Gulf of Mexico Artificial Reef Programs: An Overview

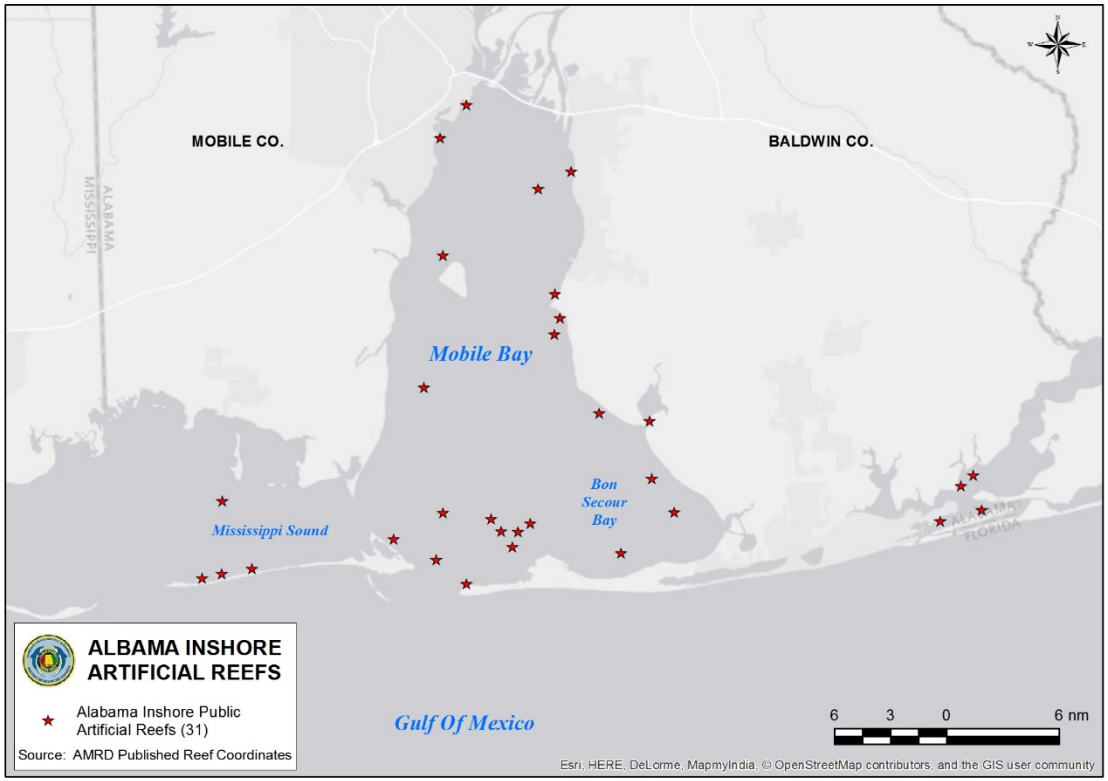
Texas Parks and Wildlife Department
Artificial Reef Program
J. Dale Shively
9 June 2016

Regional Experience

Physical Comparison of States

STATE	GOM SHORELINE (Miles)	NUMBER OF REEFS	Acres (est.)
Florida	1,350	3,100 reefs (2,100 in Gulf)	457,676
Alabama	53	1,030 sq miles permitted	872,974
Mississippi	44	15 reefs	16,000
Louisiana	397	9 offshore planning areas (3,600 sq nm)	3,051,172
Texas	367	78 reefs (10 nearshore)	5,000

Alabama


MOBILE CO.
BALDWIN CO.
MISSISSIPPI
ALABAMA
Mobile Bay
Bon Secour Bay
Mississippi Sound
ALABAMA
FLORIDA
ALBAMA INSHORE ARTIFICIAL REEFS
Alabama Inshore Public Artificial Reefs (31)
Source: AMRD Published Reef Coordinates
Gulf Of Mexico
6 3 0 6 nm
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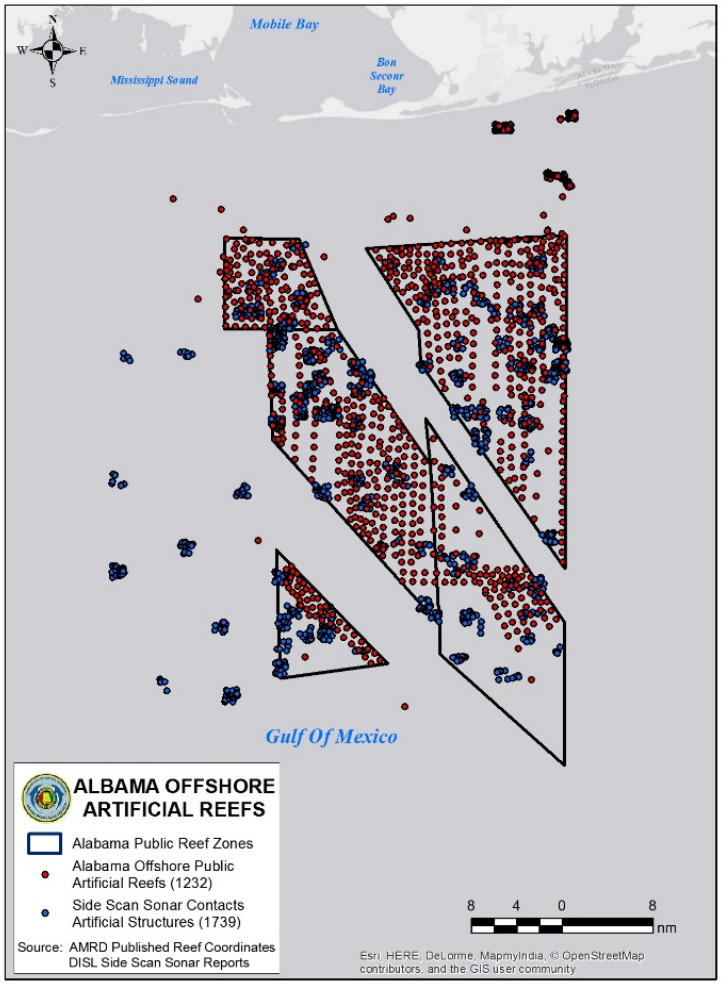
Alabama


