US Army Corps
of Engineers
New Orleans District
Mississippi Valley Division

Port of Iberia, Louisiana

Final Feasibility Report

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Volume 4:
Appendix C 1- Engineering Investigations and MCACES

This Report Contains 6 Volumes

You are here

Volume 1:
Main Report
Environmental Impact Statement

Volume 2:
Appendix A - Economics

Volume 3:
Appendix B - Environmental

Volume 4:
Appendix C 1 - Engineering Investigations and MCACES
Appendix C 2 – Technical Plates

Volume 5:
Appendix D - Real Estate Plan

Volume 6:
Appendix E - Value Engineering Team Study Report
Appendix F – Independent Technical Review Comments and Resolutions
Appendix G – Summary of Public Comments and Review

PORT OF IBERIA FINAL FEASIBILITY REPORT

APPENDIX C 1 - ENGINEERING INVESTIGATIONS AND COST ESTIMATES

TABLE OF CONTENTS

C1. GENERAL ---------- C-1

C2. HYDRAULICS AND HYDROLOGY ---------- C-2
C2.1 Climatology ---------- C-2
C2.2 Model Study ---------- C-8
C2.3 Water Quality ---------- C-10
C2.4 Channel Design ---------- C-37
C2.5 Hydraulic Design Criteria for Freshwater Bayou Lock and Freshwater Bayou By-Pass Channel Floodgates ---------- C-48
C2.6 Surveillance Plan ---------- C-50

C3. GEOTECHNICAL INVESTIGATIONS AND DESIGN ---------- C-53
C3.1 General ---------- C-53
C3.2 Geotechnical Design for Channel Deepening and Bulkhead Replacements ---------- C-53
C3.3 Geotechnical Design for By-Pass Channel Structures ---------- C-59

C4. CIVIL DESIGN ---------- C-61
C4.1 Channel Design ---------- C-61
C4.2 Removals ---------- C-70

C5. ENVIRONMENTAL ENGINEERING ---------- C-79
C5.1 Incorporation of Environmental Compliance Measures into Project Design ---------- C-79
C5.2 Incorporation of Environmental Sensitivity ---------- C-79
C5.3 Disposal of Dredged Material ---------- C-79
C5.4 By-Pass Channel Floodgates ---------- C-83
C5.5 Hazardous and Toxic Materials ---------- C-85

C6. STRUCTURAL DESIGN CRITERIA ---------- C-86
C6.1 By-Pass Channel Structures ---------- C-86
C6.2 Bulkhead Replacement ---------- C-91

C7. OPERATION AND MAINTENANCE ---------- C-98
C7.1 Maintenance Dredging and Rock Placement Requirements ---------- C-98
C7.2 By-Pass Channel Floodgates Requirements ---------- C-98

PORT OF IBERIA FINAL FEASIBILITY REPORT

APPENDIX C 1 - ENGINEERING INVESTIGATIONS AND COST ESTIMATES

TABLE OF CONTENTS

C8. COST ESTIMATES ---------- C-101
C8.1 Basis of Cost Estimate ---------- C-101
C8.2 Contingencies ---------- C-101
C8.3 Detailed Estimate ---------- C-102

C9. FUTURE DESIGN PHASES ---------- C-103
C9.1 Surveying, Mapping, And Other Geospatial Data Requirements ---------- C-103
C9.2 Future Design ---------- C-103

C10. CONSTRUCTION REQUIREMENTS ---------- C-104
C10.1 Project Access During Construction ---------- C-104
C10.2 Construction Requirements ---------- C-104
C10.3 Sequence of Construction ---------- C-106

C11. BERTHING AND BULKHEAD CONSIDERATIONS
C11.1 Deepening of Berths ---------- C-107
C11.2 Bulkheads ---------- C-107

ANNEXES

Annex 1 - Detailed Construction Cost Estimates for Studied Alternatives
Annex 2 - Investigations of Alternative Disposal Plans
Annex 3 - Geotechnical Engineering Data for Design of Bulkheads
Annex 4 - Bulkhead Design Criteria, Soil Bearing Capacity, and Load-Out Capabilities for the Port of Iberia
Annex 5 - Rerserved
Annex 6 - OMRR&R and Maintenance Dredging Cost Estimates
Annex 7 - MCACES
Annex 8 - ITR Comment Reports from Dr. Checks (refer to Volume 6, Appendix F)
Annex 9 – Documentation for Tow Simulation Model Waiver

TABLE OF CONTENTS

SUPPLEMENTAL TECHNICAL REPORTS

Freshwater Bayou Bypass Channel, Water Control Strucutres, Three (3) Volumes (provided upon request)

SEE VOLUME 4, APPENDIX C 2 FOR TECHNICAL PLATES

C1. GENERAL.

This Engineering Appendix presents and documents the feasibility level engineering and design for the selected plan. Development of the Engineering Appendix was in accordance with Engineering Regulation (ER) 1110-2-1150, "Engineering and Design for Civil Works Projects", dated 31 August 1999. The comparative studies of alternatives, field investigations, designs, and costs estimates presented herein are in sufficient detail to substantiate the recommended plan and baseline estimate.

C2. HYDRAULICS AND HYDROLOGY.

C2.1 Climatology.

C2.1.1 Climate. The climate of the study area is humid, subtropical with a strong maritime character. The climate is influenced to a large degree by the amount of water surface in the immediate area and the proximity to the Gulf of Mexico. Prevailing winds from the Gulf of Mexico reduce extreme summer heat, shorten the duration of infrequent winter polar air masses and provide abundant rain in all seasons.

C2.1.2 Temperature. Records of temperature are available from "Climatological Data" for Louisiana, published by the National Climatic Data Center. The study area can be described by using the normal temperature data observed at New Iberia and Leland Bowman Lock. These stations are shown in Table C1 with the monthly and annual normals based on the period 1971-2000. The average annual normal temperature for the two stations was 68.1°F with average monthly mean temperature normals varying from 82.3°F in July to 52.1°F in January. A maximum extreme of 103°F occurred at both stations on 31 August 2000. The minimum extreme of 9° occurred at New Iberia on 23 December 1989. Extremes are based on the normal period. Plate H-1 shows the location of these stations.

Table C1
Mean Monthly Temperatures (°F)
30-Year Normals (1971-2000)

Gage	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann.
Leland Bowman Lock	50.9	54.5	61.2	67.7	75.3	80.6	82.2	82.0	78.4	69.4	60.7	53.7	68.1
New Iberia	53.3	54.4	61.7	67.9	75.2	80.4	82.3	82.0	78.4	69.3	60.6	54.0	68.1
Average	52.1	54.5	61.5	67.8	75.3	80.5	82.3	82.0	78.4	69.4	60.7	53.9	68.1

Source: National Climatic Center

C2.1.3 Precipitation. The average annual normal precipitation based on records taken at Abbeville, Leland Bowman Lock, and New Iberia for the period 1971-2000 was 61.83

inches. The maximum monthly rainfall measured 21.35 inches at New Iberia during October 1978 and also at Abbeville during September 1973. There have several months with little or no rainfall at all three stations. Based on the same period, the maximum daily rainfall amount occurred at New Iberia, with 11.26 inches on 7 June 1978. Table C2 lists the monthly and annual normal rainfall for the three stations. The gage locations are shown on Plate H-1.

Table C2
Monthly and Annual Normal Precipitation (Inches)
(1971-2000)

Station	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Abbeville	6.00	3.87	4.87	4.34	5.99	6.45	6.20	6.16	5.52	4.23	4.60	5.39	63.62
Leland Bowman	5.43	4.44	4.51	4.33	4.14	6.46	7.71	6.14	4.96	3.97	4.64	4.24	60.97
New Iberia	5.15	4.03	4.29	4.56	5.08	6.02	6.66	6.05	5.67	4.06	4.48	4.84	60.89
Average	5.53	4.11	4.56	4.41	5.07	6.31	6.86	6.12	5.38	4.09	4.57	4.82	61.83

Source: National Climatic Center

C2.1.4 Wind. Wind data taken at Baton Rouge and Lake Charles are used to describe the study area. The average wind velocity is 7.7 miles per hour (mph) based on the period 1973-2002. Prevailing wind flow is southerly during most of the year. Winter storms in the area have produced wind gusts up to 70 mph. The summer is often disturbed by tropical storms and hurricanes, which produce the highest winds in the area. Coastal wind data can also be obtained from the Louisiana Universities Marine Consortorium (LUMCON) at their Marine Center and Tambour Bay Stations.

C2.1.5 Storms and Floods of Record. The study area has experienced numerous floods from tides, hurricanes, tropical storms, and heavy rainfall. A description of significant storms and floods follows:

(a) June 1957. Hurricane Audrey, 25-28 June, caused tidal flooding along the Louisiana coast. Rainfall at Leland Bowman Lock totaled 3.73 inches for the storm, with

2.53 inches falling on 27 June. This storm set the maximum extreme records at the Leland Bowman gages which both recorded 8.12 ft. National Geodetic Vertical Datum (NGVD) (5.54 ft. NAVD88) on 27 June.

(b) September 1961. Hurricane Carla, 4 -14 September, raised tides three to four feet above normal along the entire coastline of Louisiana. Rainfall at the Leland Bowman Lock totaled 5.31 inches, with 1.65 inches falling on 12 September. The storm set a peak stage of 5.85 ft. NGVD (3.27 ft. NAVD88) at the eastern gate of the Schooner Bayou Control Structure. The western gate, which had a height of 5.22 ft. NGVD (2.64 ft. NAVD88), was overtopped.

(c) October 1964. Hurricane Hilda, during the period of 3-5 October, caused extensive tidal and headwater flooding in the area. Heavy rainfall and several tornadoes were generated from this storm. Hilda left high watermarks of 7.32 ft. NGVD (4.74 ft. NAVD88) at Leland Bowman Lock.

(d) September 1971. Hurricane Edith, 5-17 September, had moderate tides along the Louisiana coast. Freshwater Bayou Lock (north) recorded 3.02 ft. NGVD (0.44 ft. NAVD88) on 10 September. Leland Bowman Lock (east) had a peak stage of 3.37 ft. NGVD (0.79 ft. NAVD88) on 16 September. Total rainfall amounts at Abbeville and Leland Bowman Lock were 7.11 inches and 7.58 inches, respectively.

(e) 1973 Flood. Headwater from rainfall events caused flooding during the spring of 1973. Leland Bowman Lock had a maximum one-day rainfall amount of 6.25 inches on 17 April. Maximum peak stages of 3.52 ft. and 3.47 ft. NGVD (0.94 ft. NAVD88 and 0.89 ft. NAVD88) were recorded on 21 April at the west gate of the Leland Bowman Lock and the south gate of Freshwater Bayou Lock, respectively.

(f) September 1974. Hurricane Carmen, 7–8 September, caused tidal and headwater flooding. Abbeville recorded a total of 6.00 inches of rain for 8-9 of

September. A peak stage of 3.80 ft. NGVD (1.22 ft. NAVD88) was recorded at the Schooner Bayou east gage on 9 September.

(g) August 1985. Hurricane Danny, 12-20 August, was a minimal hurricane with tides ranging up to eight feet above normal. Freshwater Bayou Lock north gage had a peak stage of 4.42 ft. NGVD (1.84 ft. NAVD88) on 15 August.

(h) October 1985. The prolonged stay of Hurricane Juan during 26-31 October produced backwater flooding and high water levels throughout the area. A peak stage of 4.95 ft. NGVD (1.97 ft. NAVD88) was recorded at the Schooner Bayou east gage.

(i) August 1992. Hurricane Andrew, 24-27 August, caused flooding from high tides and heavy rains in the study area. Leland Bowman Lock (east) had a peak stage of 4.17 ft. NGVD (1.59 ft. NAVD88).

(j) September 1998. Tropical Storm Frances, 8-12 September, set the maximum peak stage of 4.71 ft. NGVD (2.13 ft. NAVD88) at the Freshwater Bayou Lock north gage on 13 September. Abbeville had 9.43 inches of rain during 10-12 September.

(k) June 2001. Tropical Storm Allison, 4-12 June, produced heavy rains in the study area. Leland Bowman Lock and Schooner Bayou Control Structure east gages peaked at 3.77 ft. and 3.59 ft. NGVD (1.19 ft. NAVD88 and 1.01 ft. NAVD88), respectively. New Iberia had a storm total of 12.94 inches, with 3.35 inches falling on the 9 June.

(l) October 2002. Hurricane Lili, 1-6 October, had a storm total of 5.08 inches of rain at New Iberia. Peak stages at the east gages of Leland Bowman Lock and Schooner Bayou Control Structure were 7.50 ft. and 5.87 ft. NGVD (4.92 ft. NAVD88 and 3.29 ft. NAVD88) on 3 October, respectively.

C2.1.6 Stream Gaging Data. Stream gaging data are available at eleven stations within the study area. This includes two stations maintained by the U.S. Geological Survey (USGS). Table C3 lists the stream gaging stations along with their maximum and minimum extremes. Gage locations are shown on Plate H-1. The Corps gages are set to a Mean Low Gulf datum; the extremes shown on Table C3 have been adjusted to NGVD.

Table C3
Stream Gaging Data – Stage

Station	Period of Record	Maximum Stage (Ft., NGVD)	Maximum Stage Date	Minimum Stage (Ft., NGVD)	Minimum Stage Date
Corps Gages					
Freshwater Canal					
At Freshwater Bayou Lock North	**1968-02**	4.71a	09/13/98	-3.68	01/08/70 and 01/15/72
At Freshwater Bayou Lock South	**1968-02**	**6.85**	02/16/98	-5.78	**01/20/85**
Above Beef Ridge	**1963-66 1967-98**	**6.67a**	08/16/71	-2.12b	**01/08/70 and 01/15/72**
Schooner Bayou					
At Control Structure East	**1917-02**	5.87a	10/03/02	-3.68	03/05/62
At Control Structure West	1917-02	c	06/27/57	-2.48	12/21/24
Intracoastal Waterway					
At Leland Bowman Lock East	1932-02	**8.12ad**	06/27/57	**-3.65**	06/27/62
At Leland Bowman Lock West	1932-02	8.12ad	06/27/57	-1.78	12/24/66
Bayou Teche					
At Keystone Lock Upper	**1913-98**	23.32	05/27/27	-0.03	07/18/18
At Keystone Lock Lower	1913-98	23.32e	05/27/27	-0.08	09/22/13
USGS Gages					
Bayou Fearman					
Near Intracoastal City	1999-02	8.69f	10/13/01	1.40f	12/03/00
Vermilion Bay					
Near Cypremort Point	1999-02	5.01g	09/11/98	-1.84g	02/27/02

a. Extreme caused by hurricane
b. From incomplete record
c. Extreme not available - water over gates (5.22 NGVD)
d. From watermark
e. Gates open
f. Datum of gage unknown
g. Datum of gage is NAVD 1988

Source: U.S. Army Corps of Engineers – New Orleans District and U.S. Geological Survey Water Data Report LA-02-1

C2.1.7 Tides. Tides at Freshwater Bayou Lock are mostly diurnal and have mean ranges of about 1.22 feet on the north side and 2.25 feet on the gulf (south) side.

C2.1.8 Datum.

C2.1.8.1 The North American Vertical Datum of 1988, NAVD88, is a fixed reference determined by geodetic leveling. At this time, this datum has not been officially determined for the study area. To determine an approximate difference between the MLG datum for the two gages on the Freshwater Canal at Freshwater Bayou Lock and NAVD88 datum, GPS leveling was performed. This approximate difference is (-)1.8 feet. Other general datum information for this project follows:

0.00 NAVD88 = 1.80 MLG (developed specific for project area)
1.80 MLG = 2.58 NGVD29

C2.1.8.2 Mean higher high water (MHHW) and mean lower low water (MLLW) are local tidal datum and are the average of the higher high or lower low water height of each tidal day observed over the National Tidal Datum Epoch (NTDE). For stations with shorter series, comparison of simultaneous observations with a control tide station is made in order to derive the equivalent datum of the NTDE. The National Ocean Service (NOS) is in the process of updating the NTDE; the update will define the 19-year period as 1983-2001.

C2.1.8.3 MHHW and MLLW have not been determined for the study area. To approximate these local tidal datum, the Average Highest Daily Stage (AHDS) and Average Lowest Daily Stage (ALDS) were computed for the two gages on the Freshwater Canal at Freshwater Bayou Lock for the period 22 March 1987 through 20 Oct 2003. The average highest and lowest daily stages for these gages are shown on Table C4.

Table C4
Average Highest and Lowest Daily Stage

Gage	Average Highest Daily Stage	Average Lowest Daily Stage
Freshwater Canal at Freshwater Bayou Lock North	3.1 ft MLG 1.3 ft NAVD88	1.8 ft MLG 0.0 ft NAVD88
Freshwater Canal at Freshwater Bayou Lock South	3.2 ft MLG 1.4 ft NAVD88	1.0 ft MLG –0.9 ft NAVD88

C2.1.9 Visibility. Fog in the vicinity of the study area is formed when certain conditions such as low water temperatures, warm air temperatures, and high dew points are met. Water temperatures are relatively warm in the fall through early winter and conversely colder in the late winter through spring. This factor increases fog potential over land relative to water in fall and increases the relative fog potential over water surfaces in the spring. For this waterway, nearly all fog is associated with the surrounding water surfaces and wetlands, which experience the highest frequencies in late fall through early spring. The study area's location also makes it vulnerable to sea fog. Sea fog occurs very occasionally along the Louisiana coast, mostly during late fall to early spring.

