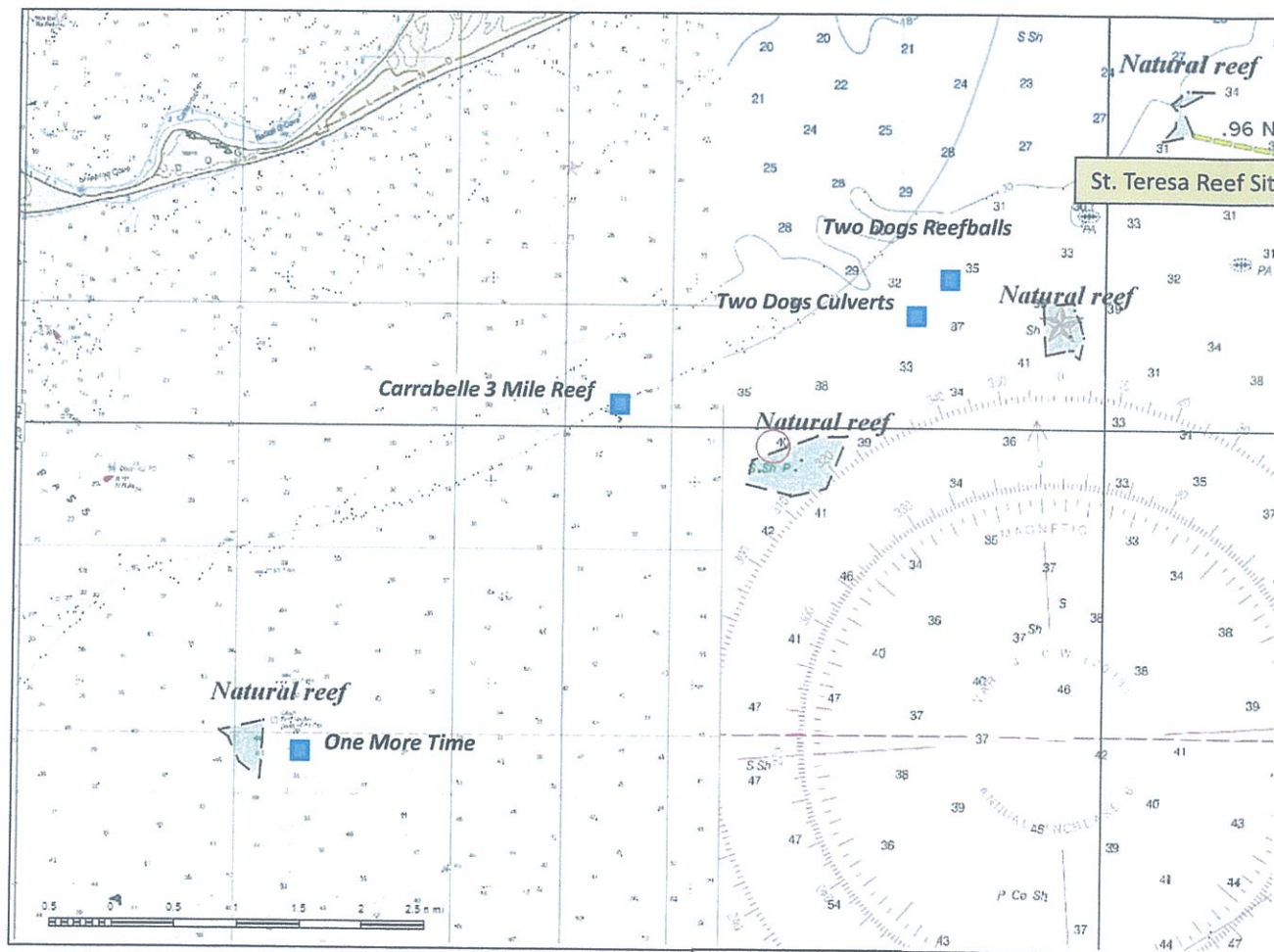
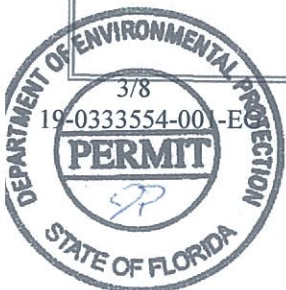


Figure - 3

**St. Teresa Artificial Reef Site
Local Nearby Reefs Map**

Map
By Fish



Proposed St. Teresa Artificial Reef Site

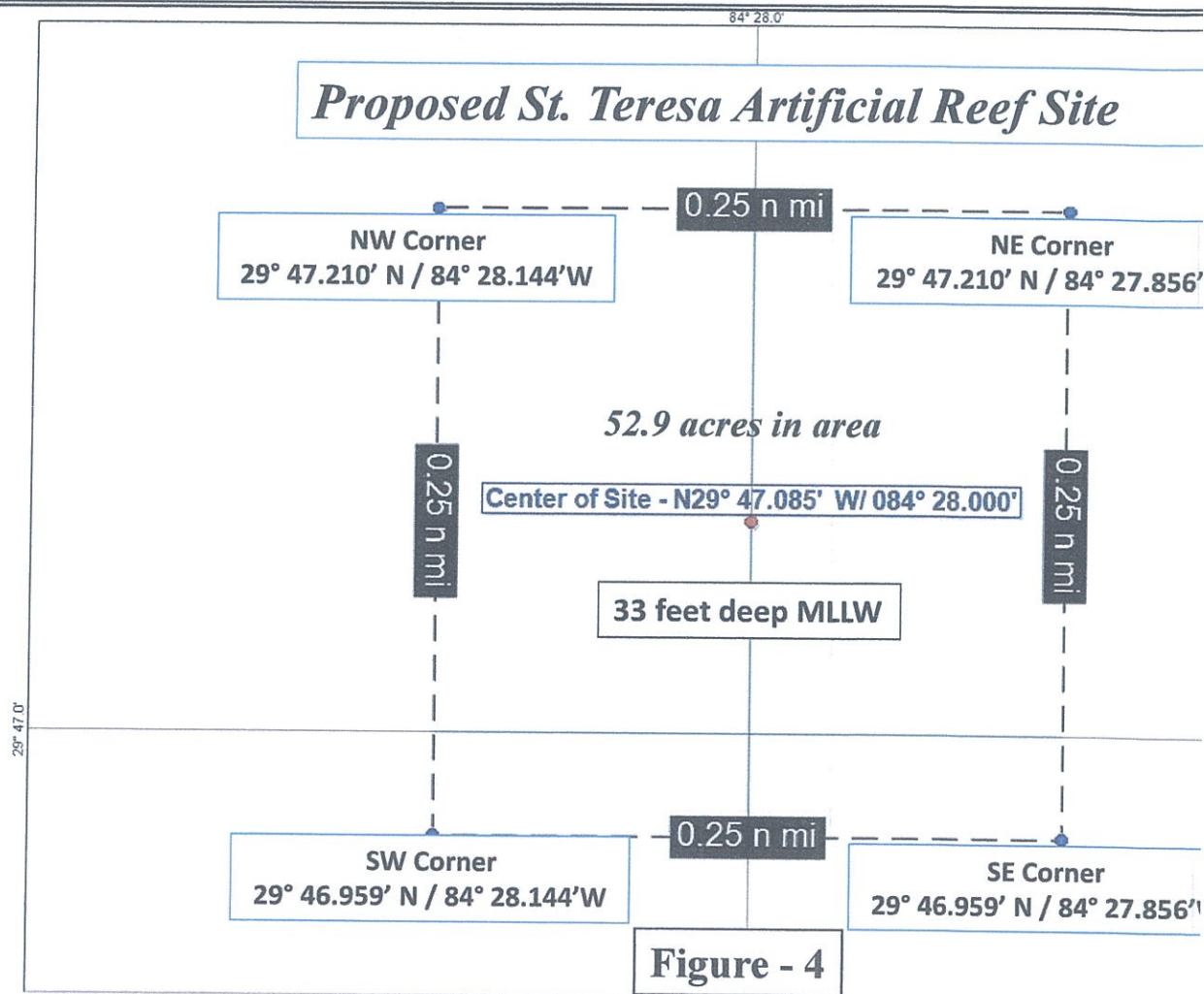


Figure - 4



St. Teresa Artificial Reef Permit Site Detail Map

Map pr
By Fish H



32

Proposed St. Teresa Artificial Reef Site



36

Depths in feet MLLW
from NOAA Nautical Chart
#11405- "Apalachee Bay"
updated 12/10/2014

Figure - 5



500 0 500 1000 1500 2000 2500 ft

Scale: 1 : 7841.

