

ARTIFICIAL FISHING REEFS
GULF OF MEXICO
Region IV
J. R. Stevens

Introduction:

During recent years this Department has built four artificial fishing reefs in the Gulf of Mexico. These reefs were built as near to shore as the requirements of the U. S. Corps of Engineers would permit in order to provide fishing for sportsmen whose boats were not capable of reaching the natural banks or reefs farther off shore. The Corps of Engineers requires a minimum clearance of fifty feet from the water's surface to the top of the reef.

Two of these artificial reefs were built in Region IV of this Department. These are located offshore from Galveston and Freeport (Figure 1). This report deals with these two reefs.

Freeport Reef

The Freeport Reef was built in April 1959. It was constructed by placing 600 junked automobile bodies on the Gulf bottom. The auto bodies were cabled together in groups of five or more, and an additional fifty pound anchor for each auto body was attached to each group. The reef was located 7.3 nautical miles from the bell buoy which marks the entrance to the Freeport ship channel on a magnetic heading of 113 degrees. Cost of construction was \$17,736.47. The reef was later marked by a lighted buoy.

Between the construction date and the summer of 1963, the Freeport Reef disappeared. Corrosion of the auto bodies and binding cables probably caused the groups to separate after which their remains either sank into the mud bottom or were swept away by currents.

In September 1963 the buoy was moved approximately one-half mile from its original location and reanchored on a natural reef known locally as the "Southeast Lump." The buoy is presently located on this reef and aids fishermen in locating the reef.

Galveston Reef

Based on experience gained from the rapid deterioration of automobile body reefs in this State and in California (Carlisle, Turner and Ebert, 1964), the Galveston Reef was built of more stable material. The original plans for the reef called for the construction of five separate units, each of a different combination of materials to determine which was the most successful. The cost of construction allowed only three of the units to be built.

The three units (Unit 1, 2 and 3, Figure 2) were completed in September, 1962, at a cost of \$17,448. The specifications of these units are given below:

Unit No. 1 consists of 5 joints of 36-inch by 6 feet, 5 joints of 48-inch by 6 feet and 5 joints of 60-inch by 6 feet reinforced concrete pipe placed on natural bottom within a 100 by 100 foot area.

Unit No. 2 consists of 10 joints of 48-inch by 6 feet reinforced concrete pipe placed on 100 by 100 by 1 foot pad of steel mill slag.

Unit No. 3 consists of 10 joints of 60-inch by 6 feet reinforced concrete pipe placed on a 100 by 100 by 1 foot pad of steel mill slag.

The pipes used in each of these units were cabled together in strings of from two to five pipes each.

These three units were placed at the locations shown in Figure 1. It is eleven nautical miles from the tip of the south Galveston jetty on a magnetic heading of 178 degrees. A lighted buoy marks its location.

In 1963, the Department increased the size of the Galveston Reef. Unit No. 4 was added at a cost of \$13,410. Construction of this additional unit was completed in October 1963.

Prior to construction of Unit No. 4, the other units were inspected by divers. Special interest was given to Unit No. 1 where the pipes had been placed on natural bottom. The inspection revealed that the pipe so placed had shown no evidence of sinking into the bottom. Based on this information, no pad was included in the specifications for Unit No. 4.

Unit No. 4 was built by placing 300 joints of 30-inch by 4 foot reinforced concrete pipe on natural bottom in 100 by 100 foot area. The pipes were cabled together into groups of three pipes each as shown in Figure 2.

The Galveston Reef has been sampled several times with hook and line by Department personnel. From the results of these samplings, it appears that the reef is successful. Bottom fish such as sand trout (Cynoscion sp.), gafftopsail catfish (Bagre marina) and golden croaker (Micropogon undulatus) were found to be very abundant. Snapper (Lutianus sp.) were present, but in smaller numbers. Surface feeders such as the king mackerel (Scomberomorus cavalla) are abundant during the summer. However, very few fishermen have been observed using this reef. An oil platform located approximately two miles from the reef is fished heavily by sportsmen.

