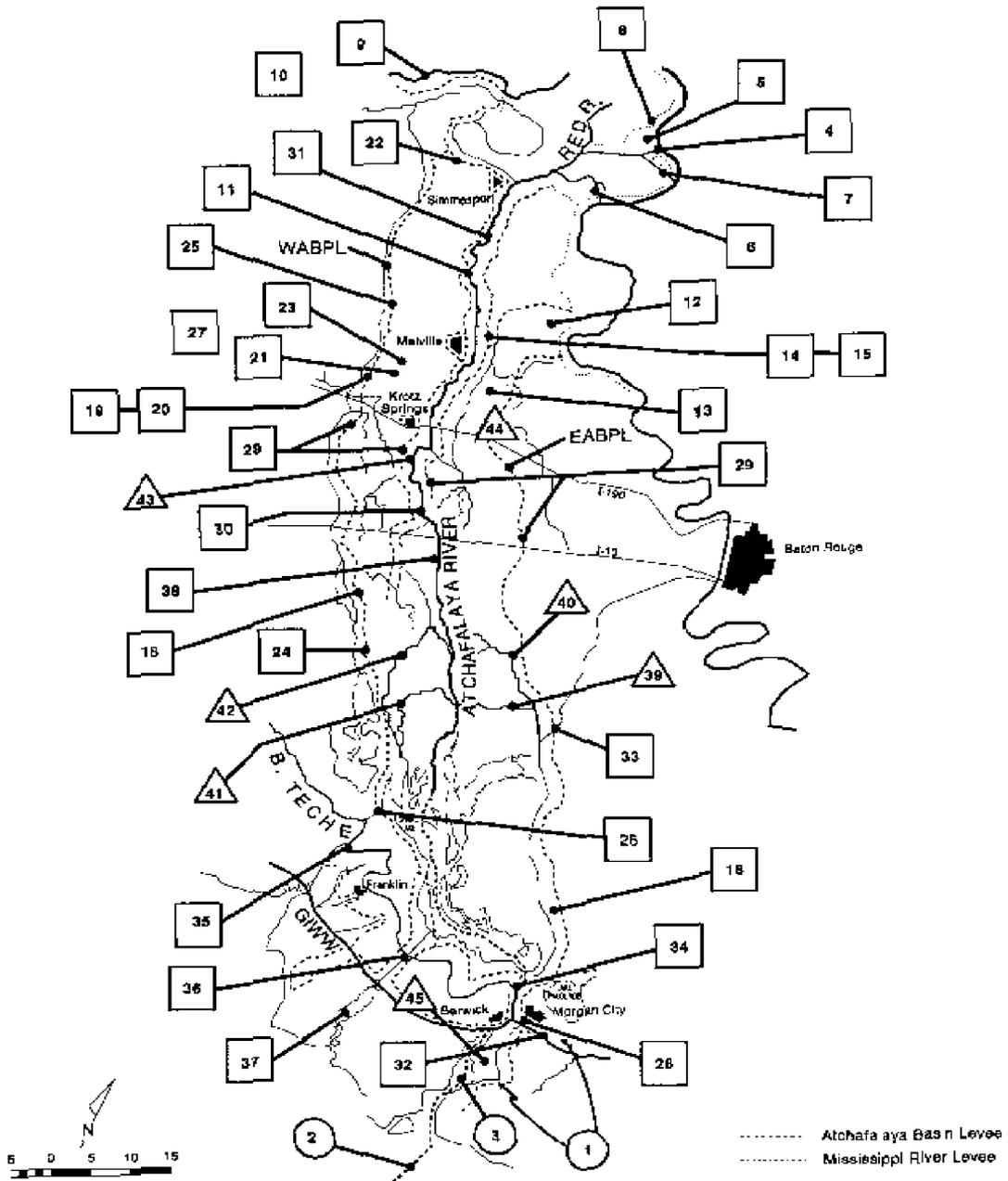
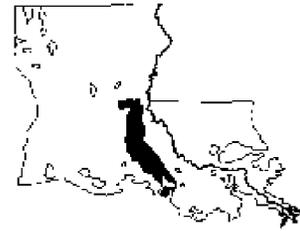


Atchafalaya River Basin



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- 2 Atchafalaya Bay and Bar Channel
- 3 Lower Atchafalaya River



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Atchafalaya River Basin

Introduction

The Atchafalaya River Basin, in southcentral Louisiana, originates at the confluence of the South Central Mississippi, Red and Atchafalaya rivers near Simmesport. The basin extends in a north-south direction from the latitude of Old River and Bayou Des Glaises to the Gulf of Mexico.

The Atchafalaya River is the largest of all distributaries of the Mississippi. Improvements in the Atchafalaya River Basin have been authorized and constructed primarily under the Mississippi Rivers and Tributaries (MR&T) project. Basin flood

protection works are an integral and extremely important part of the lower Mississippi River. At the latitude of Old River, the design project flood has been determined to be 3 million cubic feet per second. The project allows one-half of the flow to continue down the main Mississippi River channel and the other half to be introduced into the Atchafalaya Basin Floodway. Floodways follow opposite sides of the Atchafalaya River to the end of the levee system along the river. There they merge into a single broad floodway that discharges into the Gulf of Mexico through Wax Lake Outlet and the Atchafalaya River.



Navigation on the Lower Atchafalaya River at Morgan City

Mississippi River and Tributaries Projects

Old River

Prior to construction of the Old River Control Project, the Mississippi and Atchafalaya Rivers were linked by an uncontrolled natural channel known as Old River. Studies by the Mississippi River Commission indicated that the Mississippi River was seeking to use this natural link to channel its course to that of the Old and Atchafalaya Rivers. In the absence of any intervention by people, the studies showed that such a change could have taken place between 1965 and 1975. If this had occurred, the cities of Baton Rouge and New Orleans and many lesser size communities would have been without sufficient quantities of fresh water to satisfy domestic needs during low water periods. The vast industrial complex located from Baton Rouge to near the mouth of the river would have been without the fresh water vital to its operation. The Mississippi River as far upstream as Baton Rouge would have become brackish.



Old River Low Sill and Overbank Control Structures during the 1997 Floodfight

Cities, towns, railroads, highways, waterways, industry, agriculture, and utilities in the Atchafalaya Basin would have been subject to serious disruption. The effect would have probably been felt as far upstream as Vicksburg on the Mississippi River and

Boyce on the Red River as a result of swifter currents and increased meandering. The investment of the United States in flood control and navigation works would have been threatened, and a large amount of it lost. The plan for confining floods below Old River would have had to be redesigned and reconstructed.

The cost associated with providing the necessary flood protection against captured flows of the Mississippi River down the Old and Atchafalaya Rivers is estimated to be close to \$2.4 billion.

In order to preserve the present course of the river, a project was authorized by PL 780, 83rd Congress, approved in September 1954 (a modification of the Flood Control Act of May 1928), to maintain the balance of flows from the Mississippi River into the Atchafalaya River and Basin by control structures on the right bank of the Mississippi River. The U.S. Army Corps of Engineers is responsible for operation and maintenance of all project features except the main-line Mississippi River levee and road. Principal features include a low sill control structure with inflow and outflow channels, an overbank control structure, an auxiliary control structure, a navigation lock and channels, levees, closure of Old River, and bank stabilization as required.

Low Sill Control Structure. The Old River Low Sill Control Structure is a reinforced-concrete structure consisting of 11 gate bays, each having a 44-foot clear width between piers. The three center bays have a weir crest of -5.0 feet NGVD for passing low flows, and the other bays have a weir crest of 10.0 feet NGVD. Its total length is 566 feet between abutments. Vertical-lift steel gates are operated by two traveling gantry cranes. The low sill control structure was completed in 1959. The inflow channel, completed in 1960, is 0.5 mile in length and constructed with a bottom width of 1,000 feet, at an elevation of -5.0 feet NGVD. The outflow channel, also completed in 1960, is 7 miles long and constructed with a bottom width of 900 feet at an average of -9.0 feet NGVD. About 4,500 acres of land adjacent to these

channels was cleared during 1963 to provide better flow conditions in the overbank area.