St. Teresa Artificial Reef Permit Site Nautical Charted Depths

**Map prod
By Fish H:**



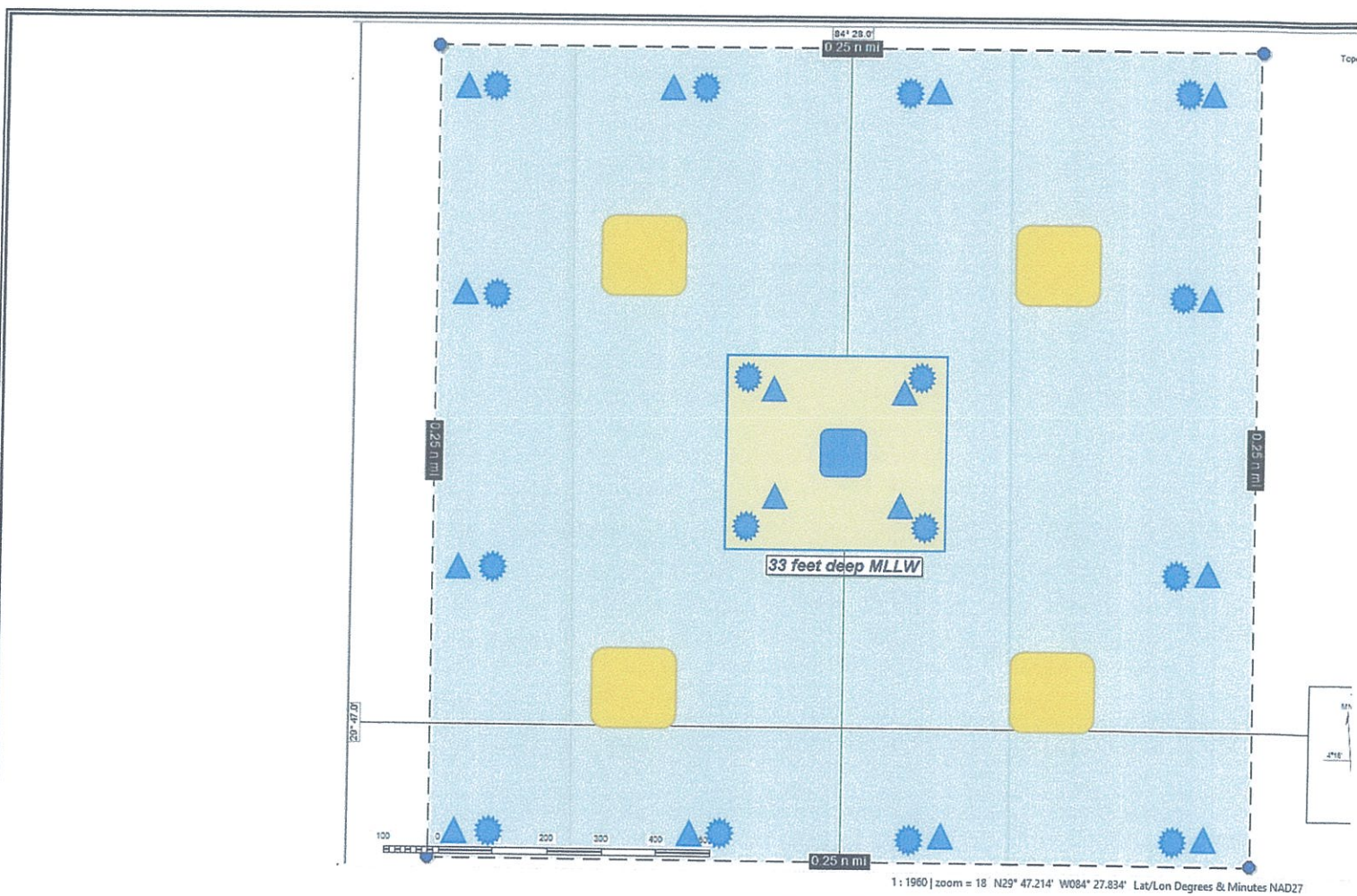


Figure - 6

St. Teresa Reef Site Materials Layout Map

Map pr
By Fish H



St. Teresa Artificial Reef Graphical Cross section Drawing

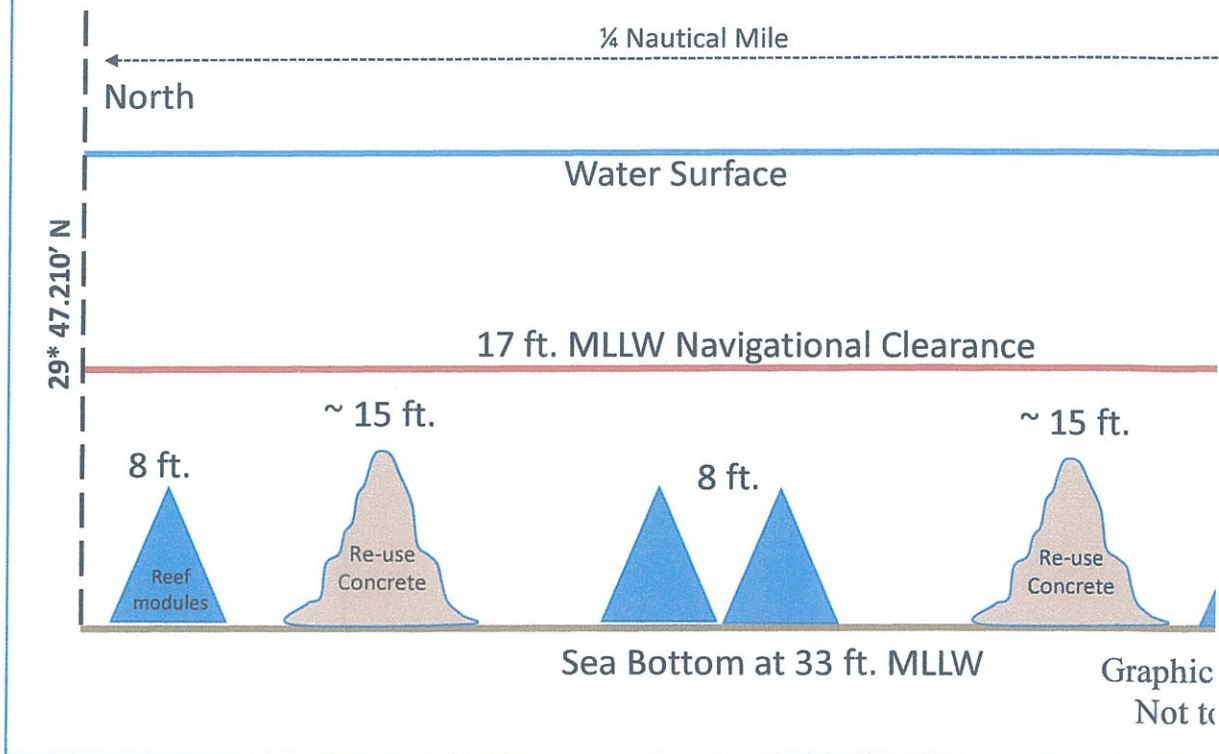


Figure - 7

St Teresa Reef Site Cross Section Drawing

Figure p
By Fish H.