Comments:

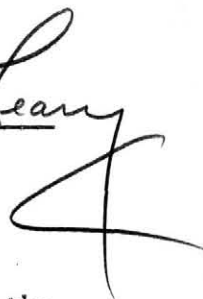
The Gulf reef building program has shown that for a reef to be successful and permanent, it must be constructed of large quantities of material such as rock or concrete. The cost involved in such operations is very high. Also the placement and maintenance of lighted buoys to mark the location of reefs after established is very expensive.

Based on the limited numbers of fishermen that use these reefs and on the high costs involved in construction and marking, it appears that the Department could realize a greater return on its investment if the money were spent on items that would serve greater numbers of people.

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Approved by:

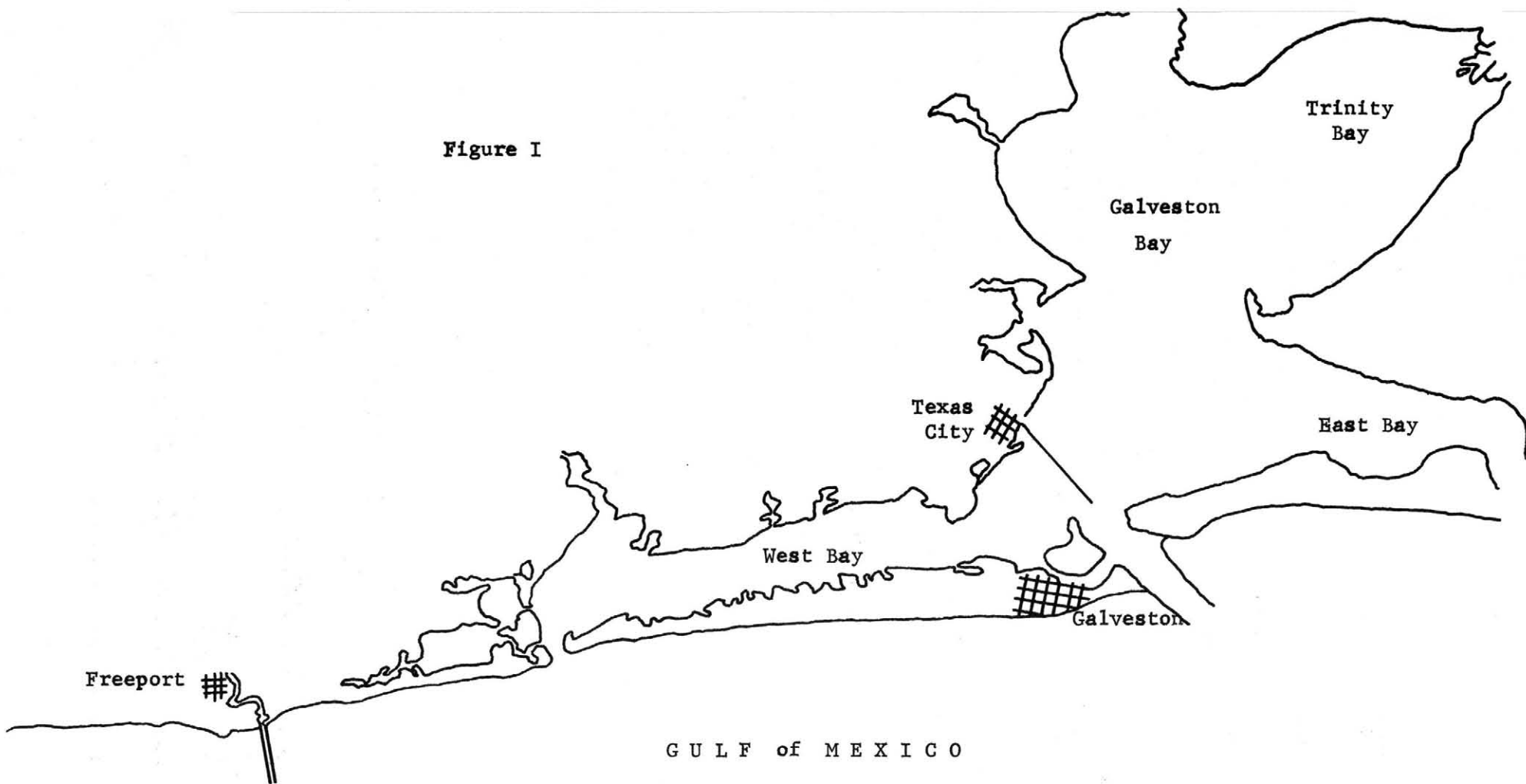
Terrance R. Leary
Coordinator



Reference

Carlisle, J. R., C. H. Turner and E. E. Ebert 1964. Artificial habitat in the marine environment. California Department of Fish and Game Fish Bulletin 124, 93 p.