Overbank Control Structure. The Overbank Control Structure is a reinforced-concrete structure consisting of 73 gate bays, each having a 44-foot clear width between piers. Weir crest is 52.0 feet NGVD. Total length is 3,356 feet between abutments. Flow is controlled by hinged timber panels operated by two traveling gantry cranes. This structure, completed in 1959, was operated in 1973, 1974, 1975, 1979, 1982, and 1983.

Auxiliary Control Structure. The Auxiliary Control Structure is a reinforced concrete structure consisting of six gate bays, each having a 62-foot clear width between piers. Weir crest is -5.0 feet NGVD. Total length is 442 feet between abutments. Flow is controlled by steel tainter gates. The inflow channel is about 1.9 miles in length with a bottom width of 500 feet. The outflow channel is about 0.9 mile in length with a bottom width of 475 feet. The structure was completed and placed in operation in 1986.

S. A. Murray Jr. Hydroelectric Power plant. This facility is a prefabricated, steel-shell, concrete-filled structure with eight 24-megawatt turbines, an inflow channel from

the Mississippi River, and an outflow channel connecting to the Low Sill Structure outflow channel. The power plant is privately owned and operated as a run-of-the-river power plant using a portion of the total flow diverted through the Old River complex in accordance with an operating agreement between the owners and the Corps of Engineers.

Old River Navigation Lock. This lock provides for continued navigation between the Atchafalaya, Ouachita-Black and Red rivers, and the Mississippi River through Old River. It has a width of 75 feet, a usable length of 1,190 feet, and sills at -11.8 feet NGVD. Construction of the lock was initiated in 1958 and the lock was placed in operation in 1963. A roadway on the levee crosses the lock on a lift bridge, which was completed in 1965.

Levee from Black Hawk to Torras.

Approximately 16 miles of levee join the right bank main-line levee at Black Hawk with the control structures and lock described above and the main-line levee below Old River. Maintenance of this levee is the responsibility of the Fifth Louisiana Levee District. Closure of Old River was completed in 1963. A levee crown width of 40 feet was provided for a roadway built and maintained by the Louisiana Highway Department.



Auxiliary Control Structure at Old River



Morganza Floodway during its only opening in May 1973

Bank Stabilization. Bank stabilization works have been constructed as required to control bank erosion and channel meandering along the bank of the Mississippi River adjacent to the inflow channels of the control structures, and along the Red and Atchafalaya rivers between the outflow channel and Simmesport.

The current estimated construction cost of the Old River project is \$307 million. There are no non-Federal costs.

Old River Rehabilitation Program. High stages during the 1973 flood caused a large scour hole to develop beneath the low sill structure. The flood also caused bank erosion in the low sill inflow and outflow channels. The scour under the structure caused the failure of one wingwall and part of the upstream concrete approach slab, and damaged the foundation and drainage system under the structure and stilling basin.

Emergency rehabilitation work was begun under Public Law 84-99, Section 206 (PL 99) to include construction of a rock dike to replace the failed wingwall, filling of the scour hole in front of the structure with riprap, exploratory drilling for damage assessment, filling of the voids underneath the structure with a special grouting material, and placing additional scour protection around the

structure. The total cost of the PL 99 work was \$15,250,000.

To further address the residual problems of the 1973 flood and alleviate possible future problems, a comprehensive rehabilitation plan was developed for the Old River Control Project. The plan was performed under the maintenance program until 1978 and then under a major rehabilitation program established in 1978. It included such items as modification of the gates of the Low Sill Structure to allow for orifice flow control, repair of erosion to the Low Sill Structure stilling basin, additional channel stabilization for both the inflow and outflow channels, and modifications to the Overbank Structure to protect against potential scour.

The major rehabilitation program was concluded in 1982 and restored a high degree of confidence in the ability of the Old River Project to operate during normal conditions. However, serious concern remained about the capability of the project to handle potential emergency situations. The Auxiliary Control Structure was constructed to provide the needed capability to deal with emergencies, and with its completion, the Old River Project has been fully restored to its original capabilities.

With completion and operation of the Auxiliary Control Structure, the Low Sill Structure was closed during 1987, and the stilling basin and gate rails are dewatered, inspected, and repaired as needed.

Morganza Floodway

Located on the west side of the Mississippi River some 35 miles northwest of Baton Rouge, the Morganza Floodway is capable of introducing excess floodwaters from the Mississippi River to the Atchafalaya Basin Floodway at a rate of 600,000 cubic feet per second (4.5 million gallons per second). The structure was operated for the first and only time when partial opening was made during the 1973 flood to lower Mississippi River stages and relieve pressure on the Old River Low Sill Control Structure.

The floodway consists of a combined gated-control structure, high-level highway and railroad crossings over the floodway, and drainage alterations and improvements. Comprehensive easements for full use of the lands within the floodway have been acquired between the guide levees. Habitation within the floodway is not permitted, but use of the land for farming, removal of timber and minerals, and other purposes not in conflict with flood control are permitted with prior approval.



Point Coupee pumping station and drainage structure

The land and water areas around the control structure are used extensively for fishing and

picnicking.

Descriptions of the various features comprising the floodway follow:

- ▶ **Morganza Combined Control Structure.** The structure consists of about 19,340 linear feet of levee and a reinforced-concrete structure consisting of 125 gated openings, each 28 feet 3 inches wide, separated by 3-foot-wide piers. Each opening is equipped with a steel vertical-lift gate operated by a gantry crane. Bridges for the gantry crane, Louisiana Highway 1, and the joint track for the Kansas City Southern and Texas and Pacific Railways are supported by piers between the earth embankments flanking the control structure. The structure was completed in 1954 at a cost of \$20,680,000.
- ▶ **Morganza Floodway Levees.** The levees consist of the upper and lower guide levees which, with the East Atchafalaya River levee, form a floodway averaging about 5 miles in width. The upper guide levee extends about 9 miles southwesterly from the combined control structure to the East Atchafalaya River levee, about 2 miles upstream from Melville. This levee protects more than 100 square miles of productive farmlands in upper Pointe Coupee Parish from overflow during floodway operations. The lower guide levee extends about 19.4 miles in a southerly direction from the control structure to join the East Atchafalaya Basin protection levee at the latitude of Krotz Springs.
- ▶ **Pointe Coupee Drainage Structure and Bayou Latenache.** A drainage system for the Upper Pointe Coupee Parish area, which is protected by the upper guide levee, was provided with a drainage structure at the intersection of the levee and Bayou Latenache. The bayou was enlarged from the drainage structure to U.S. Highway 190. The structure, located about 0.5 mile east of the Atchafalaya River, consists of a reinforced-concrete structure supported

on untreated timber piles and contains two motor-operated steel lift gates, each 10.5 feet wide and 15.0 feet high. This feature was completed in 1942 at a cost of \$310,000. Operation and maintenance are the responsibility of the U.S. Army Corps of Engineers.

- ▶ Inundation rights have been acquired on 12,800 acres of land above the drainage structure for storage of runoff during the closure of the gates, for operation of the Morganza Floodway.
- ▶ Additional drainage work has been authorized for the upper Pointe Coupee area. Initially, improvements included the enlargement of Bayou Latenache, a Corps of Engineers responsibility, and construction of an interior drainage system of major laterals and on-farm drains by others.
- ▶ Pointe Coupee Pumping Station was designed and constructed as a result of initial area drainage studies and restudies conducted prior to and following the 1973 flood. This pumping station was constructed in lieu of enlarging Bayou Latenache, as initially planned. Construction began in 1980 and was completed in October 1983; the station was first operated for removal of floodwater from the upper Pointe Coupee loop area in December 1983. The station floodwater pumping system consists of three diesel-engine-driven, 500-cubic-feet-per-second pumps that are progressively activated as needed to limit floodwater accumulations above the pumping plant to 26.0 feet NGVD, with progressive deactivation as levels are drawn down. The station structure is reinforced-concrete set on driven steel piling. The station discharges into the Atchafalaya River through three 84-inch-diameter pipes over the East Atchafalaya River levee, about 0.2 mile north northwest of the Pointe Coupee Drainage Structure. This \$15 million station is expected to minimize the duration of flooding in this leveed loop area and ensure larger crop acreage

availability.

