

1976

APPROPRIATION TITLE: Construction, General - Local Protection (Flood Control)

PROJECT: Lake Pontchartrain and Vicinity, Louisiana (Hurricane Protection) (Continuing)

LOCATION: The project is located in St. Charles, Jefferson, Orleans, St. Bernard, and St. Tammany Parishes in southeast Louisiana in the general vicinity of New Orleans adjacent to Lake Pontchartrain.

AUTHORIZATION: Flood Control Act of 1965

BENEFIT-COST RATIO: 12.6 to 1

SUMMARIZED FINANCIAL DATA

Estimated Federal Cost		\$224,000,000	
Estimated Non-Federal Cost		103,000,000	1/2/
Cash Contribution	\$75,685,000		
Other Costs	27,315,000		
Total Estimated Project Cost		\$327,000,000	
Allocations to 30 June 1974		60,239,000	
Conference Allowance for FY 1975		3,300,000	
Allocation for FY 1975		2,100,000	3/
Allocations to Date		62,339,000	28
Appropriation Requested for FY 1976		22,000,000	38
Appropriation Requested for 1976 Transition Quarter		7,350,000	41
Balance to Complete After 30 September 1976		132,311,000	

STATUS: (1 January 1975)	PERCENT COMPLETE	COMPLETION SCHEDULE
Locks	0	Sep 1980
Roads	0	Mar 1991
Channels and Canals	24	Jun 1980
Breakwaters and Seawalls	0	Sep 1980
Levees & Floodwalls		
Barrier Unit	0	Mar 1991
New Orleans East Unit	37	Mar 1983
New Orleans West Unit	0	Indef. 4/
Mandeville Unit	0	Indef. 5/
Chalmette Unit	40	Jun 1986
Pumping Plants	0	Jun 1981
Flood Control & Diversion Structures	0	Jun 1980
Permanent Operating Equipment	67	Sep 1980
Entire Project	24	Mar 1991 6/

- 1/ Includes \$8,850,000 capitalized cost of O&M for Rigolets Lock.
- 2/ In addition, local interests, through the combined efforts of the State of Louisiana, local levee and drainage district and parish police juries have spent, through the years, an estimated \$25,000,000 to effectuate and maintain the hurricane protection systems existing prior to project authorization.
- 3/ Reduction assigned as Savings and Slippages.

- 4/ Completion schedule indefinite pending completion of additional detailed environmental studies and inclusion of two bayous in the Louisiana Natural and Scenic River System.
- 5/ Completion schedule indefinite pending resolution of objections by local interests to construction of this feature.
- 6/ Except New Orleans West and Mandeville Units.

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DIVISION: LOWER MISSISSIPPI VALLEY DISTRICT: NEW ORLEANS REGION: LOWER MISSISSIPPI LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA (HURRICANE PROTECTION)

Levees: Average Height - 13 feet
Length - 80 miles

Drainage Structures: St. Charles Parish - 544 ft wide with eight 3.0 ft high by 9:0 ft wide combination flap & vertical lift gates. Sill Elevation -5.5 m.s.l.
St. Bernard Parish, two 72 in diameter CMP culverts with flap and vertical lift gates.

Orleans Parish - 4 structures as follows: 5-48 in diameter, 3-42 in diameter, 3-48 in diameter, and 4-54 in diameter CMP culverts with flap and vertical lift gates.

Channels:

	Size	Length Miles
Bayou Bienvenue Navigation Channel	10 ft by 125 ft	0.5
Bayou Dupre Navigation Channel	10 ft by 125 ft	0.2
GIWW Relocation	12 ft by 125 ft	7.0
Chef Menteur Navigation Channel	16 ft by 125 ft	2.3
Chef Menteur Approach Channel	Depth-25 ft at structure	1.2
	Width-400 ft at structure	
Rigolets Approach Channel	Depth- 30 ft at structure	1.0
	Width-800 ft at structure	
Rigolets Navigation Channel	14 ft by 110 ft at struct.	1.1

Dam Closures: Bayou Bienvenue - Earthen - 500 ft long
Bayou Dupre - Earthen - 500 ft long
Bayou Villere - Earthen - 500 ft long
Pipeline Canal - Earthen - 200 ft long
Seabrook - Rock -1040 ft long
Chef Menteur - Earthen -1600 ft long
Rigolets - Earthen -4700 ft long
GIWW East - Earthen - 500 ft long
GIWW West - Earthen - 700 ft long

Control Structures:

Chef Menteur - 1,200 ft total width structure; Sill El. -25 ft, 8 Gate Bays, Vertical Lift Steel Gates, 2 stacked per bay, 14 ft by 46 ft each.

