

VALUE ENGINEERING TEAM STUDY

PROJECT DESCRIPTION AND BACKGROUND

PROJECT TITLE: IWW/Bayou Sorrel Lock Replacement Project
PROJECT LOCATION: Intracoastal Waterway, LA

Bayou Sorrel Lock is located in Iberville Parish in south-central Louisiana, approximately 20 miles south of Baton Rouge, Louisiana. The lock passes inland navigation traffic moving on the Morgan City-to-Port Allen Route of the GIWW through the East Atchafalaya Basin Protection Levee (EABPL) of the Atchafalaya Basin Floodway system, which is a feature of the Mississippi River and Tributaries Project. The location of Bayou Sorrel Lock and the GIWW system is shown on the following location map.

Bayou Sorrel Lock was completed in 1951. The existing structure consists of two, reinforced concrete gate bays, each 68 feet long by 156 feet wide, separated by 790 feet of earthen chamber. The earthen chamber section has a bottom width of 56 feet and 1 on 2.5 side slopes protected with riprap and articulated concrete mattresses. The sill of the lock is at elevation - 14.8 NGVD; the top of the concrete walls is at elevation +24.0 NGVD. In each concrete gate bay are two 60 degree steel sector gate leaves electrically operated. The gate operating machinery is located in recesses in the top of the lock walls.

Bayou Sorrel Lock is a feature of the Archafalaya Basin Floodway Project, which is a feature of the Flood Control, Mississippi River and Tributaries Project. The Atchafalaya Basin Floodway is designed to convey one-half of the Mississippi River and Tributaries project flood at the latitude of Old River to the Gulf of Mexico. The design discharge is 3,000,000 cubic feet per second at the latitude of Old River. The Atchafalaya Basin Floodway project flood flowline has changed significantly since Bayou Sorrel Lock was constructed. The lock is structurally sound; however, the elevation of the gate bays are now 5 feet below the project flood flowline and 8 feet below the project flood design grade. The East Atchafalaya Basin Protection Levee (EABPL) has been upgraded to the current flood design grade. The Lock must therefore be replaced for flood control purposes.

The Morgan City-to-Port Allen Route is a heavily traveled reach of the GIWW system. It offers a significantly shorter route for tows moving between the Mississippi River north of Baton Rouge and the GIWW west of Morgan City. The Morgan City-to-Port Allen Alternate Route is 64 miles long with two locks, Port Allen and Bayou Sorrel. The route via the Mississippi River and the main stem of the GIWW is 224 miles long, and tows must go through either the Harvey Lock or the Algiers Lock in the New Orleans area and Bayou Boeuf Lock immediately east of Morgan City. There is another alternate route via old River Lock and Atchafalaya River. This route is not heavily used due to the combination of strong river currents and poorly aligned opening in several sets of adjacent bridges crossing the Atchafalaya River. Petroleum products, industrial chemicals, and non-metallic minerals make up the bulk of goods that are transported on the Morgan City to Port Allen alternate route.

VALUE ENGINEERING TEAM STUDY (continued)

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The typical large tow configuration on the GIWW consists of four standard size barges (35-ft in width) in tandem plus a tug for an overall length of 890 feet. The U.S. Coast Guard requires tows using the GIWW to be no larger than 55 feet wide by 1180 feet long due to bendway constrictions in the channel.

The GIWW is a vital component of the Nation's inland waterway system. The continuing growth in tonnage throughout the study area has put increased pressure on the ability of Bayou Sorrel to process waterborne commerce efficiently. Bayou Sorrel is dimensionally inadequate to handle the typical large tows that now use the GIWW.

