HEBERT CANAL WATERSHED

Resource Plan

Vermilion Parish, Louisiana

USDA Natural Resources Conservation Service
Alexandria, Louisiana
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SUMMARY OF RESOURCE PLAN

Project Name and Location: Hebert Canal Watershed, Vermilion Parish, Louisiana

Sponsors: Vermilion Soil and Water Conservation District, Vermilion Parish Police Jury, and 7thWard Gravity Drainage District

Resource Information: The project area consists of 4, 400 acres of cropland, 3,100 acres of pasture/marsh, and 100 acres of urban land. Land ownership is 98 percent private and two percent state and local. There are approximately 65 farms in the project area with an average size of 70 acres. (See Appendix A for project maps)

Problem Identification: The sponsors in the project area have identified the following concerns to be addressed by the resource plan: 1) contamination of fresh surface water by saltwater resulting in a shortage of irrigation water for rice and crawfish crops; and 2) periodic loss of soil productivity and damage to crops resulting from high salinity storm tides.

Alternative Plans Considered: Three alternative plans were considered to treat the problems and concerns within the watershed.

Alternative 1 (No Action Plan) – This plan was not selected because it would not address the needs and concerns of the watershed's land users.

Alternative 2 – Installation of a water control structure in Hebert Canal approximately 1.9 miles south of Louisiana Highway 82.

Alternative 3 – Installation of water control structures, including a major structure in Hebert Canal and an upgrade of the existing levee system at locations shown on the plan map.

Description of Recommended Plan: The recommended plan, Alternative 3, consists of structural measures that will protect cropland and pasture from the damaging effects of saltwater that occur during storm tides up to a height of 4' NAVD88. The recommended plan will also prevent saltwater from intruding into Hebert Canal north of the proposed site as shown on the plan map. Structural measures to be installed include three water control structures and upgrading the existing levee system that forms the southern, eastern and western boundaries of the 7, 600 acre watershed.

Wetlands: Approximately 4,100 acres of the project area are classified as farmed wetlands.

Threatened and Endangered (T & E) Species: The U.S. Fish and Wildlife Service list the following T & E species that are known to occur in Vermilion Parish and adjacent

waters: Brown Pelican, Piping Plover, Gulf Sturgeon, Green Sea Turtle, Hawksbill Sea Turtle, Kemp's Ridley Sea Turtle, Leatherback Sea Turtle, and Loggerhead Sea Turtle.

Cultural Resources: The project area does not contain any structures that are listed on the National Register of Historic Places. There are no known archaeological sites within the project area.

Estimated Construction Cost of the Recommended Plan: $1,491,000

HEBERT CANAL WATERSHED
RESOURCE PLAN
VERMILION PARISH, LOUISIANA

INTRODUCTION

This resource plan was developed at the request of the Vermilion Soil and Water Conservation District (SWCD), Vermilion Parish Police Jury, and the 7th Ward Gravity Drainage District. The purpose of this plan is to document the sponsor's concerns about damages accruing from salt water intrusion within the Hebert Canal watershed and identifying the structural measures that will address these concerns.

PROJECT SETTING

Location and Size

The Hebert Canal Watershed is located in east central Vermilion Parish, Louisiana near the community of Esther. (Appendix A vicinity map). The 7,600 acre watershed is in close proximity and hydraulically connected to Little Vermilion Bay. This connection influences salinity regimes within the watershed especially during storm driven tides.

Climate

Vermilion Parish is characterized as having a humid, subtropical climate that is dominated by warm moist air from the Gulf of Mexico. The prevailing wind is from the south with springtime averages of 11 miles per hour. The average January temperature is 50˚ F and the average August temperature is 81˚ F. Average annual precipitation is 59 inches.

Cultural Resources

Site files maintained by the State Historical Preservation Office were researched for evidence of known cultural sites within the footprint of proposed construction activities for the project. No sites are known to occur in this area.

Soils

Soils that occur in the Hebert Canal Watershed can be classified into map units based on their position in the natural landscape. There are four general classes of landscapes in the watershed: upland soils, Gulf Coast prairie soils, drained and protected former marsh soils, and marsh soils.

Upland soils found in the watershed are Jeanerette and Patoutville. These soils are gently undulating, somewhat poorly drained and loamy throughout. This map unit consists of

soils on broad flats, side slopes, and low ridges in the uplands. Slopes range from zero to three percent.

Gulf Coast prairie soils include Mowata, Crowley, Judice, Kaplan, and Midland. These are mainly level, nearly level, and very gently sloping, somewhat poorly drained and poorly drained soils that have a loamy surface and clayey /loamy or loamy subsoil.

Gueydan is a soil that was once marsh but has been drained and protected from flooding. This mucky soil is mainly level and poorly drained. Flooding is rare but can occur during hurricanes or when protection levees and drainage pumps fail.

Allemande is a marsh soil that occurs in the project area. It is characterized as level, very poorly drained soil that has a peaty or clayey surface layer and mucky and clayey underlying material in a fresh marsh. (Appendix A soil map).