Rigolets - 1,100 ft total width structure; Sill El. -30 ft, 16 Gate Bays, Vertical Lift Steel Gates, 3 stacked per bay, 11.5 ft by 46 ft each.

Seabrook - 116 ft total width structure; Sill El. -15.8 ft; 3 Gate Bays, Vertical Lift Steel Gates, 20 ft by 32 ft each.

Floodwalls:

Rigolets - I and/or T type wall - 170 ft long
Chef Menteur - I and/or T type wall - 590 ft long
Bayou Dupre - I and/or T type wall - 320 ft long
Bayou Bienvenue - I and/or T type wall - 375 ft long
Verret Highway No. 46 - I and/or T type wall - 255 ft long
Caernarvon Highway No. 39 - I and/or T type wall - 275 ft long
Inner Harbor Navigation Canal Westside I and/or T type wall-5.8 mi.
Inner Harbor Navigation Canal Eastside-I and/or T type wall-4.1 mi.
Citrus Back Levee -I and/or T type wall-3.2 mi.
New Orleans East Back Levee -I and/or T type wall-2.0 mi.

Floodgates:

Chef Menteur - Sector Gated - 84 ft wide
Bayou Bienvenue - Sector Gated -56 ft wide
Bayou Dupre - Sector Gated - 56 ft wide

Locks:

Seabrook - 84 ft by 800 ft Chamber, Sector Gated
Rigolets -110 ft by 800 ft Chamber, Sector Gated

Pumping Plant:

Fla. Ave. Pumping Plant-5 horizontal pumps, 470 cfs each.

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JUSTIFICATION: The lowlands in the Lake Pontchartrain tidal basin are subject to tidal overflow. The Greater New Orleans Metropolitan area which lies in this basin will continue its rapid economic development in the future years even though severe damages have resulted from several hurricanes in the recent past. Hurricane damages result from surges entering Lake Pontchartrain from Lake Borgne through natural tidal passes at the Rigolets and Chef Menteur Pass and through improved channels of the Mississippi River-Gulf Outlet and Inner Harbor Navigation Canal. The surges are intensified by local wind effects and the combination of waves and surges causes overtopping of the protective works along the shores of Lake Pontchartrain. The eastern portion of the area is also subject to flooding by surges and waves that move directly from Lake Borgne and overtop the existing inadequate protective system seaward of the developed land areas. As a result, residences and industrial and commercial establishments suffer damage, business activities are disrupted, lives endangered, and hazards to health created. Hurricanes much more severe than any of record are possible. In the event of the occurrence of such a severe hurricane, catastrophic property damage and loss of human life would be experienced. Local interests have requested protection against these threats to life and property. The Lake Pontchartrain hurricane protection project will provide the necessary protection. The Mississippi River-Gulf Outlet (MR-GO) via the Inner Harbor Navigation Canal (IHNC) provides a direct tidal route from the Gulf of Mexico to Lake Pontchartrain. Consistent with the rationale that lake levels can be controlled by limiting tidal inflow to the lake, a lock and control structure complex is to be constructed at the junction of the IHNC and Lake Pontchartrain at Seabrook. The complex will provide the multi-purpose of flood control, salinity control, and navigational benefit. The cost of the Seabrook Complex is allocated 50% to the hurricane protection project and 50% to the MR-GO project.