C2.2 Model Study.

C2.2.1 Introduction.

C2.2.1.1 The draft of vessels into and out of the Port of Iberia is currently limited to about 12 feet by the current depth of the GIWW and Freshwater Bayou. This study evaluated the effect of deepening this channel to (-)20.0 feet NAVD88, with 1-foot of overdepth and 2-feet of advance maintenance yielding a (-)23.0 feet NAVD88 channel.

C2.2.1.2 The scope of work for this study was primarily concerned with creating a 2-dimensional numerical model of the Port of Iberia access channels and the surrounding

areas to evaluate the effects of deepening those access channels on salinities. These salinity effects are to be evaluated both seasonally and by water levels.

C2.2.1.3 In addition to model development, data had to be collected and analyzed. This work included collecting and analyzing existing data, computing flows based on this data, performing flood frequency analysis of this data, and deploying monitoring stations to collect additional data to be used for model verification.

C2.2.1.4 A summary of the model results is included in this engineering appendix. However, a detailed report was prepared for this effort, and is included in the Environmental Appendix (Appendix B) of this study.

C2.2.2 Existing Conditions. The primary access to the Gulf of Mexico from the Port of Iberia is by proceeding south down Commercial Canal to the GIWW, proceeding west on the GIWW to Freshwater Bayou and south on Freshwater Bayou to the Gulf of Mexico through either the Freshwater Bayou Lock or Bypass Channel. The Freshwater Bayou Lock, the Schooner Bayou Control Structure, and the Leland Bowman Lock on the GIWW all form western boundary conditions of the modeled area. These structures are all part of the western boundary of the Mermentau River Basin System and are managed to provide an agricultural fresh water supply in the Mermentau Basin. Many crops, most particularly rice, grown in the Mermentau Basin have a very low tolerance for salt. There is a concern that deepening these channels will increase salinity levels along the western boundary of the study area and within the Mermentau River basin. In addition, the marsh along this boundary is stressed and additional salinity might cause it to change from fresh marsh to brackish marsh. This model study was undertaken to address these concerns.

C2.2.3 Model Purpose. The purpose of the TABS-MD model done for this project was to evaluate the impacts the proposed deepening of the Port of Iberia's access to the Gulf of Mexico via Commercial Canal, the Gulf Intracoastal Waterway, and Freshwater

Bayou. The RMA-2 model was constructed to study the Hydrodynamics of the system, and the RMA-4 model was done to simulate the salinity transport through the system.

C2.2.4 Model Results.

C2.2.4.1 The results indicate relatively minor changes in salinities throughout the project areas. The maximum increase in salinities was 0.5 ppt. This occurred at Station 2 (Company Canal) during the fall/winter run for the 10 percent exceedance flood event. The maximum percentage increase was 39 percent, which corresponded to the 0.5 ppt increase.

C2.2.4.2 The maximum reduction in salinities was a 2.25 ppt reduction. This occurred at station 2 during the spring run for the flood event. This was also the maximum percentage reduction in salinities, a 92 percent reduction.

C2.2.5 Model Conclusions. The Port of Iberia navigation project that calls for the deepening of the port's access routes to the Gulf of Mexico via the Freshwater Bayou bypass structure will result in negligible changes in salinities in the project area. There will probably be rare occasions resulting in salinity increases of up to 0.5 ppt. The predominant affect is likely to be an overall freshening of the project area of up to about 20 percent.

C2.3 Water Quality.

C2.3.1 Introduction.

C2.3.1.1 The Port of Iberia is a landlocked port that provides a navigation route for numerous offshore production and transportation products important to the oil and gas industry. It also provides support for the construction and repair of offshore vessels and rigs. The Port of Iberia is an important element to the gas and oil industry of Louisiana. The current depth of this access channel to the Port of Iberia is becoming increasingly

inadequate to accommodate the growing local industries that rely on this channel for offshore access. The depth of the channel is too shallow for industries that profit from the new deep-water industry. The purpose of this feasibility study is to provide a deeper and wider navigation channel from the Port of Iberia to the Gulf of Mexico.

C2.3.1.2 The Port of Iberia Feasibility Study Area is composed of three connecting waterways that serve as the access channel to the Port of Iberia. The access channel consists of Commercial Canal in Iberia Parish, which is approximately 12-feet deep and 150-feet wide and extends from the Port of Iberia to the Gulf Intracoastal Waterway (GIWW). The channel continues from the GIWW at Commercial Canal to Freshwater Bayou, which runs southward from the GIWW and empties into the Gulf of Mexico. The selected plan consists of deepening and widening this access channel by dredging the Commercial canal, the GIWW and Freshwater Bayou to a uniform size channel with of 150-feet wide by 20-feet deep, which will better accommodate the industry of the area and the port. The placement of dredged material will depend on the section of channel. Material dredged from Commercial Canal will be placed to a maximum height of 5 feet above the existing ground in upland disposal on the West side of the canal. A new dike, 26,000 linear feet in length, will bound dredged material along the western side of the disposal area. Material will also be placed in the northeastern corner of Weeks Bay to a maximum elevation of +5.0 NAVD88. Material dredged from the GIWW will be placed in bankline reclamation (along the banks of the channel) behind earthen dikes. Material dredged from Freshwater Bayou will be placed in several different bankline reclamation areas along the channel, along the northern banks of Vermillion Bay, in several designated marshland creation areas on each side of the channel, and in a designated beach nourishment area along the shoreline of the Gulf of Mexico, on the west side of the Freshwater Bayou outlet.

C2.3.1.3 This report describes the existing water quality in the study area. It also identifies the potential impacts of construction activities.

C2.3.2 Existing Conditions.

C2.3.2.1 Water Quality Standards And Criteria. The Louisiana Department of Environmental Quality (LDEQ) and the United States Environmental Protection Agency (EPA) has established ambient water quality standards and criteria applicable to surface waters in the State of Louisiana.

(a) Applicable Louisiana State Criteria. Criteria are elements of the water quality that set general and numerical limitations on the permissible amounts of a substance or other characteristics of State waters. General and numerical criteria are established to promote restoration, maintenance, and protection of State waters. Water quality criteria describe stream uses. A criterion for a substance represents the permissible levels for that substance at which water quality will remain sufficient to support a designated use. Quality criteria for the waters of Louisiana are based on their present and potential uses, and the existing water quality indicated by data accumulated through LDEQ monitoring programs, and other State and federal agencies as well as other sources.

(1) General Criteria. The LDEQ has established general written criteria that apply to all waters of the State. The general written criteria relate to the condition of the water as affected by waste discharges or human activity as opposed to purely natural phenomena. The general criteria address the following water quality parameters:

- Aesthetics
- Color
- Floating, Suspended, and Settleable Solids
- Taste and Odor
- Toxic Substances
- Oil and Grease
- Foaming or Frothing Materials
- Nutrients

- Turbidity
- Flow
- Radioactive Materials
- Biological and Aquatic Community Integrity

(2) Numerical Criteria. Numerical criteria, except for toxic substances criteria, apply to specified waterbodies, and to their tributaries, distributaries, and interconnected streams and waterbodies contained in the water management subsegment if they are not specifically named therein. The water body conditions and their acceptable levels are:

- pH – Shall fall between 6.0 and 9.0.
- Chlorides, Sulfates, and Dissolved Solids – For estuarine and coastal marine waters, criteria is listed as N/A, to be established on a case-by-case basis using field determination of ambient conditions and the designated uses.
- Dissolved Oxygen – A minimum criteria is required depending on the type of water specified. For the majority of the project area, the dissolved oxygen concentration shall not be less than 4.0 mg/l. For coastal marine waters, including Vermillion Bay, the dissolved oxygen concentration shall not be less than 5 mg/L.
- Temperature – Is specified depending on the type of water specified. For the waters of this project area, the temperature shall not exceed 35ºC (95ºF).
- Bacteria – bacterial criteria depends on the use designation for a particular water body.
    - Primary Contact Recreation – The fecal coliform content shall not exceed a log mean of 200/100 mL, for a minimum of 5 samples taken over a 30 day period.

- Secondary Contact Recreation - The fecal coliform content shall not exceed a log mean of 1,000/100 mL, for a minimum of 5 samples taken over a 30 day period.
- Drinking Water Supply – The monthly mean of total coliform most probable number (MPN) shall not exceed 10,000/100 mL, nor shall the monthly mean of fecal coliforms exceed 2,000/100 mL.
- Oyster Propagation – The fecal coliform MPN shall not exceed 14 coliforms per100 mL.

Toxic substances numerical criteria apply to all waters of the State. Numerical criteria for specific toxic substances are mostly derived from EPA water quality criteria publications. Natural background conditions are also considered. These toxic substances are selected for criteria development because of their known or suspected occurrence in Louisiana waters and potential threat to attainment of designated water uses. For purposes of criteria assessment, the most stringent criteria for each toxic substance apply. Toxicity levels will be characterized as meeting either acute or chronic aquatic criteria. Acute aquatic toxicity refers to immediate aquatic lethality or other deleterious effects caused by passage of migrating fish through a mixing zone. Chronic aquatic toxicity applies immediately outside the mixing zone, and is specified by exceedences of a 7-day average concentration to more than once every ten years. For determination of criteria attainment in ambient water where the criteria are below the detection limit, no detectable concentrations will be allowed.

(3) LDEQ - Water Quality Inventory. The Louisiana Department of Environmental Quality prepares a bi-annual water quality inventory of all waters of the State of Louisiana. A summary of the relevant portions of this inventory is included below.

a. Water Use Designations. LDEQ has established seven water use designations for surface waters in the State. The seven designated water uses follow.

- Primary Contact Recreation
- Secondary Contact Recreation
- Fish and Wildlife Propagation
- Outstanding Natural Resource
- Drinking Water Supply
- Shell Fish Propagation
- Agriculture

The Port of Iberia study area is quite large and encompasses many waterbodies. Specifically, LDEQ has designated the primary waters of the Port of Iberia Feasibility Study Area according to the following uses:

- Primary Contact Recreation
- Secondary Contact Recreation
- Fish and Wildlife Propagation

Other waterbodies that may influence the water quality of the study area are also designated by shellfish propagation. For the primary contact recreation designation, a waterbody should be suitable for activities such as swimming, water skiing, and skin diving. A waterbody designated for Secondary Contact Recreation should be suitable for activities such as boating, fishing, and limited contact incident to shoreline activities. The fish and wildlife propagation designation means the waterbody should also be suitable for preservation and reproduction of aquatic biota such as indigenous species of fish, invertebrates, reptiles, amphibians, and other wildlife associated with the aquatic environment. The outstanding natural resource designation indicates that a waterbody is suitable for preservation, protection, reclamation, or enhancement of wilderness, aesthetic qualities, and ecological regimes, such as those designated under the Louisiana Natural and Scenic Rivers System or those designated by the Department of Natural Resources as waters of ecological significance. Waterbodies designated for drinking water supply should be suitable for human consumption and general household use. Those waterbodies designated for shell fish propagation should be suitable to maintain

biological systems that support economically important species of oysters, clams, mussel and other mollusks so that their productivity is preserved and the health of human consumers of those species is protected. Finally the use category, agriculture, indicates that a waterbody should be suitable for the use of water for crop spraying, irrigation, livestock watering, poultry operations, and other farm purposes not related to human consumption.

b. Water Use Support Classification. LDEQ classifies water use support based upon either an evaluation of land use, citizen complaints, etc., or upon actual monitored data. Both evaluated and monitored assessments are available for the study area, and the results of both are shown in Table C5 below.

c. Evaluated Assessment. LDEQ has classified the waters of the Port of Iberia Feasibility Study Area as either FULLY or NOT supporting their designated uses based upon an evaluated assessment.

d. Monitored Assessment. This classification is based on nearby water quality monitoring stations for the year 2002. LDEQ uses a computer driven use-impairment index program described below. Note that metals, toxins and organic/inorganic compound data are not utilized in the program. "F" indicates fully supporting. "P" indicates partially supporting. "N" indicates not supporting. Support classification for a waterbody segment involves four levels of support classification as follows:

- Parametric use support - keys on frequency of exceedences of criteria for primary and secondary parameters for each designated use of a waterbody.

- Designated use support - determined by the least supporting parameter(s) within a designated use.

- Station use support - determined by averaging all designated use supports at a monitoring station.

- Waterbody use support - determined by the least supporting station(s) within a waterbody segment where there are multiple stations.

Current support classification criteria are presented in Table C5 below.

TABLE C5
CRITERIA FOR PARAMETRIC SUPPORT CLASSIFICATIONS
PER DESIGNATED USE FOR MONITORED ASSESSMENTS

Degree of Support	Primary Determinant Parameters	Secondary Determinant Parameters
FULLY (F)	If the parameter criteria are exceeded in less than 10% of the samples analyzed.	If the parameter criteria are exceeded in less than 30% of the samples analyzed.
PARTIALLY (P)	If the parameter criteria are exceeded in 11% to 25% of the samples analyzed.	If the parameter criteria are exceeded in 31% to 75% of the samples analyzed.
NOT (N)	If the parameter criteria are exceeded in more than 25% of the samples analyzed.	If the parameter criteria are exceeded in more than 75% of the samples analyzed.

Primary and secondary determinant parameters within each designated use category were established in order to maximize the effectiveness of use support classification procedures. The parameters utilized for each use are listed in Table C6, which follows.

TABLE C6
PARAMETERS UTILIZED
FOR USE SUPPORT DETERMINATION BY DESIGNATED USES

Use	Primary Parameter	Secondary Parameter
Primary Contact Recreation (PCR)	Fecal Coliform	Temperature
Secondary Contact Recreation (SCR)	Fecal Coliform	None
Fish and Wildlife Propagation (FWP)	Dissolved Oxygen	Temperature, pH, chlorides, sulfates, total dissolved solids

C2.3.2.2 Existing Water Quality Data.

(a) Water Quality Data.

(1) Water and sediment quality sampling was performed by Corps personnel in March 2003 and analyzed by Corps personnel as well as the Corps of Engineers contractor, Anacon. Water and sediment samples were taken from ten sites along the entire length of channel, from the gulf outlet of Freshwater Bayou to the GIWW, then along the GIWW to Commercial Canal, and then along Commercial Canal from the GIWW to the Port of Iberia. Anacon analyzed water quality based on water samples, sediment samples, and elutriate samples. Sediment and elutriate sample results will be discussed in future with project conditions, below. In addition to water and sediment samples taken by the Corps, existing water quality data was researched from other Corps sites as well as other agencies including, EPA and USGS. Research found that existing water quality data in this area is limited. Water quality data that was found to be relevant to the project is included in this report. All sites used in the analysis of the report are shown on Figure 1.

(2) All water quality data was compared to the Louisiana Water Quality Standards promulgated by the Louisiana Department of Environmental Quality (LDEQ). In some cases, new standards published by the United States Environmental Protection Agency (USEPA) are more stringent than those promulgated by LDEQ. In these cases data was compared to the newer, more stringent standards. Only those sites where exceedences of the stated criteria were found will be discussed further. In some samples, it should be noted that there is a slight gap between the detection limits of our tests and the LDEQ standards.

(b) Water Data.

(1) Water samples from sites 1 through 7 were compared to LDEQ criteria for fresh water, whereas data from sites 8, 9, and 10 were compared to LDEQ marine water criteria because of their proximity to the gulf and their salinity readings. Field readings at the ten Corps sites sampled in March 2003 showed no exceedences to pH, dissolved oxygen, or temperature. Water samples from the ten sites analyzed by Anacon did show small amounts of metals present. Arsenic, barium, copper, lead, nickel, and zinc were detected at most sites. However the levels of these metals were all low and well below the state's criterion. The only metal that might exceed chronic criterion was mercury. Mercury was undetected, however its concentrations at all ten sites were known to be less than the reported method detection limit of 0.2 ug/L, and therefore could possibly be greater than the LDEQ chronic criterion for mercury, which is 0.012 ug/L for fresh water and 0.025 ug/L, for marine water.

(2) PCBs and pesticides were undetected at all ten sites. However a few of the constituents had concentrations that were known to be less than their reported detection limits and could possibly exceed the state's criteria. Endrin, whose reported limit was <0.10ug/L, possibly exceeded both the chronic and acute criteria for fresh water (0.0375ug/L and 0.0864ug/L, respectively) as well as the chronic and acute criteria for salt water (0.037ug/L and 0.0023ug/L, respectively). Endosulfan, whose reported limit was <0.10ug/L, possibly exceeded just the acute criteria for freshwater (0.0560ug/L) as well as the acute and chronic criteria for salt water (0.034ug/L and 0.0087ug/L, respectively). Heptachlor, whose reported limit was <0.10ug/L, possibly exceeded the acute criteria for fresh water (0.0038ug/L) as well as the acute and chronic criteria for salt water (0.053ug/L and 0.0036ug/L, respectively). Chlordane, whose reported limit was <0.03ug/L, possibly exceeded both acute criteria for fresh water (0.0043ug/L) as well as the acute and chronic criteria for salt water (0.09ug/L and 0.004ug/L, respectively). Toxaphene, whose reported limit was <0.5ug/L, possibly exceeded the chronic criteria for both fresh water and salt water (0.0002ug/L and 0.0002ug/L, respectively).