Social and Economic Conditions

Data in this section was obtained from the Louisiana 2002 Census of Agriculture and the U.S. Census Bureau 2003 estimate. This data is not available by watershed but on a parish or community basis. Information presented is for Vermilion Parish as a whole.

Vermilion Parish is a predominately rural parish with a population of 54,200 people. Agriculture, petroleum recovery and related service industries, and commercial fishing are the largest industries. The median household income for the parish is $29,500, which is lower that the state median of $32,560. The percentage of people in Vermilion under the age of 18 living below the poverty level is 22.1 percent, which is higher than the state percentage of 19.6. The unemployment rate for December 2004 was 5.6 percent statewide and 5.7 percent for Vermilion Parish

There are approximately 1,116 farms in the parish with an average size farm of 322 acres. The total market value of farm products sold was $52.5 million

Water Resources

There is an estimated 9.3 miles of channels in the watershed. These channels usually contain fresh water, however, during periods of drought or storm tides saline water will migrate north into the watershed via Hebert Canal, Seventh Ward Canal and the Vermilion River. Approximately 1,800 acres of fresh marsh are located in the southern portion of the watershed which is used as pasture for livestock. Much of the cropland in the watershed is seasonally flooded for crawfish or rice production. The acreage flooded varies from year to year depending on market conditions or crop rotation scheme.

Fish and Wildlife Habitat

Fish habitats in the watershed consist of drainage and borrow canals and fresh marshes. Fish species found in the watershed are generally limited to those that can survive under shallow, warm water, low oxygen conditions. The fresh marshes are under a levee/pump-off system and access to marine organisms is restricted by structures fitted with flap gates. The canal systems within the watershed can be easily accessed by estuarine dependent species.

Wildlife habit types in the watershed include riparian areas, open fresh water, fresh marsh, and open fields. These are prime habitats for waterfowl, shore birds, and wading birds. A wide variety of mammals and reptiles also occur in the watershed.

WATERSHED PROBLEMS AND OPPORTUNITIES

The sponsors, in their application for assistance, have identified the following resource concerns to be addressed by the resource plan: 1) contamination of fresh surface water by saltwater resulting in a shortage of suitable irrigation water for rice and crawfish crops; and 2) periodic loss of soil productivity and damage to crops resulting from high salinity storm tides.

During periods of low rainfall, fresh irrigation water in the Hebert Canal becomes contaminated with salt water from the Gulf Intracoastal Waterway. Salinity levels in the canal make the available water unfit for use on rice and crawfish crops. A flap-gated structure at Site A shown on the project features map would prevent saltwater intrusion within the planned area and allow water in the canal to be used for irrigation.

Agricultural producers in the plan area have experienced periods of salt water damage to irrigated crops and pastures. High tides generated by tropical storms or hurricanes move inland and cause localized flooding. Soils become saturated with sea salts resulting in long term impacts on crops and pastures. The proposed upgrade of the existing levee system combined with the water control structures in Hebert Canal and two other sites would provide a measure of protection from storm tides.

FORMULATION of ALTERNATIVES

General

Three alternatives were considered during the evaluation of the Hebert Canal Resource Plan. The alternatives considered are: the no action alternative; construction of a single water control structure in Hebert Canal and; construction of a flap-gated structure in Hebert Canal, two smaller flap-gated structures under the existing levee systems, and renovation of the existing levee system. Refer to the project features map for location of structural measures.

Description of Alternatives

Alternative 1 – This no action alternative was not selected because if would not provide treatment alternatives that address the problems identified by the residents of the Hebert Canal Watershed

Alternative 2 – This alternative consists of the construction of a steel sheet pile structure located in Hebert Canal (Appendix B structure A). This structure would be approximately 50 feet in width with four 4' x 6' bays each containing interior stop logs and an exterior flap-gate. A structure at this location would stop the flow of high salinity water from moving into Hebert Canal and contaminating fresh irrigation water, which is used for rice, and crawfish production. It would also provide retention storage of freshwater during the irrigation season.

Alternative 3 – (Recommended Plan) Components of this alternative include: construction of a steel sheet pile structure in Hebert Canal as described above, one 36 inch corrugated metal pipe with an exterior flap-gate (Appendix B structure B), three 48 inch corrugated metal pipes with exterior flap-gates (Appendix B structure C), and upgrading 83, 000 linear feet of levee to NRCS standards. This alternative would address landowner resource concerns by: 1) reducing contamination of fresh irrigation water by saltwater; and 2) reducing the frequency of periodic loss of soil productivity and damage to crops resulting from high salinity storm tides. This alternative would provide protection from tidal surges up to elevation 4.0' NAVD88.

EFFECTS OF THE RECOMMENDED PLAN

Water Quality

The construction phase of the project would result in short-term impacts to the quality of water in receiving streams and canals in the watershed. The installation of structures in Hebert Canal, and at selected locations under the existing levee would require a small amount of dredging and disturbance of in stream bottom material. The impacts to water quality will be increased turbidity and suspended solids. Upgrading the existing levee system will require the excavation of fill material from existing borrow canals. This will also result in increase turbidity and suspended solids in receiving waters. These impacts to water quality will be limited to the construction phase of the project only.