The average annual benefits and designated redevelopment areas are as follows:

	<u>Benefits</u>	<u>Redevelopment Areas (PL 89-136)</u>		
		<u>Parish/County and State</u>	<u>Title</u>	<u>Subsection</u>
Flood Control	\$162,992,000	Louisiana		
Area Redevelopment	2,686,000	Jefferson	I	(-)
		Orleans	IV	(7)
		St. John the Baptist	IV	(1)
		Tangipahoa	IV	(1)
		Mississippi		
		Hancock	IV	(4)
Total Annual Benefits	\$165,678,000			

FISCAL YEAR 1976 AND 1976 TRANSITION QUARTER: The requested amounts will be applied as follows:

<u>Initiate:</u>	<u>FY 1976</u>	<u>1976 Transition Quarter</u>
<u>New Orleans East Unit</u>		
Citrus Back Levee Sta. 624 to 665 Floodwall Capping		\$50,000
New Orleans East Back Levee, Sta. 773 to 1006, 2d lift levee		470,000

LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA (HURRICANE PROTECTION)

	<u>FY 1976</u>	<u>1976 Transition Quarter</u>
Initiate and Continue:		
<u>Barrier Unit:</u>		
Rigolets Lock	\$2,345,000	\$1,200,000
Chef Menteur Barrier, 1st lift levee	3,000,000	800,000
Rigolets Barrier, South, 1st lift levee	10,000	300,000
<u>New Orleans East Unit:</u>		
Citrus Lakefront Levee, IHNC to Paris Road	10,000	770,000
<u>Chalmette Unit:</u>		
Station 11+95 to 65+100, 1st lift levee	300,000	100,000
Station 65 to 274, 2d lift and Old Paris Road Closure, 1st lift levee	400,000	100,000
Station 705 to 1119, 2d lift and Pipeline Failure, 1st lift levee	2,500,000	600,000
Initiate and Complete:		
<u>Barrier Unit:</u>		
Rigolets Barrier, North, 1st lift levee	2,000,000	375,000
<u>New Orleans East Unit</u>		
Citrus Back Levee, Station 196 to 431, Shaping	1,000,000	-
New Orleans East Back Levee, Station 874 to 879, Floodwall	205,000	-
New Orleans East Back Levee, Station 773 to 1006, Shaping	600,000	-
<u>Chalmette Unit</u>		
Station 70+39 to 11+95, Levee and Floodwall	1,100,000	-
Continue:		
<u>New Orleans East Unit</u>		
New Orleans East Lake Front Levee, Paris Road to South Point	2,200,000	900,000
<u>Chalmette Unit</u>		
Station 1121 to 1568 Shaping, Creedmore Canal Drainage Structure and Verret, Floodwall	2,400,000	600,000
Complete:		
<u>New Orleans East Unit</u>		
New Orleans East Bank Levee, Station 665 to 775, Floodwall	1,290,000	-
<u>Chalmette Unit</u>		
Vicinity of Caernarvon, Floodwall	100,000	-
Engineering and Design	1,100,000	610,000
Supervision and Administration	1,440,000	475,000
TOTAL	\$22,000,000	\$7,350,000

The funds requested for Fiscal Year 1976 and the 1976 Transition Quarter are required to meet the scheduled completion date. The barrier structures and levees which prevent surges into Lake Pontchartrain will be initiated. Initial funds are included for the remaining items to complete 1st lift protection for the Chalmette Area and for the Citrus Area. The level of protection for the New Orleans East area will be enhanced by the completion of a floodwall on the gulfside and by continuing work on the Paris Road to South Point Levee which will close this loop levee system.

NON-FEDERAL COSTS: Local interests are to bear 30% of the first cost to consist of the fair market value of all lands, easements, and rights-of-way, including borrow and spoil disposal areas necessary for construction of the hurricane features and to accomplish all necessary alterations and relocations to roads, railroads, pipelines, cables, wharves, drainage structures, and other facilities made necessary by the construction works. They are required to share in only 1/2 the cost of Seabrook Lock, the other half being constructed for navigation purposes at Federal expense. In addition, local interests are required to contribute the capitalized cost of operation and maintenance for Rigolets Lock. The current estimate of project costs to be borne by local interests follows:

Lands and Damages	\$16,650,000
Relocations	10,665,000
Cash Contributions:	
Based on 30% of total project cost less Seabrook Lock	62,785,000
Based on 15/85 ratio for Seabrook Lock	4,050,000
Capitalization of O&M for Rigolets Lock	8,850,000
TOTAL	\$103,000,000

Local interests are required to operate and maintain all features of the project works, excluding the Rigolets Navigation Lock and Channel and modified dual-purpose Seabrook Lock. The annual cost to local interests for maintenance and operation is estimated at \$568,000, including \$221,000 for replacements.