(3) Limited existing water quality data was available from two other Corps sites, POI4 and POI6. POI4 is located on the GIWW and POI6 is located on Freshwater Bayou (see Figure 1 for exact locations). Hourly readings of salinity, DO, pH, temperature, and TDS were taken from 2/8/2003 to 3/7/2003 at these two sites. There were no exceedences at these two sites. Salinity readings at POI4 were all less than 2700 mg/l or 2.7 ppt, indicative of brackish waters (see Table C7 for characterization of salinity). The salinity at POI6 was higher with the highest recorded salinity reading at 7750 mg/l or 7.75 ppt indicating moderately saline waters. This can be attributed to the station's location along Freshwater Bayou, in close proximity to the gulf.

(4) Three other stations maintained by the COE were in the study area. However water quality data from these stations is extremely limited. The first, Intracoastal Waterway at Leland Bowman Lock (76800) had temperature and salinity readings from1993 to 2003. These levels were acceptable, only a few temperature readings exceeded 32 deg C in the summer. The salinity readings primarily fell within the brackish range with a few readings indicating moderately saline waters.

(5) The second station is Freshwater Canal at Freshwater Bayou Lock (76592). This station had temperature and salinity readings taken sporadically from 1993 to 2002. There were only two instances of temperatures higher than 32 degrees in August and early September. Salinity values varied with 6% of the readings indicating brackish water, 83% moderately saline water and 10% severely saline water.

(6) The third existing station is located at Schooner Bayou (Inland Waterway) at Control Structure (76680). This station also had sporadic salinity and temperature readings from 1993-2002. There were no exceedences in temperature readings and the salinities were as follows: 80% of the readings indicated brackish water, 6% moderately saline water, 7% severely saline water, and 5% seawater.

(7) Ambient water quality data was available from LDEQ at two sites along Commercial Canal. The sites were named New Iberia Southern Drainage Canal near Intracoastal Waterway, sites (0683) and (0684). Site 0683 is located at the intersection of Commercial Canal and the GIWW. Site 0684 is north of 0683, on Commercial Canal . Monthly readings were taken from June 1998 to December 1998. Parameters tested included temperature, pH, D.O., and some basic metals. Site 0683 had two low dissolved oxygen readings (3.56 and 3.81 mg/l), which were lower than the state's criterion for D.O. of 4.0 mg/l, minimum. There were no exceedences for any other tested parameters. Site 0684 had one low dissolved oxygen reading (3.25 mg/l). There were no other exceedences for any other tested parameters.

(c) Other Salinity Data Results.

(1) Salinities in the area are generally fairly low. Salinities at Cypremort Point (USGS Station Number 07387040) in the eastern portion of Vermilion Bay rarely exceed 4.0 ppt. In the western portion of the bay salinities rarely exceed 10.0 ppt at USGS Station Number 07387050. No long-term salinity monitoring stations are located along the affected waterways. However, during this study, two short-term salinity stations were deployed in the study area. One of these stations was located on the GIWW near its intersection with the Vermilion River. At this location salinities ranged from a high of about 4 ppt to a low near 0 ppt. Salinities at this station (on Freshwater Bayou near Fearman's Bayou) never exceeded 4 ppt and much of the time they were below 1 ppt. Salinities reached highs of about 6 ppt, but dropped to below 1 ppt during the spring flood.

(2) Salinities in this western portion of the study area are largely influenced by flood and drought, and by the yearly hydrograph of the Vermilion River. Salinities are low in the spring, higher in winter and vary between these two extremes. Tidal variations also have some effect upon salinities in the area. Unless there is a drought there is usually sufficient freshwater flowing into the basin through the Vermilion River to keep salinities in check. Schooner Bayou Control Structure and Leland Bowman Lock

are often used to drain the Mermentau Basin project, adding more freshwater to the system. With the exception of drought years salinities do not get excessively high in this area.

(d) Existing Conditions Summary. Water quality in the Port of Iberia study area is generally acceptable given the location and current designated uses of the involved waterbodies. The isolated low dissolved oxygen readings at stations 0683 and 0684 could be attributed to local sewerage discharges or algae blooms. However all other water samples indicate that the dissolved oxygen levels in the study area are generally conducive for propagation of desirable aquatic life. Temperature and pH readings were normal. Toxic substance levels do not pose problems. Metal concentrations from water samples were within acceptable levels (mostly undetected), below the LDEQ acute criteria. Mercury could possibly exceed the chronic criteria. This is not known due to the limited capability of the testing equipment. PCBs and organic chemical concentrations (i.e. herbicides, pesticides, etc.) were mostly undetected with only a few noted detections, which were still below the state's criteria. Sediments and elutriate sample testing is discussed below, under future with project conditions. In summary, these waterbodies are in generally acceptable health. Any minor exceedences detected can be attributed to factors such as industrial vessel traffic, municipal and industrial waste point sources, and domestic runoff.

TABLE C7
LDEQ WATER USE SUPPORT CLASSIFICATION
EVALUATED AND MONITORED ASSESSMENT
2002

Waterbody Subsegment Code	Waterbody Description	Type[1]	Size[2]	PCR	SCR	FWP	ONR	DWS	SFP	AGR	Suspected Causes	Suspected Sources
060802	Vermillion River-From New Flanders(Ambassador Caffrey)Bridge, Hwy 3073, to GIWW	RIVER	38	N	N	N				F	Nitrogen, Nitrate, Turbidity, Carbofuran, TSS Total Fecal coliform Sedimentation/Siltation Dissolved oxygen	Non-irrigated crop production and irrigated crop production Municipal Point source discharges and discharges from separate storm sewer systems(MS4) Irrigated and non-irrigated crop production Municipal Point source discharges and discharges from separate storm sewer systems(MS4)
060904	Vermillion River Cutoff-From GIWW to Vermillion Bay(Estuarine)	RIVER	3	F	F	N					Carbofuran	Non-irrigated crop production and irrigated crop production
	New Iberia Southern Drainage Canal-	RIVER	8	F	F	N					Carbofuran	Non-irrigated crop production and irrigated crop

	origin to Weeks Bay(Estuarine)										Dissolved Oxygen	production Source unknown
060906	GIWW-New Iberia Southern Drainage Canal to Bayou Sale (Estuarine)	RIVER	28	F	F	N					Carbofuran	Non-irrigated crop production and irrigated crop production
061102	GIWW-Levee at Segment 0611 and 0609 boundary to New Iberia Southern Drainage Canal(Estuarine)	RIVER	18	F	F	N					Carbofuran	Non-irrigated crop production and irrigated crop production
061103	Freshwater Bayou Canal from GIWW to Control Structure	RIVER	18	F	F	N					Dissolved Oxygen	Natural conditions-water quality standards use attainability analyses needed
061104	Vermillion Bay	ESTUARY	198	F	F	F			F			

[1]Type indicates if a waterbody is either a river ®, lake (L), estuary (E), or wetland (W).
[2]Size refers to the total size of a waterbody subsegment, with rivers reported in miles, lakes in acres and estuaries and wetlands in square miles.

C2.3.2.3 Projected Water Quality.

(a) Introduction. This section sets forth the projected impacts to water quality in the study area that might reasonably be expected to result from the implementation of the selected alternative. Impacts due to the no-action alternative or without project condition are also discussed. The selected alternative is to deepen the access channel that connects the Port of Iberia with the Gulf of Mexico. Data for this assessment was obtained from the EPA database STORET, and from LDEQ and USEPA publications and websites. These sources were used to obtain information on the specific aspects of potential water quality impacts.

(b) Future Without Project Conditions.

(1) Without the proposed project in place, the water quality for the study area is expected to remain similar to current conditions over the course of the economic life of the proposed project. The water will continue to be affected by factors that are both favorable and harmful to water quality. Access to the Gulf of Mexico from the Port of Iberia will remain limited due to 12-foot average water depths through Freshwater Bayou. Traffic in the channel will increase including larger vessels to accommodate the growing offshore industry. Increased traffic may cause increased discharges in the channel. The port's current activities, which include construction of offshore platforms, supply of products used in oil exploration, and services to maintain offshore activities, will be hampered by the limited size of the access channel to gulf. Factors that currently affect water quality in the study area are municipal, industrial, agricultural and residential sources, urban runoff, atmospheric sources and discharge from vessels. These factors are expected to continue to plague the water quality throughout the economic life of the proposed project. Factors that will be beneficial to the water quality of the area include recent increased regulation and legislation as well as an increase in public awareness of environmental issues. This may result in slight reductions in the amount of pollutants released into the study area, which would improve its water quality somewhat. State and

local water quality management programs as well as other federal, state, local and private restoration efforts may improve the water quality of the study area over the economic life of the proposed project.

(2) Provided excessive erosion does not occur along the spit separating opening Freshwater Bayou from Vermilion Bay, no changes would be expected in the future if this project were not built. Salinities would continue to vary based upon the tidal affect from the Gulf of Mexico and the effects of the freshwater inflow from the Vermilion River and the Mermentau Basin.

(c) Future With Project Conditions. The dredging activities being proposed would affect the water quality of the study area if the project is constructed. The effects of these projects can be effectively broken down into those due to temporary dredging activities, dike construction, and the deposition of dredged materials. These effects will be discussed in the sections below.

(1) Effects of Dredging.

a. Dredging can temporarily cause the mixing of sediments, churning up of bottom material, and increased turbidity at the excavation and disposal site. The disturbance of soil layers, which have been consolidated, may cause pollution, depending upon the nature of the material being disturbed. If the material is largely organic (trees, roots, shrubs, etc.) then decomposition may be present. Pollution from dredging equipment may cause petroleum-based contaminants to enter the water stream. Increased turbidity may cause suspended sediments to block light penetration. This interferes with photosynthetic production of oxygen. Also, sediments absorb solar energy and transfer it into heat, raising the temperature of the water body. Oxygen is less soluble in warm water. This combined with the decreased photosynthetic production of oxygen may decrease oxygen levels in the water body. All of these effects of dredging should be temporary and return to pre-construction conditions shortly after construction.

b. Long-term effects of dredging would include improved water quality due to deeper channel depths, which would promote a healthier water channel, as there would be less churning up of bottom sediment. Larger vessels would be able to access the channel.

c. In order to evaluate the effects on salinity of the channel deepening proposed with this project, a numerical modeling study was done. The results of that study indicate relatively minor changes in salinities throughout the project areas. The maximum increase in salinities was 0.5 ppt in Company Canal near the GIWW during the fall/winter run for the 10 percent exceedance flood event. The maximum percentage increase was 39 percent, which corresponded to the 0.5 ppt increase in salinities.

d. The maximum reduction in salinities was a 2.25 ppt reduction. This occurred at the same location along Company Canal as the maximum increase, also during the spring run for the flood event. This was also the maximum percentage reduction in salinities, a 92 percent reduction.

e. The Port of Iberia navigation project that calls for the deepening of the Ports access routes to the Gulf of Mexico via the Freshwater Bayou Bypass structure will result in negligible changes in salinities in the project area. There will probably be rare occasions resulting in salinity increases of up to 0.5 ppt. The predominant affect is likely to be an overall freshening of the project area of up to about 20 percent.

(2) Sediment Testing.

a. Sediment Quality Benchmarks. Since no sediment quality criteria have been established, the results of the sediment quality data were compared to Sediment Quality Benchmarks (SQBs) compiled by NOAA and by the Florida Department of Environmental Protection (FDEP). These benchmarks are shown in Table C8. These

benchmarks provide a basis on which to evaluate relative sediment quality. The results of the sediment tests were compared to the following benchmarks:

- ER-L: "The ER-L represents the lower 10th percentile of chemical concentrations observed or predicted to be associated with biological effects."

- TEL: "The TEL represents the upper limit of sediment contaminant concentration dominated by no effects data."

- ER-M: "The ER-M benchmark represents the median of chemical concentrations observed or predicted to be associated with biological effects."

- PEL: "The PEL represents the lower limit of the range of contaminant concentrations that are usually or always associated with adverse biological effects."

b. Results of Sediment Quality Testing. Sediment was tested from all ten March 2003 sites and analyzed by Anacon. Low levels of the metals arsenic, chromium, copper, lead, nickel, and zinc were detected at most of the sites. However, the FDEP's threshold effects level (TEL) benchmark was the only benchmark exceeded and it was only exceeded four times. These exceedences were:

Metal	Data Result	TEL	Site number
Arsenic	7.71 mg/kg	7.24 mg/kg	4
Lead	35.8 mg/kg	30.2 mg/kg	7
Copper	23.3 mg/kg	18.7 mg/kg	10
Nickel	23.4 mg/kg	15.9 mg/kg	10

PCB's and pesticides were mainly undetected with only a few isolated detections of fluoranthene, chrysene, and Bis (2-ethylhexyl) phthalate. However there was only one exceedance to the sediment quality benchmarks. This was:

Organics
Bis(2-Ethylhexyl)phthalate 183 ug/kg 182 ug/kg 1

Grain size distribution tests were performed on samples from all 10 sites. The results were as follows:

Site Number	% Gravel	% Sand	% Silt	% Clay
1	0	12.3	51.8	35.9
2	0	20.4	64.9	14.7
3	0	5.9	20.7	73.4
4	0	7.5	73.7	18.8
5	0	6.8	65.6	24.9
6	0.7	26	48.3	25
7	0	22.4	51.6	26
8	0	15.9	51.2	32.9
9	0.4	15.8	51	32.8
10	0.1	37.4	3.6	66.1

Results conclude the following: Sediments in Commercial Canal are primarily silt with clay and some sand. Sediments in the GIWW are primarily silt as well with a good amount of clay and some sand. Sediments in Freshwater Bayou are somewhat different however, with good amounts of sand and clay closer to the Gulf of Mexico, and not as much silt. The variation can be attributed to the proximity of Freshwater Bayou to the Gulf of Mexico. As contaminants are more likely to adhere to clay particles than to silt or sand, it would be expected that the sites with higher clay percentages would have more pollutants. This may be indicative of the exceedences of copper and nickel at site 10 from our sediment data. Site 10 had the second highest amount of clays (66%). However, Site 3 had the most clay (73.4%) yet we have no recorded exceedences of contaminants at site 3.

c. Elutriate Data. The elutriate test is a short-term, sediment-leaching procedure. It consists of agitating a known volume of sediment/fill material with a known volume of site water. The suspension is then filtered and the filtrate analyzed. Thus, the test provides an indication of the chemical constituents likely to be released to the water

column during a disposal/fill operation. Since the sediment-to-liquid ratio used in the test is based on hydraulic dredging ratios, results from the elutriate test will probably overestimate the release from less dynamic dredging techniques such as hopper or clamshell dredging. The purpose of the elutriate test is to provide information on the potential effects of a disposal operation on water quality. Results can either be used to estimate the extent of a resource that will be influenced by the proposed discharge or used to compare the results to appropriate water quality criteria.

d. Results of the Elutriate Data Testing. The results were compared to the LDEQ water quality standards and criteria. Some constituents did show an increase in levels from their water sample at the same station. However, results of the elutriate tests showed no exceedences for any of the tested parameters with the exception of mercury, endrin, endosulfan, heptachlor, chlordane, and toxaphene. These constituents had concentrations that were known to be less than their reported detection limits and could possibly exceed the state's criteria. Endrin, whose reported limit was <0.10ug/L, possibly exceeded both the chronic and acute criteria for freshwater (0.0375ug/L and 0.0864ug/L, respectively) as well as the chronic and acute criteria for saltwater (0.037ug/L and 0.0023ug/L, (respectively). Endosulfan, whose reported limit was <0.10ug/L, possibly exceeded just the acute criteria for freshwater (0.0560ug/L) as well as the acute and chronic criteria for saltwater (0.034ug/L and 0.0087ug/L, respectively). Heptachlor, whose reported limit was <0.10ug/L, possibly exceeded both acute criteria for freshwater (0.0038ug/L) as well as the acute and chronic criteria for saltwater (0.053ug/L and 0.0036ug/L, respectively). Chlordane, whose reported limit was <0.03ug/L, possibly exceeded both acute criteria for freshwater (0.0043ug/L) as well as the acute and chronic criteria for saltwater (0.09ug/L and 0.004ug/L, respectively). Toxaphene, whose reported limit was <0.5ug/L, possibly exceeded the chronic criteria for both freshwater and saltwater (0.0002ug/L and 0.0002ug/L, respectively). The elutriate data indicates that the impacts on dredging on contaminant availability would be minimal. From the results of the elutriate and sediment data we can conclude that

placement of dredge material should not cause any negative effects to the designated disposal areas including the marshland creation areas.

e. Effects of Construction. The effects of construction may include, but are not limited to, increased turbidity and sedimentation, increased temperature, increased oxygen demand and decreased oxygen and contamination from equipment and operations. Again pollution from dredging equipment may cause petroleum-based contaminants to enter the water stream. The effects of construction are considered to be temporary and cease at the end of the construction period. NPDES legislation requires a Pollution Prevention Plan (PPP) for each project in order to reduce contamination in the waterways due to construction process. Often included in the PPP are temporary and permanent controls such as hay bales, silt fences, sand bags, sedimentation ponds, vehicle washing stations, and the seeding and mulching of denuded areas. Even with these measures some effects are still expected. The effects of construction are temporary and will subside once construction ends and denuded areas are restored.

f. Effects of Dike Construction/Bank line Restoration/Disposal Areas/Marshland Creation.