Cultural Resources

There are no known cultural sites located within the limits of construction in the project area. Should cultural sites be discovered during construction, a coordinated effort with the State Historical Preservation Office will be made to ensure their protection.

Threatened and Endangered Species

The U.S. Fish and Wildlife Service list the following T & E species that are known to occur in Vermilion Parish and adjacent waters: Brown Pelican, Piping Plover, Gulf Sturgeon, Green Sea Turtle, Hawksbill Sea Turtle, Kemp's Ridley Sea Turtle, Leatherback Sea Turtle, and Loggerhead Sea Turtle. Construction of the project is not expected to impact any of these species.

Fish and Wildlife Habitat

During construction short-term impacts are expected to occur to fishery resources. The direct effects of dredging existing borrow areas for levee construction will increase turbidity, reduce dissolved oxygen and destroy benthic species. This temporary impact will be offset by increasing the width and depths of the existing borrow pits thereby increasing the total acreage of fishery habitats.

The preferred alternative will increase the quality of freshwater habitats for terrestrial species. An increased supply of fresh water for irrigation will result in higher yields of crawfish and rice. These crops are preferred by a wide variety of waterfowl, furbearers, and game species.

Essential Fish Habitat

Marine organism access to that portion of the Hebert Canal north of the proposed water control structure would be restricted during the irrigation season. This will result in a temporary loss of nine acres of habitat. However, an increase in crop production will result in more detrital material available for the aquatic food web.

PUBLIC PARTICIPATION

The citizens of the Hebert Canal Watershed are concerned about the lack of a dependable supply of water available for irrigation and the lack of basic storm surge protection. Watershed residents have participated in two public meetings and have provided information and support for the formulation of this plan.

PERMITS

All proposed work to be installed in the watershed will be in jurisdictional wetlands and will require permits. A Section 404 permit from the U. S. Army Corps of Engineers, New Orleans District and a Coastal Use Permit from the Louisiana Department of Natural Resources is required. A Water Quality Certification from the Louisiana Department of Environmental Quality is also required.

PROJECT COSTS

The total project construction costs for the levee and associated water control structures including the large water control structure on Hebert Canal is $1,491,000. This figure includes a 12 percent contingency. Detailed information on project cost is as follows:

Item	Quantity	Unit	Total
Mob/Demobilization	Lump Sum	Job	$50,000
Clearing and Grubbing	12,000	Linear feet	$24,000
Levee earthwork	243,600	Cubic yards	$487,000
Structure A	Lump sum	Job	$500,000
Structure B	Lump sum	Job	$38,000
Structure C	Lump sum	Job	$9,000
Access Road	Lump sum	Job	$41,000
Land Rights	Lump sum	Job	$20,000
Engineering & Design	Lump sum	Job	$131,000
Supv. & Inspection	Lump sum	Job	$53,000
Subtotal			$1,353,000
Contingency			$138,000
Total			$1,491,000

PROJECT BENEFITS

Construction of the proposed water control structures and levee will provide:

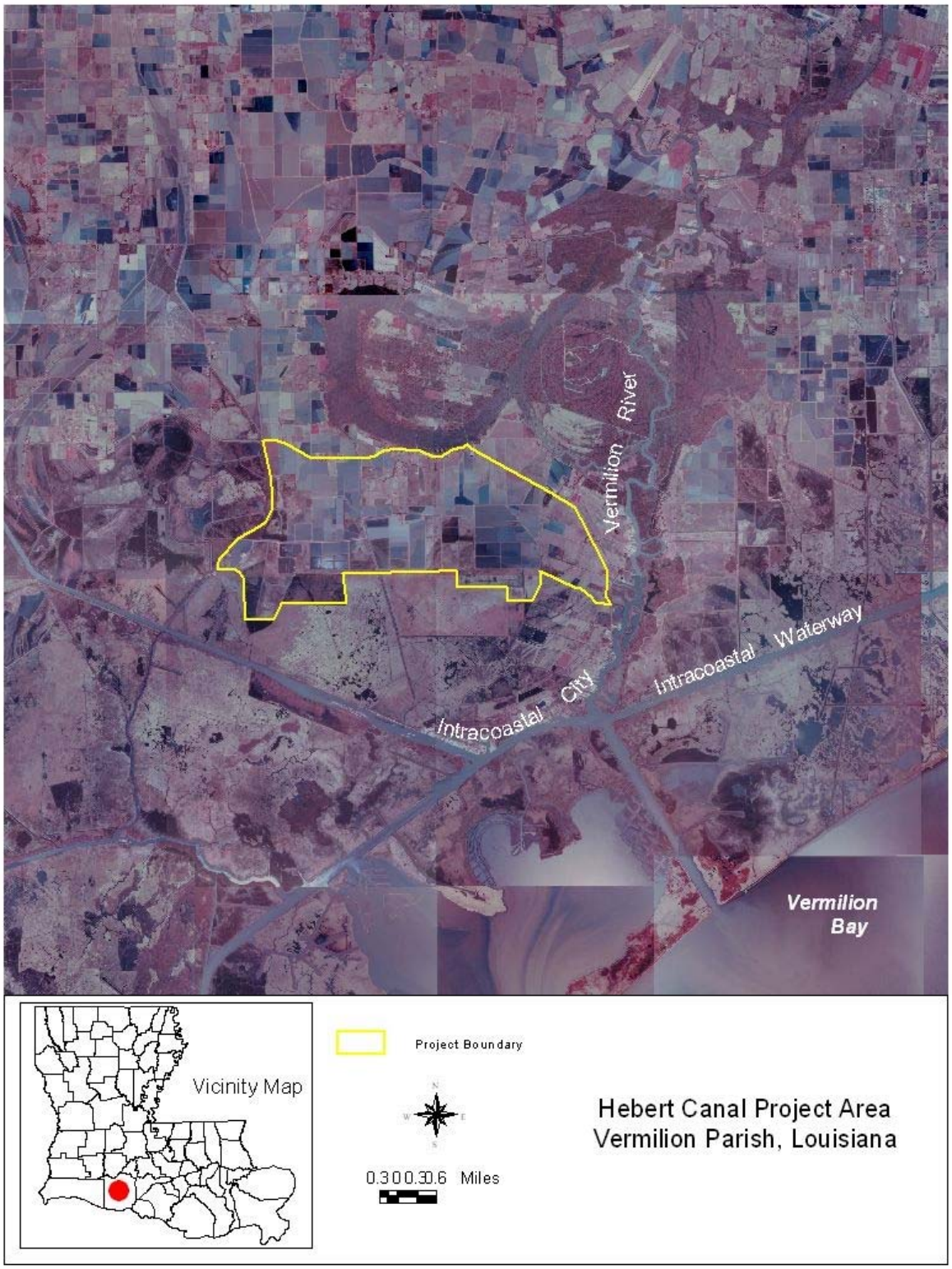
- Reduced salt water intrusion damages to rice and crawfish production. This includes maintaining yields and protection of the early harvest of crawfish at higher seasonal prices. These average annual per acre losses, which will be prevented, were estimated to be $120.
- Reduce the occurrence of saltwater contamination of fresh irrigation water in Hebert Canal.
- Annual benefits that would accrue from protecting the 1,900 acres of cropland from saltwater damages are estimated to be $115,700
- Additional benefits also include reduced damage and repair costs, to parish ditches, culverts, and canals (including irrigation) and a small benefit to maintaining the alligator harvest.