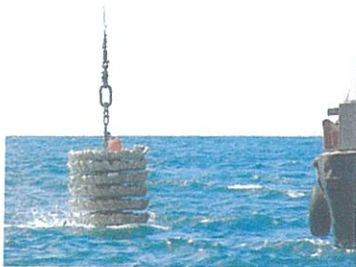




Re-use concrete culverts



Concrete cube modules



Walter EcoSystem Modules



Walter Florida Limestone Modules



Walter Grouper Modules



Re-use concrete poles/bridge materials



Golia



Pre-fa



Lime



Figure - 8

St. Teresa Reef Site examples of proposed reef materials

Figu
By F



62-330.600 General Permit for the Construction of Artificial Reefs.

(1) A general permit is 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 Agency with the notice required in Rule 62-330.402, 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 nautical 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 Oceanic and Atmospheric Administration, U.S. Department of Commerce, Rockville, Maryland, and the Florida Fish and Wildlife Conservation Commission (FWC), 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.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.418, 403.805(1) FS. Law Implemented 373.118(1), 373.406(5), 373.413, 373.4131, 373.414(9), 373.416, 373.418, 403.814(1) FS. History—New 10-3-95, Formerly 62-341.600, Amended 10-1-13.

62-330.405 General Conditions for All General Permits.

The following general permit conditions are binding upon the permittee and are enforceable under Chapter 373, F.S. These conditions do not apply to the general permit in Section 403.814(12), F.S.

(1) The general permit is valid only for the specific activity indicated. Any deviation from the specified activity and the conditions for undertaking that activity shall constitute a violation of the permit and may subject the permittee to enforcement action and revocation of the permit under Chapter 373, F.S.

(2) This general permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any construction, alteration, operation, maintenance, removal or abandonment authorized by this permit.

(3) This general permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the general permit.

(4) The general permit does not relieve the permittee from liability and penalties when the permitted activity causes harm or injury to: human health or welfare; animal, plant or aquatic life; or property. It does not allow the permittee to cause pollution that violates state water quality standards.

(5) Section 253.77, F.S., provides that a person may not commence any excavation, construction, or other activity involving the use of state-owned or other lands of the state, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required consent, lease, easement, or other form of authorization authorizing the proposed use. Therefore, the permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on state-owned lands.

(6) The authorization to conduct activities under a general permit may be modified, suspended or revoked in accordance with Chapter 120, F.S., and Section 373.429, F.S.

(7) This permit shall not be transferred to a third party except pursuant to Rule 62-330.340, F.A.C. The permittee transferring the general permit shall remain liable for any corrective actions that may be required as a result of any permit violations prior to sale, conveyance, or other transfer of ownership or control of the permitted project, activity, or the real property at which the permitted project or activity is located.

(8) Upon reasonable notice to the permittee, Agency staff with proper identification shall have permission to enter, inspect, sample and test the permitted activity to ensure conformity with the plans and specifications approved by the permit.

(9) The permittee shall maintain any permitted project or activity in accordance with the plans submitted to the Agency and authorized in this general permit.

(10) A permittee's right to conduct a specific activity under this general permit is authorized for a duration of five years.

(11) Activities shall be conducted in a manner that does not cause or contribute to violations of state water quality standards. Performance-based erosion and sediment control best management practices shall be implemented and maintained immediately prior to, during, and after construction as needed to stabilize all disturbed areas, including other measures specified in the permit to prevent adverse impacts to the water resources and adjacent lands. Erosion and sediment control measures shall be installed and maintained in accordance with the *State of Florida Erosion and Sediment Control Designer and Reviewer Manual (Florida Department of Environmental Protection and Florida Department of Transportation June 2007)*, available at www.dep.state.fl.us/water/wetlands/docs/erp/FLerosionSedimentManual_6_07.pdf, and the *Florida Stormwater Erosion and Sedimentation Control Inspector's Manual (Florida Department of Environmental Protection, Nonpoint Source Management Section, Tallahassee, Florida, July 2008)*, available at www.dep.state.fl.us/water/nonpoint/docs/erosion/erosion-inspectors-manual.pdf.

(12) Unless otherwise specified in the general permit, temporary vehicular access within wetlands during construction shall be performed using vehicles generating minimum ground pressure to minimize rutting and other environmental impacts. Within forested wetlands, the permittee shall choose alignments that minimize the destruction of mature wetland trees to the greatest extent practicable. When needed to prevent rutting or soil

compaction, access vehicles shall be operated on wooden, composite, metal, or other non-earthen construction mats. In all cases, access in wetlands shall comply with the following:

(a) Access within forested wetlands shall not include the cutting or clearing of any native wetland tree having a diameter 4 inches or greater at breast height;

(b) The maximum width of the construction access area shall be limited to 15 feet;

(c) All mats shall be removed within 72 hours after the work commences; and

(d) Areas disturbed for access shall be restored to natural grades immediately after the maintenance or repair is completed.

(13) Barges or other work vessels used to conduct in-water activities shall be operated in a manner that prevents unauthorized dredging, water quality violations, and damage to submerged aquatic communities.

(14) The construction, alteration, or use of the authorized project shall not adversely impede navigation or create a navigational hazard in the water body.

(15) Except where specifically authorized in a general permit, activities must not:

(a) Impound or obstruct existing water flow, cause adverse impacts to existing surface water storage and conveyance capabilities, or otherwise cause adverse water quantity or flooding impacts to receiving water and adjacent lands;

(b) Cause an adverse impact to the maintenance of surface or ground water levels or surface water flows established pursuant to Section 373.042, F.S., or a Works of the District established pursuant to Section 373.086, F.S.; or

(16) If any prehistoric or historic artifacts, such as pottery or ceramics, stone tools or metal implements, dugout canoes, or any other physical remains that could be associated with Native American cultures, or early colonial or American settlement are encountered at any time within the project site area, work involving subsurface disturbance in the immediate vicinity of such discoveries shall cease. The permittee or other designee shall contact the Florida Department of State, Division of Historical Resources, Compliance and Review Section, at (850) 245-6333 or (800) 847-7278, as well as the appropriate permitting agency office. Such subsurface work shall not resume without verbal or written authorization from the Division of Historical Resources. If unmarked human remains are encountered, all work shall stop immediately and notification shall be provided in accordance with Section 872.05, F.S.

(17) The activity must be capable, based on generally accepted engineering and scientific principles, of being performed and of functioning as proposed, and must comply with any applicable District special basin and geographic area criteria.

(18) The permittee shall comply with the following when performing work within waters accessible to federally- or state-listed aquatic species, such as manatees, marine turtles, smalltooth sawfish, and Gulf sturgeon:

(a) All vessels associated with the project shall operate at "Idle Speed/No Wake" at all times while in the work area and where the draft of the vessels provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.

(b) All deployed siltation or turbidity barriers shall be properly secured, monitored, and maintained to prevent entanglement or entrapment of listed species.

(c) All in-water activities, including vessel operation, must be shutdown if a listed species comes within 50 feet of the work area. Activities shall not resume until the animal(s) has moved beyond a 50-foot radius of the in-water work, or until 30 minutes elapses since the last sighting within 50 feet. Animals must not be herded away or harassed into leaving. All on-site project personnel are responsible for observing water-related activities for the presence of listed species.

