

BENEFICIAL USE OF DREDGED MATERIAL DISPOSAL HISTORY
MERMENTAU RIVER, LA
1962 - 2019

The purpose of the Mermentau River, LA, project is to improve the discharge of flood flows in lower Mermentau River below Grand Lake and in the Inland Waterway from Vermilion Bay to Grand Lake and to improve navigation by enlargement of the North Prong of Schooner Bayou and Schooner Bayou Cutoff, and to maintain a navigational channel from Grand Chenier, LA, to the Gulf of Mexico, via the Lower Mermentau River, by removing bottom sediments with a hydraulic cutterhead dredge.

The Flood Control Act of 1941, as modified by the Rivers and Harbors Act of 1946, authorized enlargement of the Lower Mermentau River below Grand Lake to a minimum cross sectional area of 3,000 square feet below Mean Low Gulf (MLG) to accommodate discharge of flood flows; construction of a sector gated control structure in Mermentau River at Catfish Point, mile 24; channel enlargement and realignment of the Inland Waterway from Vermilion Bay to Grand Lake to provide a minimum cross-sectional area of 3,000 square feet below Mean Low Gulf for discharge of flood flows and interflow between lakes; construction of a sector gated control structure in the enlarged channel near Schooner Bayou Lock; enlargement of the North Prong of Schooner Bayou and the Schooner Bayou Cut-off to a channel 6- by 60- feet at Mean Low Gulf level for navigation purposes. The Act further provides for incorporation into the Mermentau River, LA Project, the existing projects: “Waterway for White Lake to Pecan Island, LA” and that part of the “Inland Waterway from Franklin, LA to the Mermentau River,” west of Vermilion Bay. The Waterway from “White Lake to Pecan Island consists of a channel 5- by 40- feet at Mean Low Gulf level.

The project was reclassified as an “Operation and Maintenance, General” project under the category, “Navigation (locks, dams, reservoirs and canals)” by authority of the Office, Chief of Engineers, in 1st Endorsement, 23 April 1956, on letter of the Division Engineer, U.S. Army Engineer Division, Lower Mississippi Valley, 6 March 1956, subject, “Classification of the Mermentau River and Bayou Teche and Vermilion River, Operation and Maintenance, General Projects.”

A 4.6 mile channel from Grand Chenier to the Gulf of Mexico, described as “the Mermentau River, Gulf of Mexico Navigation Channel, LA, project,” was constructed in 1971 by the East Cameron Port, Harbor, and Terminal District of Cameron Parish. Federal assumption of maintenance of this locally-constructed channel by USACE New Orleans District was authorized by Congress in 1976, under the Water Resources Development Act of 1976 (Public Law 94-587). The southern segment of this channel was realigned such that the Mermentau River now turned east at Lower Mud Lake before extending in a southerly direction to the Gulf of Mexico.

The Mermentau River, Gulf of Mexico Navigation Channel, LA is maintained to a depth of –15.0 feet MLG over a width of 200 feet in the jetty and bar channel segments (from Mile 3.1 to Mile 1.2), and to a width of 100 feet in the inland segment from Grand Chenier at Mile 6.5 to the Gulf at Mile 3.1).