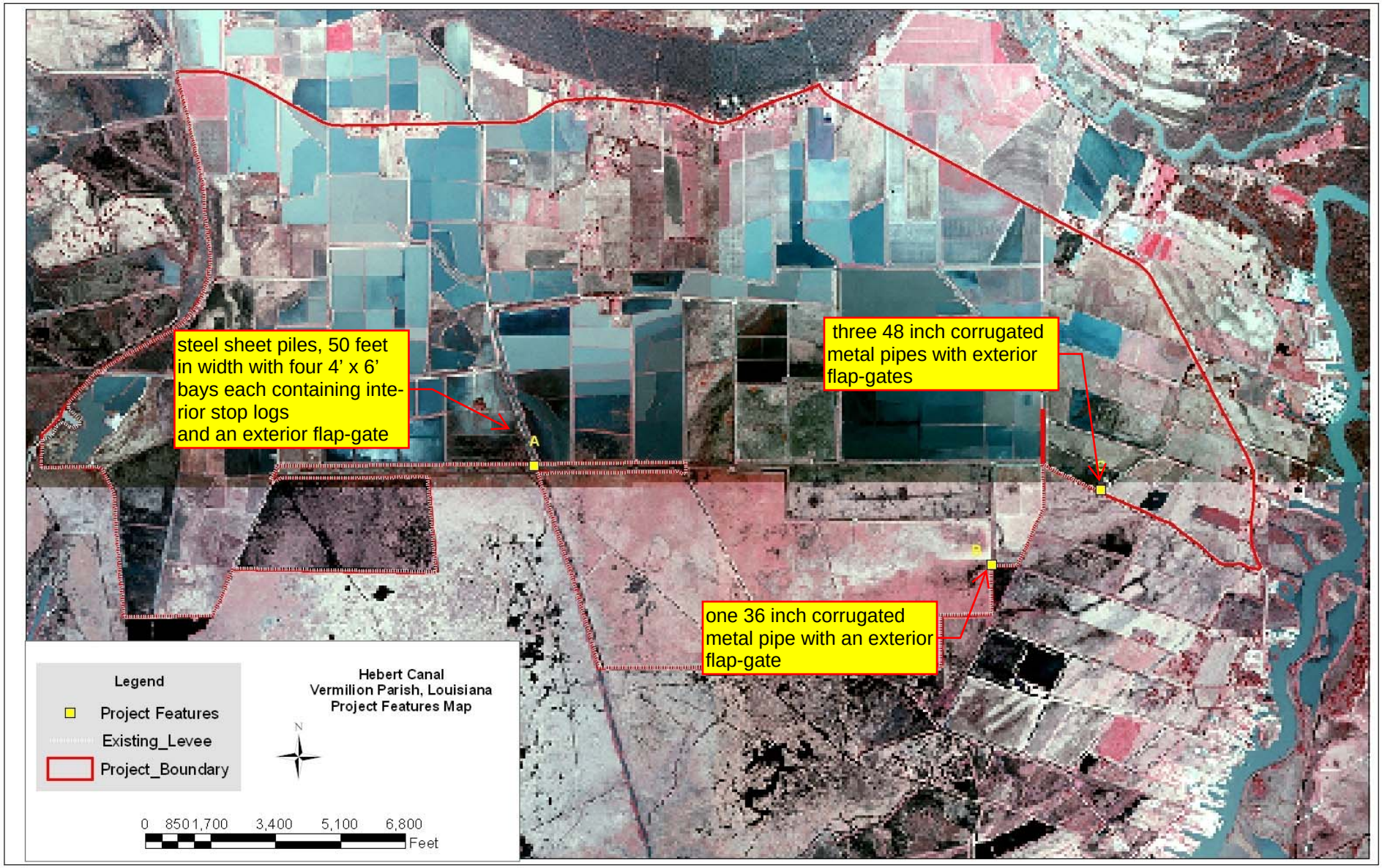
OPERATION AND MAINTENANCE

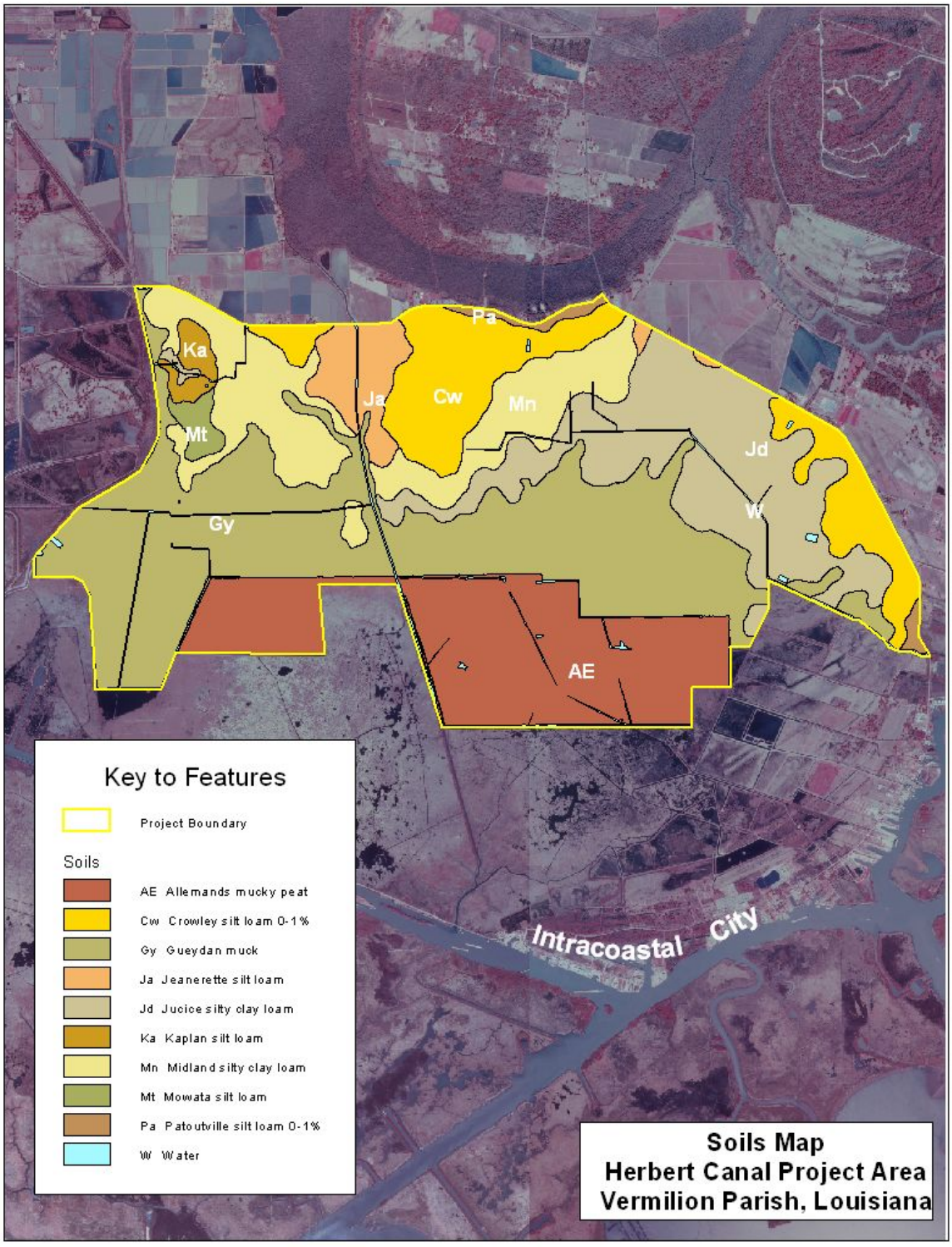
The operation and maintenance of structural measures will be the responsibility of the project sponsors which are the Vermilion Soil and Water Conservation District, Vermilion Parish Police Jury, and 7thWard Gravity Drainage District. The estimated annual operation and maintenance cost is $4,000 per year.