Mobile Bay
Mississippi Sound
Bon Secour Bay
Gulf Of Mexico
ALBAMA OFFSHORE ARTIFICIAL REEFS
Alabama Public Reef Zones
Alabama Offshore Public Artificial Reefs (1232)
Side Scan Sonar Contacts Artificial Structures (1739)
Source: AMRD Published Reef Coordinates
DISL Side Scan Sonar Reports
8 4 0 8
nm
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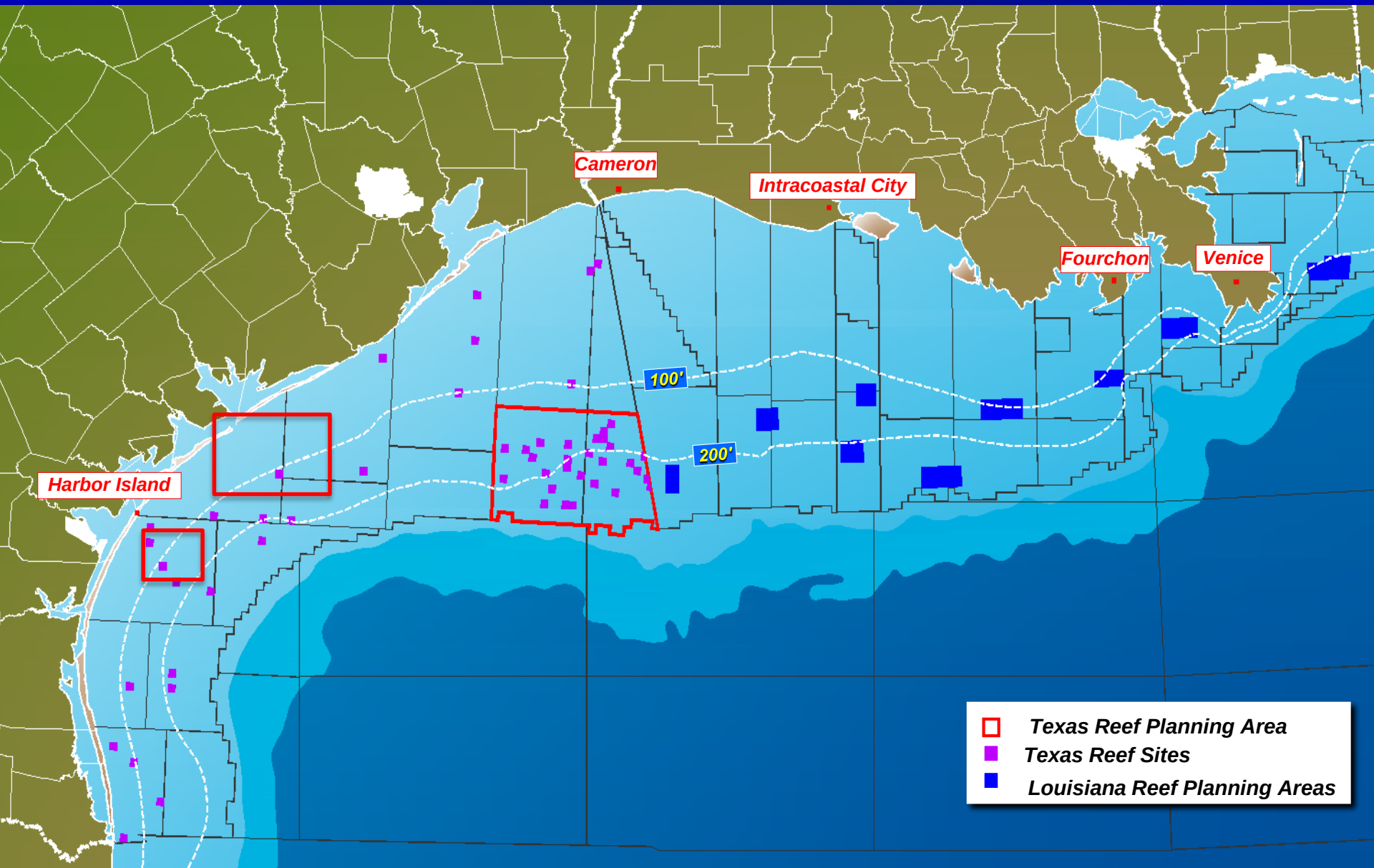
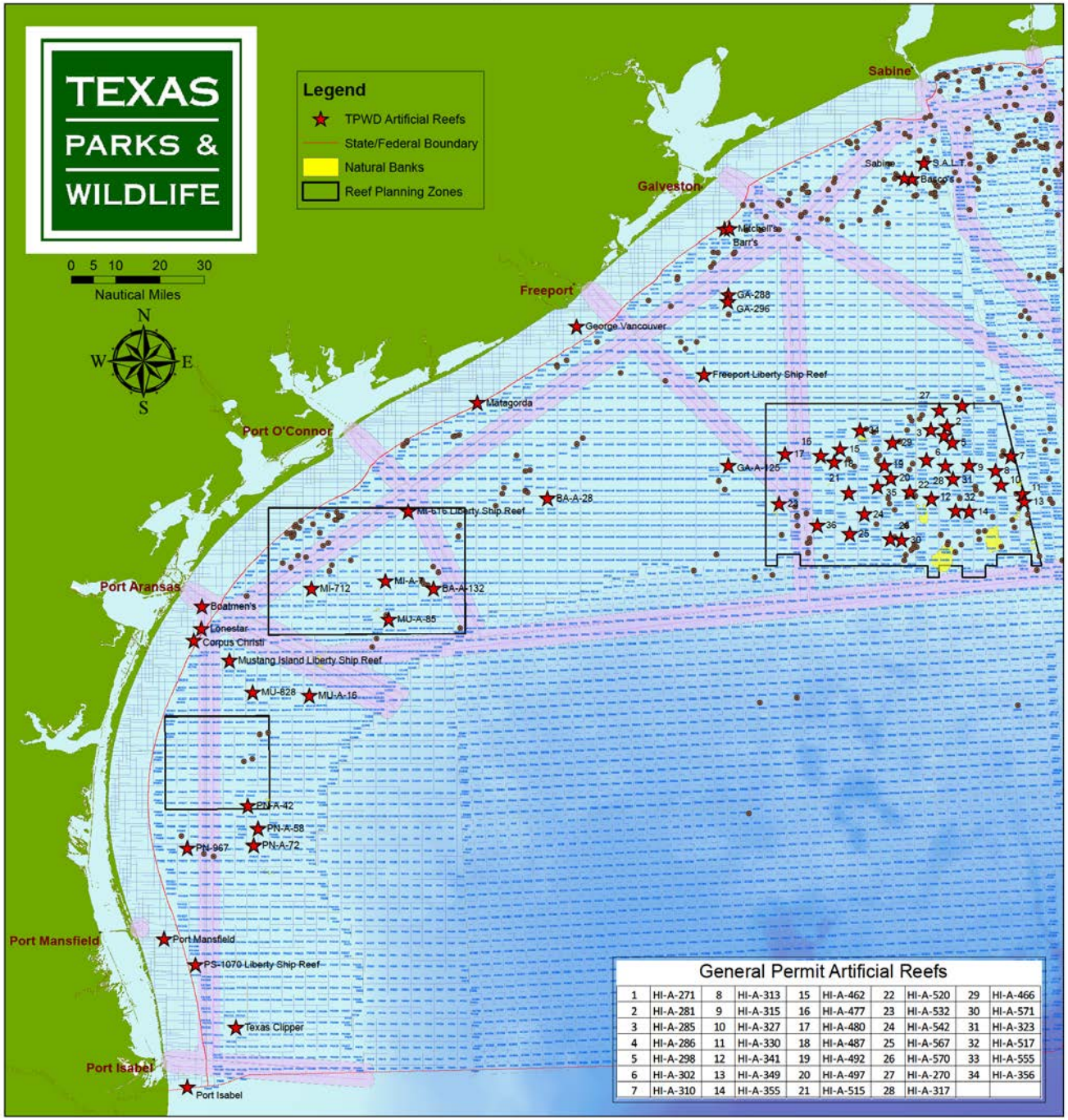
GoM Water Depth Contour Map