- ▶ Highway and railroad traffic is routed over the floodway on three high-level crossings.

West Atchafalaya Floodway

Under the project plan, it is estimated that this floodway, which has a designed capacity of 250,000 cubic feet per second, will be used an average of less than once every 100 years for carrying floodwaters in excess of the combined capacities of the Atchafalaya and Mississippi rivers and the Morganza Floodway. The floodwaters enter the floodway by overtopping the levee at the head of the floodway and along the south bank of Bayou des Glaises. The floodway has not been operated to date. The floodway, about 6 miles in width, is located between the West Atchafalaya River levee and the West Atchafalaya Basin protection levee. It extends from Bayou des Glaises to the latitude of Krotz Springs, a distance of about 32 miles. Below this point, it joins the floodwaters from the Atchafalaya River and the Morganza Floodway in the Atchafalaya Basin Floodway.

Perpetual flowage easements were acquired by the government over all lands and improvements in the floodway down to the latitude of Krotz Springs. These easements provide for full use of the lands for flood control purposes. Owners retain the rights to farm, improve and inhabit the lands, and harvest timber and minerals.

Railway and highway traffic are carried over the floodways on three high-level crossings.

Atchafalaya Basin Floodway

The floodway is located between protection levees approximately 15 miles apart extending from the lower limits of the Morganza and West Atchafalaya floodways, at the latitude of Krotz Springs, to Morgan City and through the Lower Atchafalaya River and Wax Lake Outlet, to the Gulf of Mexico. The improvements necessary to this floodway are described as separate features.

Atchafalaya Basin Bank Stabilization

Bank stabilization works are being constructed from above Simmesport to the lower end of the main stem levee system to maintain a favorable alignment for navigation and for protection of the levee system. Through 1996, 48 miles of revetment have been made.

Atchafalaya Basin Levees

All levees in the Atchafalaya Basin except the guide levees for the Morganza Floodway are included under this heading. The levee system is designed to protect agricultural areas and towns from the normal high waters of the Mississippi-Red River backwater area, floods on the Atchafalaya River, and when necessary to contain excess floodwaters of the Mississippi and Red rivers on their way south to the Gulf of Mexico. The levees also protect valuable agricultural lands from backwaters created by the floodwater. The system includes about 449 miles of levees and

currently will contain a flood of about 1.4 million cubic feet per second. Work is under way to raise the floodway levees to an elevation to confine a design flow of 1.5 million cubic feet per second. Individual levee features within the existing Atchafalaya system include the following:

East Atchafalaya Basin Protection Levee

(EABPL). The levee begins at the lower end of the east guide levee of the Morganza Floodway, extends southward to and through Morgan City to the Avoca Island Cutoff, and includes the Bayou Boeuf and Bayou Sorrel locks. The length of this system is 106.7 miles, including 1.3 miles of floodwall along the Morgan City front and about 0.4 mile of floodwall below Morgan City. The Atchafalaya Basin Levee District and the city of Morgan City are responsible for operation and maintenance of this feature.



East Atchafalaya Basin Protection Levee and foreshore protection

West Atchafalaya Basin Protection Levee

(WABPL). The levee begins near the town of Hamburg, where it joins the Bayou des Glaisses fuseplug levee. It extends in a south and southeasterly direction to the Wax Lake Outlet at the latitude of the East and West Calumet Floodgates and thence eastward through Berwick to the Gulf Intracoastal Waterway. This levee extends 128.7 miles and connects with 3 miles of floodwall along the front of the town of Berwick. Structures along the levee include Bayou Darbonne and Courtableau drainage structures, the Charenton Floodgate, and the Berwick Lock,

described subsequently.

The Red River, Atchafalaya, and Bayou Boeuf Levee District, the Atchafalaya Basin Levee District, the town of Berwick, and the St. Mary Parish Government (formerly Police Jury) are responsible for operation and maintenance.

East Atchafalaya River Levee. The levee extends from the junction of the Atchafalaya, Old and Red rivers along the east bank of the Atchafalaya River to approximately 10 miles below Alabama Bayou, a distance of 52.5

miles. The Atchafalaya Basin Levee District is responsible for maintenance.

West Atchafalaya River Levee. The levee extends southward from Bayou des Glaises levee at Simmesport along the west bank of the Atchafalaya River and Bayou La Rose, to approximately 2 miles below Butte La Rose, a distance of 60.1 miles. Additional levees include the Simmesport ring levee, 1.6 miles in length, and its drainage outlet, Brushy Bayou Drainage Structure, Melville ring levee, 4.1 miles in length and its drainage structures, and the Krotz Springs ring levee, 1.7 miles in length. The total length of levee in this system is 67.5 miles. The Red River, Atchafalaya, and Bayou Boeuf Levee District is responsible for maintenance of the portion of this levee from Simmesport to Bayou Courtableau. The remaining portion is maintained by the Atchafalaya Basin Levee District.

Bayou des Glaises Fuseplug Levee. The levee extends from the town of Simmesport west and along the south bank of Bayou des Glaises, to the WABPL near Hamburg, a distance of approximately 8 miles. This levee protects the lands in the West Atchafalaya Floodway from floodwaters in the Mississippi-Red River backwater area until stages requiring the use of the West Atchafalaya Floodway are reached. Floodwaters will then enter the floodway by overtopping the levee. The Red River, Atchafalaya, and Bayou Boeuf Levee District is responsible for maintenance.

Mansura Hills to Hamburg Levee. The levee extends from the Mansura Hills along the north bank of Bayou des Glaises across the structure and southward to the junction of the WABPL and the Bayou des Glaises fuseplug levee, near the town of Hamburg. This 20.5-mile levee protects the area west of the floodways and west of Marksville from Mississippi-Red River backwater flooding. The Red River, Atchafalaya, and Bayou Boeuf Levee District is responsible for maintenance.



Bayou Yokely Pumping Station

Levees West of Berwick. A total of 56.5 miles of levees tying into high ground are located west of Berwick. They have been designed to protect the agricultural lands along the Teche and Sale ridges from the back waters created by the introduction of floodwaters from the Mississippi and Red Rivers through the floodways, the Wax Lake Outlet and Lower Atchafalaya River.

The levee system begins at the lower end of the WABPL below Berwick and extends westward generally along the north bank of the Intracoastal Waterway and Wax Lake Outlet, to the Charenton Drainage Canal near Baldwin. It also encloses the Bayou Sale Ridge.

Drainage for the enclosed area is through about 38 miles of canals, 3 drainage structures, 20 gated culverts, an inverted siphon and 11 pumping stations, all of which were completed by 1965.

The Atchafalaya Delta development and coincident rising Gulf-side water levels would progressively reduce pumping capacities of these pumping stations. Formal notification was given to the local operating agencies in 1983 that the Federal government assumed responsibility for modifications needed to regain pumping capacities and was studying means that could be employed. Accordingly,

refurbishment of pumps, replacement of aged drive-engines and equipment as necessary, and modifications and repairs were commenced in 1990 and completed in 1993 at the Bayou Yokely, Maryland, Franklin, Centerville, and Wax Lake East and Wax Lake West pumping stations to regain lost capacities.

Removals of some of the 20 gated culverts that are no longer useful or functional for effective gravity-control, collection and transmission of surface drainage waters through flood protection levees are scheduled to be completed by 2002.

EABPL, Landside Drainage Improvements

After closure of the Bayou Pigeon navigation connection, and during the construction of the Bayou Sorrel Lock, drainage intercepted by the East Atchafalaya Basin Project Levee (EABPL) was provided for by enlarging portions of the borrow pit and nearby streams. These improvements serve as a navigation route between Bayou Sorrel Lock and Intracoastal Waterway. Although about 22 miles longer than the project route between Port Allen and Morgan City, the landside route affords easier navigation in times of flood and swift currents. During times of low rainfall east of the levee, fresh water may be passed through Bayou Sorrel and Port Allen locks into the channels east of the levee. The drainage improvements are described below.