Appendix A

Project Maps


Vermilion River
Intracoastal City
Intracoastal Waterway
Vermilion Bay
Vicinity Map
Project Boundary
0.3 0 0.3 0.6 Miles
Hebert Canal Project Area
Vermilion Parish, Louisiana

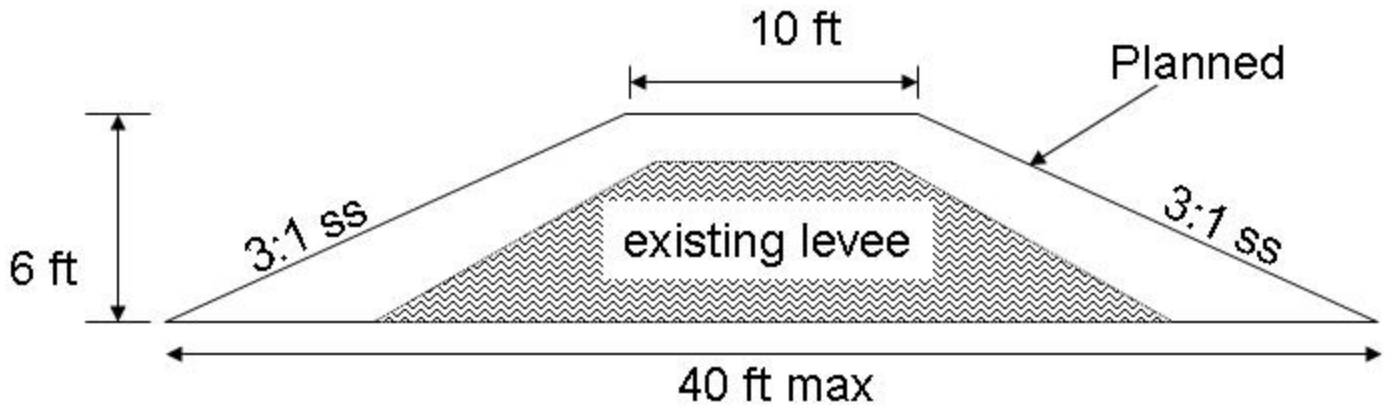

steel sheet piles, 50 feet in width with four 4' x 6' bays each containing interior stop logs and an exterior flap-gate
three 48 inch corrugated metal pipes with exterior flap-gates
one 36 inch corrugated metal pipe with an exterior flap-gate
A
B
C
Legend
Project Features
Existing_Levee
Project_Boundary
Hebert Canal
Vermilion Parish, Louisiana
Project Features Map
N
0 850 1,700 3,400 5,100 6,800
Feet


Pa
Ka
Ja
Cw
Mn
Mt
Jd
W
Gy
AE
Intracoastal City
Key to Features
Project Boundary
Soils
AE Allemands mucky peat
Cw Crowley silt loam 0-1%
Gy Gueydan muck
Ja Jeanerette silt loam
Jd Jucice silty clay loam
Ka Kaplan silt loam
Mn Midland silty clay loam
Mt Mowata silt loam
Pa Patoutville silt loam 0-1%
W Water
Soils Map
Herbert Canal Project Area
Vermilion Parish, Louisiana