(d) Any listed species that is killed or injured by work associated with activities performed shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922 and ImperiledSpecies@myFWC.com.

(e) Whenever there is a spill or frac-out of drilling fluid into waters accessible to the above species during a directional drilling operation, the FWC shall be notified at imperiledspecies@myfwc.com with details of the event within 24 hours following detection of the spill or frac-out.

(19) The permittee shall hold and save the Agency harmless from any and all damages, claims, or liabilities which may arise by reason of the construction, alteration, operation, maintenance, removal, abandonment or use of any activity authorized by the general permit.

(20) The permittee shall immediately notify the Agency in writing of any submitted information that is ~~later~~ discovered to be inaccurate.

Rulemaking Authority 373.026(7), 373.043, 373.118(1), 373.406(5), 373.4131, 373.414(9), 373.4145, 373.418, 403.805(1) FS. Law Implemented 373.044, 373.118(1), 373.129, 373.136, 373.406(5), 373.413, 373.4131, 373.414(9), 373.4145, 373.416, 373.422, 373.423, 373.429, 403.814(1) FS. History—New 10-3-95, Amended 10-1-07, Formerly 62-341.215, Amended 10-1-13.

**GENERAL CONSENT CONDITIONS FOR
USE OF SOVEREIGNTY SUBMERGED LANDS**

Any use of sovereignty submerged lands is subject to the following general conditions are binding upon the applicant and are enforceable under Chapter 253, F.S. X and Chapter 258, F.S.

1. Sovereignty submerged lands may be used only for the specified activity or use. Any unauthorized deviation from the specified activity or use and the conditions for undertaking that activity or use will constitute a violation. Violation of the authorization will result in suspension or revocation of the applicant's use of the sovereignty submerged lands unless cured to the satisfaction of the Board of Trustees.
2. Authorization under Rule 18-21.005, F.A.C., conveys no title to sovereignty submerged lands or water column, nor does it constitute recognition or acknowledgment of any other person's title to such land or water.
3. Authorizations under Rule 18-21.005, F.A.C., may be modified, suspended or revoked in accordance with its terms or the remedies provided in Sections 253.04, F.S. and Chapter 18-14, F.A.C.
4. Structures or activities will be constructed and used to avoid or minimize adverse impacts to resources.
5. Construction, use, or operation of the structure or activity will not adversely affect any species which is endangered, threatened or of special concern, as listed in Rules 68A-27.003, 68A-27.004, and 68A-27.005, F.A.C.
6. Structures or activities will not unreasonably interfere with riparian rights. When a court of competent jurisdiction determines that riparian rights have been unlawfully affected, the structure or activity will be modified in accordance with the court's decision.
7. Structures or activities will not create a navigational hazard.
8. Structures will be maintained in a functional condition and will be repaired or removed if they become dilapidated to such an extent that they are no longer functional.
9. Structures or activities will be constructed, operated, and maintained solely for water dependent purposes.
10. The applicant agrees to indemnify, defend and hold harmless the Board of Trustees and the State of Florida from all claims, actions, lawsuits and demands in any form arising out of the authorization to use sovereignty submerged lands or the applicant's use and construction of structures on sovereignty submerged lands. This duty to indemnify and hold harmless will include any and all liabilities that are associated with the structure or activity including special assessments or taxes that are now or in the future assessed against the structure or activity during the period of the authorization.

11. Failure by the Board of Trustees to enforce any violation of a provision of the authorization or waiver by the Board of Trustees of any provision of the authorization will not invalidate the provision not enforced or waived, nor will the failure to enforce or a waiver prevent the Board of Trustees from enforcing the unenforced or waived provision in the event of a violation of that provision.

12. Applicant binds itself and its successors and assigns to abide by the provisions and conditions set forth in the authorization. If the applicant or its successors or assigns fails or refuses to comply with the provisions and conditions of the authorization, the authorization may be terminated by the Board of Trustees after written notice to the applicant or its successors or assigns. Upon receipt of such notice, the applicant or its successors or assigns will have thirty (30) days in which to correct the violations. Failure to correct the violations within this period will result in the automatic revocation of this authorization.

13. All costs incurred by the Board of Trustees in enforcing the terms and conditions of the authorization will be paid by the applicant. Any notice required by law will be made by certified mail at the address shown on page one of the authorization. The applicant will notify the Board of Trustees in writing of any change of address at least ten days before the change becomes effective.

14. This authorization does not allow any activity prohibited in a conservation easement or restrictive covenant that prohibits the activity.

Appendix F

USACOE Permit



DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT CORPS OF ENGINEERS
PENSACOLA REGULATORY OFFICE
41 NORTH JEFFERSON STREET, SUITE 301
PENSACOLA, FLORIDA 32502

REPLY TO
ATTENTION OF

April 12, 2016

Pensacola Permits Section
SAJ-2015-00966 (SP-SWA)

City of Carrabelle
1001 Gray Avenue
Carrabelle, Florida 32322

Ladies and Gentlemen:

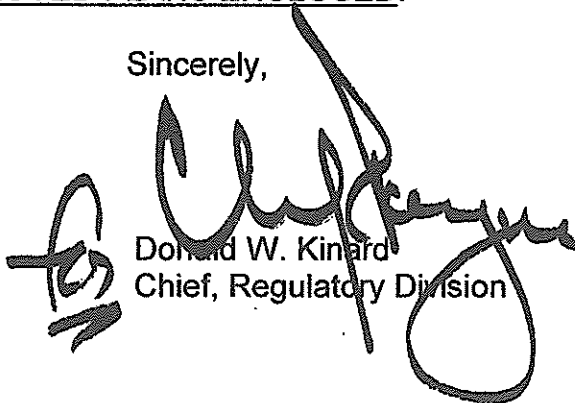
The U.S. Army Corps of Engineers (Corps) is pleased to enclose the Department of the Army permit, which should be available at the construction site. Work may begin immediately but the Corps must be notified of:

- a. The date of commencement of the work,
- b. The dates of work suspensions and resumptions of work, if suspended over a week, and
- c. The date of final completion.

This information should be mailed to the Special Projects and Enforcement Branch of the Regulatory Division of the Jacksonville District at 41 North Jefferson Street, Suite 301, Pensacola, Florida 32502. The Special Projects and Enforcement Branch is also responsible for inspections to determine whether Permittees have strictly adhered to permit conditions.

IT IS NOT LAWFUL TO DEVIATE FROM
THE APPROVED PLANS ENCLOSED.

Sincerely,



Donald W. Kinard
Chief, Regulatory Division

Enclosures

DEPARTMENT OF THE ARMY PERMIT

Permittee: City of Carrabelle
1001 Gray Avenue
Carrabelle, Florida 32322

Permit No: SAJ-2015-0966 (SP-SWA)

Issuing Office: U.S. Army Engineer District, Jacksonville

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the U.S. Army Corps of Engineers (Corps) having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: The project to establish an artificial reef area referred to as the "St Teresa Artificial Reef". It would consist of a ¼ by ¼ statute mile deployment area, totaling 40 acres with a deployment buffer of 50 feet on each side. Material to be deployed shall consist of clean concrete or rock, heavy gauge steel products (¼-inch thickness or greater), and prefabricated structures that are a mixture of clean concrete and heavy gauge steel. The material to be deployed shall have a maximum profile height of no more than 11 feet and result in a minimum authorized depth of -22 feet at mean lower low water MLLW.

Project Location: The proposed project is located in the Gulf of Mexico, off Franklin County, with the center of the site being located approximately 8.57 nautical miles on a direct bearing of 184° from the town of St. Teresa.