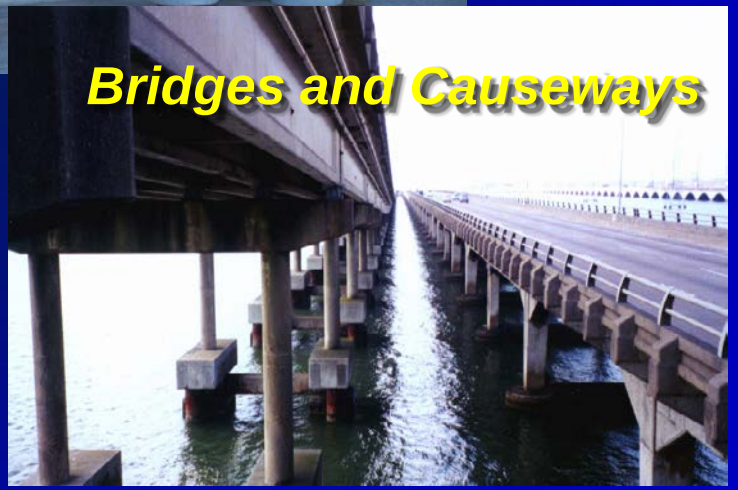
Texas Parks and Wildlife Department - Artificial Reef Program



General Permit Artificial Reefs

1	HI-A-271	8	HI-A-313	15	HI-A-462	22	HI-A-520	29	HI-A-466
2	HI-A-281	9	HI-A-315	16	HI-A-477	23	HI-A-532	30	HI-A-571
3	HI-A-285	10	HI-A-327	17	HI-A-480	24	HI-A-542	31	HI-A-323
4	HI-A-286	11	HI-A-330	18	HI-A-487	25	HI-A-567	32	HI-A-517
5	HI-A-298	12	HI-A-341	19	HI-A-492	26	HI-A-570	33	HI-A-555
6	HI-A-302	13	HI-A-349	20	HI-A-497	27	HI-A-270	34	HI-A-356
7	HI-A-310	14	HI-A-355	21	HI-A-515	28	HI-A-317		

Shallow Water Reefs



Ships-to-Reefs

Reefing Materials by State

STATE	Nearshore / Shallow Water Materials	Ships-to-Reefs
Florida	pyramids / reefballs / concrete / metal / rock	military (CV Vandenberg / Liberty Ships) / barges / cargo
Alabama	pyramids / white goods / poultry transport devices / concrete / eco reef / metal / voting machines	barge / Liberty Ships / tug
Mississippi	concrete rubble / culverts / pyramids / reef ball / Armored Personnel Carriers	Liberty Ships / steel hull vessels / barge / shrimp boat / tug