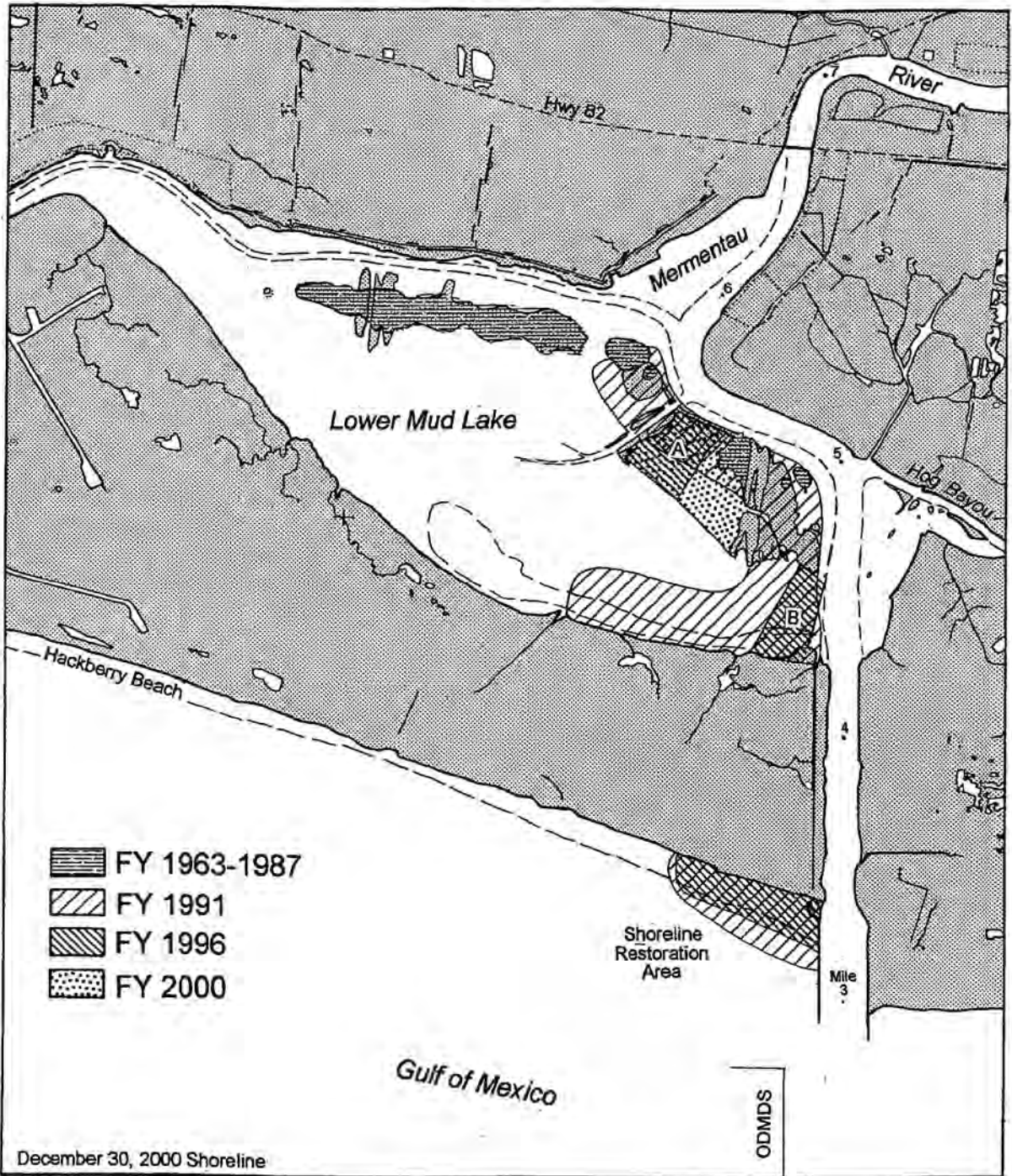
Usually about 1,000,000 cubic yards of material is removed from the Mile 6.5 to Mile 1.2 reach by cutterhead dredge every 3 to 4 years; the most recent dredging event occurred in 2017. The resultant dredged material is used to create wetlands in Lower Mud Lake and to attempt beach/shoreline nourishment adjacent to the existing shoreline and west jetty. Until 1997, dredged material from the Gulf reach (Mile 3.1 to Mile 1.2) was placed in the Ocean Dredged Material Disposal Site (ODMDS) located on the right-descending bank of the bar channel.

History of Maintenance Dredging Events with a Beneficial Use Component:

1962

From November 1962 through June 1963, about 2,227,902 cubic yards of material was dredged from the Mermentau River from Mile -0.7 at the mouth of the Mermentau River in Vermilion Bay and to about Mile 13.0 of the waterway. Most of the material was placed in upland/confined disposal areas on either bank but at around Mile 6.5 in an area 1000 feet south of, and parallel to, the centerline of the channel. Dredged material was also placed in the upper part of Lower Mud Lake at a surface elevation not exceeding +3.0 feet MLG. This could be considered the first example of beneficial use of dredged material for this waterway though likely unintentional. Due to the silty nature of the material, it could not stack any higher and settled to the right elevation to encourage wetland development for at least some time before erosion took its toll. At this time, the Mermentau River channel extended through the original mouth of the Mermentau River to the Gulf.

Mermentau River, Louisiana Dredged Material Disposal History Through FY 2000





Mermentau River Old Channel Vicinity of Lower Mud Lake (March 1969)



Mermentau River New Channel Vicinity of Lower Mud Lake (September 1971)

1982

During FY 1982 (6 January 1982 through 21 February 1982), maintenance dredging of the “new” navigational channel was performed from about Mile 6.2 at Grand Chenier through Mile 1.2 in the Gulf of Mexico (GOM). A cutterhead dredge performed all work and the dredged material was placed in one of three locations: an area about 500 yards west of the channel centerline in Lower Mud Lake at an elevation not to exceed +5.0 MLG in an effort to create marsh; in an upland confined disposal area on the east bank of the channel just north of the GOM shore; and in the ODMDS.