In addition, local interests, through the combined efforts of the State of Louisiana, local levee and drainage districts, and parish police juries have spent an estimated \$25,000,000 between 1930-1963, based on the best cost records available, to effectuate and maintain the hurricane protection system existing prior to project authorization. Available costs of record are tabulated below:

Combination of State of Louisiana and Lake Borgne Levee District and Chalmette Back Levee District on the Chalmette Back Levee Protection Systems	\$4,410,000
Orleans Levee District Board	12,010,000
Port of New Orleans (Levees along Industrial Canal)	924,000
Pontchartrain Levee District	5,022,000
Fourth Drainage District of Jefferson Parish	3,000,000
TOTAL	\$25,366,000

LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA (HURRICANE PROTECTION)

A very severe hurricane, "Betsey," occurred in the project area in September 1965, just prior to authorization of the project in October 1965. Considerable damage was done to many of the existing levees and local interests immediately instituted an accelerated rehabilitation program with the view of restoring and strengthening existing protection prior to succeeding hurricane seasons. Only work performed by local interests after project authorization which conforms to the project design criteria and alignment will be accepted by the United States as work-in-kind in lieu of cash contribution.

Hurricane "Camille" occurred in the project area in August 1969 and flooded areas along the Inner Harbor Navigation Canal. In September 1974, if hurricane "Carmen" had continued on its predicted course, extensive flooding would have occurred in the project area. The National Weather Service rated this storm as more dangerous than hurricane "Betsey."

STATUS OF LOCAL COOPERATION: Assurances are required for the two independently justified plans authorized by Congress. Chalmette Area Plan: Full assurances have been accepted. Assurances from the St. Bernard Parish Police Jury and the Board of Commissioners of the Lake Borgne Basin Levee District were accepted on 28 September 1968. Assurances from the Board of Commissioners of the Orleans Levee District were accepted on 10 October 1966. The assurances were amended on 16 September 1971 to reflect increase in cost participation and were accepted on 29 March 1974.

Lake Pontchartrain Barrier Plan: Assurances from the Board of Commissioners of the Orleans Levee District were accepted on 10 October 1966.

Because of the rising non-Federal cost of participation and the widespread benefits to be derived by surrounding Parishes, the Orleans Levee District has requested assistance in carrying out the assurances. On 5 March 1971, the Governor of the state of Louisiana, by executive order, designated the State of Louisiana, Department of Public Works as the local coordinating agency for the Lake Pontchartrain Barrier Plan. The US Army Corps of Engineers on behalf of the United States Government has contacted the Department of Public Works and requested that agency to obtain the necessary assurances for cooperation and cost sharing from local interests. To date, formal assurances have been received from the Board of Levee Commissioners of the Orleans Levee District, the Board of Commissioners of the Pontchartrain Levee District, the Lake Borgne Levee District and the St. Bernard Parish Police Jury. The St. Tammany Parish Police Jury is reluctant to grant the assurances providing for its participation in the project. However, on 8 May 1972, Governor John J. McKeithen executed formal assurances covering all requirements of local cooperation on behalf of the Police Jury by virtue of his authority under Section 81 of title 38 of Louisiana Revised Statutes of 1950, as amended. Such assurances are binding on the St. Tammany Parish Police Jury. Acceptance of replacement assurances are pending receipt of pertinent supporting documents.

Supplemental assurances were executed by the Orleans Levee District on 21 September 1973 and by the Pontchartrain Levee District on 15 October 1973 covering the relocations assistance and acquisition provisions of PL 91-646. On 2 January 1975, a joint Supplemental Assurance covering the requirements of PL 91-646 was sent to the Louisiana Department of Public Works to coordinate between Lake Borgne Levee District and St. Bernard Police Jury. To date, these assurances have not been received; however, assurances are expected to be forthcoming.

COMPARISON OF FEDERAL COST ESTIMATES: The current Federal cost estimate of \$224,000,000 is an increase of \$21,000,000 over the latest estimate (\$203,000,000) submitted to Congress. This change includes \$11,973,000 for higher price levels; \$5,651,000 in construction features due to increases based on actual bid price for South Point to GIWW Levee, modification of contract on Bayou Bienvenue Control Structure, addition of the Florida Avenue Complex and more detailed design; \$2,334,000 in Engineering and Design and \$1,042,000 in Supervision and Administration, based on a reanalysis of requirements.