Figure I



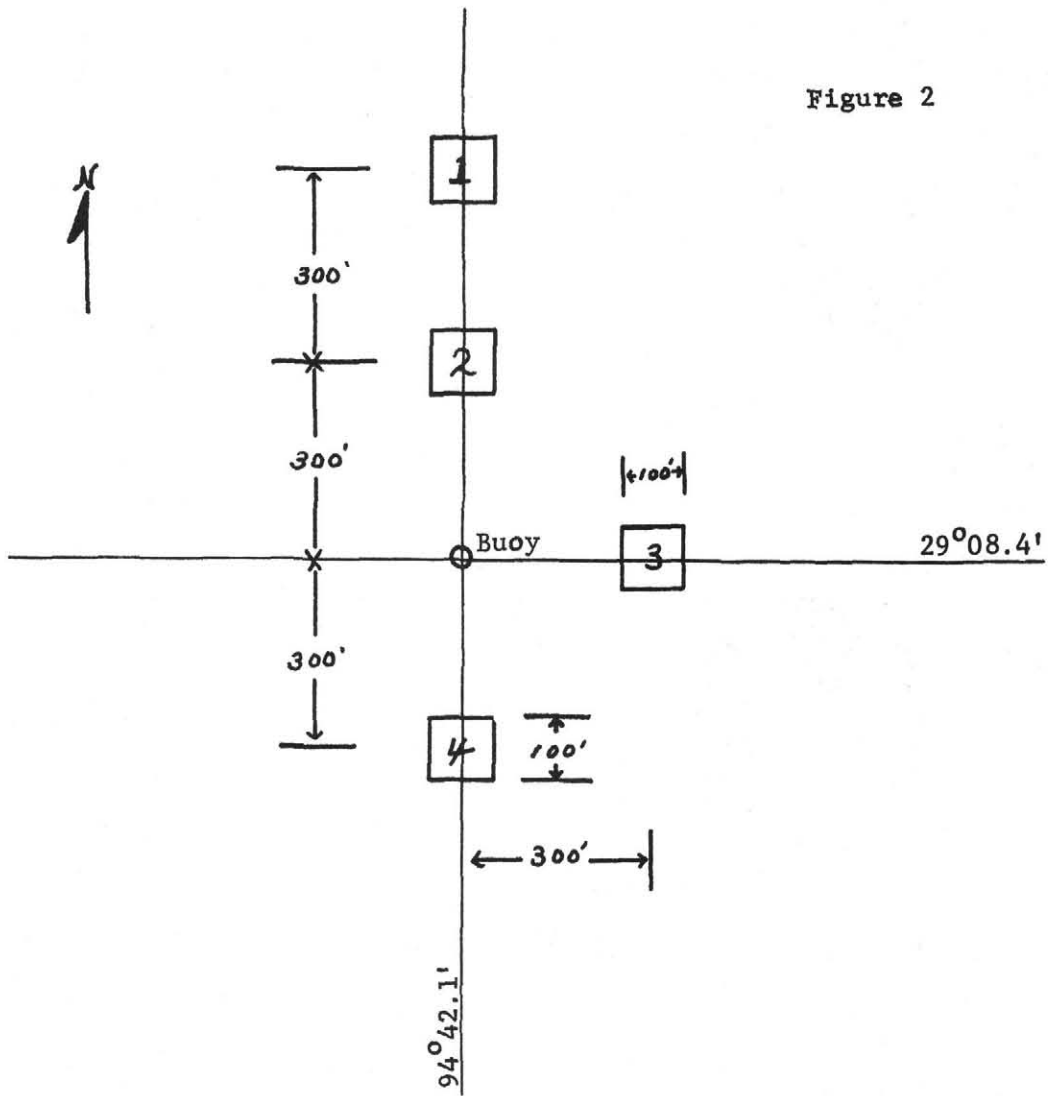
GULF of MEXICO

Original Reef Location
+
Freeport Buoy Location
(Lat. $28^{\circ}50.6'$ Long. $95^{\circ}08.05'$)

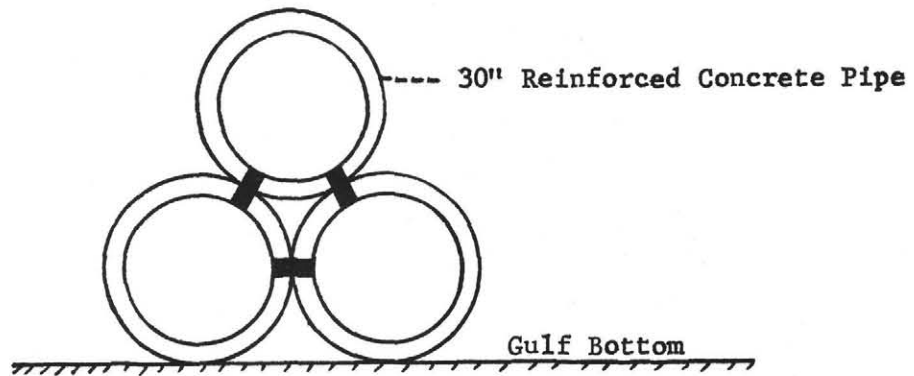
Galveston Buoy Location