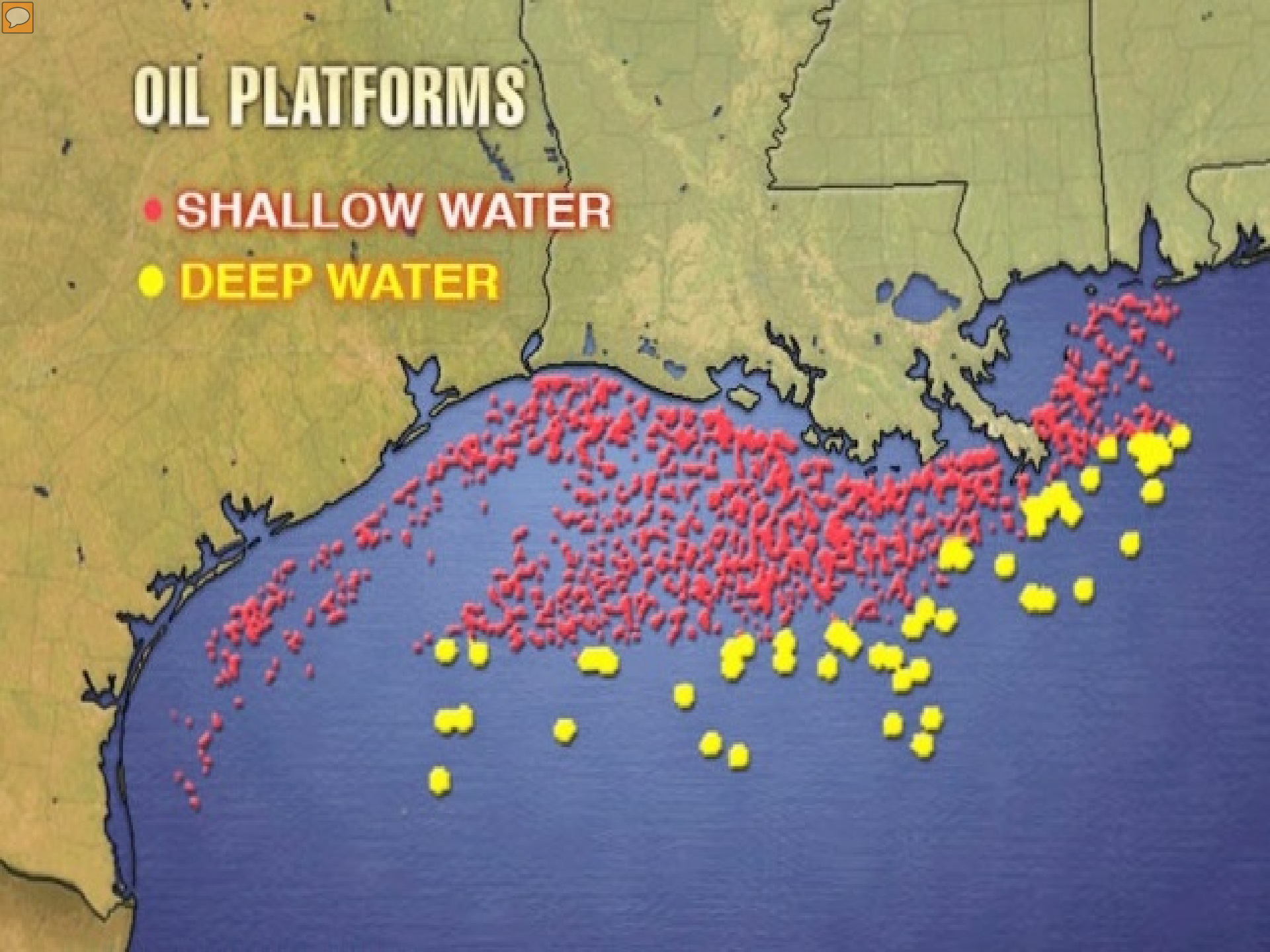
Reefing Materials by State

STATE	Nearshore / Shallow Water Materials	Ships-to-Reefs
Louisiana	shell / limestone / bridge material / concrete / bridge / Armored Personnel Carriers	tug
Texas	reef balls / pyramids / culverts / utility poles / fly-ash blocks / quarry rocks / hatchery troughs	Liberty Ships / Tx Clipper / cargo / tugs / barges / shrimp boats