1. Dredged material from the channel will be used for bank line restoration. Dikes will be constructed along the banks of the channel along the length of Freshwater Bayou and GIWW. Dredged material will be placed behind the dikes. There will be an excess of about 2 million cubic yards of dredged material that will not fit into bank line restoration areas along Freshwater bayou. This excess material will be placed into designated marshland creation areas on each side of Freshwater bayou, on the northern shores of Vermillion bay, and in beach nourishment areas on the gulf. All dredged material from the GIWW should fit into designated bank line restoration areas. Material dredged from Commercial Canal will not be placed along the banks but in designated disposal areas, either on the northeastern corner of Weeks Bay, or in upland disposal. Effects of dike construction/bank line restoration will be minimal and may

include contamination from equipment and construction activities, increased turbidity, and mixing of sediments. These effects should be temporary and return to pre-construction conditions shortly after construction.

2. The effects caused by new earthen/riprap dike construction are considered to be permanent. The effects may include, but are not limited to, a slight increase in runoff due to the taller banks and compaction of the dike materials. These effects are considered to be minor and will not be detrimental to the environment. Long-term effects will be positive, as bank line restoration measures will extend the benefits gained by dredging the channel deeper. Also marshlands will be preserved as erosion is decreased due to the deposition in the marshes of dredge material.

3. The effects due to marsh creation will result in healthier wetlands due to a reduction in nutrients as well as a lesser tendency toward algae blooms, and improved dissolved oxygen levels. There will be less erosion due to the creation of marshland from dredge material.

4. None of these effects are considered to be significant changes to current organic, metal, nutrient, or pathogen levels. The most significant effects from the construction of new dikes and riprap placement will be positive, as the new channel banks will be stabilized and erosion will be prevented.

(d) Summary Of Overall Effects. The effects of construction due to dredging and disposal areas may include (but are not limited to) typical short-term effects including increased turbidity and sedimentation, increased temperature, increased oxygen demand, and decreased oxygen, and contamination from construction equipment and operations. These effects are considered to be temporary and cease with the end of the construction period. Long-term effects include a healthier, deeper channel for access from the Port of Iberia to the gulf, as well new marshland creations areas created from dredged material. Also, the shoreline on the gulf adjacent to Freshwater Bayou as well as

the designated shoreline in Weeks Bay that will be used for disposal will gain some protection from tidal influence of the Gulf of Mexico.

TABLE C8
SEDIMENT QUALITY BENCHMARKS

	NOAA[a]		FDEP[b]	
CHEMICAL	ER-L	ER-M	TEL	PEL
Inorganics (mg/kg dry weight)				
Antimony	2	25		
Arsenic	8.2	70	7.24	41.6
Cadmium	1.2	9.6	0.68	4.21
Chromium	81	370	52.3	160
Copper	34	270	18.7	108
Lead	46.7	218	30.2	112
Mercury	0.15	0.71	0.13	0.7
Nickel	20.9	51.6	15.9	42.8
Silver	1.0	3.7	0.73	1.77
Zinc	150	410	124	271
Organics (ug/kg dry weight)				
Acenapthene	16	500	6.71	88.9
Acenaphthylene	44	640	5.87	128
Anthracene	85.3	1100	46.9	245
Benz(a)anthracene	261	1600	74.8	693
Benzo(a)pyrene	430	1600	88.8	763
Bis (2ethylhexyl)-phthalate			182	2647
Chlordane	0.5	6	2.26	4.79
Chrysene	384	2800	108	846
DDD,op'- + pp'-	2	20		
DDD,pp'-			1.19	4.77
DDE,pp'-	2.2	27	2.07	3.74
DDT,op'- + pp'-1	7			
DDT,pp'-			1.19	4.77
DDT,Total	1.58	46.1	3.89	51.7
Dibenzo(a,h)-anthracene	63.4	260	6.22	135
Dieldrin	0.02	8	0.72	4.3
Endrin	0.02	45		
Fluoranthene	600	5100	113	1494
Fluorene	19	540	21.2	144
Lindane			0.32	0.99
2-Methyl napthalene	70	670	20.2	201
Naphthalene	160	2100	34.6	391
PAH, Total LMW	552	3160	312	1442
PAH, Total HMW	1700	9600	655	6676
PAH, Total	4022	44792	1684	16770
PCB, Total	22.7	180	21.6	189
Phenanthrene	240	1500	86.7	544
Pyrene	665	2600	153	1398

[a]NOAA=National Oceanic and Atmospheric Administration

ER-L=effects range low

ER-M=effects range median.

[b]FDEP=Florida Department of Environmental Protection

TEL=threshold effects level

PEL=probable effects level.

TABLE C9

Based on its source and relative salinity concentrations, water is characterized by the following categories ("Water and Wastewater Engineering", John Wiley and Sons, New York, 1968):

1) Brackish: 1,000 to 5,000 mg/l
2) Moderately saline waters: 2,000 to 10,000 mg/l
3) Severly saline waters: 10,000 to 30,000 mg/l
4) Seawater: 30,000 mg/l to 36,000 mg/l

C2.3.2.4 References.

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C2.4 Channel Design.

C2.4.1 General. Port of Iberia project channel is comprised several existing channels: Freshwater Bayou; the GIWW; and Commercial Canal. Currently Freshwater Bayou and the GIWW channels are federally authorized and maintained to (-)12 feet Mean Low Gulf (MLG) by 125-foot bottom width. Freshwater Bayou Lock dimensions are (-)16 feet MLG by 84-feet wide by 600-feet long. The entrance channel to Freshwater Bayou extends into the Gulf of Mexico to the (-)12 ft. MLG contour; its dimensions are (-)12 ft. MLG by 250-feet wide. Several proposed channel dimensions, (-)16' x 150', (-)18' x 150', (-)18' x 135', (-)18' x 125', (-)20' x 150', (-)20' x 135', and (-)20' x 125' (depths are below the ALDS), were evaluated based on current traffic patterns and projected vessel sizes.

C2.4.2 Vessel Dimensions. Vessel dimensions are used to design both depth and width of a navigation channel. The project reach of channel is currently used by a variety of vessels: crew and service boats; small oil tankers, tow boats both with and without barges; professional fishing vessels; and recreational vessels. The frequency of travel of these vessels will increase from existing to future years. Some typical vessel dimensions are presented in Table C10.

TABLE C10
Typical Vessels

VESSEL TYPE	DESCRIPTION	MAXIMUM DIMENSIONS		
		LENGTH	BEAM	DRAFT
Dry Cargo	Crew/Service Boat	325'	55'	18'*
Tanker	Small Oil Tanker	N/A	N/A	12'
Tow Boat	Tow Boats w/o Barges	250'	90'	12'
Dry Cargo	Barges w/Tow Boats	400'	100'	20'
Tanker	Barges w/Tow Boats	250'	75'	13'

18* is the design draft for this vessel. It is light loaded to a 13-foot draft currently, due to depth limitations in the existing channels.

N/A = not available

Some or most of these vessels can be safely accommodated in the proposed channel depending upon the new channel dimensions selected.

C2.4.3 Channel Alignment. The proposed channel alignment will follow the existing alignment of Freshwater Bayou, GIWW and Commercial Canal channels. The Channel is predominately straight with only 2 significant bendways: one at the intersection of Freshwater Bayou and the GIWW and the other at the intersection of the GIWW and Commercial Canal.

C2.4.4 Channel Width and Depth.

C2.4.4.1 Design Vessel. The design vessel for this channel is a special offshore petroleum industry barge that is 100-feet wide by 400-feet long, and has a design draft of 20 feet. Movements for this design vessel are constrained to 2 to 3 times per year at approximately 2 miles per hour under with-project conditions. More than 80% of the project's benefits are derived from these few movements.

C2.4.4.2 Channel Design.

(a) Channel widths and depths are designed to provide for the safe and efficient movement of vessels along the channel. Standard design criteria for determining bottom width and channel depth of shallow and deep draft channels are outlined in EM 1110-2-1611 and EM 1110-2-1613, respectively. In both EMs, the minimum width of a channel is based on a number of factors, including vessel maneuverability, climatic conditions, and channel shape and alignment. The minimum depth of a channel is also based on a number of factors, including vessel squat, sinkage in fresh water, effects of trim and wave action, and safety and efficiency clearance.

(b) The existing channel is shallow (El. -12.0 ft. MLG), and the existing authorized bottom width of the channel is 125 feet. These dimensions are smaller than

required by the EMs for the typical vessels in both shallow-draft and deep-draft channels. The channel sizes investigated and proposed in this report also do not meet the design criteria in the EMs for the large cargo vessel. However, to pass the design vessel through a 20-foot deep channel, special accommodations can be made, as is done currently to allow usage of restrictive channels with no safety issues. This vessel does not maneuver under its own power, but rather is pushed and pulled very slowly downstream by several tugboats. Because the barge moves so slowly, the width dimension can be encroached upon somewhat without much surrendered for safety or bank damage. Additionally, trips along the channel for this vessel are infrequent and limited to ideal weather conditions and high tide conditions. The ALDS and AHDS in Freshwater Bayou north of the lock are 0.0 NAVD88 and 1.3 NAVD88, respectively (see Table C4). Interviews with industry indicate that the 100-foot x 400-foot barge would be ballasted to draft 19 feet (see Annex 4). Thus, the clearance under the barges will range between 1 foot and 2.3 feet if the barge is brought out during normal daily conditions. Therefore, this report concludes that the channel dimensions proposed in this report (150 feet wide by 20 feet deep) will be sufficient for the safe conduct of navigation for the identified design vessel. To ensure safe passage, special accommodations as previously described must be maintained.

(c) For designs where the recommended width of a proposed navigation channel is smaller than the minimum dimensions derived from criteria established in EMs, the EMs prescribe that a tow simulation model be conducted. Engineering Regulation 1110-2-1403, "Studies by Coastal, Hydraulic and Hydrologic Facilities and Others", states that hydraulic design studies associated with the planning, design, construction, operation, and maintenance of navigation channels will include a ship-simulation investigation unless omission of such an investigation is approved by HQUSACE. In November 2005, MVN requested such a waiver for the proposed Port of Iberia, Louisiana navigation channel. To support HQUSACE with their decision, the Engineering Research and Development Center (ERDC) in Vicksburg, Mississippi conducted a desktop study. During the course of this study, ERDC and MVN met on-site with representatives from

the Port of Iberia (POI), the local navigation industry, and manufacturers located in the POI to discuss their methods of loading and transporting large packages from the Port to the Gulf of Mexico. During this visit and subsequent discussions, ERDC gained an understanding of how delivery barges are transported, how much caution and oversight are used during transport, the number of tows used, and the speeds attained during the transit. ERDC concluded that a tow simulation model was not required. On 9 February 2006, Chief, Engineering and Construction, Directorate of Civil Works, granted the waiver (see Annex 9).

(d) Channel design also includes 2 feet for advanced maintenance and 1 foot of overdepth in accordance with the corresponding general allowances provided in EM 1110-2-1613.

TABLE C11 - RESERVED

TABLE C12 - RESERVED

C2.4.6 Stone Design.

C2.4.6.1 In many locations along the project reach the channel bank line has retreated hundreds of feet. This is especially apparent along the GIWW and Freshwater Bayou channels. This bank loss is the result of a combination of several factors: sea level rise, subsidence and erosion. Although little can be done to ameliorate the effects of sea level rise, use of dredged materials as availability permits can be used to maintain and minimize land loss due to subsidence and bank erosion. Erosion within these channels is predominantly caused by wave action. South of Freshwater Bayou Lock some wave action emanating from the Gulf is the cause; but along most of the channel the predominant cause of erosion is wave action created by vessel traffic. This wave action affects both the existing banks and newly placed dredged material.

C2.4.6.2 Observation of the vessel traffic using these channels indicates that, although all vessels create waves, the larger faster moving vessels create the largest waves. Fast moving crew boats can create waves on the order of 4 feet. Smaller or slower vessels, such as barges, usually create smaller waves on the order of 3 feet. To protect the bank a graded stone foreshore or bank revetment is recommended. The average high daily stage (AHDS) is about +1.3 feet NAVD88 in the project area and the average annual high is approximately +2.4 feet NAVD88. The crest elevation selected for the stone must prevent significant wave overtopping during most of the year, protecting the areas behind the revetment from erosion due to vessel wave wash. For Freshwater Bayou the crest of the bank protection can be determined by adding the wave runup of 2 to 2.5 feet from the 4-foot wave to a reasonably high water level, i.e. an elevation at which navigation is expected to continue normally and not be affected by winds or other conditions. In this part of the channel we selected the water elevation of +2.4 feet NAVD88 combined with 2.5 feet of runup to arrive at a crest elevation of +5 feet NAVD88. In the GIWW where traffic is slower and dominated by barges, the runup and crest elevation is somewhat less. In the GIWW wave runup is expected to be on the order of 1 to 1.5 feet and navigation will probably remain unaffected until stages rise to about elevation +2, where winds will restrict some barge traffic for safety reasons. Thus, in the GIWW the crest elevation selected for bank protection is +3.5 feet NAVD88.

C2.4.6.3 The stone that comprises the dike must be of sufficient weight and thickness to withstand the effects of this wave action. Since a 4-foot boat wave can be expected frequently in the Freshwater Bayou reach of the project channel up to Intercostal City, the dike in this reach will be composed of a 36-inch thickness of graded stone or equivalent. Along the GIWW inland from Intercoastal City vessel traffic is predominantly barges, which are generally slower and produce a 3-foot wave. The dike in this reach can be 28-inch graded stone or equivalent. Bank protection stone or equivalent will be placed over a geotextile fabric or a smaller gradation core stone for both the 28- and 36-inch gradations to prevent the material underneath from washing through the coarser upper layer. Stone sizes were determined from Hudson's formula

using a 3 or 4-foot wave, as appropriate. Hudson's formula is given below. Gabion mattress was considered as an alternative design. For the 36-inch revetment, a gabion thickness of 1 foot is considered equivalent. For the 28-inch revetment, a gabion thickness of 9-inches will suffice. The other dimensions of each gabion basket must be a minimum of at least 12 feet by 3 feet to provide sufficient weight.

Hudson's formula:

$$W_{50} = \frac{w_r H^3}{K_{rr} (S_r - 1)^3 \cot\Theta}$$

Where:

W_{50} is the weight in lbs. of an individual stone

w_r is the unit weight of stone (in this case 155 lbs/ft^3)

H is the design wave height at the structure (3 or 4 feet)

K_{rr} is the stability coefficient ($K_{rr} = 2.2$)

S_r is the specific gravity of stone relative to water (W_r/W_w) (for this case 155/64)

$\cot\Theta$ is the cotangent of the structure slope (in this case 3)

This formula and values for K_{rr} are explained in detail in the Shore Protection Manual, published by the Department of the Army, Waterways Experiment Station, Corps of Engineers, in 1984. Gradations were determined from a set of standard gradations provided by LMV Division, Corps of Engineers, in a November 1981 letter report by selecting the gradation which most closely fits the stone weight determined from Hudson's formula. Design stone sizes are large enough to insure that the stone will not be displaced during the occurrence of the design wave. Stone gradations required for foreshore protection along Freshwater Bayou and the GIWW reaches are given in Table C13.

TABLE C13

Foreshore Protection
36-Inch Stone Gradation

Percent Lighter By Weight	Limits of Stone Weight (lbs.)
100	2200 - 900
50	930 - 440
15	460 - 130

Foreshore Protection
28-Inch Stone Gradation

Percent Lighter By Weight	Limits of Stone Weight (lbs.)
100	1000 - 400
50	430 - 200
15	210 - 60

Typical cross sections are shown in the main body of the report.

C2.4.7 Channel Dredging Maintenance Quantities. Bank erosion along both Freshwater Bayou and the GIWW has been a significant problem for many years. Both channels have experienced such extensive bank erosion that stone bank protection has been placed along many reaches of the banks of both streams periodically. The causes of the bank erosion are many-fold. However, most of the bank loss stems from soil weakness, i.e. the banks inability to withstand the dynamic forces of waves generated by vessel traffic. Use of Freshwater Bayou by high-speed crew boats has accelerated bank loss from wave wash and exacerbated bank erosion from other causes. Along the GIWW some of the bank erosion problems stem from the age of the project: it was designed over 50 years ago to handle smaller vessels and lesser traffic volume than it currently experiences. For these reasons shoreline bank protection will be provided along all of Freshwater Bayou and the GIWW within the Iberia channel project reach. With the banks stabilized and without another significant sediment source we do not expect significant dredging maintenance requirements along Freshwater Bayou from the

landside of the Lock to the entrance of the Commercial Canal. In general, subsidence of the area over the project life will insure that any small quantities of sediment washed out of the banks or from the bottom into the channel will settle to the bottom and not require dredging. However, two reaches of channel, Freshwater Bayou Bar Channel and Commercial Canal, will require regular periodic maintenance dredging. Several other reaches of channel will require dredging of a less predictable frequency.

C2.4.7.1 Freshwater Bayou Bar Channel. The existing bar channel at the entrance to Freshwater Bayou is regularly dredged. Records of maintenance quantities and frequency of dredging over the past years are assumed to reflect the future frequency of periodic dredging of the bar channel. Because of the large supply of available material in the Gulf for filling of the entrance channel, the dredging cycle period was originally determined to be approximately the same as it is currently with quantities increasing proportionately to the increase in channel dimensions. Because of the increased depths and lengths of the proposed channels, only the quantity of dredged material would be larger than the amounts dredged currently. However, the New Orleans District reanalyzed the fluid mud or "fluff" question as it relates to the Freshwater Bayou Bar Channel. After reevaluating historical dredging events for this channel, LSU documentation of sediment patterns for the area, and the results of a recent Value Engineering Report for Atchafalaya Bar Channel, the proposed maintenance cycle was changed from every 4 years to every 3 years. The anticipated quantities removed for each maintenance event as shown in Table C14 below remains the same.