Lottie to Bayou Maringouin Borrow Pit Enlargement. This improvement consists of the enlargement of the restricted sections of the landside borrow pit between a point one-quarter mile south of Lottie and Bayou Maringouin. Work was completed in 1940 at a cost of \$126,000.

Bayous Boeuf-Long Drainage Canal and Enlargements of Bayou Chene. Features of this project include the improvement of existing streams along the landside of the EABPL from the Bayou Sorrel Lock to the vicinity of Lake Palourde, a new land cut around the east side of Lake Palourde to Bayou Boeuf, and the enlargement of Bayou Boeuf, to provide a minimum channel depth of

9 by 100 feet wide for drainage and navigation from the Intracoastal Waterway to the levee borrow pit. The improvements were completed in 1947 at a cost of \$501,000.

WABPL, Landside Drainage Improvements

Drainage intercepted by the West Atchafalaya River Basin Project levee (WABPL) is provided for with this project by enlargement of the landside borrow pit and natural streams in the area. Features of these improvements are as follows:

Bayou des Glaises Diversion Channel State Canal and Bayou Roseau. The Bayou des Glaises Diversion Channel, completed in 1939, connects Bayou des Glaises with the landside borrow pit of the WABPL. This channel operates at full capacity since the state-owned floodgate on Bayou des Glaises near Bordelonville is closed. Other landside drainage intercepted by the Mansura Hills to Hamburg levee is taken off by the enlarged channel of State Canal and Bayou Roseau, between Mill Bayou and the main diversion channel, which was completed in 1943. The cost of these improvements was \$228,000.

Bayou des Glaises Culvert. The culvert consists of a 72 inch concrete pipe culvert with flap gate and concrete stilling basin. It passes through the Old Bayou des Glaises levee connecting the floodway side borrow pit of the Bordelonville-Hamburg levee with Bayou des Glaises proper, and provides an outlet for the water accumulating within the Bayou des Glaises loop. It was completed in 1939. A replacement of the corroded and partially collapsed culvert was completed in 1990 at a cost of \$187,500.

Borrow Pit Enlargement Between Hamburg and Courtableau. Enlargement of inadequate sections of the borrow pit was completed in 1939 at a cost of \$345,000.

Bayou Darbonne Drainage Structure. The structure is located in the WABPL at the Bayou Darbonne crossing and consists of a reinforced-concrete box culvert 10 by 10 by 265 feet long, with a motor-controlled gate.

This structure is used during low stages on the landside to permit flow, when possible, from the West Atchafalaya Floodway to Bayou Teche through Bayou Courtableau. It thereby provides water frequently needed for irrigation purposes. During landside flood stages, floodwaters in the borrow pit pass through the structure to the floodway. It will be closed during operation of the West Atchafalaya Basin Floodway. The structure was completed in 1941 and is operated by the U.S. Army Corps of Engineers.

Bayou Courtableau Diversion Channels and Control Structure. The original channel of Bayou Courtableau was blocked by construction of the WABPL. To retain and introduce low-water flow into Bayou Teche for use in rice irrigation in the Teche and Vermilion River basins, where it is frequently needed, two reinforced-concrete weirs with crests of 18 feet NGVD were constructed on the south bank of Bayou Courtableau just west of the WABPL. Floodflows pass over the weirs into two adjacent channels excavated below the weirs, then into the borrow pit below. The width of the east weir is 482 feet and the west weir, 517 feet. The diversion channels were completed in 1939, and the structures were completed in 1942. The structures are operated and maintained by the U.S. Army Corps of Engineers.

Courtableau Drainage Structure and Channels. The structure and channels are located approximately 2 miles southeast of the village of Courtableau in St. Landry Parish. Construction of the WABPL intercepted the natural drainage of the Bayou Courtableau Basin, located west and north of the levee. The feature consists of: a five-barrel (each 10 feet wide and 15 feet high), reinforced-concrete, box-type culvert 220 feet long, with five mechanically operated vertical-lift gates at the outlet end; an inlet channel approximately 1,800 feet long; an outlet channel approximately 23,500 feet in length; a 1,300-foot levee along the south bank of the inlet channel with a 12-foot-wide gravel road on the crown; and guide levees on both banks of the outlet channel for confining drainage flows passed through the structure. The feature was completed in 1950 at a cost of \$1.4 million. The structure is operated and maintained by the U.S. Army Corps of Engineers.



Bayou Darbonne Control Structures

Bayou Berard Drainage Canal. The canal extends from the landside borrow pit in the vicinity of Cypremort, about 3 miles below Henderson, to the head of Lake Catahoula, a distance of 7 miles. Enlarged twice, it now has a bottom width of 65 feet, -15 feet NGVD. Flow through this enlarged channel supplements the runoff through the borrow pit. It was completed in 1940 at a cost of \$277,000.

Cypremort to Dauterive. Channel improvement from Cypremort to Dauterive extends in a southerly direction in the landside borrow pit, commencing about 1 mile south of Cypremort and ending opposite the head of Lake Dauterive, a distance of 14.3 miles. The borrow pit was enlarged and Bayou Mercier and two distributaries of Lake Catahoula were improved. The channel and the Bayou Berard Drainage Canal are supplemental improvements. The channel was completed in 1941 at a cost of \$791,000.

Charenton Drainage Canal. This canal is a drainage connection extending from the Charenton Floodgate to Bayou Teche, and thence along Bayou Teche and a new land cut to West Cote Blanche Bay, an arm of the Gulf of Mexico. It provides an outlet for the intercepted drainage carried by the WABPL

borrow pit. The canal has a bottom width of 75 feet, a depth of -30 feet NGVD, and a design discharge capacity of approximately 22,000 cubic feet per second. This improvement required the construction of one railroad bridge and three highway bridges. It was completed in 1948 at a cost of \$2,955,000.



Charenton Floodgate in the Atchafalaya Basin

Atchafalaya River Improvement Dredging

Improvement dredging of the leveed channel of the Atchafalaya River and its outlets is provided under this feature. Work includes the enlargement of the openings of existing railroad and highway bridges across the Atchafalaya River and such alterations of existing crossings of this river as are deemed necessary to the execution of the plan. Other restricted sections of the channel are to be enlarged to increase the floodflow capacity of the Atchafalaya River. The improvement extends from the confluence of the Red, Old, and Atchafalaya rivers to Alabama Bayou, mile 57. All work has been completed, unless at a later date it is found that additional improvements are required. The cost of construction to date is \$4,578,000. Work was completed in 1953.

Atchafalaya Basin Main Channel Improvement Dredging

The flood-carrying capacity of the Atchafalaya was developed by dredging a continuous main

channel through the swamps of the central portion of the basin. The capacity of the floodway was being reduced by sedimentation in the floodway. The main channel preserves floodway capacity and reduces wetland loss by reducing overbank sedimentation in the Lower Atchafalaya Floodway. The dredging extended from the Atchafalaya River at Alabama Bayou to the main body of Sixmile Lake near Morgan City. No work has been performed on this feature since December 1968. The need and feasibility of continued channel dredging were addressed in the Phase I General Design Memorandum approved February 1983.

This document concluded that the river was enlarging naturally and that flows could be confined to the main channel by slightly raising its natural banks. This channel training work would also significantly reduce sedimentation into the back wetlands. The initial channel training work above Morgan City was completed in 1989 when rock weirs were installed at Blue Point Chute and American Pass. Additional channel training and channel realignment work above Morgan City was completed in 1993. Material for enhancing the natural banks to confine the river came from within the construction right-of-way instead of the main channel which reduced environmental impacts by one third.

Wax Lake Outlet

The Corps constructed this outlet to convey floodwaters from the Atchafalaya Basin. The outlet, with an initial design capacity of 300,000 cubic feet per second, provides an additional means of safely passing flood waters to the Gulf of Mexico. The dredged channel is about 10 miles west of Berwick and extends from Sixmile Lake through the Teche Ridge and Wax Lake into Atchafalaya Bay, a distance of about 15.7 miles.