1985

During FY 1985 (8 January 1985 through 27 January 1985), maintenance of the Mile 6.2 to Mile 1.2 reach of the channel was performed. Approximately 724,000 cubic yards were removed from the channel and placed unconfined in the following designated disposal areas: the Lower Mud Lake disposal area west of the channel with the maximum initial elevation not exceed +5.0 feet MLG; the ODMDS; and a new area identified as a “shoreline restoration area” in the near open waters west of the west jetty. High tidal energy in the shoreline restoration area prevented any sub-aerial accumulation of material.

1986

During the FY 1986 maintenance event (15 March 1986 to 10 June 1986), dredging extended from Mile 6.2 to about Mile 24.0 of the Mermentau River. Most of the material was placed in confined disposal areas (dike height elevations ranging from +3.0 to +5.0 feet MLG) on either side of the waterway. Efforts were undertaken to create a bird island 2 to 3 acres in size in open water in the southern part of Upper Mud Lake. Due to the very soft nature of the dredged material, an island only one-half acre in size could be created, with a maximum height of +4.3 feet MLG. Tide elevation of +3.0 feet MLG rendered approximately 2,000 square feet of island surface area above water.

1987

During FY 1987 (22 June 1987 through 16 July 1987), a cutterhead dredge removed material from the Mile 6.2 to the GOM reach. All dredged material was placed unconfined in the same three disposal areas west of the channel used in 1985. The only difference in disposal is that the dredged material placed in the shoreline restoration area was deposited at a minimum distance of 500 feet west of the existing jetty.

1991

During the FY 1991 maintenance event (29 April 1991 through 10 June 1991), a cutterhead dredge removed material from the Mile 6.2 to GOM reach. Dredged material was placed unconfined in the Lower Mud Lake and shoreline restoration sites. No material was placed in the ODMDS. About 390,000 cubic yards of dredged material normally placed in the ODMDS were placed in the lower southeast corner of the Lower Mud Lake disposal area, with a final

average fill height of +3.5 feet MLG for wetlands development. Cubic yard quantities were not recorded for the placement into the upper part of the Lower Mud Lake disposal area or in the shoreline restoration area.

Dredged material was placed in the shoreline restoration area to an average initial elevation of about +4.0 to +4.5 feet MLG along the beach line. Dredged material was initially placed about 250 to 300 feet from the existing shoreline creating a “bar”, and then material was placed in the area in between the “bar” and the existing shoreline with some material overflowing the “bar” gulfward by about 200 feet. Placement at the shoreline restoration area extended westerly for approximately 300 feet.



Mermentau River Shoreline BU Placement Site (13 August 1991)

1996

Background:

During the FY 1996 Mermentau River maintenance event (contract DACW29-96-C-0037: 21 April 1996 to 22 May 1996), the cutterhead dredge MISSOURI H performed all maintenance dredging work.

Dredged Material Placement Event:

Dredged material was discharged into the Lower Mud Lake marsh creation site, the shoreline restoration area, and into the ODMDS. The Lower Mud Lake marsh creation site consisted of two separate placement cells (Cell A and Cell B). Cell A received approximately 234,778 cubic yards of dredged material while Cell B received about 172,362 cubic yards of dredged. Dredged material discharge was restricted to a maximum initial elevation of +4.0 feet MLG for marsh development in these cells.