Appendix B

Typical Drawings

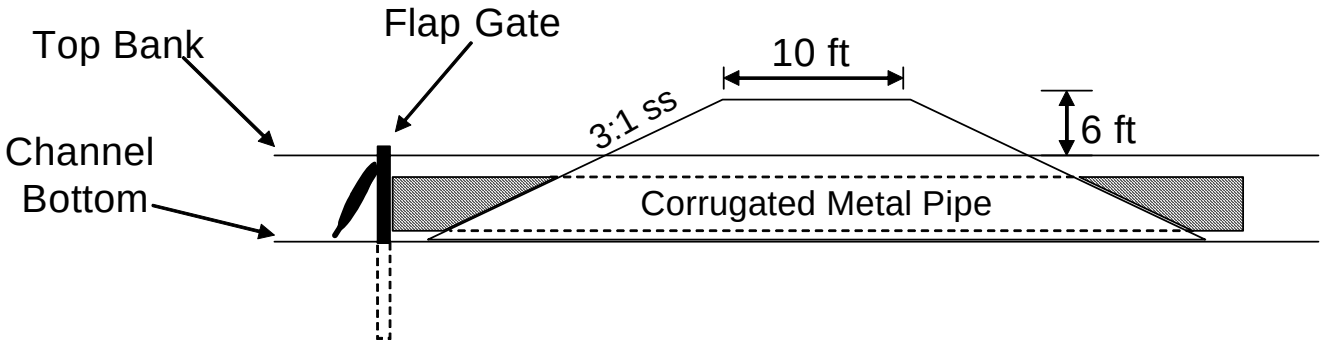
Typical Levee Upgrade

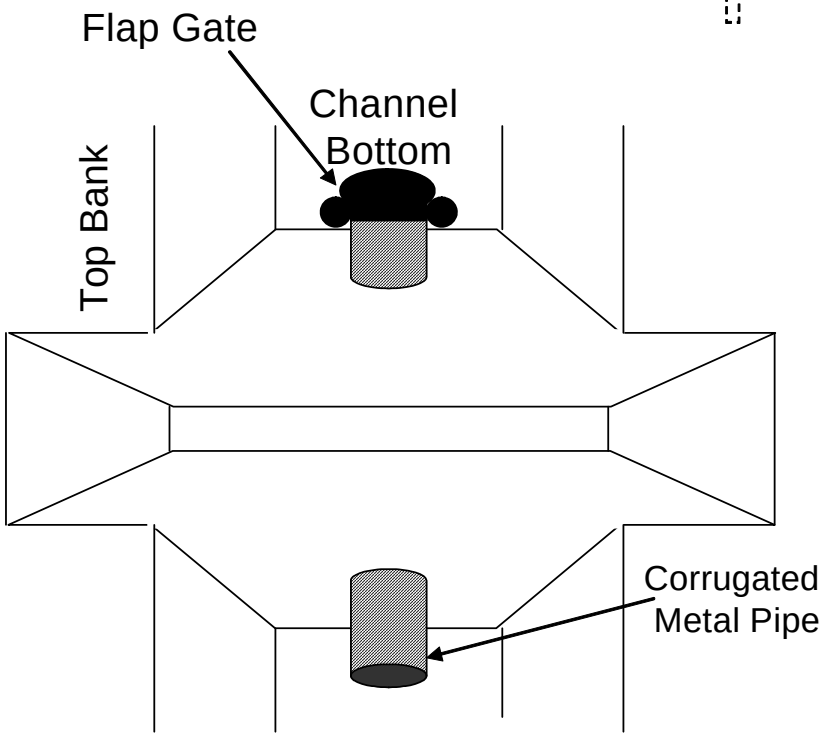


(not to scale)

Hebert Canal Project
Vermilion Parish, Louisiana

Typical Flap Gated Culvert



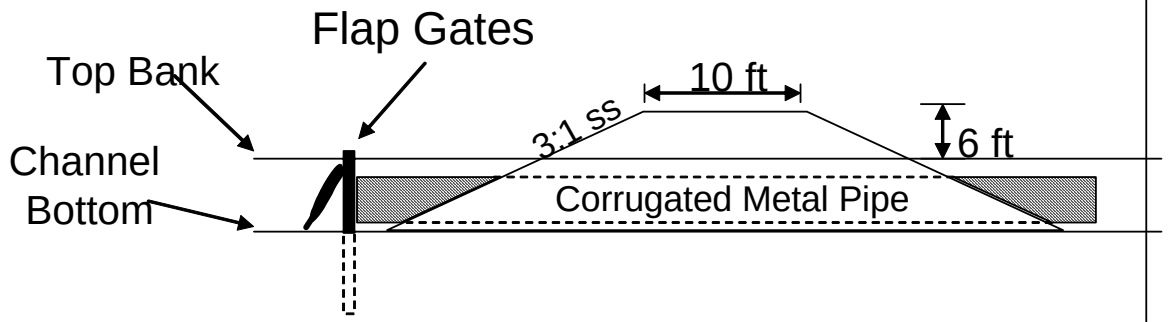


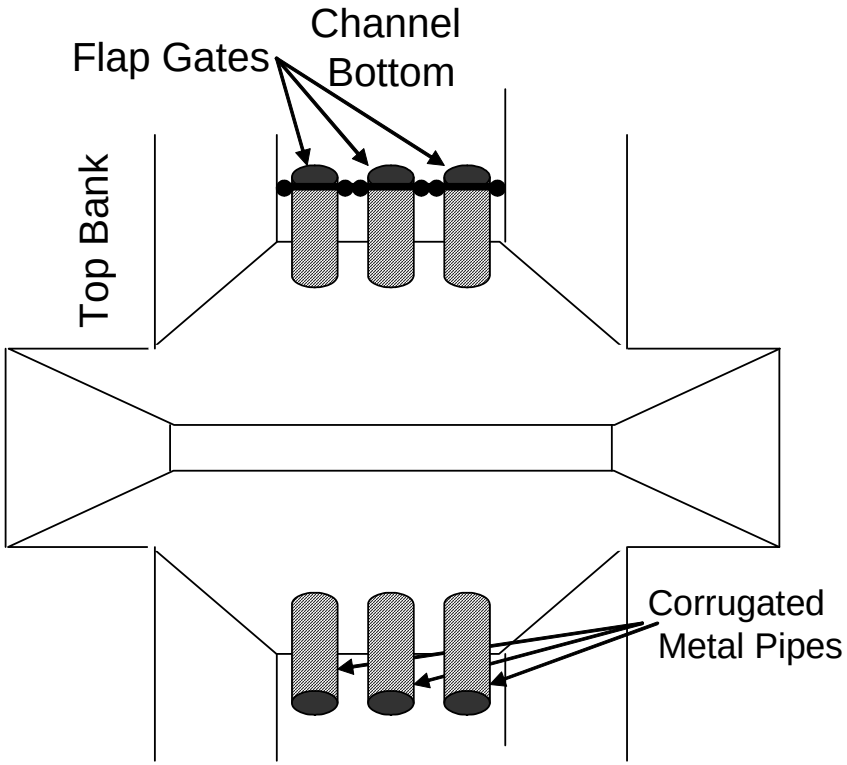
(drawing not to scale)