(Lat. $29^{\circ}0.84'$ Long. $94^{\circ}42.1'$)



Figure 2



Unit Map - Galveston Reef



Pipe Assembly - Unit # 4

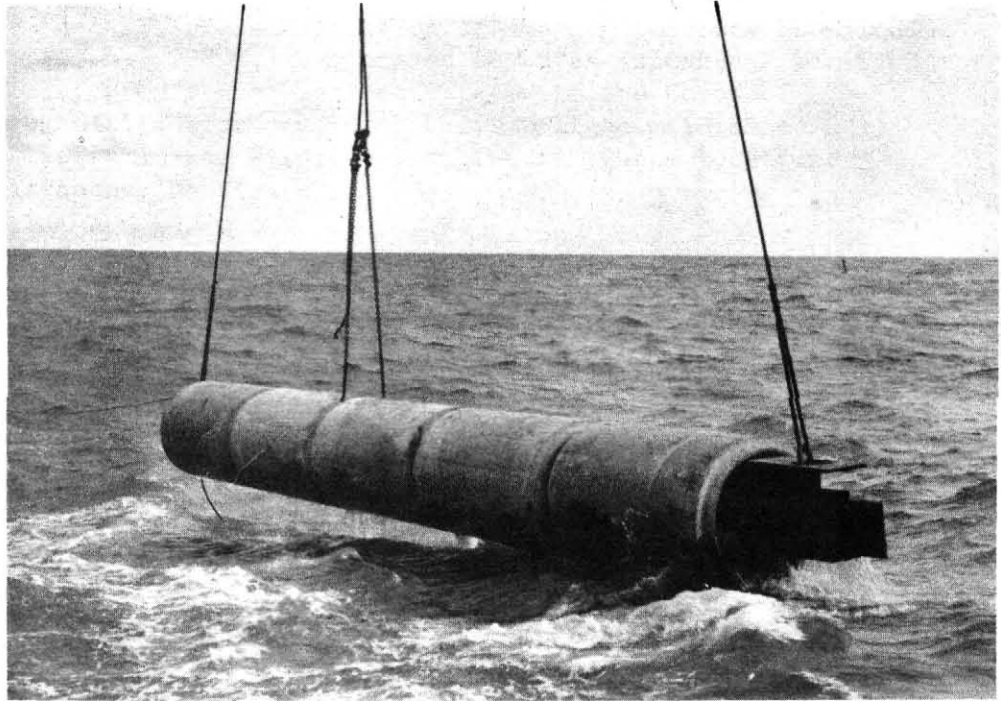


Figure 3
Pipe being lowered to bottom on Galveston Reef (September 1962).