The channel was initially constructed to a bottom width of 300 feet from Sixmile Lake to a point one-half mile below Bayou Teche, 400 feet below that point, and a uniform depth of -45 feet NGVD. The excavated material from the channel dredging was used to construct guide levees extending from the WABPL to

the Intracoastal Waterway on each side of the outlet.

The Wax Lake Outlet Control Structure was constructed in 1987 to stabilize the distribution of low to normal floodway outlet flows to approximately 70 percent/30 percent between the Lower Atchafalaya River and the Wax Lake Outlet and to increase the channel development of the Lower Atchafalaya River, thereby increasing the combined capacity of the Lower Atchafalaya River and the Wax Lake Outlet to convey flood flows. Flooding of riverfront businesses along the Lower Atchafalaya River in Morgan City/Berwick Louisiana occurred more frequently after the completion of the Wax Lake Outlet Control Structure. Local interests claimed that the control structure was primarily responsible for the more frequent flooding and requested a complete removal of the weir and dredging of the channel above the weir. The President of the Mississippi River Commission directed the removal of the weir, as requested. The weir removal was completed in March 1995 and the dredging of Sixmile Lake was completed in June 1995.

Rock from the Wax Lake Outlet Control Structure was used to protect the shorelines along Freshwater Bayou in Vermilion Parish and along the Avoca Island levee at Bayou Shaffer in St. Mary Parish. The Wax Lake Outlet rock was also used to fill a scour hole in the Charenton Drainage Canal at Bayou Teche in St. Mary Parish and to build segmented breakwaters on the north side of Grand Isle in Jefferson Parish to slow wetland erosion.

The East and West Calumet floodgates, described below were constructed where the guide levees cross Bayou Teche to allow continued navigation. New bridges were constructed to carry U.S. Highway 90 and the Southern Pacific lines over the dredged channel. This improvement was completed in 1942 at a cost of \$7,122,000, and is maintained by the U.S. Army Corps of Engineers, except for the bridges, which are maintained by their owners.

East and West Calumet Floodgates

These floodgates are located in the East and West Wax Lake Outlet guide levees where the levees cross Bayou Teche. Each floodgate is a reinforced-concrete structure 161 feet long, with a 45-foot clear width, a sill depth of -9.8 feet NGVD, and steel sector gates.

The floodgates allow navigation in Bayou Teche and regulate flows to some extent. They were completed in 1950 at a cost of \$1,320,000. Operation and maintenance are the responsibility of the U.S. Army Corps of Engineers. Detailed engineering to modify the existing structures to the project flood flowline had been suspended because of the removal of the Wax Lake Outlet weir and pending the results of the lower Atchafalaya Basin Reevaluation Study.

Charenton Floodgate

This floodgate is located in the WABPL, about 1 mile north of Charenton. It is a reinforced-concrete structure 175 feet long, with a clear width of 45 feet, a depth of -10.8 feet NGVD, and steel sector gates.

The floodgate regulates flows between Bayou Teche and the Atchafalaya Basin Floodway and affords a navigation connection between Grand Lake and the WABPL borrow pit and Charenton Drainage Canal. In 1951, a removable bridge with a low steel elevation of 20.7 feet NGVD was constructed across the structure. The floodgate was completed in 1948 at a cost of \$298,000. Charenton Floodgate is operated by the U.S. Army Corps of Engineers. A study is underway to provide modifications to the existing floodgate through consultation and a public meeting with local interests. A navigable structure was determined to be no longer required. A non-navigable closure is planned. In 1994, a scour hole was repaired with rock removed from the Wax Lake Outlet weir.

Berwick Lock

Located in the WABPL near its crossing of the Lower Atchafalaya River, about 2 miles north of the town of Berwick, this lock is a reinforced-concrete structure 45 feet wide, with sills at an elevation of -9.8 NGVD and a

usable length of 300 feet between steel sector gates. It affords a navigation passage through the levee and permits navigation up the Lower Atchafalaya River to Patterson and Bayou Teche. The lock was completed in 1951 at a cost of \$2.1 million and is maintained by the U.S. Army Corps of Engineers.

Bayou Sorrel Lock

This lock, located in the EABPL at its intersection with the Morgan City-Port Allen Route to the Gulf Intracoastal Waterway, about 15 miles below Plaquemine, provides a navigation connection through the levee. The structure consists of two reinforced-concrete gate bays equipped with steel sector gates and connected with an earth chamber having a timber guide wall on both sides. The usable length is 790 feet, the clear width is 56 feet, and the depth over the sill is 14 feet below NGVD.

The navigation route between Port Allen and Morgan City through the lock is about 22 miles shorter than the landside waterway. The lock was completed in 1952 at a cost of \$4,700,948, and is operated and maintained by the U.S. Army Corps of Engineers.

Bayou Boeuf Lock

This lock is located in the EABPL below Morgan City at a point where it crosses Bayou Boeuf and the Intracoastal Waterway. It consists of two reinforced-concrete gate bays, equipped with steel sector gates connected by an earth chamber which has a timber guide wall on both sides. The lock has a length of 1,136 feet, a clear width of 75 feet, and a depth over sills of 13 feet at NGVD. The Bayou Boeuf Lock provides for navigation through the levee, which protects the areas and communities east of Morgan City from the floodwaters from the Atchafalaya Basin. It was completed in 1955. The lock, excluding approach channels, was completed at a cost of about \$2,754,000. It is operated and maintained by the U.S. Army Corps of Engineers.

Atchafalaya River

Channel work on the Atchafalaya River, completed in February 1956 at a cost of

\$303,500, is a navigation feature of the MR&T project. The channel, 12 feet deep over a bottom width of 125 feet, extends from the Gulf Intracoastal Waterway at Morgan City to the Mississippi River via the Atchafalaya and Old rivers. As a shortcut from the Gulf to the upper Mississippi, this project affords travel savings of 172 miles and eases port congestion at New Orleans. Average annual traffic, 1986-1995, was 10,458,000 tons.

Atchafalaya Basin Floodway System

The Atchafalaya Basin Floodway system resulted from a combination of a general investigation (GI) study with a Phase I General Design Memorandum (GDM). The GI study, Atchafalaya Basin (Water and Land Resources), Louisiana, was authorized by resolutions of the Senate and House Committees on Public Works in 1972. The Phase I GDM was authorized in June 1976 under the discretionary authority of the Secretary of the Army acting through the Chief of Engineers to address alternative plans for accomplishing the previously authorized purposes of the Atchafalaya Basin project. Because of the interrelationships of the separately authorized studies, they were combined into a single study.

The primary goal of the study was to develop an implementable multipurpose plan that will protect southeast Louisiana from Mississippi River floods by ensuring safe passage of one-half the MR&T project design flood through the Atchafalaya Basin Floodway system, while retaining and restoring the unique environmental values of the floodway and maintaining or enhancing the long-term productivity of the wetlands and woodlands.

The new plan was recommended in the Atchafalaya Basin Floodway system final report/EIS, which was submitted to the Mississippi River Commission in January 1982, and was approved by the Office of the Chief of Engineers in February 1983. The recommended plan provides for the following features under existing MR&T project authority:

- ▶ continued operation of the Old River Control Structure to maintain the authorized 70/30 flow division;
- ▶ continued construction of bank stabilization works above mile 55.0 on the main channel;
- ▶ modification of existing features, such as floodway guide levees, floodgates, pumping plants, etc.;
- ▶ further channel dredging only to the extent required for providing dredged/excavated material to construct training works along the main channel that will achieve the desirable degree of flow confinement and natural channel enlargement from mile 90.0 to 116.0;
- ▶ construction of the Wax Lake Outlet Control Structure to stabilize the distribution of low to normal floodway outlet flows to approximately 70 percent/30 percent between the Lower Atchafalaya River and the Wax Lake Outlet, with possible future restriction of Wax Lake Outlet flows to about 20 percent depending upon ecosystem response (as noted on page 49 the Wax Lake Outlet Control Structure rock weir has been removed and the connecting levee was removed in 1995);
- ▶ enlargement of the Wax Lake Outlet overbank area to allow passage of up to 50 percent of floodflows;
- ▶ realignment of the four principal distributaries of the main channel for sediment control;
- ▶ enlargement of the outlet channels for construction of training works along both channels below the latitude of Morgan City;
- ▶ construction of further extensions of the Avoca Island levee and/or other measures for backwater protection east of the floodway after completing additional detailed studies of the Atchafalaya bay-wetlands-backwater complex;

- ▶ and construction of fresh water diversion structures for the Henderson Lake and Sherburne areas.