TABLE C14
Estimated Maintenance Dredged Quantities
Entrance Bar Channel

Channel Design Depth (feet)	Bottom Width (feet)	Dredged Quantity Volume (million cubic yards)
Existing 12-ft	250	1.0
16-ft	250	1.5
18-ft	250	1.9
20-ft	250	2.3

C2.4.7.2 Commercial Canal. No bank protection is planned for Commercial Canal. Maintenance dredging records for the existing Commercial Canal are not available. However, it is reasonable to assume that since the Freshwater Bayou and GIWW channel banks are composed of soil types that are vulnerable to bank erosion, Commercial Canal would be subject to the same erosive forces. In addition, the increase in the size and amount of vessel traffic caused by deepening the existing channel to project depth will certainly increase the current bank erosion rate. Therefore, an estimate was made of the bank loss due to vessel wake. This estimate was determined using the existing shape of typical eroded banks as a guide. Assuming that the constructed bank, which will have 1 on 3 side slopes, will widen into a bank line similar to the existing bank line over time, a quantity of material lost from the bank can be determined. Those quantities are assumed to settle to the bottom of the channel and be removed by dredging. For this estimate dredging quantities are assumed to increase with channel depth due to the increased pressure on the banks in deeper channels from larger vessels. Estimates for 125-, 135-, and 150-foot widths accompanying various depths are included in Table C15. These estimates assume that the channel banks will not be restored or protected with riprap during the 50-year project life. If during the project life banks are restored but remain unprotected, maintenance dredging quantities would likely begin again from year 0 in these tables.

TABLE C15
Estimated Dredged Quantities
Commercial Canal

150-FOOT BOTTOM WIDTH*

Years Since Construction	16-Ft Channel Deposition During Period ($CYx10^3$)	16-Ft Channel Depth over bottom (feet)	18-Ft Channel Deposition During Period ($CYx10^3$)	18-Ft Channel Depth over bottom (feet)	20-Ft Channel Deposition During Period ($CYx10^3$)	20-Ft Channel Depth over bottom (feet)
10	320	1.6	533	2.7	791	4.0
20	160	0.8	267	1.4	395	2.0
30	80	0.4	133	0.7	198	1.0
40	40	0.2	67	0.3	99	0.5
50	20	0.1	33	0.2	49	0.3

135-FOOT BOTTOM WIDTH*

Years Since Construction	18-Ft Channel Deposition During Period ($CYx10^3$)	18-Ft Channel Depth over bottom (feet)	20-Ft Channel Deposition During Period ($CYx10^3$)	20-Ft Channel Depth over bottom (feet)
	$x10^3$		$x10^3$	
10	533	3.0	791	4.5
20	267	1.5	395	2.2
30	133	0.8	198	1.1
40	67	0.4	99	0.6
50	33	0.2	49	0.3

125-FOOT BOTTOM WIDTH*

Years Since Construction	18-Ft Channel Deposition During Period ($CYx10^3$)	18-Ft Channel Depth Over Bottom (feet)	20-Ft Channel Deposition During Period ($CYx10^3$)	20-Ft Channel Depth Over Bottom (feet)
10	533	3.0	791	4.5
20	267	1.6	395	2.4
30	133	0.8	198	1.2
40	67	0.4	99	0.6
50	33	0.2	49	0.3

*Dredge quantities assume that much of the original upper bank is lost in the first 10 years: 50% in the first 2-3 years and the remaining 50% in the next 7-8 years. For the remaining 10-year periods, total sediments will be decreased by 50% from the previous 10-year period. These figures assume that no bank restoration will take place during the 50-year life of the project.

C2.4.7.3 GIWW. Newly dredged material will be placed behind the foreshore bank protection to an elevation of +5 feet NAVD88; this is higher than the elevation of the recommended bank protection. Along the GIWW, because of reduced runup from vessel waves, the recommended bank protection elevation is +3.5 feet NAVD88. Since bank protection will not extend to the height of the fill placed behind it, some loss of the newly placed material can be expected due to wave wash, overtopping and even rainfall during the first years few years after construction. Because of the added weight over the sub soils, some portion of the newly placed material will subside rather than erode. Because of the high rate of subsidence, 3.6 feet in the first 5 years, we estimate that most of the

material lost to erosion will occur in the first 5 years. We estimate that without bank protection at most 50 percent of the upper 1.5 feet of fill, 100 feet in length behind the bank protection will be lost into the channel in the first 5 years. The remaining 50% will subside or be washed away from the channel. The estimated quantities and depths associated with this scenario are shown in Table C16.

TABLE C16
Estimated Maintenance Quantities along GIWW
Adjacent to +3.5 Bank Protection

Year	Bank Loss (Square feet)	Channel Width (feet)	Depth Over Bottom (feet)
5	150	150	1.0
5	150	135	1.1
5	150	125	1.2

C2.4.7.4 Hurricane Dredging. Aside from the foregoing fairly predictable sources of material, another source of potential dredging is associated with infrequent intense tropical storms and hurricanes. The Type 5 Flood Insurance Study (FIS) for this area indicates that the 15-year storm in this area can be expected to cause a stage of approximately +8.0 feet NAVD88. Hurricane Lili in 2002 left a high water mark of about +8 (datum unknown) in the area, and Hurricane Edith left a high water mark of 7.4 feet (datum unknown) in 1971. Thus, this frequency from the Type 5 FIS seems reasonable. Because of the target design of the bank, +1.4 feet NAVD88, a stage of this magnitude can easily overtop the bank. Because of the increased depth of the proposed channel, it is likely that a stage of this magnitude in Vermillion Bay can pour into the inlet, depositing a substantial amount of sediment in some portion of the channel. Along the reach of MRGO within Breton Sound, this occurs as often as every 5 years. However this proposed channel will be afforded some degree of protection by the bank, thus the occurrence of filling will be less frequent and likely not affect the entire channel length. For estimating purposes we will assume that about 10 miles, or 25%, of the Freshwater Bayou/GIWW channel fronting the Bay will be affected by each occurrence and that sediment deposits within this 25% will be on the order of 3 to 4 feet in depth - enough to

require dredging. Since a 15-year storm is likely to occur several times during the 50-year project life, it is reasonable to expect at least 3 dredging cycles caused by deposition from a hurricane. Dredging quantities estimated based on this scenario are included as Table C17.

TABLE C17
Estimated Maintenance Quantities
From Hurricane Overflow
Years 10, 25 and 40

Channel Width (feet)	Quantity Deposited (million cubic yards)
125	0.85
135	0.93
150	1.03

C2.5 Hydraulic Design Criteria for Freshwater Bayou Lock and Freshwater Bayou By-Pass Channel Floodgates.

C2.5.1 Freshwater Bayou Lock. The existing Freshwater Bayou Lock will be incorporated into the Port of Iberia project. Although the number of openings and closings will increase with the increased flow of vessel traffic, the function and operation of the lock will not be altered by improvements proposed by this project. Thus, the hydraulic design parameters developed for the existing lock will not change from the original criteria. Those parameters are outlined in the design documents for the Lock and will not be repeated here.

C2.5.2 Freshwater Channel By-Pass Channel Floodgates. Water elevations used in design of the floodgates must reflect their proximity to and use in conjunction with the existing lock. Hydraulic loading cases used in floodgate design must insure reliability and stability of the structure during normal operating conditions and extraordinary water level events. A ridge with a crest elevation of approximately +5 feet NAVD88 parallels the coastline in this area, crossing both the Lock and the proposed floodgate alignments.

To not compromise this line of protection, the top elevation of the floodgate is set at +5 feet NAVD88. Tropical storm and hurricane stages at the site often exceed this height. The 100-year maximum storm surge elevation in this area is approximately +12 feet NAVD88. This elevation is not used in determining hydraulic head loading criteria for the floodgate, since both the lock and the floodgate will be completely swamped. For water levels between +5.0 and +12.0 ft. NAVD88, overtopping of the ridge will allow stages to equalize on both sides of the complex.

C2.5.3 Salinity Intrusion. The lock and floodgates are not intended to protect the interior areas from extreme high stages but rather to moderate inland salinities. Because ridges surrounding the lock and floodgates do not allow overtopping until stages exceed +5.0 ft. NAVD, the worst design condition for the gate occurs when the water level is at the top of the gate on one side and winds depress water levels on the opposite side of the gate to very low levels. This scenario occurs more frequently for direct head conditions than for reverse heads. Table C18 lists still water levels (SWL) for hydraulic design cases.

TABLE C18

Floodgate Hydraulic Design Loading Cases

	Water Surface Elevation (feet NAVD88)	
Load Case	Floodside SWL/Wave Height	Protected Side SWL
1. Hurricane Maximum Head w/o Waves	+5.0	-2.0
2. Hurricane Maximum Head w/ Waves	+5.0/3.0	-2.0
3. Maximum Reverse Head from Hurricane	-2.0	+5.0
4. Operating Maximum Direct Head*	+2.0	+1.0
5. Operating Reverse Head*	+1.0	+2.0
6. Maintenance Condition, Dewatering	+3.0	+3.0

*Note that for operating heads it was assumed that floodgate operation is completely discretionary; i.e. the gate will only be used during the most favorable conditions.

C2.6 Surveillance Plan. To assure proper performance of the project, operation, maintenance, and monitoring features must be included as part of the proposed plan. Gages must be included in the plan to allow monitoring of stages in and around the project, to facilitate operation, and to provide advance warning of unusual water level conditions.

C2.6.1 Freshwater Bayou Lock and Floodgate Complex Operation Plan.

C2.6.1.1 The operation plan for the Freshwater Bayou Complex includes Freshwater Bayou Lock and the proposed floodgates. At present, the planned complex consists of the existing Freshwater Bayou Lock located in the main channel and 2 floodgates constructed in a near-by by-pass channel. These structures are tied into the highest elevations along the adjoining Beef Ridge. Structures will be operated to stabilize and/or enhance the environmental quality of inland areas by regulating currents and salinity intrusion through the navigation channels.

C2.6.1.2 For the purpose of protecting the project area from the detrimental effects of swift currents and salinity intrusion, the Freshwater Bayou Lock will be operated in accordance with the existing operation criteria for that structure. The proposed floodgates will be closed at all times during normal conditions and opened for passage of larger vessels. Operational criteria for the complex will be reevaluated and rewritten during detailed design of the floodgate(s) when proposed alignment and number of floodgates is established. These revised operational criteria will reflect the function of the lock and gate complex as an interacting unit. Stages used for the revised operational criteria will be referenced to gage datum of NAVD88.

C2.6.1.3 Operational criteria are based on historical data of climate, stages and structure usage. For optimum operation of the complex, a monitoring program must be in place to gather and evaluate the influence of these factors on the project's performance and adjust operational criteria accordingly. Operation criteria should be re-evaluated

annually for the first three years of operation to insure that this criteria insures optimum safety and performance; criteria should then be re-evaluated every five years after that. Any required adjustments to these criteria should be implemented as soon as practicable.

C2.6.2 Monitoring of Project Area.

C2.6.2.1 It is recommended that the existing automatic gages on the flood and landside of Freshwater Bayou Lock continue to be used in operation and monitoring. In addition, we recommend the addition of staff gages (or automatic as funding permits) on both sides of the proposed floodgates to insure their proper operation and detect anomalies. It is also recommended that a staff gage (or automatic as funding permits) be placed at the northern end of the project in Commercial Canal for collection of stage data from both normal and hurricane stages to evaluate performance and environmental effects of the project. A common benchmark will be used to set all of these gages to NAVD88 datum. Automatic gaging sites will be equipped with automatic continuous recorders and transmitters. Data will be transmitted real-time to the district for dissemination via the Internet.

C2.6.2.2 Project gages will require periodic maintenance to insure reliability. This maintenance occurs on a monthly basis, at a minimum, and consists of cleaning, checking batteries and connections, and insuring that the instrument is in proper calibration. Malfunctions will be repaired immediately.

C2.6.2.3 As another facet to monitoring of the project, it is recommended that vertical aerial photography of the study area extending out into the surrounding marsh be taken periodically. Photo coverage will extend from the head of the channel at the Port of Iberia, south and westward along the channel into the Gulf of Mexico. Photography should extend for about 10 miles on either side of the channel and be to a scale that allows accurate reproduction of bank and marsh details. Photos will be flown in the winter every two years. Also an aerial photography flight must be made when a

hurricane causes stages to exceed 5.0 ft. NAVD88 at Freshwater Bayou Lock or anywhere along the channel as soon as hurricane cloud cover drops to 25% or less. These photos will enable the sponsor to detect breaches (or potential breaches) in the bank line or loss of bank protection. By January of the following year a copy should be provided to MVN to determine if bank or land loss, or other factors, have compromised the project's performance.

C3. GEOTECHNICAL INVESTIGATIONS AND DESIGN.

C3.1 General. This section includes the soils investigations and foundation design for the by-pass channel structures. The geotechnical analysis consists of I-walls, T -walls, pile supported sector gates and pile supported swing barge gates.

C3.2 Geotechnical Design for Channel Deepening and Bulkhead Replacements.

C3.2.1 General. This portion of the report contains the results of feasibility level geotechnical design performed for the proposed dredging, in the vicinity of the Port of Iberia, GIWW, Freshwater Bayou, and Commercial Canal. This report covers the soils, geology, foundation investigation and conditions, the channel design, and the design of the bulkheads.

C3.2.1.2 Data Collection. One hundred two (102) new borings were taken in 2003 under a contract with Eustis Engineering along the alignment for this project, namely:

POI-1, POI-1U, POI-2, POI-2U, POI-3, POI-3U, POI-4, POI-4U, POI-5, POI-5U, POI-6, POI-6U, POI-7, POI-7U POI-8, POI-8U, POI-9, POI-9U, POI-10, POI-10U, POI-11, POI-11U, POI-12, POI-12U, POI-13, POI-13U, POI-14, POI-14U, POI-15, POI-15U, POI-16, POI-16U, POI-17, POI-17U, POI-18, POI-18U, POI-19, POI-19U, POI-20, POI-20U, POI-21, POI-21U, POI-22, POI-22U, POI-23, POI-23U, POI-24, POI-24U, POI-25, POI-25U, POI-26, POI-26U, POI-27, POI-27U, POI-28, POI-28U, POI-29, POI-29U, POI-30, POI-30U, POI-31, POI-31U, POI-32, POI-32U, POI-33, POI-33U, POI-34, POI-34U, POI-35, POI-35U, POI-36, POI-36U, POI-37, POI-37U, POI-38, POI-38U, POI-39, POI-39U, POI-40, POI-40U, POI-41, POI-41U, POI-42, POI-42U, POI-43, POI-43U, POI-44, POI-44U, POI-45, POI-45U, POI-46, POI-46U, POI-47, POI-47U, POI-48, POI-48U, POI-49U, POI-50U, POI-51U, POI-52U, POI-53U, and POI-54U.

C3.2.1.3 Project Design Criteria. For this investigation, the channel dredge line is at EL -20.0 ft. NAVD88, and the channel bottom width is 150 feet. For design purposes, the design dredge elevation was lowered to an elevation of –23.0 ft. NAVD88 to account for advance maintenance and construction tolerance, and a 1V on 3H slope was used from the projected edge of the cut.

C3.2.2 Field Investigation.

C3.2.2.1 Undisturbed Soil Borings. Fifty-four (54) undisturbed soil borings were drilled for this project in 2003. The soil borings were obtained by the local sponsor through an A/E contract with Eustis Engineering, Inc. These borings were taken to a depth of approximately 70 feet below the existing ground surface and tested by Eustis Engineering under contract to the local sponsors. The boring plots are shown on Plates G1 through G54, respectively.

C3.2.2.2 General Type Soil Borings. Forty-eight (48) general type soil borings were drilled for this project in 2003. The soil borings were obtained through an A/E contract with Eustis Engineering, Inc. These borings were taken to a depth of approximately 50 feet below the existing ground surface and tested by Eustis Engineering under contract to the Corps of Engineers (COE). The boring plots are shown on Plates G55 through G57, respectively.

C3.2.3 Geology.

C3.2.3.1 A geologic profile is shown on Plates G59 through G67.

C3.2.3.2 The study area is located parallel to New Iberia Southern Drainage Canal, west along the to Intracoastal Waterway, and south parallel to Freshwater Bayou Canal in Vermillion and Iberia Parishes, Louisiana. This is an area of low relief ranging in elevation from +5 feet* in the vicinity of Port of Iberia and highest marsh areas to near sea level south of Freshwater Bayou Canal Lock.