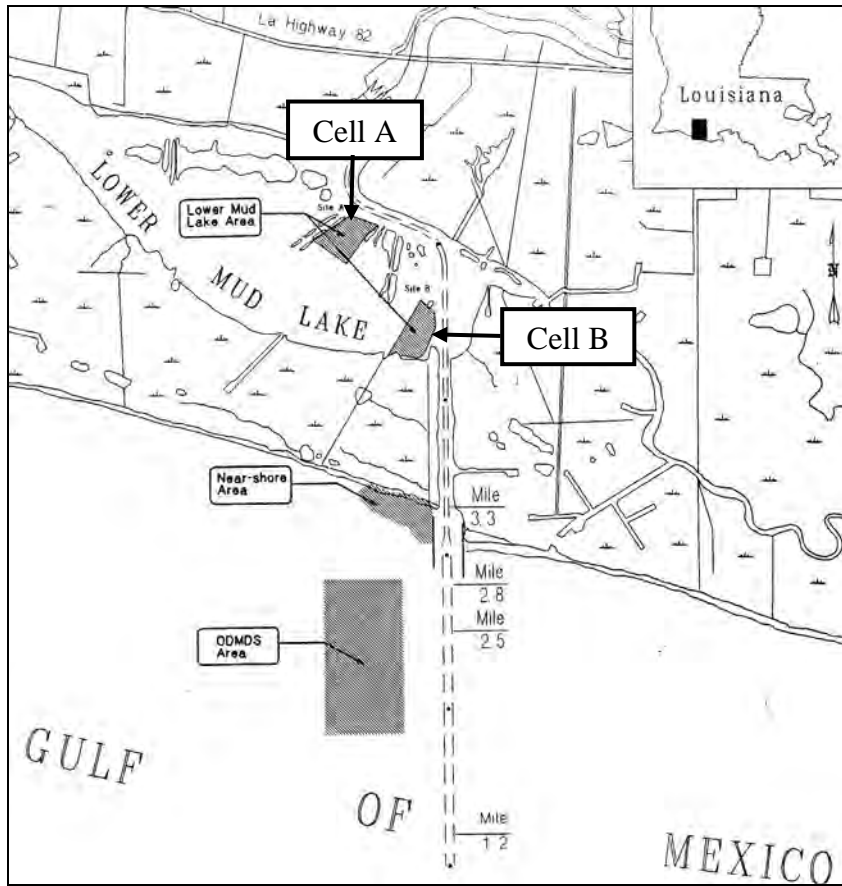
Approximately 407,140 cubic yards were placed at the shoreline restoration area, and approximately 272,496 cubic yards were discharged into the ODMDS.

Containment:

Earthen dikes along the channel and sides of the Lower Mud Lake placement cells were built to an elevation of +6.0 feet, while the back dikes separating the cells from the open waters of Lower Mud Lake were constructed to an elevation of +4.0 feet MLG. Dredged material was allowed to overflow the back dikes. All earthen borrow material came from within the placement sites. Dredged material was placed unconfined in the shoreline restoration site and the ODMDS.

Results:

A total of approximately 40 acres of marsh habitat were created in the Lower Mud Lake cells by this placement effort. However, by 1998 the earthen dikes along the channel had eroded away resulting in much of the placed dredged material being washed into the open waters of Lower Mud Lake.



Mermentau River 1996 Disposal Plan



Mermentau River Lower Mud Lake BU Placement Site (1998)

2001

Background:

During the 2001 Mermentau River maintenance event (contract W912P8-00-C-0071: 27 September 2000 to 1 December 2000), the cutterhead dredge E STROUD performed all maintenance dredging work. In an effort to prevent the channel current from eroding earthen containment dikes located along the channel, articulated concrete mattresses (ACM) were placed along the channel side boundary of the 2 Lower Mud Lake marsh creation cells used for this placement event. The Lower Mud Lake placement area was divided into two cells, one on each side of a small channel leading from the navigational channel into Lower Mud Lake.

Dredged Material Placement Event:

1. Approximately 509,104 cubic yards of dredged material was placed in the larger, eastern Lower Mud Lake marsh creation cell. The placement height of dredged material was restricted to a maximum initial elevation of +4.0 feet MLG. It was anticipated that, following compaction and dewatering of the sites, a final marsh-conducive elevation of about +2.5 feet MLG would be achieved. No material was placed in the smaller, western cell.
2. Approximately 829,000 cubic yards were placed unconfined in the shoreline restoration area. The average height of the disposal material placed in the shoreline restoration area was about +3.0 feet MLG with most of the buildup occurring near the jetty closure and along the shoreline.

Containment:

The channel side dikes for the Lower Mud Lake cells consisted of ACM laid over an earthen core. The channel side dikes were constructed to an elevation of +6.0 feet MLG. Earthen dikes were constructed to tie into existing marsh vegetation located adjacent to each cell in order to fully contain dredged material placed into these cells. These earthen dikes were constructed to an elevation of +4.0 feet MLG. Dredged material was allowed to overflow the rear dikes into the open waters of Lower Mud Lake. All earthen borrow material for these dikes came from within the placement cells.

Prior to pumping dredged material into the shoreline restoration site, an approximately 500-foot gap in the west jetty, extending from the shoreline, was repaired by filling it in with rock to an elevation of +6.0 feet MLG.

Results:

This placement effort resulted in the creation of approximately 72 acres of marsh habitat in the Lower Mud Lake cell, and approximately 17 acres of beach habitat in the shoreline restoration site.