The recommended plan also included the following features that required additional authorization: acquisition of additional real estate in the Lower Atchafalaya Basin Floodway in the interest of flood control and environmental improvements, construction of recreation facilities, construction of two pilot management units and miscellaneous canal closures and water circulation improvements. These latter features were authorized by the Supplemental Appropriations Act of 1985 and the Water Resources Development Act of 1986.

The following features were authorized under the discretionary authority of the Chief of Engineers. The Wax Lake Outlet Control Structure in Six Mile Lake, which stabilized the distribution of low to normal floodway outlet flows, was completed in 1988 at a cost of \$11,610,000. Removal of this structure was completed in March 1995. This was necessary to reduce stages and stage durations in the vicinity of Morgan City. The Wax Lake Outlet Control Structure rock weir removal was completed in March 1995, and the connecting levee was removed in February 1996. All channel training work above the latitude of Morgan City was completed in February 1992. The channel realignment work, which consists of two distributary realignments, was completed in 1992. Enlargement of the Wax Lake Outlet overbank has been indefinitely postponed pending recommendations of the Lower Atchafalaya Basin Reevaluation Study.

In order to solve the problem of backwater flooding northeast of Morgan City, a 5.5 mile extension of the existing Avoca Island levee was considered. However, a recommendation that the study be suspended due to limited support, high cost, local and state opposition, and the high probability that the area would continue to flood from sources other than the



Biologists and recreation planners decide how to best manage the resources of the Atchafalaya Basin

Atchafalaya River backwater (even if the Avoca Island Levee were constructed), was made and approved by the Mississippi River Commission in December 1991. At the present time, the study is being reevaluated. The issue of providing backwater protection for Morgan City is being studied as part of the Lower Atchafalaya Basin Reevaluation Study.

Excessive Atchafalaya River flows over the past several years have necessitated a project reevaluation to assess the project function. The Lower Atchafalaya Basin Reevaluation Study is addressing this concern and investigating conditions at Wax Lake Outlet, Bayou Black, and other locations and will recommend modifications desirable for flood protection, navigation, and environmental management. The study is investigating several alternatives aimed at reducing the volume of flood waters passing Morgan City for flows less than project flood. In conjunction with this study, the Corps of Engineers has initiated an intensive public involvement program intended to provide an avenue for local interest groups to express their concerns and to allow technical exchange of information. The expected completion date is July 2000.



Unprotected businesses in Morgan City during the 1997 Floodfight

Floodproofing Measures - Morgan City and Berwick Riverfront Section 21 l(g) of WRDA 96 authorized "flood damage prevention measures" in the vicinity of Morgan City as a separable element of the Atchafalaya Basin feature of the project for Flood Control, MR&T. The plan includes provisions for temporary floodproofing and for the study of a long-term solution including the relocation of riverside industries to a safe non-flood area in the vicinity. The New Orleans District staff is developing the technical report and defining a recommended plan while working closely with the Mayor of Morgan City and Berwick and all of the riverfront businesses.

Improvements for Access, Fish and Wildlife, and Recreation.

A program has been initiated to develop a plan to minimize disruption to basin access and damage to the fish and wildlife resource occasioned by the construction of the flood control improvements. Features for fish, wildlife, and recreation are provided for the Atchafalaya Basin Floodway system project.

East and West Access Channels. This feature consists of channels, 7 feet deep by 80 feet wide, which provide navigable connections between the East and West Atchafalaya guide levees. The East Access Channel consists of a canal connecting the Atchafalaya River Main Channel with Bayou Sorrel. The West Access Channel connects the Main Channel to Lake Fausse Pointe Cut via Bayou Crook Chene and Little Gonsolin Bayou. They are used by both commercial and recreational craft and permit basin-wide access to and from the main channel. Another function of these channels is to distribute fresh water to the overbank areas which they traverse. The West Access Channel was realigned in 1991, and the old entrance (Little Bayou Chene) was closed.

East and West Freshwater Distribution Channels. These channels are being maintained to distribute fresh water on the east and west sides of the Atchafalaya Basin during seasons of low water on the Atchafalaya River system. The East Freshwater Distribution Channel consists of Little Tensas Bayou and

Upper Grand River. The West Freshwater Distribution Channel connects the Main Channel with Lake Fausse Point Cut via Bayou LaRompe, Lake Long, and Bayou L'Embarras. The intermittent overflow from these channels is beneficial to fishing and hunting activities in the area. In 1992, a new entrance to the East Freshwater distribution channel was excavated, and the old entrance at Little Tensas Bayou was closed.

Sherburne Structure. This structure will be constructed in the Atchafalaya River levee at Sherburne to supply fresh water from the Atchafalaya River to the wetlands on the east side of the river.

The structure at Sherburne would distribute water by gravity flow through Little Alabama Bayou, Bayou des Glaises, and connecting channels into the Ramah area of the Atchafalaya Basin Floodway, east of the Atchafalaya River.

Retention Dikes. Prior to dredging in the Atchafalaya Basin, a system of dikes, ditches and weirs was constructed to prevent damage to the high-value habitat. The purpose of the dikes is to confine dredged material to carefully chosen areas, while the ditches and weirs return spill waters from the dredging process to the main channel. This system precludes the incursion of sediments into existing off-channel openwater areas and minimizes alteration of the basin's unique environment.

Public Access Real Estate Feature. With regard to the status of the real estate features, the Lower Atchafalaya Basin contains approximately 595,000 acres. The state claims ownership of 150,000 acres of water bottoms and accreted lands, 30,000 acres donated by Dow Chemical Company and 12,000 acres purchased for its Sherburne Wildlife Management Area. Another 15,000 acres were purchased by the U.S. Department of Interior for the Atchafalaya National Wildlife Refuge.



Recreation in the Atchafalaya Basin

The project plan for the remaining 388,000 acres are located in the lower part of the Atchafalaya Basin which is situated in south central Louisiana, in parts of Iberville, Iberia, Pointe Coupee, St. Martin, St. Mary, and St. Landry Parishes. This area is limited to the part of the Atchafalaya River Basin that has been confined between protection or guide levees that are about 15 miles apart. The northern boundary, west of the Atchafalaya River, lies along the south right-of-way line for the Union Pacific Railroad near the south side of U.S. Highway 190 between the West Atchafalaya Basin Protection Levee (WABPL) and the west limits of the town of Krotz Springs, then southerly along the west limits of the town and easterly along the south limits of the town to the Atchafalaya River; east of the Atchafalaya River along the southern right-of-way line for the Union Pacific Railroad. The eastern and western boundaries lie at the floodside toes of the EABPL and the WABPL, respectively. The area within these limits has been calculated at about 595,000 acres.



Camp on Bayou Chene at Pierre Point

Existing Project: This project consists of the acquisition of 50,000 acres of fee title, excluding minerals, from willing sellers and 338,000 acres of developmental control and environmental protection easements. On about 59,000 acres of the 338,000 acres, flowage easements will be acquired. Acquisition of the flowage easements were authorized by the Flood Control Act of 1928, as amended by the Flood Control Act of 1938. These easements will provide the perpetual right to overflow the land at any time, any length of time, and to any elevation. All acquisition is over privately owned land. The State will provide its 150,000 acres of existing lands and also about 30,000 acres of land donated by the Dow Chemical Company to accomplish the project features. Other state and Federal lands in the project area include 15,000 acres acquired by the Department of the Interior for the Atchafalaya National Wildlife Refuge and 12,000 acres acquired by the state for the Sherburne Wildlife Management Area.