C3.2.3.3 Marsh deposits overlie the entire study area except borings POI-2U, POI-1U, POI-30U and POI-5 and as described below. Fill overlies Pleistocene deposits in borings POI-2U, POI-1U, and POI-30U. Swamp is at the surface in boring POI-5. From approximately distance 0 to 16,800 feet, fill overlies marsh deposits in the industrialized

areas of Port of New Iberia. Except for boring POI-30U, fill overlies marsh deposits in the industrialized areas of Intracoastal City from approximately west channel bank (north side IWW) distance 137,700 to 150,200 feet (see Plate G61). Spoil overlies marsh deposits along east channel bank (south side IWW) from approximately distance 60,200 to 66,600 and 75,400 to 91,000 feet (see Plate G64). Fill overlies marsh deposits in boring POI-54U, which is south of Freshwater Bayou Canal Lock. Marsh deposits consist of interbedded peat and very soft to medium, organic, fat clay with high moisture content and occasional lenses of very soft to medium lean clay. Marsh deposits average 8 feet thick and range in elevation from +5 to (–)20 feet. Swamp deposits underlie marsh deposits from approximately distance 2,600 to 10,400 feet and 16,400 to west channel bank 65,200 feet and east channel bank 66,000 feet. Swamp deposits consist of interbedded very soft to stiff, organic, fat clay and peat with high moisture content, wood, and occasional lenses of very soft to medium, lean clay and silty sand. Swamp deposits average 12 thick and range in elevation from 0 to (–)25 feet. Estuarine deposits underlie marsh deposits from approximately west channel bank distance 163,400 to the end of the study area north of Freshwater Bayou Canal Lock and east channel bank distance 168,800 to the end of the study area south of Freshwater Bayou Canal Lock. Estuarine deposits consist of very soft to medium, fat clay with occasional shells and shell fragments interbedded with occasional layers and lenses of very soft to soft, lean clay and lenses of silty sand and a layer of shells in boring POI-41U. These deposits average 25 feet thick and range in elevation from 0 to (–)51 feet. The elevation of (–)51 feet is estimated (see Plate G66). Estuarine deposits are occasionally interbedded with marsh deposits. Pleistocene deposits underlie marsh, swamp, and estuarine deposits and consist of interbedded, highly oxidized, stiff to very stiff, fat and lean clays, silt, clayey sand, silty sand, and sand. The surface of the Pleistocene deposits ranges from +2 to (–)51 feet in elevation and these deposits extend to an unknown depth.

C3.2.3.4 Ground water is at or near the surface in the study area and Pleistocene sands may be hydraulically connected to New Iberia Southern Drainage Canal, Intracoastal Waterway, and Freshwater Bayou Canal.

C3.2.3.5 Long-term relative subsidence rates average approximately 0.5 foot/century in the study area. Future eustatic sea level rise is currently estimated to contribute an additional 1.0 ft/century to the relative subsidence rates (EPA, 1995). Combined, the relative subsidence rate is estimated to be 1.5 feet/century.

*All elevations are in NAVD88.

C3.2.4 Laboratory Tests.

C3.2.4.1 Testing for Undisturbed Soil Borings. For the undisturbed soil borings, visual classifications were made on all samples obtained from the soil borings. Water content determinations were made on all cohesive soil samples. Unconfined Compression (UCT) tests and Unconsolidated-Undrained (Q) shear tests were performed on samples from the undisturbed borings. Liquid and plastic limits were determined for all samples on which UCT's and Q tests were performed. The results of these tests are shown on Plates G1 through G54. The results are also shown on the laboratory reports included in Appendix A.

C3.2.4.2 Testing for General Type Soil Borings. For the general type soil borings, visual classifications were made on all samples obtained from the soil borings. Water content determinations were made on all cohesive soil samples. Unconfined Compression Tests (UCTs) were performed on samples from the general type borings. Liquid and plastic limits were determined for all samples on which UCTs were performed. The results of the UCTs and the water content tests are shown on Plates G55 through G57. The results of the liquid and plastic limits tests, and all other tests are also shown on the laboratory reports included in Appendix A.

C3.2.5 Foundation Design.

C3.2.5.1 General. The geotechnical design was broken into four areas, namely Freshwater Bayou, GIWW, Commercial Canal, and Port Bulkheads. For the foundation design, the project was further divided into several soils reaches. The soils reaches were based on subsurface stratifications and subsurface soil shear strengths. The Freshwater Bayou consists of two soils reaches. GIWW consists of six soils reaches. The Commercial Canal consists of two soils reaches. The Port Bulkheads consists of one soils reach.

C3.2.5.2 Design Soil Parameters. Design soil parameters (Q-Case) and subsurface stratifications for each soils reach for the foundation design of each area are shown on Plates G68 through G78.

(a) Bulkhead Design.

(1) General.

a. Due to the insufficiency of detail design information available at this time, a total of five bulkhead designs were performed, grouping similar existing conditions, such as existing mud line, design section, and loading conditions. During the Detailed Design Phase of this project, the foundation for the Port Bulkheads will be divided into soils reaches based on subsurface stratifications and subsurface soil shear strengths.

b. The bulkhead designs are based on soil parameters developed from the testing of the borings recently retrieved. Other borings were taken for specific bulkheads and the test results were provided for several of these borings in the form of a geotechnical report furnished by the local sponsor. This report was considered for this design

(2) Loading Conditions. Shaw Coastal Engineering, engineering consultant for the local sponsor, provided sketches of the design sections with the loading of 200 psf for the bulkhead design. A more detailed investigation of existing loading conditions and future loading conditions will be performed during the Detailed Design Phase of this project.

(3) Wall Stability. The bulkheads were designed for water level at EL. 0.0 N.A.V.D. The required penetrations for the stability of the walls were determined by the method of planes analysis (CWALSHT) for both the short term (Q) and the long term (S) cases. The wall was analyzed for the Q–case using the design shear strengths shown on Plate G78. The wall was analyzed for the S-case using the shear strengths of c = 0 and ϕ = 23° for clay strata. The following criteria were applied:

TABLE C19
Wall Design Criteria

CASE	FACTOR OF SAFETY	DESIGN COMPONENT	CRITERIA
Q	1.50	Tip Elevation	Water at 0.0
Q	1.25	Moment, Anchor Load	Water at 0.0
S	1.50	Tip Elevation	Water at 0.0
S	1.25	Moment, Anchor Load	Water at 0.0

The factors of safety were applied to the design shear strengths as follows:

$$\phi' = \tan^{-1}\left(\frac{\tan\phi}{F.S.}\right) \qquad c' = \frac{c}{F.S.}$$

Using the resulting shear strength, the net horizontal water and earth pressure diagrams were determined for movement toward each side of the sheet pile. Using these distributions of pressure, summations of horizontal forces were equated to zero for various tip penetrations. At these penetrations, summations of overturning moments about the bottom of the pile were determined. The required depth of penetration to satisfy the stability criteria was determined where the summation of moments was equal to zero. The required anchor load to satisfy the stability criteria was determined where the

summation of horizontal forces was equal to zero. Design summaries are presented in Appendix B giving the tip elevation, bending moment, and anchor force for each bulkhead. CWALSHT outputs are also shown in Appendix B.

(4) Global Stability. The global stability of the bulkhead was determined by the LMVD Method of Planes, using the design (Q) shear strengths as shown on Plates G78. These stability analyses are shown on Plates G125 through G129. A minimum stability factor-of-safety of 1.3 was required for each section.

(b) Channel Design.

(1) General. The stability of the channel slopes was determined by the LMVD Method of Planes, using the design (Q) shear strengths as shown on Plates G68 through G77. The slopes were designed for a minimum stability factor-of-safety of 1.3.

(2) Design Sections. For the design, composite sections were generated based on the existing cross sections and the design template. The design template consisted of the bottom of the channel at El. (-)23.0 ft. NAVD88, the bottom width of 150 feet, and a 1V on 3H slope from the edge of the cut projected to the location of natural ground, according to each composite section. Both the Eastside and the Westside of the channel was designed with a low water elevation of 0.0 ft. NAVD88. Disposal was placed on the top of bank to an elevation of +5.0 ft. NAVD88. 36-inch riprap was used to protect the slope along Freshwater Bayou. 28-inch riprap was used along the GIWW for bank protection up to el. +3.5 ft. NAVD88. In some locations, a riprap bench was required to overcome bearing failure. The stability analyses for each design section are shown on Plates G79 through G124.

C3.3 Geotechnical Design for By-Pass Channel Structures. The Port of Iberia Project provides for the installation of two (2) control structures on the north and south ends of the Freshwater Bayou Lock Bypass Channel in Vermilion Parish, Louisiana. The

existing swing gates and associated structures will be removed, and replaced by two (2) concrete barge-type swing gates. A detailed presentation of feasibility level geotechnical design information for these swing gates is included in a Technical Report (Freshwater Bayou Bypass Channels, Water Control Structures, Three (3) Volumes) supplemental to this Engineering Appendix

C4. CIVIL DESIGN.

C4.1 Channel Design.

C4.1.1 General. Currently, navigation from the Port of Iberia utilizes Commercial Canal, beginning in the Port Area and travels south to the intersection of the Gulf Intracoastal Waterway (GIWW) near Mile 140.5. Navigation then may travel east or west along the GIWW. This study effort focuses on navigation traveling west along the GIWW to its intersection with Freshwater Bayou near Mile 161. At the GIWW and Freshwater Bayou intersection, navigation then travels south toward the Freshwater Bayou Lock at the coastline and on to the Gulf of Mexico. The GIWW, Freshwater Bayou, and the Freshwater Bayou Bar Channel are federally authorized navigation channels with current dimensions of 125-feet by (-)12 feet Mean Low Gulf (MLG), with increased width to 250 feet in the Gulf of Mexico approach. Commercial Canal is operated and maintained by the Port of Iberia, a political subdivision of the State of Louisiana and has dimensions of (-)13 feet NGVD by 125 feet

C4.1.2 Channel Dimensions.

C4.1.2.1 This study authorized the evaluation of several alternatives for channel dimensions that will provide 20 feet of water. These dimensions include:

- (-)18 feet ft. NAVD88 by 125 feet
- (-)20 feet ft. NAVD88 by 125 feet
- (-)18 feet ft. NAVD88 by 135 feet
- (-)20 feet ft. NAVD88 by 135 feet
- (-)16 feet ft. NAVD88 by 150 feet
- (-)18 feet ft. NAVD88 by 150 feet
- (-)20 feet ft. NAVD88 by 150 feet

C4.1.2.2 Channel dimensions for each alternative begin in the Port of Iberia, Port Area, and extend south to the GIWW, then west to the intersection with Freshwater

Bayou, and south to Freshwater Bayou Lock. To supply 20 feet of water in this reach, the channel will be deepened to (-)16-ft. NAVD88, (-)18-ft. NAVD88, or (-)20-ft. NAVD88, based on the Average Low Daily Stage (ALDS) of 0.00 NAVD88 (see Table C-4). From Freshwater Bayou Lock into the Gulf of Mexico, the ALDS drops to -0.90 NAVD88. As a result, the channel will be deepened to (-)17-foot NAVD88, (-)19-foot NAVD88, or (-)21-foot NAVD88 from the lock and into the Gulf of Mexico to the respective contour line.

C4.1.2.3 Channel dimensions also varied within the Port area itself, based on existing dimensions and clearances from existing facilities and individual users. Individual users within the Port area were contacted to ensure the proper channel dimensions, primarily focusing on the channel width at the alternative bottom elevations listed above. Channel widths include:

- 115-foot bottom width, west fork, centerline station 358+50.46 to 397+46.51;
- 125-foot bottom width, center fork, centerline station 314+60.65 to 366+30.66;
- 125-foot bottom width, east fork, centerline station 308+32.76 to 344+67.07; and,
- 4000-foot east extension of the east fork.

C4.1.2.4 When comparing the dimensions listed above within the Port area to existing permit criteria for the New Orleans District, and existing structures within the Port area, the Structure Limit Line criteria cannot be met. However the Navigation Fairway criteria can be met. Prior to finalizing the channel dimensions, consideration was given to the existing structures and vessel requirements for the local users. Both the local sponsor and the users expressed the need for a minimum bottom width of 115 feet based on dimension requirements for vessels.

C4.1.2.5 From centerline station 309+60.65 to centerline station 0+00, at the intersection with the GIWW, channel bottom widths vary based on the specific

alternative included in the analysis. See drawing no. C1 of C19 for additional details regarding the channel bottom widths within the Port area.

C4.1.3 Dredging and Disposal.

C4.1.3.1 General. Dredging and disposal alternatives investigated in this study centered on identifying the least-cost, environmentally acceptable plan. A long-term Dredged Material Disposal Plan has been developed for this project and is included in the Environmental Appendix (Appendix B) of this report.

C4.1.3.2 Commercial Canal.

(a) Dredging in the Commercial Canal reach of the project area will be completed using a combination of hydraulic cutterhead dredge and mechanical dredge. Hydraulic dredging will include the Port area and extend south in Commercial Canal. The material will be placed in a 336-acre upland confined disposal area located along the west bank of Commercial Canal. The estimated capacity of this disposal area is approximately 1,400,000 cubic yards of dredged material. See Drawing C2 of C19 for additional details regarding this disposal area.

(b) Once the capacity of the 336-acre site is reached, the remainder of the channel will be dredged with a mechanical dredge. The dredged material will be disposed of in open water in the Weeks Bay disposal area shown on Drawing C4 of C19. The material will be dredged and loaded for transportation to the Weeks Bay area where it will be placed, unconfined, for marsh development.

(c) Actual limits of hydraulic dredging versus mechanical dredging vary with the channel dimensions, as does the dredge quantity included in the analysis.

C4.1.3.3 Gulf Intracoastal Waterway (GIWW).

(a) Dredging the GIWW reach of the project will be accomplished using a combination of mechanical dredge and hydraulic cutterhead dredge. The primary focus of the disposal plan along the GIWW is bank reclamation and protection followed by marsh creation/nourishment. The disposal plan will vary depending on the channel dimensions included in the analysis and may include all mechanical dredging or a combination of mechanical dredging and hydraulic dredging.

(b) Material mechanically dredged from the channel will be disposed of along the channel banks. To maintain hydraulic connections to adjacent marsh, gaps will be placed in the bankline were existing waterways exist based on 1998 aerial photographs. Once the bank reclamation is completed, any remaining channel material will be hydraulically dredged and disposed of in a combination of marsh creation/nourishment areas shown on Drawing C3 of C19 through Drawing C10 of C19.

C4.1.3.4 Freshwater Bayou.

(a) As with the Commercial Canal and GIWW reaches, the Freshwater Bayou reach will be dredged using a combination of mechanical dredge and hydraulic cutterhead dredge. Also, as before, the primary focus of the disposal plan along Freshwater Bayou is to place the material in eroded bankline areas along the channel, with hydraulic dredging of remaining material combined with marsh creation/nourishment and placement in shallow water areas in the intertidal zones adjacent to the beach.

(b) As before, the disposal plan varies between channel alternative dimensions. The mechanically dredged material will be placed along the channel banks. To maintain hydraulic connections to adjacent marsh, gaps will be placed in the bankline were existing waterways exist based on 1998 aerial photographs. Once the eroded banklines areas are at capacity, the remaining channel material will be hydraulically dredged and disposed of in a combination of marsh

creation/nourishment areas and in shallow water areas in intertidal zones adjacent to the beach. See Drawing C10 of C19 through Drawing C18 of C19 for additional details.

C4.1.3.5 Freshwater Bayou Bar Channel. Dredging the Freshwater Bayou Bar reach of the project will be completed using a hydraulic cutterhead dredge. All dredged material from this reach will be disposed unconfined in the shallow-water areas within the intertidal zone. The actual limits of work and disposal quantity will vary based on the alternative included in the analysis.

C4.1.3.6 Freshwater Bayou Lock By-Pass Channel. The existing Freshwater Bayou Lock By-Pass Channel will require dredging along with the other project reaches. Dredging in the By-Pass Channel will be completed with a hydraulic cutterhead dredge with disposal adjacent to the By-Pass Channel as shown on drawing C17 of C19 and drawing C18 of C19. This dredging will require construction of containment dikes around the disposal areas, as well.

C4.1.4 Construction Schedule. Initial construction is anticipated to require a maximum of 10 construction contracts. Depending on the channel dimensions included, the construction contract will vary in number from a minimum of 1 to a maximum of 5. A breakdown of construction contracts by reach is presented below.

- Commercial Canal – 1 construction contract;
- GIWW – 1 construction contract (min.), 3 construction contracts (max.);
- Freshwater Bayou – 5 construction contracts; and,
- Freshwater Bayou Bar – 1 construction contract.

Construction contracts along the GIWW and Freshwater Bayou are mainly driven by the estimated quantity of rock for bank protection. Suppliers were contacted and stated that a reasonable amount of rock per contract would be 300,000 tons to 500,000 tons.

C4.1.5 Operation And Maintenance.

C4.1.5.1 General. The majority of maintenance is expected to be in the Commercial Canal and Freshwater Bayou Bar Channel reaches. Limited maintenance along both the GIWW and Freshwater Bayou is expected due to the placement of rock for bank protection along both of these reaches.

C4.1.5.2 Commercial Canal.

(a) Maintenance dredging will be required along the Commercial Canal reach of the project. In general, over the 50-year period of economic analysis, maintenance quantities are expected to be greater in the first 10-years, followed by diminishing requirements through the remaining project life.

(b) As with dredging and disposal of the initial construction material, maintenance dredging material will be disposed of in the upland confined disposal area along the west bank of Commercial Canal. The first maintenance dredging cycle is expected to be completed, approximately 5-years after initial construction, followed by maintenance cycles in year 10, year 20, year 35, and year 50.

(c) During the 5-year time period prior to the first maintenance dredging cycle and during the years between the subsequent maintenance cycles, the initial construction material will consolidate and settle in the disposal area and provide additional capacity for disposal of the maintenance material from the channel.