Note:
This typical drawing is for a single 36 inch pipe.

Hebert Canal Project
Vermilion Parish, Louisiana

Typical Flap Gated Culverts



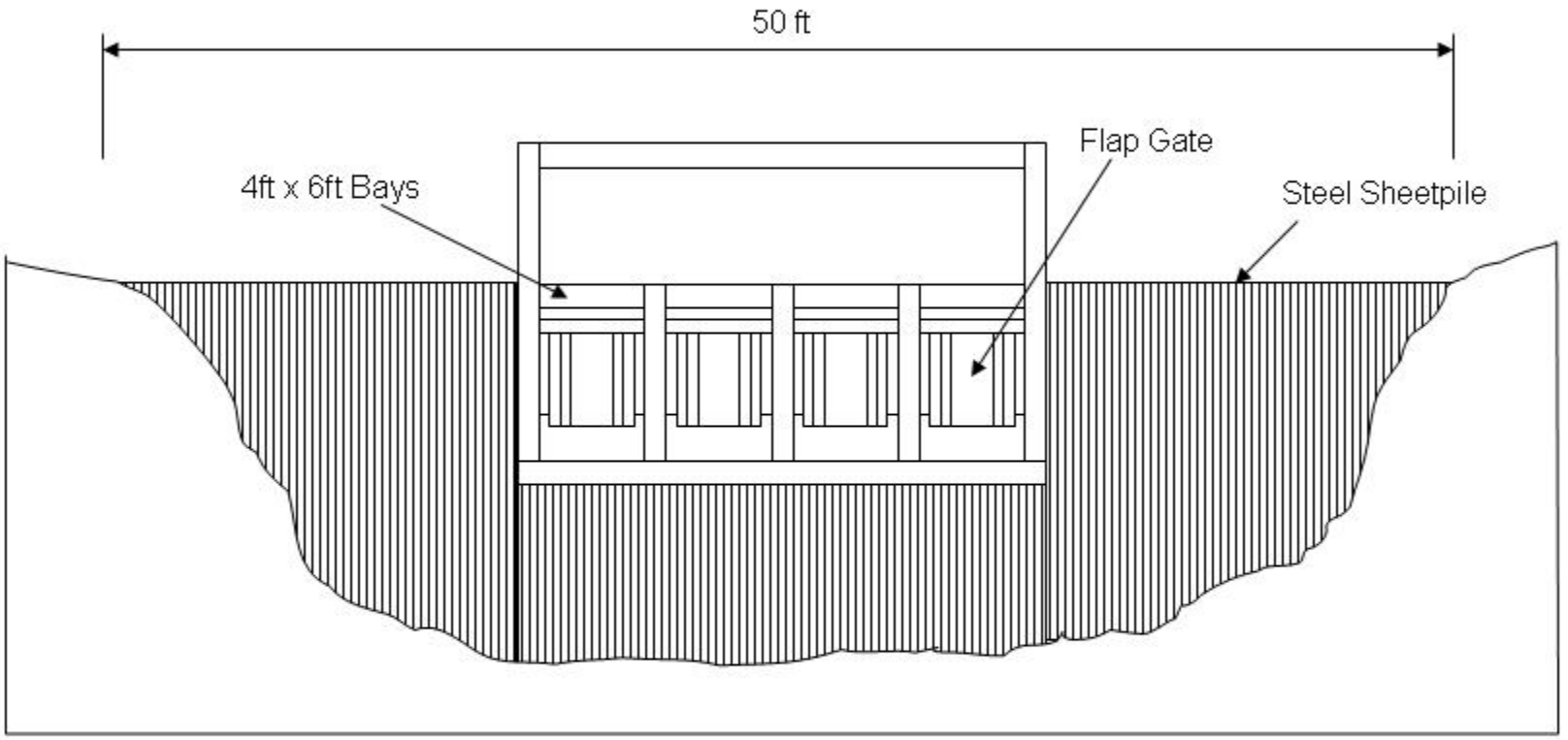


(drawing not to scale)

Note:
This typical drawing is for three 48 inch pipes.

Hebert Canal Project
Vermilion Parish, Louisiana

Typical Structure



Drawing
Not to Scale

Typical Gated Sheetpile Structure
Hebert Canal
Vermilion Parish, Louisiana