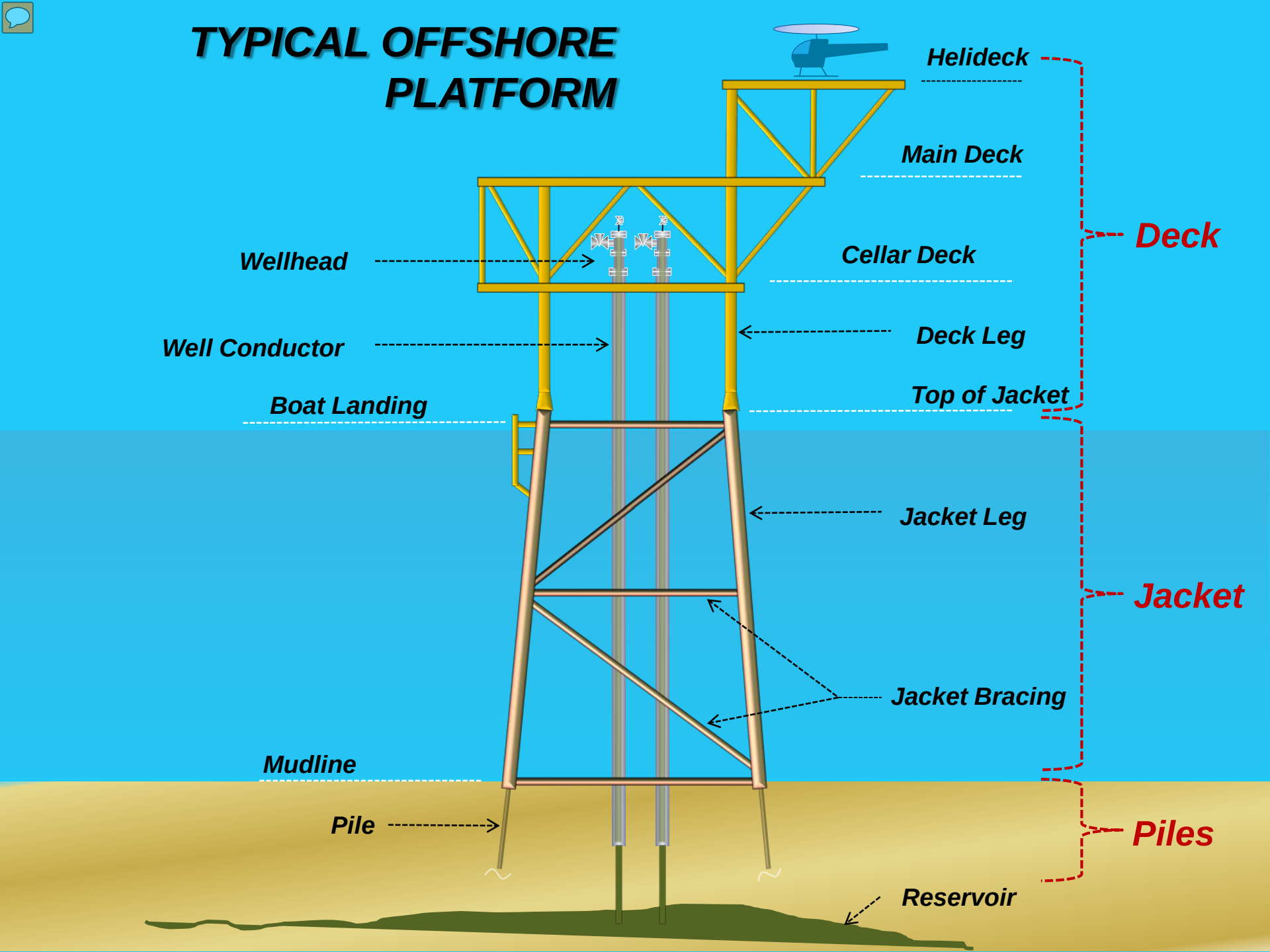
Rigs-to-Reefs Program

Rigs-to-Reefs

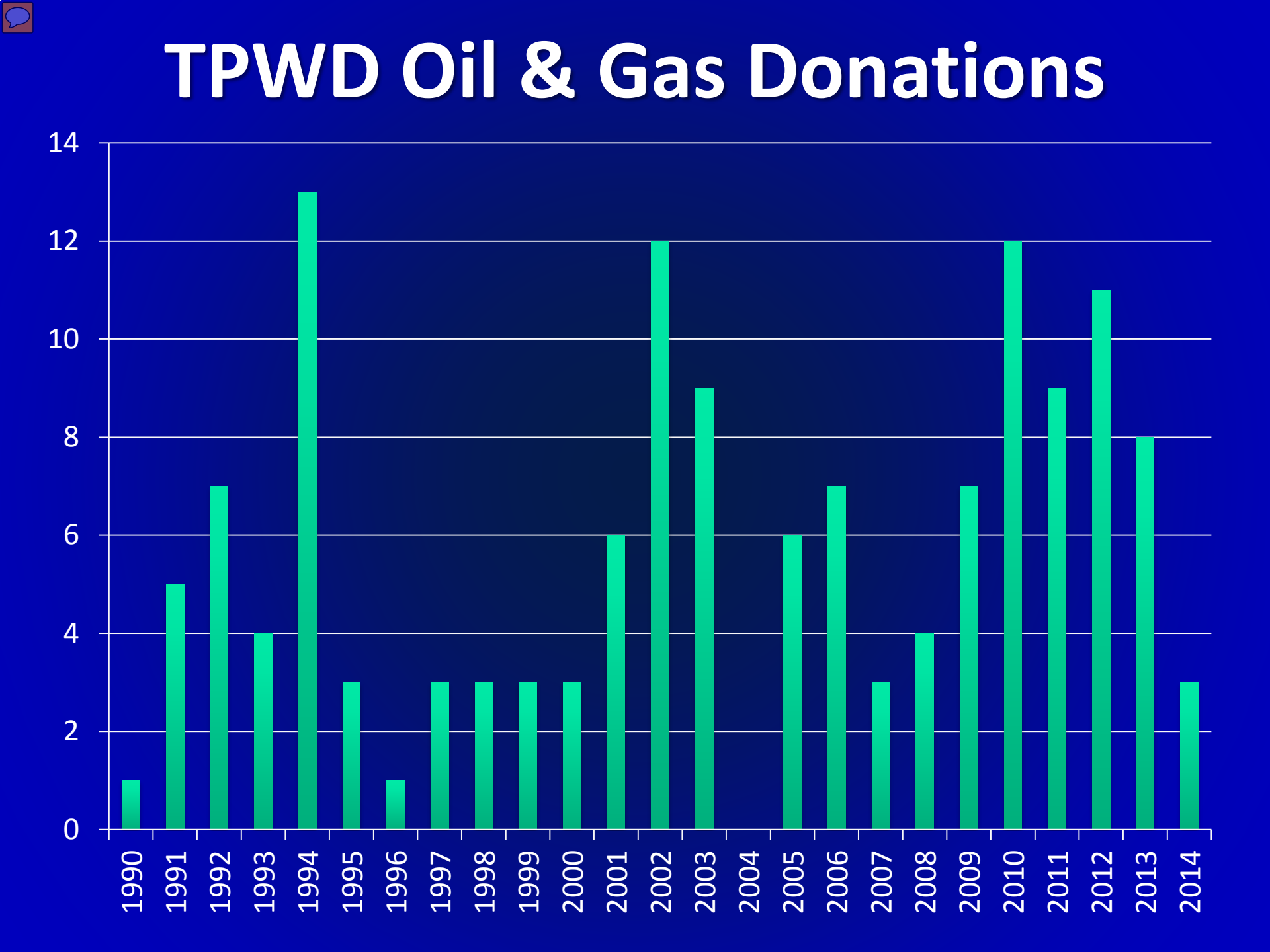
STATE	Rigs-to-Reefs (est.)
Florida	N/A
Alabama	6
Mississippi	7
Louisiana	365
Texas	150