(d) As always, if during the project life, there is an opportunity to use the maintenance material in an economically acceptable and environmentally acceptable manner, the material will be used accordingly. Any additional areas would be identified and proposed by the local sponsor.

C4.1.5.3 Gulf Intracoastal Waterway (GIWW).

(a) Currently, no maintenance dredging is performed along the GIWW reach of the project. The current channel was initially constructed to (-)12.0 feet MLG by 125-foot bottom width, and current surveys indicate the channel is deeper and wider than these original construction dimensions. Maintenance dredging projections indicate minimal maintenance dredging will be required along the channel at the new dimensions as well. This projection is based on the fact that the banks are protected with rock or other similar erosion protection.

(b) Quantity estimates for maintenance dredging indicate that some material placed in the eroded banklines along the channel will once again erode into the channel. The erosion of this material is expected to deposit 1.0 feet to 1.2 feet of material along the channel bottom, varying according to which channel dimensions are being analyzed. Additionally, hurricanes making landfall within the project area will deposit material within the channel. Therefore, maintenance dredging has been included for the G.I.W.W. reach of the project. The first maintenance dredging cycle is expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and year 40. Maintenance dredging material will be disposed of in the open water disposal areas in Vermillion Bay

(c) To minimize the amount of material eroding back into the channel, maintenance of the 28-inch rock placed along the banks during initial construction will also be required due to settlement and subsidence of the rock. The first maintenance cycle for rock refurbishment is expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and year 40.

C4.1.5.4 Freshwater Bayou.

(a) Similar to the G.I.W.W. reach of the project, no maintenance dredging is currently performed in Freshwater Bayou. The current channel was initially constructed to (-)12.0 feet MLG by 125-foot bottom width, and current surveys indicate the channel is deeper and wider than these original construction dimensions. Maintenance dredging projections indicate minimal maintenance dredging will be required along the channel at the new dimensions as well. This projection is based on the fact that the banks are protected with rock or other similar erosion protection.

(b) As with the G.I.W.W, quantity estimates for maintenance dredging indicate that some material placed in the eroded banklines along the channel will once again erode into the channel. The erosion of this material is expected to deposit 1.0 feet to 1.2 feet of material along the channel bottom, varying according to which channel dimensions are being analyzed. Additionally, hurricanes making landfall within the project area will deposit material within the channel. Therefore, maintenance dredging has been included for the G.I.W.W. reach of the project. The first maintenance dredging cycle is expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and year 40. Maintenance dredging material will be disposed of in the open water disposal areas in Vermillion Bay.

(c) To minimize the amount of material eroding back into the channel, maintenance of the 36-inch rock placed along the banks during initial construction will also be required due to settlement and subsidence of the rock. The first maintenance cycle for rock refurbishment is expected approximately 10-years after initial construction, followed by maintenance cycles in years 25 and year 40.

C4.1.5.5 Freshwater Bayou Bar Channel. Maintenance dredging will be required for the Freshwater Bayou Bar Channel. Maintenance events are projected to be one cycle every three (3) years. Maintenance quantities are expected to increase consistent with channel dimensions as

well. Additionally, hurricanes and tropical storms will have an effect on the channel maintenance quantities.

C4.2 Removals.

C4.2.1 General. The information contained in this section documents affected facilities and presents proposed removals required by the Port of Iberia Feasibility Study. The study will address the dredging and deepening of the existing channel. Navigation servitude will be utilized; therefore, all pipeline actions to accommodate the enlarged channel will be non-compensable and thus classified as "removals". Subsequent reinstallation of the pipelines is anticipated.

C4.2.2 Description of Existing Facilities Affected by the Project. Categories of facilities affected by the project include oil and gas pipelines, and electrical lines. The locations of impacted facilities, depicted on plates R1 through R5, were obtained from site visits, state agencies and facility representatives. For the purpose of this study, impacted facilities are referenced by state plane coordinates, NAD 83, Louisiana south zone.

C4.2.3 Enlargement of the Affected Channels.

C4.2.3.1 Freshwater Bayou, Gulf Intracoastal Waterway (GIWW), Commercial Canal, and the Port of Iberia are proposed to be dredged to an elevation of (-)23.0 feet NAVD88. MVN criteria requires a minimum of eight (8) feet of mud cover over a pipeline in a Federally maintained navigable waterway as measured from the bottom of the channel to the top of the pipeline. Therefore, any pipeline or buried utility line with a top of pipe elevation greater than elevation (-)31.0 feet NAVD88 would require removal.

C4.2.3.2 Impacted facilities requiring removal would then be reinstalled to facilitate the new design depth and channel cross section. To maintain continuous service for facilities during removal and reinstallation operations, hot taps and temporary bypasses are assumed, as well as de-energizing submerged electrical cables.

C4.2.4 Affected Facilities and Removal Disposition. The following facilities will be affected and impacted by the proposed project and will require removal, and subsequent reinstallation, unless noted otherwise.

(a) Natural Gas Pipeline (P-1): One 12-inch natural gas pipeline owned by Tennessee Gas Pipeline Company. The pipeline crosses Freshwater Bayou at X=2,975,686.26 and Y=399,938.29 with a top of pipe of -24.3 feet MSL. This pipeline was constructed in 1977 of steel with an unlimited design life for the transportation of high-pressure gas.

(b) Natural Gas Pipeline (P-2): One 16-inch natural gas pipeline owned by Tennessee Gas Pipeline Company. The pipeline crosses Freshwater Bayou at X=2,975,752.08 and Y=400,032.63 with a top of pipe of -25.1 feet MSL. This pipeline was constructed in 1980 of steel with an unlimited design life for the transportation of high-pressure gas.

(c) Pipeline (P-3): One pipeline owned by Unocal Pipeline. The pipeline crosses Freshwater Bayou at X=2,979,373.18 and Y=405,374.73. There was no response from Unocal Pipeline for information on this pipeline crossing.

(d) Natural Gas Pipeline (P-4): One 8-inch natural gas pipeline owned by Transcontinental Gas Pipeline Corporation. The pipeline crosses Freshwater Bayou at X=2,981,178.03 and Y=408,072.29 with a top of pipe of -16.1 feet MLG (-17.9 NAVD 88). The pipeline was constructed in 1950 of steel with a perpetuity design life for the interstate transportation of natural gas.

(e) Three Phase Flow (Gas, Oil and Water) (P-5): One 10-inch three phase flow (gas, oil and water) pipeline owned by ExxonMobil Corporation. The pipeline crosses Freshwater Bayou at X=2,982,139.37 and Y=409,466.70 with a top of pipe of -24 feet

MLG (-25.8 NAVD88). This facility was constructed of carbon steel in 1997 with a design life of greater than 50 years.

(f) Natural Gas Pipeline (P-6): One 14-inch natural gas pipeline owned by Cypress Gas Pipeline, LLC. This pipeline follows the west shoreline of Freshwater Bayou from approximately X=2,991,203.33 and Y=445,656.25 and at approximately X=2,980,959.10 and Y=408,371.40. Removal of this pipeline is not required.

(g) Pipeline (P-7): One pipeline owned by Unocal Pipeline. The pipeline crosses Freshwater Bayou at X=2,986,228.38 and Y=420,364.28. There was no response from Unocal Pipeline for information on the pipeline crossing.

(h) Natural Gas Pipeline (P-8): One 12-inch natural gas pipeline owned by Texas Gas Transmission LLC. The pipeline crosses Freshwater Bayou at X=2,986,699.52 and Y=421,922.29 with a top of pipe of -23 feet MLG (-24.8 NAVD88). This pipeline was constructed in 1966 of steel with a maintained indefinite design life for the transportation of natural gas.

(i) Electrical Submarine Cable (P-9): One 14,400 volt I/O distribution cable owned by South Louisiana Electric Member Corporation. The distribution cable crosses Freshwater Bayou at X=2,986,956.56 and Y=422,652.09 with a top of cable of -24 feet MSL. The distribution cable was installed in 1969 with an unlimited design life.

(j) Natural Gas Pipeline (P-10): One 6-inch natural gas pipeline owned by Trunkline Gas Company LLC. The pipeline crosses Freshwater Bayou at X=2,987,170.70 and Y=423,289.54 with a top of pipe of -21.0 MLG (-22.8 NAVD88). This pipeline was constructed in 1966 of steel with an indefinite design life for the transportation of natural gas.

(k) Natural Gas Pipeline (P-11): One 6-inch natural gas pipeline apparently owned by BP / Amoco. The pipeline crosses Freshwater Bayou at X=2,989,135.40 and Y=431,871.89. Additional information has been requested from BP/Amoco.

(l) Unidentified Pipeline (P-12): One unidentified pipeline crossing Freshwater Bayou at X=2,991,785.39 and Y=446,643.16. Additional ownership information is being sought for this pipeline.

(m) Natural Gas Pipeline (P-13): One 10-inch natural gas pipeline owned by Acadian Gas, LLC. Formerly owned by Chico Pipeline. This pipeline crosses Freshwater Bayou at X=2,995,280.95 and Y=450,946.08 with a top of pipe of -22.0 feet MLG (-23.8 NAVD88). This facility was installed in 1966 with a perpetual life span.

(n) Natural Gas Pipeline (P-14): One 10-inch natural gas pipeline owned by Transcontinental Gas Pipeline Corporation. The pipeline crosses the Gulf Intracoastal Waterway (GIWW) AT X=3,022,116.14 and Y=467,594.96. This pipeline was constructed in 1958 of steel with a perpetuity design life for the interstate transportation of natural gas.

(o) Natural Gas Pipeline (P-15a & P-15b): Two 12-inch natural gas pipelines owned by ANR Pipeline Company. These pipelines cross the GIWW 25 feet apart at X=3,022,477.61 and Y=467,595.90. The top of pipe for the west line is approximately -24 feet MSL and was constructed of steel in 1966 to transports high-pressure natural gas. The top of the pipe for the east line is approximately -24.3 MSL, constructed of steel in 1966 to transports high-pressure natural gas. Both lines have an unlimited design life span.

(p) Natural Gas Pipeline (P-16): One 8-inch natural gas pipeline owned by ANR Pipeline Company. The pipeline crosses the GIWW at X=3,029,366.91 and Y=469,291.04 with a top of pipe of approximately -26.5 feet MSL. This steel pipeline

was installed in 1966 to transport high-pressure natural gas with an unlimited design life span.

(q)) Natural Gas Pipeline (P-17): One 36-inch natural gas pipeline previously owned by Southern Natural Gas (an El Paso Company). The pipeline crosses the GIWW at X=3,045,773.90 and Y=475,261.27. Additional ownership information is being sought for this pipeline.

(r) Natural Gas Pipeline (P-18): One 20-inch natural gas pipeline owned by Acadian Gas, LLC. This pipeline crosses the GIWW at X=3,049,316.64 and Y=476,523.57 at a top of pipe of -24.12 feet MLG (-25.92 NAVD88). This facility was installed in 1989 to transport high-pressure natural gas and has a perpetual life span.

(s) Natural Gas Pipeline (P-19a and P-19b): One 10-inch and one 30-inch natural gas pipeline owned by Texaco Pipeline LLC. The pipelines cross GIWW at X=3,049,437.37 and Y=476,566.92 with a top of pipe of -22.0 feet MSL. These pipelines were constructed in 1964 of steel with an indefinite design life for the transportation of natural gas.

(t) Crude Oil Pipeline (P-20): One 10-inch crude oil pipeline owned by Shell Pipeline Company LP. The pipeline crosses the GIWW at X=3,073,628.42 and Y=485,437.00 with a top of pipe of -20.0 feet MLG (-21.8 NAVD88). This steel pipeline was installed in 1953 with a design life span of 100 plus years to transport crude oil.

(u) Crude Oil Pipeline (P-21): One 12-inch crude oil pipeline owned by Shell Pipeline Company LP. The pipeline crosses the GIWW at X=3,073,681.89 and Y=485,450.44 with a top of pipe of -22.75 feet MLG (-24.55 NAVD88). This steel pipeline was installed in 1965 with a design life span of 100 plus years to transport crude oil.

(v) Electrical Submarine Cable (P-22): One 14,400 volt I/O distribution cable owned by South Louisiana Electric Member Corporation (SLEMCO). The distribution cable crosses the GIWW at X=3,074,013.49 and Y=487,567.37 with a top of cable of -21.1 feet MLG (-22.9 NAVD88). The distribution cable was installed in 1979 with an unlimited design life.

(w) Natural Gas Liquids Pipeline (P-23): One 8-inch natural gas liquids pipeline owned by Texaco Pipeline LLC. The pipeline crosses GIWW at X=3,077,297.05 and Y=486,638.83 with a top of pipe of -27.9 feet NGVD (-30.48 NAVD88). This pipeline was constructed in 1971/1972 of steel with an indefinite design life for the transportation of natural gas liquids.

(x) Natural Gas Liquids Pipeline (P-24): One 6-inch natural gas liquids pipeline owned by Texaco Pipeline LLC. The pipeline crosses Commercial Canal at X=3,120,607.91 and Y=500,094.33 with a top of pipe of -22.5 feet NGVD (equals -25.08 NAVD88). This pipeline was constructed in 1967/1968 of steel with an indefinite design life for the transportation of natural gas liquids.

(y) Natural Gas Pipeline (P-25): One 20-inch natural gas pipeline owned by Trunkline Gas Company, LLC. The pipeline crosses Commercial Canal at X=3,120,608.76 and Y=500,232.26 with a top of pipe of -20.5 feet MSL. This pipeline was constructed in 1961 of steel with an indefinite design life for the transportation of natural gas.

(z) Pipeline (P-26): One 22-inch pipeline owned by Shell Pipeline. The pipeline crosses Commercial Canal at X=3,121,065.98 and Y=517,311.99 with an unknown top of pipe elevation. The pipeline was constructed in 1952 – 1953 of steel with a 100-year design life for the transportation of crude oil.

(aa) Natural Gas Pipeline (P-27): One 26-inch natural gas pipeline owned by Texas Gas Transmission LLC. The pipeline crosses Commercial Canal at X=3,121,093.97 and Y=517,590.50 with a top of pipe at the highest spot under the channel of -16.6 MSL. This pipeline was constructed in 1962 of steel with a maintained indefinite design life for the transportation of natural gas.

(ab) Natural Gas Pipeline (P-28): One 20-inch natural gas pipeline owned by Texas Gas Transmission LLC. The pipeline crosses Commercial Canal at X=3,121,101.04 and Y=517,631.12 with a top of pipe of -24.5 MSL. This pipeline was constructed in 1956 of steel with a maintained indefinite design life for the transportation of natural gas.

(ac) Natural Gas Pipeline (P-29): One 30-inch natural gas pipeline owned by Gulf South Pipeline Company, LP. The pipeline crosses Commercial Canal at X=3,121,111.82 and Y=517,694.39 with a top of pipe of -28 feet MLG (-29.8 NAVD88).

(ad) Natural Gas Pipeline (P-30a): One 24-inch natural gas pipeline owned by Tennessee Gas Pipeline Company. The pipeline crosses Commercial Canal at X=3,120,049.26 and Y=520,933.32 with a top of pipe of –18.5 MSL. This pipeline was constructed in 1965 of steel for transportation of high-pressure natural gas with an unlimited design life.

(ae) Natural Gas Pipeline (P-30b): One 24-inch natural gas pipeline owned by Tennessee Gas Pipeline Company. The pipeline crosses Port Canal at approximately X=3,122,306 and Y=519762 with a top of pipe of –22.8 MSL. This pipeline was constructed in 1965 of steel for transportation of high-pressure natural gas with an unlimited design life.

(af) Natural Gas Pipeline (P-31a): One 16-inch natural gas pipeline owned by Tennessee Gas Pipeline Company. The pipeline crosses Commercial Canal at

X=3,120,029.92 and Y=520,975.08 with a top of pipe of -21.9' MSL. This pipeline was constructed in 1953 of steel for transportation of high-pressure natural gas with an unlimited design life.

(ag) Natural Gas Pipeline (P-31b): One 16-inch natural gas pipeline owned by Tennessee Gas Pipeline Company. The pipeline crosses Port Canal at approximately X=3,122,316 and Y=519,703 with a top of pipe of -22.0' MSL. This pipeline was constructed in 1953 of steel for transportation of high-pressure natural gas with an unlimited design life.

(ah) Natural Gas Pipeline (P-32): One 30-inch natural gas pipeline owned by Columbia Gulf Transmission Company. The pipeline crosses the Commercial Canal at X=3,119,786.73 and Y=521,571.46 with a top of pipe of -25 feet MSL. It was constructed of steel in 1954 and transports natural gas.

(ai) Natural Gas Pipeline (P-33): One 24-inch natural gas pipeline owned by Columbia Gulf Transmission Company. The pipeline crosses the commercial canal at X=3,119,769.80 and Y=521,621.57 with a top of pipe of -25 feet MSL. It was constructed of steel in 1958 and transports natural gas.

(aj) Natural Gas Pipeline (P-34): One 20-inch natural gas pipeline owned by Columbia Gulf Transmission Company. The pipeline crosses the Commercial Canal at X=3,119,743.56 and Y=521,676.68 with a top of pipe of –19' MSL. It was constructed of steel in 1971 and transports natural gas.

(ak) Unidentified Pipeline (P-35): One unidentified pipeline crossing Commercial Canal at X=3,121,204.12 and Y=515,639.45. Additional ownership information is being sought for this pipeline.