Approximate Coordinates:

	Corner	Latitude	Longitude
1	Northwest Corner	29.786812° N	84.468670° W
2	Northeast Corner	29.786812° N	84.464509° W
3	Southwest Corner	29.783183° N	84.468670° W
4	Southeast Corner	29.783183° N	84.464509° W

Permit Conditions

General Conditions:

PERMIT NUMBER: SAJ-2015-00966 (SP-SWA)

PERMITTEE: City of Carrabelle

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1. The time limit for completing the work authorized ends on **March 31, 2026**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.

2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature and the mailing address of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. **Reporting Addresses:** The Permittee shall reference this permit number, SAJ-2015-00966, on all correspondence. Unless specifically notified to the contrary, the Permittee shall use the following addresses for transmitting correspondence to the referenced agencies:

a. U.S. Army Corps of Engineers

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41 North Jefferson Street, Suite 301
Pensacola, FL 32502

or by email at CESAJ-ComplyDocs@usace.army.mil

- b. National Oceanic and Atmospheric Administration
Marine Chart Division
Office of Coast Survey, N/CS26, Sta. 7317
1315 East-West Highway
Silver Springs, MD 20910-3282

or email at ocs.ndb@noaa.gov

- c. Commander, U.S. Coast Guard (USCG)
8th Coast Guard District
Hale Boggs Federal Building
500 Poydras Street
New Orleans, LA 70130

- d. Florida Fish and Wildlife Conservation Commission
Artificial Reef Program
620 S. Meridian Street, Box 4B2
Tallahassee, Florida 32399

Or email at artificialreefdeployments@MyFWC.com

2. Initial Agency Notification: The Permittee shall provide to the U.S. Army Corps of Engineers (Corps), National Oceanic and Atmospheric Administration (NOAA), and U.S. Coast Guard (USCG) written notification of the planned deployment start date at least 2 weeks prior to the initial deployment on the authorized artificial reef site.

3. Endangered Species: The permittee agrees to comply with all of the activity specific Project Design Criteria (PDCs) listed in the National Marine Fisheries Service's (NMFS) Statewide Programmatic Biological Opinion (SWPBO), dated December 4, 2015. Failure to comply with these conditions could result in enforcement action by the Corps and/or NMFS.

4. Right Whale Protection: It is illegal to approach within 500 yards of a right whale by vessel, aircraft, or any other means (50 CFR 224.103 (c)). Any vessel finding itself within 500 yards of a right whale must depart immediately at a slow speed.

5. Species reporting: Any collision(s) with and/or injuries to any sea turtle, sawfish, whale, or sturgeon occurring during the construction of a project, shall be reported immediately to NMFS's Protected Resources Division (PRD) at (727-824-5312) or by email to takereport.nmfs@noaa.gov and CESAJ-ComplyDocs@usace.army.mil. Sea turtle and marine mammal stranding/rescue organizations' contact information is available by region at <http://www.nmfs.noaa.gov/pr/health/networks.htm>. Smalltooth sawfish encounters shall be reported to <http://www.flmnh.ufl.edu/fish/sharks/sawfish/sawfishencounters.html>.

*Failure to report take of a federally listed threatened or endangered species may lead to suspension, revocation, or modification of this authorization. (From Section 3(18) of the Federal Endangered Species Act: The term 'take' means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct.)

6. Reef Materials: Reef materials shall be clean and free from asphalt, creosote, petroleum, other hydrocarbons and toxic residues, loose free-floating material or other deleterious substances.

7. Assessment of bottom conditions: No artificial reef materials shall be deployed until an assessment of the bottom conditions has been accomplished by diver or submersible video camera. The inspection of the deployment area may occur at the time of deployment but no more than 1 year prior to deployment.

8. Protection of adjacent resources: The permittee shall maintain a deployment buffer of at least 500 feet from any submerged aquatic resources including seagrasses, macroalgae, hard or soft coral, sponges, oysters, hard bottom, or areas where there are unique or unusual concentrations of bottom-dwelling marine organisms.

9. Size of reef materials: No individual reef unit or module will weigh less than 500 pounds (lb). Reef materials shall be clean and free from asphalt, petroleum, other hydrocarbons and toxic residues, as well as loose, free-floating material, or other deleterious substances. All artificial reef materials and/or structures will be selected, designed, constructed, and deployed to create stable and durable marine habitat.

10. Authorized Reef Materials: The Permittee shall deploy only the following authorized reef materials: clean concrete or rock, heavy gauge steel products (¼-inch thickness or greater), and prefabricated structures that are a mixture of clean concrete and heavy gauge steel.

11. Reef structures, materials, and installation methods shall be designed and deployed to prevent entanglement and entrapment of listed species. The use of open-

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bottom structures is not authorized unless the structure has at least a 3-ft opening at the top of the structure for turtles to escape.

12. Reef Parameters: The Permittee shall deploy all reef materials within the buffer boundary as defined on attached permit drawings. A minimum clearance of -22 feet at MLLW shall be maintained.

13. Violation of Reef Parameters Notification: In the event reef material is deployed in a location or manner contrary to the Reef Parameters Special Condition, the Permittee shall immediately notify the USCG Station and provide information as requested by the station. The Permittee shall notify NOAA, USCG and Corps in writing within 24 hours of the occurrence. At a minimum the written notification shall explain how the deployed material exceeds the authorized reef parameters, a description of the material, a description of the vessel traffic in the area, the deployment location in nautical miles at compass bearing from obvious landmarks, the location of the unauthorized material in latitude and longitude coordinates (degree, minute, decimal minute format to the third decimal place), and the water depth above the material from MLW. The document will list the information provided by telephone to the USCG as noted above and include the time of the call and the name of the USCG personnel receiving the information.

14. Pre-Deployment Notification: No less than 14 days prior to deployment of material on an artificial reef, the Permittee shall transmit by electronic mail ("email") a complete and signed "Florida Artificial Reef Materials Cargo Manifest and Pre-Deployment Notification" form (Attached), to the Corps and Florida Fish and Wildlife Conservation Commission (FWC) to allow inspection of the proposed reef materials as deemed necessary by the agencies. Inspection is allowable at the staging area. By signing the Pre-Deployment Notification the Permittee certifies all materials are free from asphalt, petroleum, other hydrocarbons and toxic residues. The Permittee shall not deploy material if notified by the Corps or FWC that the material is questionable. The material needs to be evaluated before it is released for deployment. Any material deemed unacceptable for reef material will be disposed in an approved upland disposal site.

Deployment of the material shall not occur until after the end of the 14-day inspection period. The Permittee shall ensure both a copy of this 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. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision: This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

- a. You fail to comply with the terms and conditions of this permit.
- b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (see 4 above).
- c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions: General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

15. Post-Deployment Placement Report/As-Built Drawing: No more than 30 days after deployment at the reef site, the Permittee shall transmit by email to the Corps, FWC, and NOAA a complete and signed "Florida Artificial Reef Materials Placement Report and Post-Deployment Notification" form (Attached). Please note, the Corps requires the latitude and longitude to be accurate within 5 meters horizontal distance on the post-deployment report. Attach to the report an as-built drawing containing the approximate deployment configurations and the height of the material after placement. Depth shall be verified utilizing fathometer, depth sounder, or similar device accurate to within 1 meter. Also, include information on the condition of the material at the time of deployment. The report and drawing shall be limited to a few pages per deployment. Representative photographs and/or video, if available, should be submitted.

16. Ownership/Maintenance/Liability: By signing this permit, the Permittee certifies and acknowledges ownership of all artificial reef materials deployed on the reef, accepts responsibility for maintenance of the artificial reef, and possesses the ability to assume liability for all damages that may arise with respect to the artificial reef.