STATUS OF ENVIRONMENTAL STATEMENT: The final statement was submitted to CEQ on 6 January 1975.

BENEFIT TO COST RATIO: The benefit to cost ratio last presented to Congress (FY 1975) was 12.3 to 1. The current benefit to cost ratio is 12.6 to 1. The benefit to cost ratio is based on the project functioning independently.

OTHER INFORMATION: Funds to initiate preconstruction planning were appropriated in FY 1966 and for construction in FY 1967.

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LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA (HURRICANE PROTECTION)

APPROPRIATION TITLE: CONSTRUCTION GENERAL		CLASSIFICATION: LOCAL PROTECTION (FLOOD CONTROL PROJECT)				
SUMMARY CONSTRUCTION PROGRAM (PS-J)						
FISCAL YEARS 1975, 1976 AND 1976 TRANSITION QUARTER						
ITEM	PROJECT COST ESTIMATE	TOTAL TO 30 JUNE 1974	CURRENT FISCAL YEAR 1975	BUDGET FISCAL YEAR 1975	TRANSITION QUARTER 1974	BALANCE TO COMPLETE AFTER 30 SEP 1974
(1)	(2)	(3)	(4)	(5)	(6)	(7)
LANDS AND DAMAGES	16,650,000	12,645,000	922,000	1,190,000	1,709,000	184,000
RELOCATIONS	10,665,000	3,416,100	715,000	3,994,200	1,874,700	665,000
LOCKS	34,380,000			2,345,000	1,200,000	30,835,000
ROADS	120,000					120,000
CHANNELS AND CANALS	3,220,000	764,800				2,455,200
BREAKWATERS AND SEAWALLS	2,310,000					2,310,000
LEVEES AND FLOODWALLS	171,436,000	41,837,400	8,347,500	19,215,000	5,065,000	96,971,100
PUMPING PLANTS	7,600,000					7,600,000
FLOOD CONTROL AND DIVERSION STRUCTURES	38,220,000					38,220,000
PERMANENT OPERATING EQUIPMENT	30,400	20,400				10,000
ENGINEERING AND DESIGN	26,018,000	10,690,000	2,300,000	1,100,000	610,000	11,318,000
SUPERVISION AND ADMINISTRATION	16,350,600	3,348,200	815,200	1,440,000	475,000	10,272,200
TOTAL APPLIED COST (Fed. & Non-Fed.)	327,000,000	72,721,900	13,099,700	29,284,200	10,933,700	200,960,500
Undistributed Cost (None)						
TOTAL PROJECT COST (Fed. & Non-Fed.)	327,000,000	72,721,900	13,099,700	29,284,200	10,933,700	200,960,500
Pending Adjustments (None)						
TOTAL COST (Fed. & Non-Fed.)	327,000,000	72,721,900	13,099,700	29,284,200	10,933,700	200,960,500
Undelivered Orders		+11,462,700	-9,362,700	-2,100,000		
TOTAL OBLIGATIONS		84,184,600	3,737,000	27,184,200	10,933,700	200,960,500
TOTAL APPLIED COST (Fed. Funds Only)	224,000,000	48,776,300	11,462,700	24,100,000	7,350,000	132,311,000
Undistributed Cost (None)						
TOTAL PROJECT COST (Fed. Funds Only)	224,000,000	48,776,300	11,462,700	24,100,000	7,350,000	132,311,000
Pending Adjustments						
TOTAL COST (Fed. Funds Only)	224,000,000	48,776,300	11,462,700	24,100,000	7,350,000	132,311,000
Undelivered Orders		+11,462,700	-9,362,700	-2,100,000		
TOTAL OBLIGATIONS		60,239,000	2,100,000	22,000,000	7,350,000	132,311,000
EFFECTIVE DATE	DIVISION LOWER MISS. VALLEY		REGION LOWER MISSISSIPPI		PROJECT LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA (HURRICANE PROTECTION)	
1 JAN 75	DISTRICT NEW ORLEANS		BASIN COASTAL LOUISIANA			