OIL PLATFORMS
SHALLOW WATER
DEEP WATER

TYPICAL OFFSHORE PLATFORM



TPWD Oil & Gas Donations



Fish Species Targeted

- Florida – General reef species, red snapper, gag grouper, red grouper
- Alabama / Mississippi – Red snapper, Grey Triggerfish, Greater Amberjack, snapper species, gag grouper, flounder spotted seatrout, sheepshead
- Louisiana / Texas – General reef species with some concentration on Red snapper

Artificial Reef Planning

- All GOM state artificial reef programs operate under approved state fisheries management plans
- All utilize the GSMFC *Guidelines for Marine Artificial Reef Materials*
- Enhance, conserve, and create marine habitat in general
- Provide habitat for certain target species on a case-by-case basis (FL-grouper; AL-grey triggerfish; TX-red snapper)
- Provide for fishing and diving opportunities (prime diving sites in Florida; limited in other states due to water clarity)

Program Concerns

- Need for increased analysis of information on the biological outcome of specific reef designs (FL, TX)
- Public misconceptions on what artificial reefs can and can’t do in regard to fisheries management (FL)
- High fishing pressure at artificial reefs creates challenges for research and monitoring (FL)
- Rising labor, materials and equipment costs (ALL)
- Limited pool of marine contractors willing to undertake small artificial reef projects (FL)
- Limited waterfront artificial reef material staging areas (FL, TX)

Program Concerns

- Lack of public awareness of programs (TX)
- Project funding (e.g. low oil prices affect rigs-to-reef donations (LA, TX)
- Changing regulatory requirements (TX)
- Invasive species such as lionfish (ALL)
- Need for more scientific study such as socioeconomic, biological, and reef design (ALL)
- Lack of information and data on reef biological performance, especially in regard to target reef fish species objectives (FL)

Program Concerns

- Standardization of data collection and monitoring (physical and biological) (ALL)
- Better integration of reef development with fisheries management (ALL)

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Back Up Slides

DEEPWATER HORIZON NATURAL RESOURCE DAMAGE ASSESSMENT COUNCIL

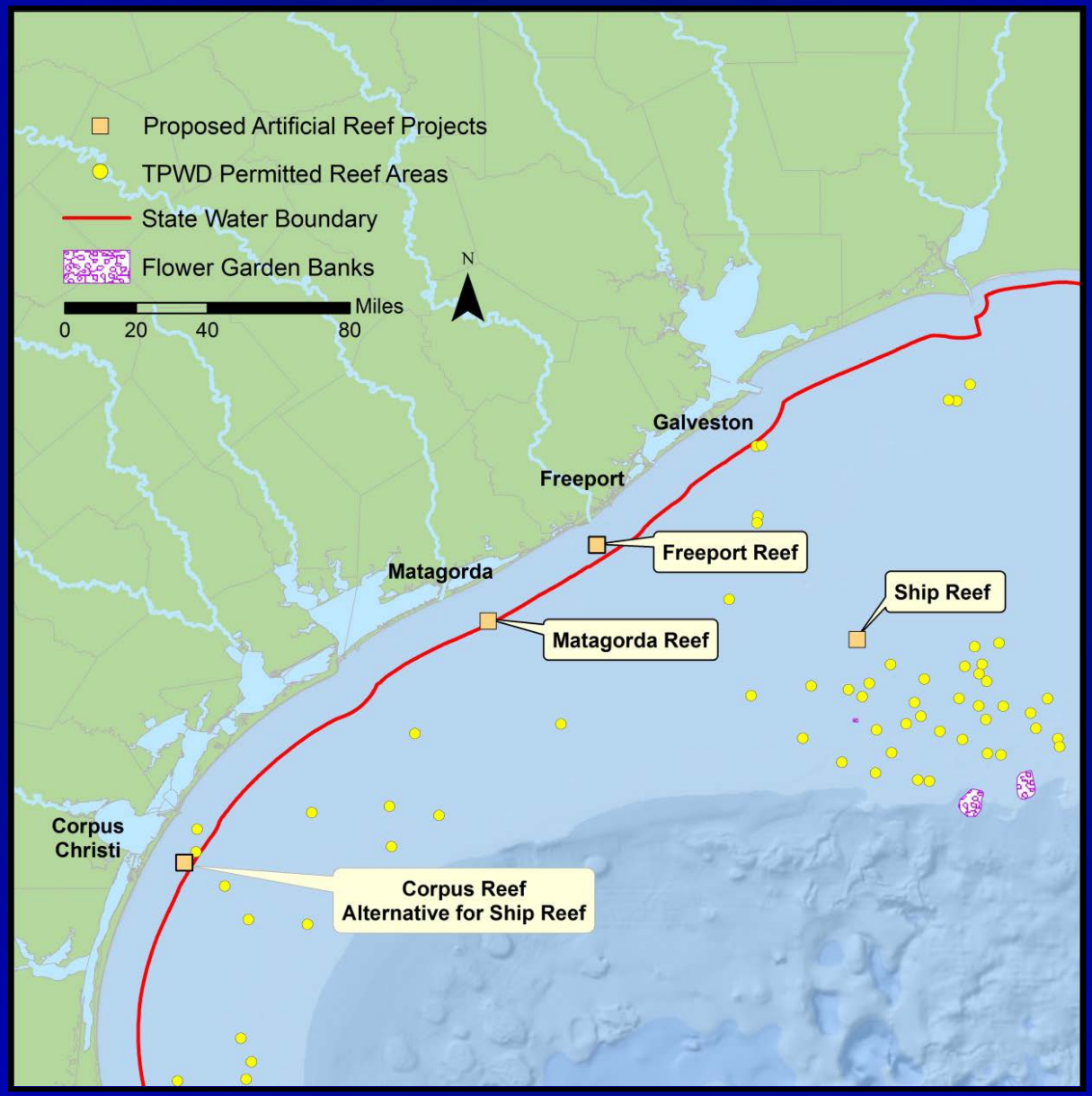
On April 20, 2010, an explosion on the Deepwater Horizon MC252 drilling platform in the Gulf of Mexico caused the rig to sink and oil began leaking into the Gulf. Before it was finally capped in mid-July, almost 5 million barrels of oil were released into the Gulf.