17. Assurance of Navigation and Maintenance: The Permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structures or work herein authorized, or if in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the Permittee will be required, upon due notice from the Corps, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

18. Sea Turtle/Sawfish/Sturgeon Guidelines: The Permittee shall comply with the attached National Marine Fisheries Service's "*Sea Turtle and Smalltooth Sawfish Construction Conditions*", which also applies to sturgeon.

19. Manatee Conditions: The Permittee shall comply with the attached "*Standard Manatee Conditions for In-Water Work – 2011.*"

20. Monitoring: As part of the yearly monitoring program the Permittee will conduct a fathometer scan once per year of each deployment within the "St. Teresa Artificial Reef" deployment site to verify material location and condition and compare to such information from previous monitoring events to distinguish changes in either. The monitoring report should include a spreadsheet representation of the site inspected and data gained with a written narrative and submitted in accordance with Special Condition 1.

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Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

(X) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403)

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344)

() Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413)

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

c. This permit does not authorize any injury to the property or rights of others.

d. This permit does not authorize interference with any existing or proposed Federal projects.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.

b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.

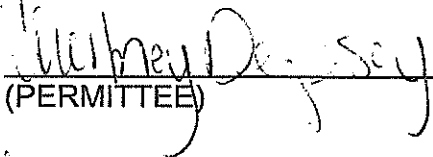
c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.

d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

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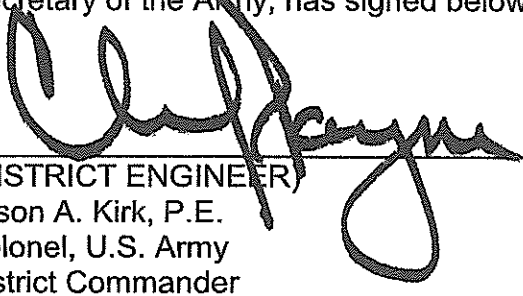
Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.


(PERMITTEE)

4-6-16
(DATE)


(PERMITTEE NAME-PRINTED)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.


(DISTRICT ENGINEER)
Jason A. Kirk, P.E.
Colonel, U.S. Army
District Commander

12 April 2016
(DATE)

PERMIT NUMBER: SAJ-2015-00966 (SP-SWA)
PERMITTEE: City of Carrabelle
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When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEREE-SIGNATURE)

(DATE)

(NAME-PRINTED)

(ADDRESS)

(CITY, STATE, AND ZIP CODE)

PERMIT NUMBER: SAJ-2015-00966 (SP-SWA)
PERMITTEE: City of Carrabelle
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***Attachments to Department of the Army
Permit Number SAJ-2015-00966***

1. PERMIT DRAWINGS: Seven (7) pages, dated March 17, 2016.
2. SEA TURTLE, SAWFISH AND STURGEON CONDITIONS: One (1) page.
3. MANATEE CONDITIONS: One (1) page.
4. FLORIDA ARTIFICIAL REEF MATERIALS CARGO MANIFEST AND PRE-DEPLOYMENT NOTIFICATION FORM: Two (2) pages.
5. FLORIDA ARTIFICIAL REEF MATERIALS PLACEMENT REPORT AND POST-DEPLOYMENT NOTIFICATION FORM: One (1) page.
6. SELF-CERTIFICATION FORM: One (1) page.



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



STANDARD MANATEE CONDITIONS FOR IN-WATER WORK

2011

The permittee shall comply with the following conditions intended to protect manatees from direct project effects:

- a. All personnel associated with the project shall be instructed about the presence of manatees and manatee speed zones, and the need to avoid collisions with and injury to manatees. The permittee shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing manatees which are protected under the Marine Mammal Protection Act, the Endangered Species Act, and the Florida Manatee Sanctuary Act.
- b. All vessels associated with the construction project shall operate at "Idle Speed/No Wake" at all times while in the immediate area and while in water where the draft of the vessel provides less than a four-foot clearance from the bottom. All vessels will follow routes of deep water whenever possible.
- c. Siltation or turbidity barriers shall be made of material in which manatees cannot become entangled, shall be properly secured, and shall be regularly monitored to avoid manatee entanglement or entrapment. Barriers must not impede manatee movement.
- d. All on-site project personnel are responsible for observing water-related activities for the presence of manatee(s). All in-water operations, including vessels, must be shutdown if a manatee(s) comes within 50 feet of the operation. Activities will not resume until the manatee(s) has moved beyond the 50-foot radius of the project operation, or until 30 minutes elapses if the manatee(s) has not reappeared within 50 feet of the operation. Animals must not be herded away or harassed into leaving.
- e. Any collision with or injury to a manatee shall be reported immediately to the Florida Fish and Wildlife Conservation Commission (FWC) Hotline at 1-888-404-3922. Collision and/or injury should also be reported to the U.S. Fish and Wildlife Service in Jacksonville (1-904-731-3336) for north Florida or Vero Beach (1-772-562-3909) for south Florida, and to FWC at ImperiledSpecies@myFWC.com



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>



**FLORIDA ARTIFICIAL REEF MATERIALS
CARGO MANIFEST AND PRE-DEPLOYMENT NOTIFICATION**
(Issued pursuant to Ch. 379.249(6)(b), Florida Statutes)



I, _____
Name of individual managing reef deployment (print) Signature Date

whose address is _____, (____) _____ - _____
Street City State Zip Code Phone

declare that I am staging and transporting the following artificial reef construction materials allowable pursuant to the U.S. Army Corps of Engineers Artificial Reef Permit referenced below and agree to comply with all permit conditions in the permit listed below and attached to this manifest. I understand this artificial reef site is open to public access and this authorization does not provide any rights or exclusive private use over those rights or uses to the general public.

The address of the land based reef materials staging area is: _____

Transporting Vessel Registration Number: _____

Vessel Owner: _____ Vessel Operator: _____

The following items are to be deployed as reef material (attach additional sheets when more than four locations):

MATERIAL TAG ID NUMBER(S), if applicable	Descriptions of material (number of pieces, type, dimension, weight)	GPS Coordinates degrees, minutes, decimal minutes (DD°MM.mmm')
		Lat: _____ ° _____', Lon: _____ ° _____'
		Lat: _____ ° _____', Lon: _____ ° _____'
		Lat: _____ ° _____', Lon: _____ ° _____'
		Lat: _____ ° _____', Lon: _____ ° _____'

A copy of the below referenced permit(s) and all associated conditions is attached to this manifest and shall be carried on board the vessel during loading, storing, or transporting artificial reef material.

-- OFFICIAL USE ONLY --

(TO BE COMPLETED BY PERMIT HOLDER, OR AUTHORIZED ARTIFICIAL REEF INSPECTOR)

Permit Holder: _____
Name of U.S. Department of the Army, Corps of Engineers (ACOE) Permit Holder

ACOE permit number _____, permitted site name _____

issued on _____ and has an expiration date of _____.

Local tracking number (if applicable): _____

(Name of FWC authorized Artificial Reef Inspector, printed)

(Signature)

(Date)

EXPLANATION SHEET FOR THE ARTIFICIAL REEF MATERIALS CARGO MANIFEST FORM

The attached artificial reef cargo manifest has been developed in compliance with subsection 379.249(6)(b), Florida Statutes, which states that:

"It is unlawful for any person to: store, possess or transport on or across state waters any materials reasonably suited for artificial reef construction and stored in such a manner providing ready access for use and placement as an artificial reef, unless a valid cargo manifest issued by the commission or a commission-certified inspector is onboard the transporting vessel. The manifest will serve as authorization to use a valid permitted site or land-based staging area, which will validate that the type of artificial reef construction material being transported is permissible for use at the permitted site, and will describe and quantify the artificial reef material being transported. The manifest will also include the latitude and longitude coordinates of the proposed deployment location, the valid permit number, and the copy off the permit conditions for the permitted site. The manifest must be available for inspection by any authorized law enforcement officer or commission employee."