The developmental control rights will prohibit the construction of new permanently habitable structures and require that all other structures, including camps, be subject to permit. The environmental protection rights include the right to prohibit the conversion or development of said land from the existing uses into other uses, and to prohibit certain timber harvesting practices without a permit.

To date approximately 32,900 acres of fee and 32,100 acres of developmental control and protection easements have been acquired.

Engineering and design for the Buffalo Cove pilot management unit is underway; however, construction is currently unscheduled. The Bayou Eugene Prototype model test was completed in Nov. 1994. Results of the prototype model test are being used to assist in the design of management unit features.

The purchase of 1,500 acres in fee by the state of Louisiana for recreational use, the construction of recreation facilities, and construction of miscellaneous canal closures and water circulation features are also unscheduled.

Estimated total cost of the project is \$198 million, of which \$185 million is federal. Acquisition of the scheduled features began in 1989 and is expected to be completed in 2017.

Local Cooperation: A Project Cooperation Agreement (PCA) is not required for the

acquisition of flowage, developmental control, and environmental protection easements or for the acquisition of the public access lands (fee). A PCA will be required for the unscheduled work, such as the Operations and Maintenance and Recreation features.



Fulton Revetment on the Red River

Lower Red River (Vicksburg District)

This project is a main stem feature of the MR&T project. It consists of about 60 miles of levees designed to prevent Mississippi River backwater from entering the alluvial lands south of the Red River and protect against headwater floods on the Lower Red River. Improvements extend from Hotwells to Moncla along the right bank of Red River.

Bank stabilization works, including dikes and/or revetments, have been placed at locations where caving banks constitute a threat to the levees' integrity and where levee setbacks would be uneconomical.

Some 59.5 miles of levee, about 99 percent of the total length, have been completed to final grade and section. The remainder provides a high degree of protection. The estimated cost is \$24,630,000.

A feature of this project, the Bayou Rapides Drainage Structure and Pumping Plant, located in Alexandria, is being evaluated and a design report is being prepared to determine the appropriate course of action regarding its repair or replacement.

During 1956, the right bank levee, a non-Federal levee between Moncla and Lake Long, was rehabilitated to consistent grade and uniform cross section. The work was

accomplished under PL 899. Total cost was \$117,300, of which approximately \$39,000 was contributed by local interests. This particular section of levee is still maintained by local interests.

The Coulee des Grues Culvert is a triple 8 by 8-foot barrelgated structure located in the embankment where Louisiana State Highway 1 crosses over Coulee des Grues. The structure closes a gap in the hills that extend from the WABPL to the south bank of Red River levees. The culvert was originally built by local interests in connection with construction of the highway. During periods of high water in the Red River backwater area, the structure is closed.

As originally constructed, the highway embankment was deficient in the cross section required for a levee. Modifications consisted of extending the structure, installing manually operated gates and enlarging the embankment. In 1954, the U.S. Army Corps of Engineers completed the modification at a cost of \$59,000. Maintenance of this feature is the responsibility of the Red River, Atchafalaya, and Bayou Boeuf Levee District.

Bayou Cocodrie and Tributaries

Authorized under the Flood Control Act of August 1941, this project provides for construction of a 59.8-mile diversion channel from Bayou Rapides, west of Alexandria, to Bayou Courtableau above Washington; snagging and clearing of 2.2 miles of Bayou Boeuf; enlargement of 14.9 miles of Bayou Boeuf; enlargement of 15.3 miles of Bayou Cocodrie; and snagging and clearing of 10 miles of Bayou Cocodrie. Gated control structures are located at the head of the diversion channel and in Bayou Lamourie. A fixed-crest weir near Lecompte ensures suitable low-water flow in Bayou Boeuf.

The 1941 authorization is complete except for the enlargement of 13.5 miles of upper Bayou Boeuf and the channel improvement of 25.6 miles of Bayou Cocodrie. This work was delayed pending the provision of an adequate outlet at and below the lower end of the Bayou Cocodrie Diversion Channel. The

uncompleted reach of Bayou Cocodrie has been designated as a natural and scenic stream under the State Scenic Stream Act. Section 87 of the Water Resources Development Act of 1974 authorized the enlargement of Bayou Courtableau from the town of Washington to the WABPL, in lieu of construction of a previously authorized Washington-Courtableau Diversion Channel. Associated rights-of-way and excavated material areas will be provided at Federal expense. This act also authorized construction of additional culverts through the WABPL to provide for the increased flow.

The estimated total cost of the project (October 1987) was \$27.8 million, of which \$20.4 million is federal. The Federal cost for work through 1992, including the completed portion authorized in 1941, is \$4,899,000. The project, when complete, would reduce flood damages over an area of 61,700 acres. The prevented flood damages through 1996 are estimated at \$11,326,000. The Red River, Atchafalaya, and Bayou Boeuf Levee District is responsible for maintenance and operation of all completed portions of the project except bridges for which the owners are responsible. The project was classified as inactive in 1988 when it was determined that it was no longer economically justified.

Eastern Rapides and South-Central Avoyelles Parishes

Flooding and poor drainage are serious problems in the Chatlin Lake, Choctaw Bayou, and Bayou Dulac drainage areas, along the south bank of Red River southeast of Alexandria. The same problem exists, to a lesser extent, along Bayou des Glaises and the WABPL. About 206,000 acres in this area are subject to flooding.

Authorized by the Flood Control Act of December 1970, the work authorized for construction by the Corps consists of enlargement of several existing channels, diversion of flows to the Atchafalaya Basin, an outlet channel into the Atchafalaya Basin, a control structure in the borrow pit, a levee to assist in diverting floodflows from U.S. Highway 190 to the vicinity of Palmetto, rectification of intercepted drainage, and

Federal acquisition of the Lake Pearl area for fish and wildlife mitigation.

Cost of Corps of Engineers work (1986) is estimated at \$50 million and non-Federal cost at \$16.7 million. The project was classified as inactive in 1987 when it was determined that it was no longer economically justified.

Lower Atchafalaya River Basin Projects

In the lower Atchafalaya River Basin, two navigation projects and one hurricane protection project have been authorized. These projects, described below, are not a part of the MR&T project.

Atchafalaya River and Bayous Chene, Boeuf, and Black

This waterway affords transportation for large offshore drilling equipment built by industries in the area and for personnel and equipment servicing offshore drilling operations.

As authorized by the Rivers and Harbors Act of 1968, the channel was constructed from the vicinity of U.S. Highway 90 at Bayou Boeuf to the Gulf of Mexico. The channel follows a route along reaches of the Gulf Intracoastal Waterway and Bayou Chene, through the Avoca Island-Cutoff Bayou drainage channel to the Lower Atchafalaya River, and from there through the existing project across the Atchafalaya Bay to the 20-foot depth contour in the Gulf of Mexico.

The channel is 20 feet deep with a bottom width of 400 feet, except in Bayou Boeuf where industrial development on both sides of the bayou necessitates a 300-foot-wide channel. The project includes a 20-foot-deep by 400-foot-wide channel constructed from the major shipyard on Bayou Black at U.S. Highway 90 through the Gulf Intracoastal Waterway to Bayou Chene.

The cost of the project is \$32,745,000 Federal, including \$13,000 for navigation aids, and \$1,896,000 non-federal.



Tiger Island Floodwall in Morgan City along the River

Construction was initiated in April 1974 on the bay and Gulf reaches and was completed that same year. Construction of the Bayou Boeuf and Bayou Black portion was begun in 1977 and completed in 1978. Construction of the Bayou Chene and Avoca Island cutoff reach was initiated in 1980 and completed in 1981.

Mitigation for this project consisted of creation of wetlands with material dredged during construction. Additional wetlands have been and will continue to be created during maintenance dredging.

In order to protect the cypress swamp in the vicinity of an eagle nest, 1,800 feet of gabions were placed in the waterway. These rocks will reduce erosion in this important area.