Submitted Projects

ARTIFICIAL REEF DEVELOPMENT IN NEARSHORE TEXAS STATE WATERS OF THE GULF OF MEXICO

ARTIFICIAL REEF DEVELOPMENT IN OFFSHORE TEXAS WATERS OF THE GULF OF MEXICO

Proposed TPWD Restore Act Projects

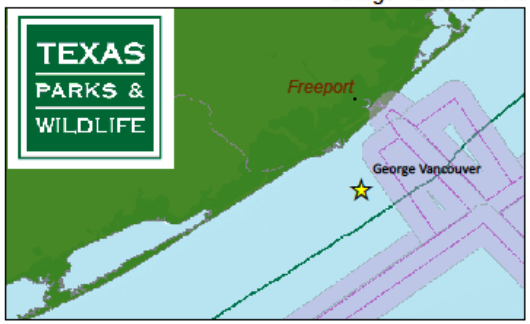


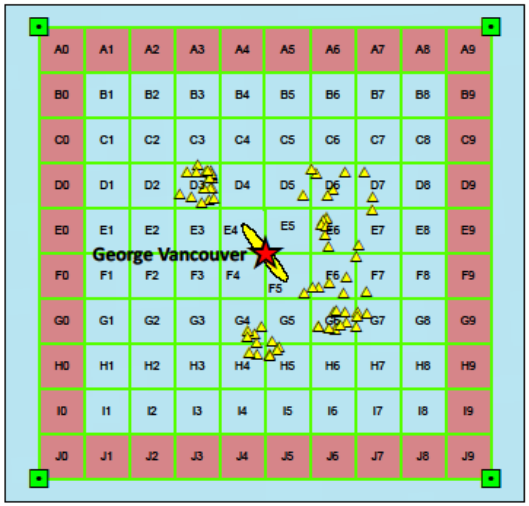
BA–336 Proposed Vancouver Reefing

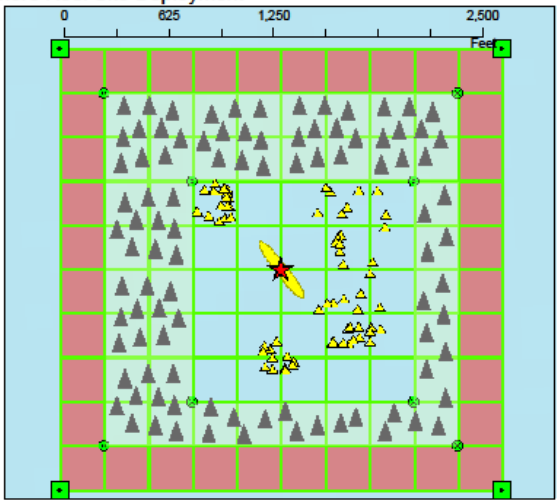
Location: 6 miles south of Freeport

Estimated Cost: $2,155,365

George Vancouver Nearshore Reef Site Deployment







between 800 and 950 pyramid reefs will be placed in the reefing area of the George Vancouver Nearshore Reef Site.

each ▲ represents 10 pyramid structures

Coordinates for the George Vancouver Nearshore Reef Site Reefing Area

	NAD83 Latitude (DMS)	NAD83 Longitude (DMS)	WGS84 Latitude (DD)	WGS84 Longitude (DD)
B0	28° 47' 24.71" N	95° 21' 4.30" W	28.790	-95.351
B8	28° 47' 24.05" N	95° 20' 40.57" W	28.790	-95.345
D2	28° 47' 27.16" N	95° 20' 58.27" W	28.791	-95.350
D7	28° 47' 26.75" N	95° 20' 43.44" W	28.791	-95.345
I2	28° 47' 40.22" N	95° 20' 57.81" W	28.795	-95.349
I7	28° 47' 39.81" N	95° 20' 42.98" W	28.794	-95.345
J0	28° 47' 45.61" N	95° 21' 3.56" W	28.796	-95.351
J8	28° 47' 44.96" N	95° 20' 39.83" W	28.796	-95.344

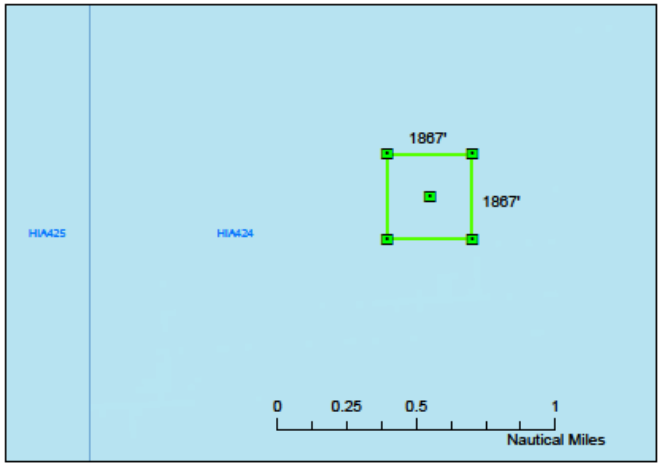
Yellow details shown on maps represent the George Vancouver ship and pyramids already placed at the reef site.