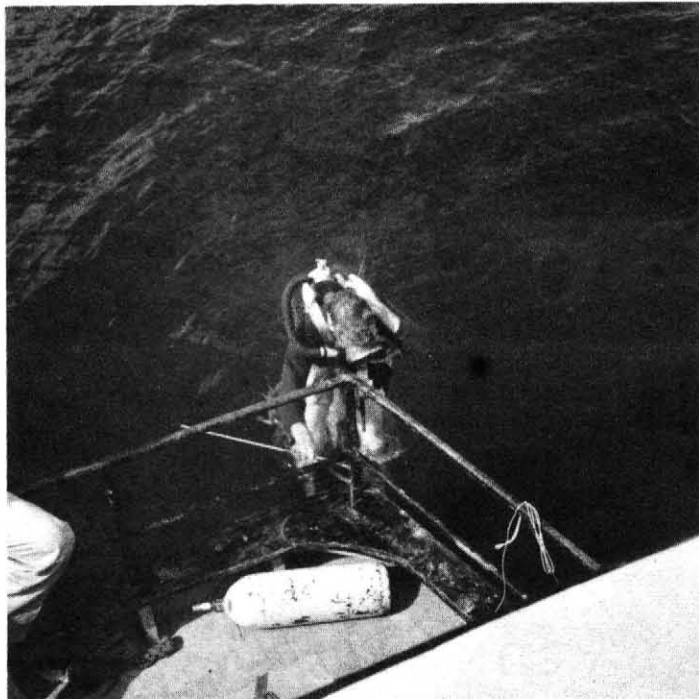


Figure 4
Diver goes overboard to inspect Galveston Reef



Figure 5
Assembly of pipes for Unit No. 4 of Galveston Reef.

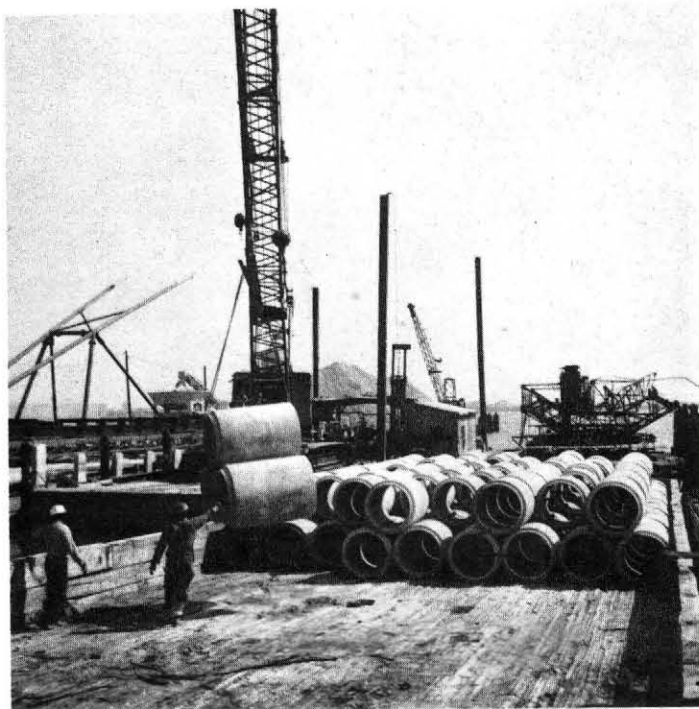


Figure 6
Assembled pipes are loaded on a barge for trip
to Unit No. 4 of the Galveston Reef.