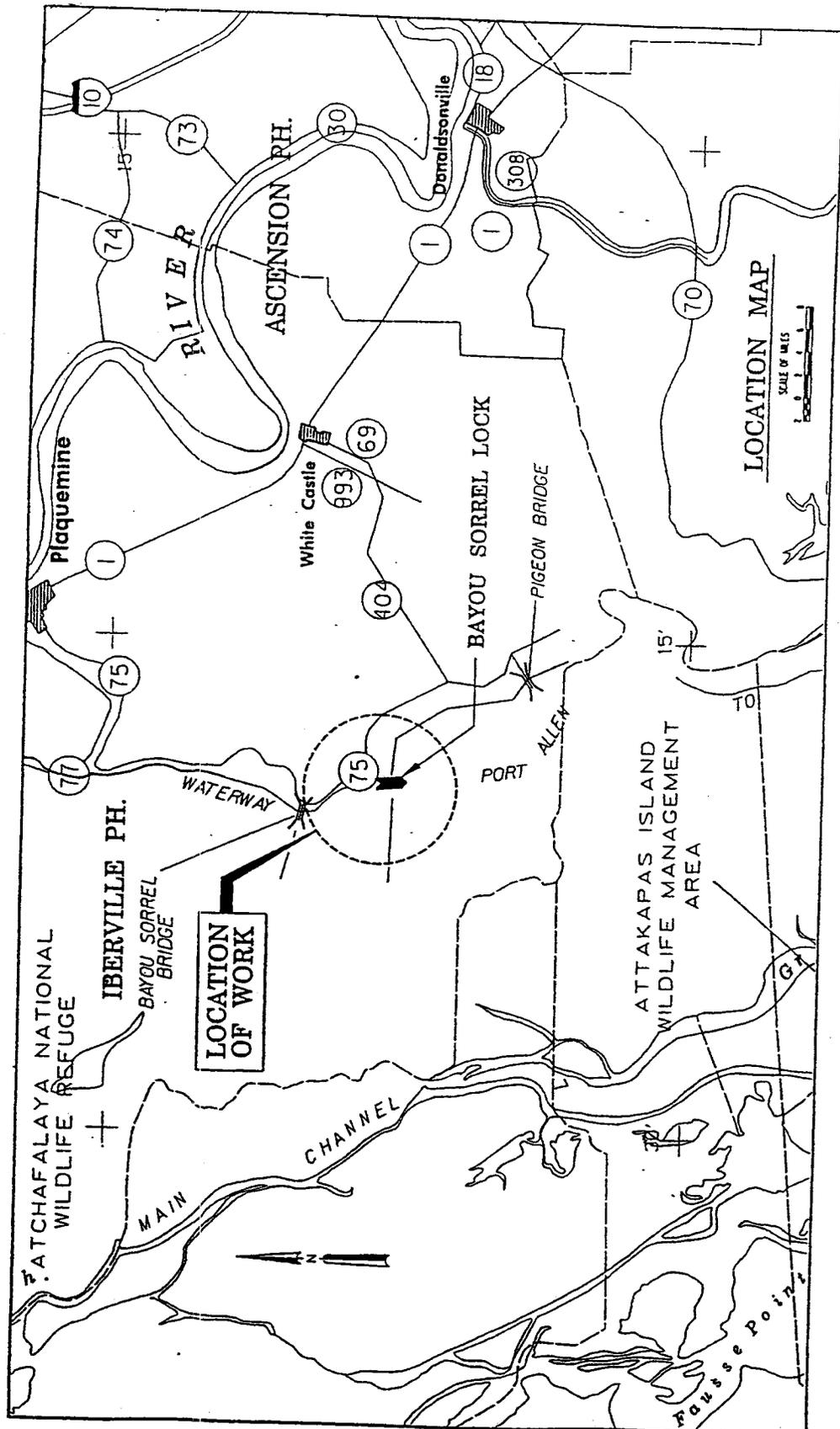
Bayou Sorrel Lock must be replaced or significantly modified to bring it up to grade to pass the Mississippi River and Tributaries project flood through the Archafalaya Basin Floodway. Vessel traffic using Bayou Sorrel is experiencing significant delays, ranging from 2.4 hours per tow to 4.1 hours per tow over the last three years of record. The tonnages through Bayou Sorrel Lock projected to continue to increase over the 50-year planning horizon, resulting in a significant increase in delays. These delays cost the towing industry an average of approximately \$8.4 million per year during the three-year period, 1995-1997. These delay costs could be significantly reduced by an increase in the chamber size of a replacement lock.

Only 1,200-foot chamber lengths are being considered for alternative replacement lock plans at Bayou Sorrel. The 1,200-foot length is a standard on the GIWW system. Both Port Allen Lock, which is the next lock on Morgan City-to-Port Allen Alternate Route north of Bayou Sorrel Lock, and Leland Bowman Lock, the next lock in the system to the south of Bayou Sorrel have 1,200-foot chamber lengths.

The Replacement of Bayou Sorrel Lock allows us the opportunity to meet both navigational and flood control needs. A replacement lock at Bayou Sorrel also offers significant savings to navigation at a reduced cost. Cost will be split between the Flood Control, MR&T Project and Inland Navigation.

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LOCATION MAP



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SITE PLAN