HI-A-424 – Proposed Ship Project

Location: 67 miles offshore of Galveston

Estimated Cost: $1,785,765

Proposed Ships-to-Reef Location - HI-A-424 - 80 acres



Nearest Point to Point Distances:

Distance Offshore: 57.6 Nautical Miles
Safety Fairways: 5.89 Nautical Miles
Oil and Gas Pipelines: 2.95 Nautical Miles
State and Federal Boundary: 47.6 Nautical Miles
Obstruction or Platforms: 9.69 Nautical Miles

	NAD 83 Latitude	NAD 83 Longitude	NAD 27 Latitude	NAD 27 Longitude	NAD 83 SPSC_X	NAD 83 SPSC_Y	NAD 27 SPSC_X	NAD 27 SPSC_Y
Center	28°26' 38.43" N	94°17' 6.16" W	28°26' 37.50" N	94°17' 5.52" W	3483339.947	13375925.997	3514930.211	252492.894
NW	28°26' 48.04" N	94°17' 16.18" W	28°26' 47.11" N	94°17' 15.54" W	3482406.537	13376859.407	3513996.818	253426.287
NE	28°26' 47.29" N	94°16' 55.29" W	28°26' 46.36" N	94°16' 54.65" W	3484273.357	13376859.407	3515863.611	253426.298
SE	28°26' 28.83" N	94°16' 56.13" W	28°26' 27.89" N	94°16' 55.49" W	3484273.357	13374992.587	3515863.604	251559.501
SW	28°26' 29.57" N	94°17' 17.03" W	28°26' 28.64" N	94°17' 16.39" W	3482406.537	13374992.587	3513996.811	251559.490

Geographic Coordinates (Degrees Minutes Seconds) and State Plane Texas South Central FIPS_4204 (feet) in NAD27 and NAD83.

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Legend

- TPWD ARP 66 Reef Sites
- HI-A-424
- Fairways
- 2 NM Fairway Buffer
- Anchorages
- Natural Banks
- TX State/Federal Line
- Reef Planning Zones

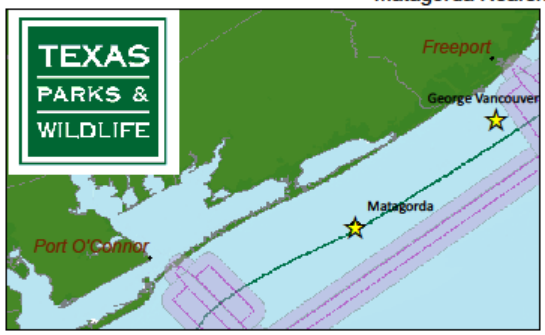
N

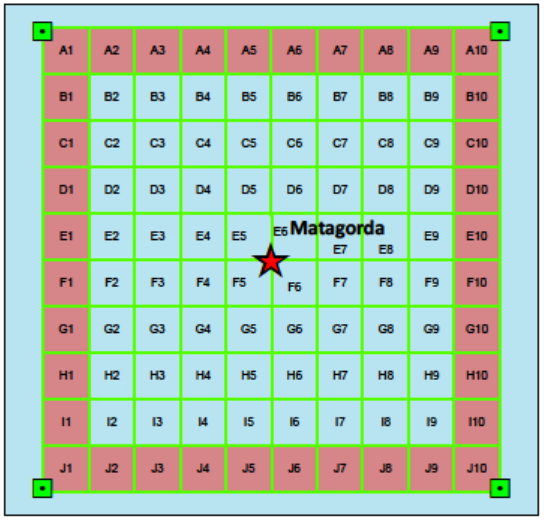
BA-439 – Proposed Matagorda Reefing

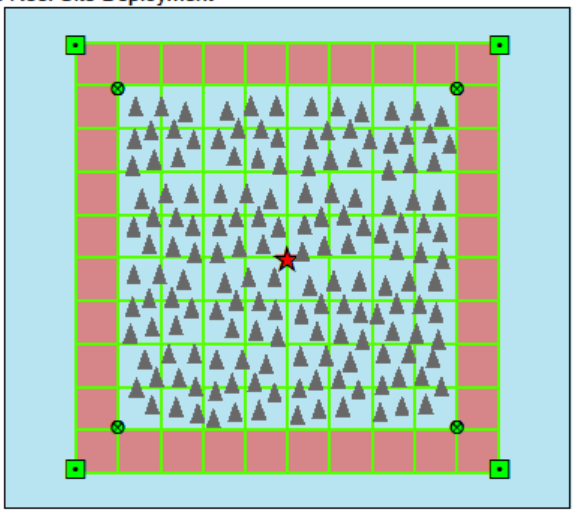
Location: 10 miles southeast of Matagorda County

Estimated Cost: $3,486,398

Matagorda Nearshore Reef Site Deployment







1600 pyramid reefs will be placed in the reefing area of the Matagorda Nearshore Reef Site.

each ▲ represents 10 pyramid structures

Coordinates for the Matagorda Nearshore Reef Site Reefing Area

	NAD83 Latitude (DMS)	NAD83 Longitude (DMS)	WGS84 Latitude (DD)	WGS84 Longitude (DD)
B2	28° 31' 11.84" N	95° 47' 4.70" W	28.520	-95.785
B9	28° 31' 11.27" N	95° 46' 41.03" W	28.520	-95.778
I2	28° 30' 50.94" N	95° 47' 5.35" W	28.514	-95.785
I9	28° 30' 50.36" N	95° 46' 41.68" W	28.514	-95.778