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APPROPRIATION TITLE: CONSTRUCTION GENERAL		CLASSIFICATION: LOCAL PROTECTION (FLOOD CONTROL PROJECT)					
SUMMARY CONSTRUCTION PROGRAM (PS-1)							
FISCAL YEARS 1975, 1976 AND 1976 TRANSITION QUARTER							
ITEM	PROJECT COST ESTIMATE	TOTAL TO 30 JUNE 1974	CURRENT FISCAL YEAR 1975	BUDGET FISCAL YEAR 1976	TRANSITION QUARTER 1976	BALANCE TO COMPLETE AFTER 30 SEP 1976	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
TOTAL APPLIED COST (Non-Fed. Only)	103,000,000	23,945,600	1,637,000	5,184,200	3,583,700	68,649,500	
Undistributed Cost (None)							
TOTAL PROJECT COST (Non-Fed. Only)	103,000,000	23,945,600	1,637,000	5,184,200	3,583,700	68,649,500	
Pending Adjustments (None)							
TOTAL COST (Non-Fed. Only)	103,000,000	23,945,600	1,637,000	5,184,200	3,583,700	68,649,500	
Undelivered Orders (None)							
TOTAL OBLIGATIONS		23,945,600	1,637,000	5,184,200	3,583,700	68,649,500	
METHOD OF FINANCING							
Federal Funds							
Allocations		60,239,000	2,100,000				
Unobligated Carryover from Prior Year							
Total Funds Available for Obligation			2,100,000				
Appropriations Required				22,000,000	7,350,000	132,311,000	
Non-Federal Contributions							
Contributions		23,945,600	1,637,000				
Unobligated Carryover from Prior Year							
Total Funds Available for Obligation							
Contributions Required				5,184,200	3,583,700	68,649,500	
Cash		1,650,000				67,800,500	
Equivalent Work		22,295,600	1,637,000	5,184,200	3,583,700	849,000	
EFFECTIVE DATE	DIVISION	REGION	PROJECT				
1 JAN 75	LOWER MISS. VALLEY	LOWER MISSISSIPPI	LAKE PONTCHARTRAIN AND VICINITY, LOUISIANA (HURRICANE PROTECTION)				
	DISTRICT	BASIN					
	NEW ORLEANS	COASTAL LOUISIANA					
SWS FORM 2200 9 DEC 74 (REV. 2-3-60) SPECIAL EDITION							

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APPROPRIATION TITLE: Construction General - Local Protection (Flood Control Projects)

PROJECT: Larose to Golden Meadow, Louisiana (Hurricane Protection) (Continuing)

LOCATION: The project is located in Lafourche Parish, Louisiana, about 28 miles southwest of New Orleans and about 25 miles inland from the Gulf of Mexico along Bayou Lafourche, south of the Intracoastal Waterway extending from Larose to Golden Meadow, a distance of about 16 miles.

AUTHORIZATION: Flood Control Act of 1965

Accumulated % of Est. Fed. Cost

BENEFIT-COST RATIO: 3.6 to 1

SUMMARIZED FINANCIAL DATA

STATUS: (1 January 1975)

COMPLETION SCHEDULE

Estimated Federal Cost \$18,800,000
 Estimated Non-Federal Cost 8,000,000 1/
 Cash Contribution \$4,480,000
 Other Costs 3,520,000
 Total Estimated Project Cost \$26,800,000

Not started

March 1987

Allocations to 30 June 1974 1,292,000
 Conference Allowance for FY 1975 1,200,000
 Allocation for FY 1975 1,200,000
 Allocations to Date 2,492,000

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Appropriations Requested for FY 1976 1,600,000
 Appropriations Requested for 1976 Transition Quarter 1,000,000
 Balance to Complete After 30 September 1976 13,708,000

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1/ In addition, local interests, through the combined efforts of the Department of Public Works, State of Louisiana, and the Lafourche Parish Police Jury have spent, between 1954-1965, an estimated \$500,000 for a protective system around the town of Golden Meadow, Louisiana, against tidal inundation and for the complementary interior drainage works.

DIVISION: LOWER MISSISSIPPI VALLEY

DISTRICT: NEW ORLEANS

REGION: LOWER MISSISSIPPI

LAROSE TO GOLDEN MEADOW, LOUISIANA (HURRICANE PROTECTION)

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