Lower Mud Lake BU Placement Cells (21 November 2000)



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Lower Mud Lake BU Placement Cell: ACM Protection (21 November 2000)



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Lower Mud Lake BU Placement Cell: ACM Protection (21 November 2000)



Mermentau River Shoreline BU Placement Site (21 November 2000)

2004

Background:

During the FY 2004 event (7 November 2003 to 19 December 2003), working under contract W912P8-04-C-0002, the cutterhead dredge E STROUD removed approximately 1,438,319 cubic yards from the Mile 6.6 to Mile 1.3 reach and placed it all into the West Side Jetty Disposal Area (also called the “shoreline restoration area”).

Dredged Material Placement Event:

All 1,438,319 cubic yards were placed behind the west jetty to an elevation not exceeding the existing surface elevation of the nearby marsh shoreline. In addition, the initial placement of dredged material within this disposal area was oriented in such a way as to allow placement of the material as close to the beach as practicable without any direct placement onto the beach at the request of natural resource agencies out of concern for adversely impacting piping plover wintering habitat.

Containment:

All dredged material was placed unconfined behind the west jetty.

Results:

Approximately 11 acres of beach habitat were created by this placement effort.



Mermentau River: Post-Placement Shoreline Restoration BU Site (2004)

2005

Background:

During the FY 2005 maintenance dredging event (11 May 2005 to 12 June 2005), working under contract W912P8-05-C-0034, the cutterhead dredge MISSOURI H removed approximately 1,312,276 cubic yards from the Mile 6.1 to Mile 1.3 reach.

Dredged Material Placement Event:

All dredged material was placed into the West Side Jetty Disposal Area (also called the “shoreline restoration area”) at an elevation not exceeding the existing surface elevation of the nearby marsh shoreline. The discharge pipe would be placed shoreward along the inside of the west jetty, and the material was placed as close to the beach, without any direct placement on the beach, as was practicable.

Containment:

All material was placed unconfined at the West Jetty Disposal Area.

Results:

Approximately 20 acres of beach habitat were created as a result of this placement effort.



Mermentau River: Post-Placement Shoreline Restoration BU Site (2005)

2007

Background:

During the FY 2007 maintenance dredging event (6 February 2007 to 14 March 2007), working under contract W912P8-06-C-0201, the cutterhead dredge VENTURE removed approximately 1,720,709 cubic yards from the Mile 6.1 to Mile 1.3 reach.

Dredged Material Placement Event:

All dredged material was placed into the West Side Jetty Disposal Area (also called the “shoreline restoration area”) at an elevation not exceeding the existing surface elevation of the nearby marsh shoreline. The discharge pipe would be placed shoreward along the inside of the west jetty, and the material was placed as close to the beach, without any direct placement on the beach, as was practicable.

Containment:

All material was placed unconfined at the West Jetty Disposal Area.

Results:

Approximately 18 acres of beach habitat were created as a result of this placement effort.



Mermentau River: Post-Placement Shoreline Restoration BU Site (November 2007)

2009

Background:

During the FY 2009 maintenance dredging event (22 May 2009 to 29 June 2009), working under contract W912P8-09-C-0053, the cutterhead dredge DREDGE 32 removed approximately 1,092,782 cubic yards from the Mile 6.1 to Mile 1.3 reach.

Dredged Material Placement Event:

All dredged material was placed into the West Side Jetty Disposal Area (also called the “shoreline restoration area”) at an elevation not exceeding the existing surface elevation of the nearby marsh shoreline. The discharge pipe would be placed shoreward along the inside of the west jetty, and the material was placed as close to the beach, without any direct placement on the beach, as was practicable.

Containment:

All material was placed unconfined at the West Jetty Disposal Area.

Results:

Approximately 9 acres of beach habitat were created as a result of this placement effort.



Mermentau River: Post-Placement Shoreline Restoration BU Site (November 2009)

2017-2018

Background:

During the FY 2017-2018 maintenance dredging event (16 August 2017 to 14 October 2017), working under contract W912P8-17-C-0034, the cutterhead dredge *INGENUITY* removed approximately 999,154 cubic yards from the Mile 6.1 to Mile 1.3 reach.

Dredged Material Placement Event:

All dredged material was placed into the West Side Jetty Disposal Area (also called the “shoreline restoration area”) at an elevation not exceeding the existing surface elevation of the nearby marsh shoreline. The discharge pipe would be placed shoreward along the inside of the west jetty, and the material was placed as close to the beach, without any direct placement on the beach, as was practicable.

Containment:

All material was placed unconfined at the West Jetty Disposal Area.

Results:

Approximately 1 acre of beach habitat was created as a result of this placement effort.



Mermentau River: Post-Placement Shoreline Restoration BU Site (November 2017)