This requirement for a cargo manifest became part of the statutory revision of the artificial reef program statute Section 379.249 Florida Statutes (F.S.), modified during the 2000 State of Florida Legislature. The statutory language allows a "commission certified inspector" to complete and approve the artificial reef materials cargo manifest. Therefore, we are providing the attached cargo manifest form to all local coastal government artificial reef coordinators and eligible non-profit corporations who may physically construct artificial reefs with the approval of the permit holders.

INSTRUCTIONS

A separate cargo manifest form is to be completed for each load to be transported offshore (i.e., one manifest per voyage). The manifest is to list all, and only, the reef materials onboard.

The top of the form is to be filled out by the reef builder with his/her contact information and the information about the proposed reef materials to be deployed written into the boxes. If several materials are identical but have different tag numbers, please write "SAME" in the box for the other materials. Also put "SAME" under additional coordinates if all materials are going to the same deployment site.

The shaded portion of the form at the bottom is to be filled out by the materials inspector. The cargo manifest must be completed by an entity representing the holder of the applicable artificial reef permit to assure that all materials meet the requirements of the permit.

Completion of the artificial reef materials cargo manifest is required for all construction activities.

The requirement to complete this document is not intended to be an undue burden on entities wishing to legally construct artificial reefs within permitted sites, but is a tool to assist law enforcement personnel in preventing the illegal construction of artificial reefs without the knowledge of the permit holder or in areas outside of legally permitted sites. It is intended to allow law enforcement staff to determine whether or not a load of materials is legal under the permit conditions. Without a properly completed Cargo Manifest Form on board, reef builders will be returned to port pursuant to Chapter 379.249 (6) (b). It is not necessary to send a copy of the Cargo Manifest Form to the FWC artificial reef section in Tallahassee. Documentation of the reef building activity should be maintained by the entity issuing the manifest in the event of any FWC inquiries.

Reminder: the placement of all public artificial reefs in state or adjacent federal waters requires the submittal of a Materials Placement Report to the FWC artificial reef program within 30 days of public reef deployment in accordance with s. 379.249 F.S.



FLORIDA ARTIFICIAL REEF MATERIALS PLACEMENT REPORT AND POST-DEPLOYMENT NOTIFICATION



US Army Corps
of Engineers

To Be Completed For Each Deployment Location or Date of Deployment

County or
Municipality: _____

Date of Placement: _____

Grant No. FWC - _____
(if applicable)

U.S. Army Corps
Permit No.: _____

Total project cost: \$ _____ (Funding Source(s) and Amount(s): FWC \$ _____ Local \$ _____ Other \$ _____)

Name of Permitted
Reef Site: _____

Location Name
for This Deployment: _____

Latitude: _____° _____' _____" North
Degrees minutes decimal minutes

Longitude: _____° _____' _____" West
Degrees minutes decimal minutes

GPS Brand: _____ GPS Model number: _____

Geographical Location: _____ at _____ degrees from _____
(nautical miles) (bearing) (reference inlet)

Water Depth: _____ feet (minus) Max. Material Height: _____ feet (equals) Actual Vertical Clearance: _____ feet

TYPE AND AMOUNT OF MATERIAL DEPLOYED AT THE LOCATION DESCRIBED ABOVE:

(ATTACH A PHOTOGRAPH OF THE MATERIAL ON THE BARGE IMMEDIATELY PRIOR TO DEPLOYMENT) ☐

Primary Type of Material: _____ Number of Pieces: _____

Dimensions: _____

Secondary Type of Material: _____ Number of Pieces: _____

Dimensions: _____

How was tonnage calculated?(Check all that apply, attach additional sheets if necessary): ☐ Before & after barge draft calculation
☐ Known weight of individual pieces
☐ Trucking receipts

TOTAL TONNAGE FOR THIS DEPLOYMENT: _____

I DO HEREBY CERTIFY THAT THE ABOVE INFORMATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE

Observer's Name: _____
(PLEASE PRINT)

Title: _____
(PLEASE PRINT)

Observer's Signature: _____

Date: _____

Observer's Remarks: _____

I DO HEREBY CERTIFY THAT THE ABOVE INFORMATION COMPLIES WITH THE ABOVE REFERENCED PERMIT CONDITIONS

Permittee's Staff Name: _____
(PLEASE PRINT)

Title: _____
(PLEASE PRINT)

Permittee's Staff Signature: _____ Date: _____

Local Tracking number _____ FWC Tracking number _____ Entered by _____ on _____ date _____
Rev. 4/23/2007 FWC initials

SELF-CERTIFICATION STATEMENT OF COMPLIANCE

Permit Number: SAJ-2015-00966 (SP-SWA)

Permittee's Name & Address (please print or type): _____

Telephone Number: _____

Location of the Work: _____

Date Work Started: _____ Date Work Completed: _____

Description of the Work (e.g. bank stabilization, residential or commercial filling, docks, dredging, etc.):

Acreage or Square Feet of Impacts to Waters of the United States: _____

Describe Mitigation completed (if applicable): _____

Describe any Deviations from the Permit (attach drawing(s) depicting the deviations):

I certify that all work, and mitigation (if applicable) was done in accordance with the limitations and conditions as described in the permit. Any deviations as described above are depicted on the attached drawing(s).

Signature of Permittee

Date

Appendix G

Letters of Support

March 8, 2016

Artificial Reef Program
Division of Marine Fisheries Management
Florida Fish and Wildlife Conservation Commission
Tallahassee, FL 32399

**Ref: OAR Grant Proposal
St. Teresa Reef**

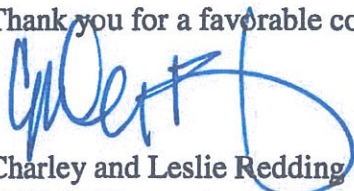
FWC,

The Redding Family has been actively involved with the Organization for Artificial Reefs (OAR) over the last several years, beginning with the deployment of **Robby's Reef**, in memory of our son Robby Redding. **Robby's Reef**, southeast of Dog Island, near several other artificial reefs (Nicholas Cureton Reef and the Dixon Camp Memorial Reef) within the Carrabelle 10 Mile Reef site. We actively support the City of Carrabelle's Reef Program to improve and enhance the marine environment offshore of Franklin County. OAR has served Carrabelle well over the years as its project manager for artificial reef deployment.

Robby's Reef is not only a great tribute to our son, who loved to fish in the local Gulf waters but has also provided a diverse fishing and diving activity, contributing significantly to the local economy. Continued reef deployment around Dog Island Reef and St. Teresa Beach will no doubt increase the invertebrate and fish populations, in direct proportion to the structural/material expansion as planned in the proposed grant application.

We remain committed to OAR's mission and urge approval of the referenced grant proposal in order to enhance **Price's Point** and the St. Teresa Reef build-out.

Thank you for a favorable consideration,



Charley and Leslie Redding
4198 St. Teresa Ave.
Sopchoppy, FL 32358
850.556.9631

February 25, 2016

C Quarters Marina
501 St. James Avenue
Carrabelle, Florida 32322

To Whom It May Concern:

C Quarters Marina would like to take this opportunity to voice our support for the City of Carrabelle's work that they are doing regarding reef development. The City has traditionally used the Organization for Artificial Reefs (OAR) as their project manager for their deployments, of which the latest effort, "Robby's Reef, has benefitted our area with additional fishing and diving activity. The shallow water St. Teresa Reef System will provide an opportunity for owners of smaller boats to enjoy the benefits of fishing and diving artificial reef structure nearer to shore.