Atchafalaya River, Morgan City to Gulf of Mexico

Authorized by the Rivers and Harbors Act of June 1910, this project consists of a 20-foot-deep by 200-foot-wide channel, approximately 16 miles long from the 20-foot depth contour in Atchafalaya Bay to the same contour in the Gulf of Mexico.

Traffic sufficient to warrant maintenance to current project dimensions did not immediately develop. Maintenance dredging progressively enlarged the channel from 10-feet deep by 100-feet wide in 1939 to 20 by 200-feet in 1974. Total costs to date have been \$501,963 for construction and \$10,706,845 for maintenance. The project has been superseded by the Atchafalaya River and Bayous Chene, Boeuf, and Black project.

Morgan City and Vicinity Hurricane Protection

The purpose of the project is to provide hurricane flood protection for developed residential, industrial and commercial areas extending from the vicinity of Morgan City to the Charenton Drainage and Navigation Canal. Features of this project include the construction of 9.2 miles of new levees, 3.2 miles of which are part of the Franklin area feature; enlargement of 21.6 miles of existing levees (Franklin area feature), construction of flap-gated drainage structures and a floodgate;

and alteration of 5 existing pumping stations and 11 drainage culverts all of which are part of the Franklin area feature. The conceptual plan for the Morgan City feature essentially follows the existing back levee alignment and includes four gravity drainage structures. The total value of improvements to be protected by the project is estimated at over \$117.5 million. Estimated first cost (1 Oct 1985) is \$30.8 million, of which \$12.2 million is Federal and \$18.6 million is to be borne by non-Federal interests.

The Morgan City area is protected from hurricane surge at the present time by a non-Federal levee system. This levee system has succeeded in protecting the area against hurricanes which have occurred since its construction. It is not considered adequate to protect against a standard project hurricane with a frequency of once in several hundred years. The project has been excluded from the budget request since FY 86 based on the local assurer's inability to provide financial support. In July 1987, the project was recommended for reclassification to the "deferred" category. The request was approved November 1987. A "deferred" project is generally not opposed by local interests, but the local interests are unable to furnish the required local cooperation. The Franklin separable element was reported to the Speaker of the House and the President of the Senate by the Assistant Secretary of the Army for Civil Works in October 1994. It will automatically be deauthorized May 1997, thirty months from the date of the report, unless Federal funds are obligated for construction, or Congressional action is taken to extend authorization by that time.

Programs and Surveys

Flood Insurance Studies

In the Atchafalaya River Basin, insurance studies were completed in the following areas: Berwick, Melville, Morgan City, Patterson, Simmesport, St. Mary Parish, and Terrebonne Parish.

Surveys Authorized or Under Way ***Atchafalaya Basin (Water and Land Resources Study).***

This general investigation feasibility study investigated methods to maximize the growth of the emerging Atchafalaya Delta while providing for existing navigation and maintenance using the lowest Atchafalaya Basin Floodway project flows practicable.

Within the next 50 years, the Atchafalaya Bay south of Morgan City is expected to fill with the sediments carried through the Atchafalaya Basin Floodway. This is the only major delta accreting in the continental United States. This process of accretion can be optimized, i.e., more wetlands can be built sooner, by channel realignment and the judicious placement of material dredged from the existing Federal navigation channel through the bay.

It is currently estimated that the cost to achieve the optimization of the Atchafalaya Delta will be about \$3 million, with these funds being expended over approximately eight dredging seasons.

The study has been suspended until such time that the long-term impacts of the operation of the Wax Lake Outlet Control Structure are confirmed. Now that the Wax Lake Outlet Control Structure has been removed, recommendations on the Water and Land Resources Study will be delayed until the completion of the Lower Atchafalaya Basin Reevaluation Study.

Lower Atchafalaya Reevaluation Study

The study is authorized under the Atchafalaya Basin project which was authorized by the Flood Control Act of 1928 and subsequently modified by the Acts of 1934, 1936, 1938, 1941, 1946, 1950, and 1954. The United States Senate Report to the 1994 Energy and Water Development Act (PL 103-126) dated 28 October 1993 further directed the Corps to use available funds to investigate conditions at Wax Lake Outlet, Bayou Black, and other features and recommend any modifications desirable for flood protection, navigation, and environmental management.

The study area is located in south central Louisiana and includes the parishes of St. Mary, Iberville, St. Martin, Assumption, Terrebonne, Iberia, West Baton Rouge, Pointe Coupee, and Vermilion.

The Atchafalaya River is a dynamic alluvial river. As a result, the existing Federal project requires periodic reevaluation to assess the project function. Excessive high Atchafalaya River flows over the past several years have prompted a public outcry for project reevaluation. As part of any reevaluation study, we will investigate changes to the existing project that may facilitate improvements to the environment, flood control, and operation and maintenance of the project.

As part of the overall flood control plans for the Lower Atchafalaya Basin, the MR&T system included a weir in Wax Lake Outlet. This weir was designed to maintain a specific flow distribution between the outlet and the Lower Atchafalaya River. While the weir was working with respect to the overall MR&T system, natural changes in the lower basin resulted in intolerable stages in the vicinity of Morgan City and Berwick, LA. In order to maintain system function of the Lower Basin, the weir was removed. Currently, alternatives are being explored to maintain system function of the MR&T well into the future that will allow for the continued economic growth of the region.

Study efforts, which included data collection, began in December 1994. While data collection is still underway sufficient information has been obtained so that preliminary screening of alternatives has been conducted. Feasibility scope analysis will be performed on the remaining alternatives, including the preparation of an Environmental Impact Statement. As part of the feasibility scope analysis, we have embarked on a comprehensive study of the areas east and west of the basin outlets, including the collection of velocity, water level, water quality, conductivity, and temperature data. The comprehensive study and the 2-dimensional modeling ongoing at the Waterways Experiment Station, which is also

part of the feasibility scope analysis, will address the issues of flow, salinity, and other hydraulic, navigation, and environmental issues in the area to the west of the Wax Lake Outlet.

Morganza, LA to the Gulf of Mexico Study

The study is investigating the feasibility of providing flood and hurricane protection to communities and developed areas within the study area. The Mississippi River levee and the East Atchafalaya Basin Protection levee provide flood protection to the area from major flooding of the mainstem Mississippi River and tributaries. These levee systems, designed to protect the area from flooding, have interrupted the historic flow distribution. Drainage for the area currently passes to the Gulf of Mexico, which in some cases lengthens the drainage path. The southern portion of the basin is experiencing higher stages due to the delta building of the Atchafalaya River, thereby increasing the tail water elevation and the potential for backwater flooding in the basin. Potential alternatives which were being addressed as part of the Morganza to the Gulf of Mexico Study and are now being addressed as part of the Lower Atchafalaya Basin Reevaluation Study include: diversion of flood waters in the northern portion of the basin into the Atchafalaya Basin; channel modifications; flood control structures; ring levees for the areas affected by tides; and non-structural alternatives.

The areas remaining to be studied in the Morganza, LA, to the Gulf of Mexico Study are associated with the Houma hurricane protection plan, which includes eastern Terrebonne and northwestern Lafourche Parishes. They are being studied with a 50-50 cost-shared agreement as a feasibility study. The sponsor has been advised of the President's FY 1996 budgetary policies and has indicated a desire to proceed with the feasibility study. The feasibility study has been initiated in FY 1995. The Reconnaissance Review Conference was held in May 1995. The remainder of the study area and the alternatives described above are being studied at 100 percent Federal cost, as part of the Lower Atchafalaya Basin Reevaluation Study.

Lake Dauterive/Lake Fausse Pointe

Flooding problems in the vicinity of Lake Dauterive and Lake Fausse Pointe are being considered in this study. Lake Dauterive and Lake Fausse Pointe are freshwater lakes located along the west side of the Atchafalaya Basin Floodway in St. Martin and Iberia parishes in south-central Louisiana. The lakes are outlets for drainage intercepted by the West Atchafalaya Basin Protection Levee. Flooding is a problem in the areas adjacent to and upstream of the lakes. A reconnaissance study was completed in March 1996, and it was concluded that there are no feasible solutions to the flooding problems in the study area that meet Federal criteria.