As a provider of marine fuel and fishing supplies we are very aware of the offshore improvements OAR has implemented for the local fishermen and divers which in turn support our business when leaving or returning on trips offshore.

We would like to emphasize that Artificial Reef development, especially in the Northwest Region and Panhandle of Florida is a demonstrable method to: enhance fishing stock, positively increase marine ecosystem environment(s) and also supports green job creation - not only through the building of the reefs; but through the continual recreational dollars spent to fish/dive on these resources; which develop into permanent structures.

Thank you for this consideration.



2ppt. Manager

February 25, 2016

The Moorings of Carrabelle
100 N W Avenue A
Carrabelle, FL 32322

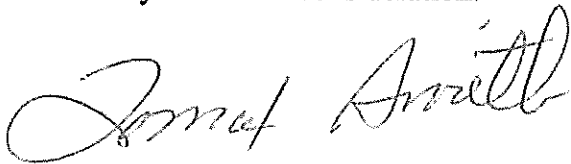
To Whom It May Concern:

The Moorings of Carrabelle would like to take this opportunity to voice our support for the City of Carrabelle's work that they are doing regarding reef development. The City has traditionally used the Organization for Artificial Reefs (OAR) as their project manager for their deployments, of which the latest effort, "Robby's Reef, has benefitted our area with additional fishing and diving activity. The shallow water St. Teresa Reef System will provide an opportunity for owners of smaller boats to enjoy the benefits of fishing and diving artificial reef structure nearer to shore.

As a provider of marine fuel and fishing supplies we are very aware of the offshore improvements OAR has implemented for the local fishermen and divers which in turn support our business when leaving or returning on trips offshore.

We would like to emphasize that Artificial Reef development, especially in the Northwest Region and Panhandle of Florida is a demonstrable method to: enhance fishing stock, positively increase marine ecosystem environment(s) and also supports green job creation - not only through the building of the reefs; but through the continual recreational dollars spent to fish/dive on these resources; which develop into permanent structures.

Thank you for this consideration.

A handwritten signature in cursive script, appearing to read "Lomax Smith".

Lomax Smith, Owner

March 10, 2016

William Mickler
2606 Highway 98 East
Carrabelle, FL 32322

To Whom It May Concern:

I would like to take this opportunity to voice my support for the City of Carrabelle's work that they are doing regarding reef development. The City has traditionally used the Organization for Artificial Reefs (OAR) as their project manager for their deployments, of which the latest effort, "Robby's Reef, has benefitted our area with additional fishing and diving activity. I fish the artificial reefs that Carrabelle and OAR have provided year round.

The shallow water St. Teresa Reef System will provide an opportunity for me and other owners of smaller boats to enjoy the benefits of fishing and diving artificial reef structure nearer to shore. The reef system is near shore and shallow enough for skin divers like myself, who do not own expensive SCUBA equipment.

As a user of marine fuel and fishing supplies we are very aware of the offshore improvements OAR has implemented for the local fishermen and divers which in turn support our business when leaving or returning on trips offshore. I am continually reminded by these business people of the financial impact in these small economically depressed communities.

Artificial Reef development, especially in the Northwest Region and Panhandle of Florida is a demonstrable method to: enhance fishing stock, positively increase marine ecosystem environment(s) and also supports green job creation - not only through the building of the reefs; but through the continual recreational dollars spent to fish/dive on these resources; which develop into permanent structures.

Thank you,



February 25, 2016

Lanark Village Mart
2348 Highway 98 East
Carrabelle, Florida 32322
850 697-4600

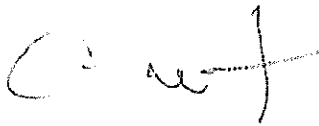
To Whom It May Concern:

Lanark Village Mart would like to take this opportunity to voice our support for the City of Carrabelle's work that they are doing regarding reef development. The City has traditionally used the Organization for Artificial Reefs (OAR) as their project manager for their deployments, of which the latest effort, "Robby's Reef, has benefitted our area with additional fishing and diving activity. The shallow water St. Teresa Reef System will provide an opportunity for owners of smaller boats to enjoy the benefits of fishing and diving artificial reef structure nearer to shore.

As a provider of marine fuel and fishing supplies we are very aware of the offshore improvements OAR has implemented for the local fishermen and divers which in turn support our business when leaving or returning on trips offshore.

We would like to emphasize that Artificial Reef development, especially in the Northwest Region and Panhandle of Florida is a demonstrable method to: enhance fishing stock, positively increase marine ecosystem environment(s) and also supports green job creation - not only through the building of the reefs; but through the continual recreational dollars spent to fish/dive on these resources; which develop into permanent structures.

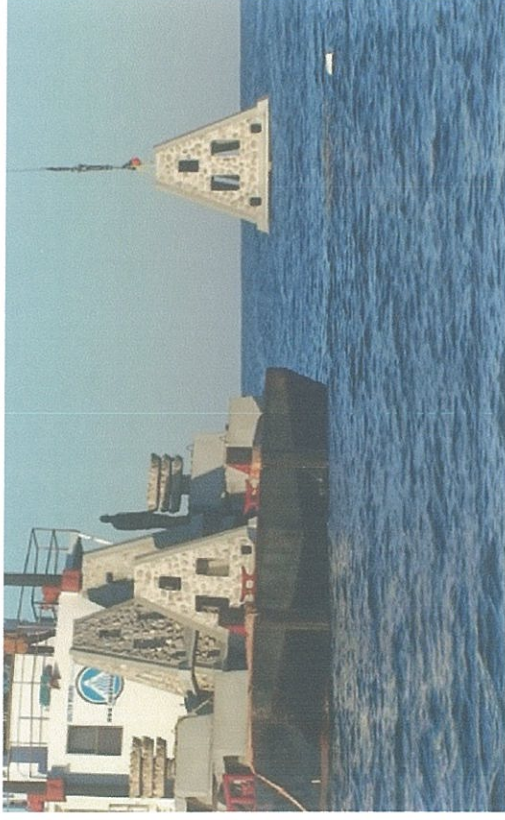
Thank you for this consideration.

A handwritten signature in black ink, appearing to read "Carson Ulrich", with a stylized flourish at the end.

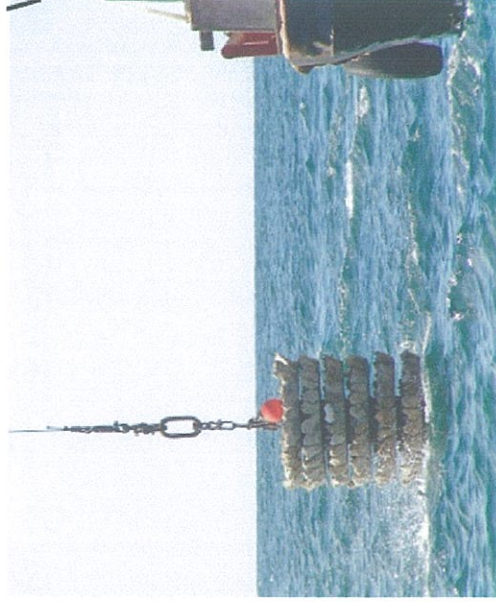
Carson Ulrich, Owner

Appendix H

Examples of Reef Materials



Walter Florida Limestone Reefs



Walter EcoSystem Reefs



Figure - 6

St. Teresa Reef Site examples of proposed reef materials



Walter Grouper/Ecosystem Reefs

Figure produced for OAR
By Fish Haven Services