(al) Sewer Force Main (P-36): One 2" sewer force main owned by Frank's Casing Crew. The force main crosses Commercial Canal at X = 3,120,491.07 and Y=519,633.81 with a top of pipe of -44.0' MSL. The force main was constructed in February 2002.

(am) Natural Gas Pipeline (P-37): One 4-inch natural gas pipeline owned by Atmos Energy Corporation. The pipeline crosses the Rodere Canal at X=3,118,686.48 and Y=523,377.90 with a top of pipe of –21.0' NGVD (equals -23.58 NAVD88). It was constructed of steel in 1966 with a design life of 50 – 100 years, and transports natural gas.

(an) DELETED (P-38 and P-39).

(ap) Natural Gas Pipeline (P-40): One 12-inch natural gas pipeline owned by Spicer Oil Company. The pipeline crosses the GIWW at approximately X=3,080,636 and Y=487,022. Additional ownership information is being sought for this pipeline.

C5. ENVIRONMENTAL ENGINEERING.

C5.1 Incorporation of Environmental Compliance Measures into Project Design. Environmental compliance measures are related solely to the timing and methods used for dredged material disposal during both project construction and project maintenance. The plan for dredged material disposal is contained in the project EIS. The EIS will be referred to during the Preconstruction Engineering and Design (PED) phases of this project. Additionally, a detailed description of the long-term dredge disposal plan will be included in the project OMRR&R Manual.

C5.2 Incorporation of Environmental Sensitivity. Environmental sensitivity has been incorporated into all aspects of project design, and is especially evident in the proposed plan for disposal of dredged material. Disposal of dredged material has, by far, the largest potential for adversely affecting the local environment. Avoidance and minimization of adverse impacts have been incorporated into the project construction and maintenance plan to the maximum extent practicable. Construction methods that will enhance environmental features to the maximum extent practicable will be incorporated into the designs of the various features of the Port of Iberia Deepening Project.

C5.3 Disposal of Dredged Material.

C5.3.1 General. The goal of the PDT was to identify the least-cost, environmentally acceptable plan for material removed by the proposed dredging activities. Three alternatives were investigated:

C5.3.1.1 Disposal Alternative No. 1 - Features.

- Disposal of material in eroded bankline areas along GIWW and Freshwater Bayou. Includes placement of 28-inch and 36-inch stone for material retention.

- Marshland creation in open water areas of Weeks and Vermillion Bays, and nourishment of marsh areas along Freshwater Bayou.
- Placement of material in intertidal zones adjacent to beaches
- Upland disposal along Commercial Canal for material removed from this channel.

C5.3.1.2 Disposal Alternative No. 2 - Features.

- Disposal in existing upland disposal easements along GIWW and Freshwater Bayou.
- Marshland creation in open water areas of Weeks and Vermillion Bays, and nourishment of marsh areas along Freshwater Bayou.
- Placement of material in intertidal zones adjacent to beaches
- Upland disposal along Commercial Canal (for material removed from this channel).

C5.3.1.3 Disposal Alternative No. 3 - Features.

- Disposal of material in eroded bankline areas along GIWW and Freshwater Bayou, but without placement of 28-inch and 36-inch stone for material retention.
- Marshland creation in open water areas of Weeks and Vermillion Bays, and nourishment of marsh areas along Freshwater Bayou.
- Placement of material in intertidal zones adjacent to beaches
- Upland disposal along Commercial Canal for material removed from this channel.

C5.3.1.3 Disposal Alternative No. 4 - Features.

- Disposal of material in deepwater Ocean Dredge Material Disposal Sites (ODMDS) approved by the EPA.
- Placement of material in intertidal zones adjacent to beaches

C5.3.2 Cost analysis and comparisons for the four alternatives are presented in Annex 2. The least-cost, environmentally acceptable plan for disposal of dredged material proved to be Alternative No. 1. After selection, this alternative was finalized and fine-tuned through a series of meetings of the PDT, which included many of the local, State and Federal environmental agencies and stakeholders. A long-term Dredged Material Disposal Plan has been developed for this project and is included in the Environmental Appendix (Appendix B) of this report.

C5.3.3 Disposal Alternative No. 1 - Preferred Disposal Plan.

C5.3.3.1 Reclaiming and Maintaining Eroded Banklines Along GIWW and Freshwater Bayou.

(a) Placement of Dredged Material. Along GIWW and Freshwater Bayou, dredged material will be placed in areas of deteriorated bankline to elevation (+)5.0 NAVD88. This elevation was established in the above-mentioned meetings of the PDT, and was selected after conference with the geotechnical members of the PDT. It was chosen because sufficient settlement and subsidence of the material is expected over the first 5 year of the project life to bring the material to a final elevation (+)1.4 NAVD88. This elevation is considered consistent with existing marsh in the area.

(b) Rock Placement. The shelves along GIWW and Freshwater Bayou Interior upon which dredged material will be placed were created by wave action eroding the weak soils composing the bank and enlarging the top width of the channel. The nature of

the material being removed from the channels indicates that dredged material placed again on these shelves would readily erode in a similar fashion, probably before initial dredging operations would be complete. Thus, to facilitate disposal activities, fronting protection (28-inch and 36-inch stone) would be placed to maintain this readily erodible supply of material. Stone design is discussed in detail in paragraph C2.4.6. Generally, twenty-eight (28) inch stone will be placed to elevation (+)3.5 NAVD88 along GIWW; however, along Freshwater Bayou, 36-inch stone will be placed to elevation (+)5.0 NAVD88. This is because Freshwater Bayou is used extensively by oil field crew and supply boats coming out of Intracoastal City, which is located at the intersection of Freshwater Bayou and GIWW. The reach of GIWW within the project area is to the east of Intracoastal City and is not used as much by vessels of this type. These vessels historically produce higher and more dynamic wave activity. The larger and higher stone along Freshwater Bayou will counter the effects of this wave action. Along GIWW, it must be noted that since the dredged disposal material will be placed to elevation (+)5.0 NAVD88, and the rock to elevation (+)3.5 NAVD88, a small quantity of material will be carried back into the channel. Detail discussion of this issue in included in above paragraph C2.4.7.3

C5.3.3.2 Marshland Creation In Open Water Areas. Dredged material will also be used for marshland creation in open water areas, predominantly in Weeks Bay and Vermillion Bay. The material going into Weeks Bay will come from bucket dredging activities in the lower reaches of Commercial Canal. This material will be transported by barge to Weeks Bay, and placed for marsh creation. Material from the GIWW and Freshwater Bayou, over the amount being placed in the bank reclamation areas, will be placed in Vermillion Bay areas via hydraulic dredges within the confined areas shown on drawings C3 through C10 of C19.

C5.3.3.3 Nourishment of Marsh Areas West of Freshwater Bayou. Material from lower reaches of Freshwater Bayou, over the amount being placed in the bank

reclamation areas, will also be placed in a large area of deteriorating marsh west of Freshwater Bayou.

C5.3.3.4 Placement within Intertidal Zones. Material excavated from Mile 850 of Freshwater Bayou to the (-)20-foot NAVD88 contour of the bar channel, will be deposited in shallow water areas within intertidal zones along the gulf shoreline .

C5.3.3.5 Upland Disposal. Due to the unavailability of suitable disposal sites in the vicinity of Commercial Canal, the disposal plan for material being removed from the Port of Iberia proper and the upper reaches of Commercial Canal was limited to a 336-acre upland disposal site along the western side of Commercial Canal. Detailed discussions of the proposed disposal plans and methods are discussed in above section C4.1.3, "Dredging and Disposal".

C5.4 By-Pass Channel Floodgates.

C5.4.1 Design of Positive Environmental Attributes. Construction methods that will eliminate or minimize environmental impacts to the maximum extent practicable will be incorporated into the design of Freshwater Bayou by-pass structure. Disposal of excess dredged material will be disposed of in a manner consistent with the dredge disposal plan developed as part of the Environmental Impact Statement (EIS).

C5.4.2 Inclusion of Environmentally Acceptable Operations and Management for the By-Pass Channel Structures. The by-pass channel structures will remain in a closed position and opened only for the passage of deepwater draft vessels. The Freshwater Bayou Lock will continue to serve current vessels' need. The structures will serve as a barrier to saltwater intrusion through the bypass channel and will inhibit tidal influx. Periodic opening of the structures is anticipated for allowing scour to maintain project depths, and will be scheduled during the predominant peak freshwater flow periods. The Operation, Maintenance, Repair, Replacement, and Rehabilitation (OMRR&R) Manual

will include the environmentally acceptable components for the operations and management of the structure.

C5.4.3 Uses of Spoil or Other Project Refuse. Excavated and dredged material will be used primarily for the reinforcement of the structure and appurtenance integrity. Excess excavated and dredged material will be disposed of in a manner consistent with the dredge disposal plan.

C5.4.4 Maintenance of the Ecological Continuity with the Surrounding Area and Within the Region. The proposed structures will replace existing structures and will function similarly. The landscape of the project site will not be altered by the swing barge alternative. The swing barge alternative may be utilized as a lock system during periods of low freshwater flow or dominant tidal flow. No long-term significant changes to the ecology of the area are expected.

C5.4.5 Consideration of Indirect Environmental Costs And Benefits. The indirect environmental effect of the project consists of an increase in vessel size along the waterway system. The project is intended to provide navigational access to deep-water draft vessels. The increase in vessel size and associated increase in vessel wakes and vessel draft surges will increase the potential for shoreline erosion of the waterway. The dredge disposal plan is expected to address these particular issues.

C5.4.6 Corrosion Mitigation. To prevent corrosion, the proposed sector gate and swing barge structure will be prepared, primed and painted according to U.S. Army Corps of engineers painting guide specifications developed for the applicable climate and conditions of the proposed site. The swing barge structures alternatives consist of two options, steel barge and concrete barge. Steel barges and sector gates will be more susceptible to the corrosion forces associated with a marine environment and will be protected by proper paint measures as well as cathodic protection.

C5.5 Hazardous and Toxic Materials. As part of this study, New Orleans District personnel are conducting an "Initial Hazardous, Toxic and Radioactive Waste Assessment" (IHTRWA) of the site of the proposed structures. The assessment is to be based on analysis of existing literature, agency records, land use research, historical aerial photographs, site visits, and helicopter over-flights. From initial results and applying best professional judgment, there is no apparent Hazardous, Toxic, and Radioactive Waste (HTRW) concern. Proper measures will be taken if any concerns for HTRW arise during the final EIS study.

C6. STRUCTURAL DESIGN CRITERIA.

C6.1 Freshwater Bayou Bypass Water Control Structures.

C6.1.1 General. The Port of Iberia Project provides for the installation of two control structures on the north and south ends of the Freshwater Bayou Lock Bypass Channel in Vermilion Parish, Louisiana. The existing swing gates and associated structures will be removed. During this study, 3 alternatives were investigated:

- Two (2) steel barge-type swing gates
- Two (2) concrete barge-type swing gates
- One (1) cast-in-place sector gate.

The steel barge-type swing gate alternative was eliminated because of maintenance concerns due to corrosion. The cast-in-place sector gate was eliminated because it was more expensive and would possibly allow an unacceptable amount of salt water to enter Freshwater Bayou during operation. Thus, the concrete barge-type swing gate alternative is the preferred alternative proposed in this report. A detailed presentation of feasibility level design information for these swing gates is included in a Technical Report (Freshwater Bayou Bypass Channels, Water Control Structures, Three (3) Volumes) supplemental to this Engineering Appendix

C6.1.2 Criteria. The proposed concrete swing gates will provide for a 200-foot clear opening for the passage of deep draft vessels. The purpose of these floodgates is to install a structure that: provides barrier to saltwater intrusion; decreases maintenance dredging of the bypass channel; increases the bypass channel width to 200 feet; and boosts the potential for oilfield industry and overall economy of surrounding and associated parishes. The existing Freshwater Bayou Lock will continue to serve the majority of vessels. However, large deep draft vessels, and those vessels requiring a maximum clear opening of two hundred (200) feet will utilize the proposed gate structures on the Freshwater Bayou Lock Bypass Channel. The estimated construction cost for the floodgates (including 15% contingency) is approximately $30,638,000.

C6.1.3 Controlling Elevations.

Channel Bottom Elevation: -23.00 Ft NAVD88
Flood Elevation: +9.00 Ft NAVD88
Top of Swing Gate: +5.00 Ft NAVD88
Channel: 200-Foot Clearance

C6.1.4 Project Features.The project encompasses civil/structural, mechanical, and electrical components.

C6.1.5 Civil/Structural. The following are the civil/structural features of the proposed project.

C6.1.5.1 Concrete Swing Gate. The concrete swing gate consists of a concrete hull with a pivoting swing arm attached to a pivot structure. When the gate is swung into position and ballasted to seal with the sill and receiving structure, the bottom will rest at -23.0 feet NAVD 88 and upper deck will be at +5.0 feet NAVD 88. The gate will bear against the concrete abutments to Elevation 5.0 feet NAVD 88. A hollow elastomeric strip seal shall be utilized at the contact areas between the swing gate and the channel sheet pile cut-off wall, the receiving structure footings, and the receiving structure pilasters (abutments).

C6.1.5.2 Receiving Structures. Two (2) receiving structures each on the north and south ends of the bypass channel will be constructed. The receiving structures consist of a cast in-place, pile-supported concrete foundation system for lateral bearing of the concrete swing gate in the closed position. As stated earlier, the concrete swing gate abutments will be constructed to allow a clear opening of 200 feet.

C6.1.5.3 Grade Beams. Concrete grade beams will be installed between the receiving structures to support the concrete swing gate in the closed position. The grade beams are designed to be pre-cast panels supported on precast concrete piles.

C6.1.5.4 Pivot Structure Monolith. The cast in-place concrete pivot structure monolith will be pile supported and will support a steel pipe pivot that will be connected to the swing arm assembly. The swing arm will connect the concrete swing gate to the pipe pivot. The steel pipe pivot will be constructed with a floating collar and universal hinge to allow the swing arm and concrete swing gate to rotate about both the longitudinal and transverse axes.

C6.1.5.5 Anchor Structure Monolith. The cast in-place concrete anchor structure monolith will be constructed to house the pull cable to open and close the concrete swing gate. Two (2) anchor structures will be constructed for each concrete swing gate, one for opening the concrete swing gate and one for closing it.

C6.1.5.6 T-Walls and I-Walls. From each of the four (4) receiving structures, concrete T-walls will extend toward the bank lines a maximum distance of one hundred eight (108) feet, then I-walls will extend another eighty (80) feet (maximum) into the bank lines. The top of concrete elevation for the T-walls and I-walls will be +5.0 ft NAVD88.

C6.1.5.7 Cattle and Pedestrian Walkways. In order for cattle to cross the bypass channel periodically, a 15-foot wide walkway will be constructed on the top of the concrete swing gate. Cattle will access the top of the concrete swing gate through a livestock ramp constructed of precast concrete panels spanning between concrete pile supports. The livestock ramp will be installed with handrails and grating on each side. The elevated pedestrian walkways will be 6 feet wide with aluminum handrails on each side and will be constructed with precast concrete panels supported by concrete piles. These walkways will provide access from the boat dock to the top of the bank and from the cattle walkway to the swing gate in the navigation open position. The 6-foot wide sidewalk located on the top of the bank will provide access from the cattle walkway to the boat dock walkway.

C6.1.5.8 Boat Dock. A 15-foot x 20-foot boat dock will be constructed on the east and west sides of the bypass channel on the north and south ends. The boat dock will be constructed with a deck of precast concrete panels supported by precast concrete beams and pilings. The pedestrian walkway will connect to the boat dock. A one-ton hoist crane will be installed on the dock.

C6.1.5.9 Navigation/Mooring Dolphins. Navigational dolphins will be constructed in the bypass channel so that marine vessels can be guided through each swing gate opening on the north and south ends. The dolphin structures will be constructed in front and back of each receiving structure. A total of eight (8) dolphins are to be installed. Navigation lights will be installed on each dolphin. Additionally, a total of six (6) mooring dolphins will be constructed parallel to the bankline on the east side on the north and south ends of the bypass channel where each concrete swing gate docks while in the navigation open position. These will be used to anchor the concrete swing gate in a safe shoreline location while marine vessels utilize the channel.

C6.1.6 Mechanical.

C6.1.6.1 Winches and Cables. Two (2) hydraulic motor driven winches are required for each swing gate; one to pull and one to brake. The winches alternate function between opening and closing the swing gate. A single electric motor driven hydraulic pump with valves will be used to drive and control braking of the two winches.

C6.1.6.2 Ballast / Deballast Pumps. Two separate pumping systems will be utilized, one to deballast the swing gate and one to sink it. To deballast the swing gate, each watertight compartment has one 2,000 GPM electric submersible pump that discharges through the sidewall of the swing gate. The two largest chambers, however, each have two pumps to effectively remove the large volume of water. The pumps will be equipped with a rail removal system for maintenance. To supply enough water to sink the swing gate, four electric driven submersible pumps will be used. They will be located

in two flooded chambers and will supply 5000 GPM of water each for a total of 20,000 GPM to an above deck carbon steel manifold. This supply system will provide enough water to sink the concrete swing gate four feet in one hour. Note that to deballast it entirely, it will take approximately two hours. The pumps will be equipment with a rail removal system for maintenance.

C6.1.6.3 Hydraulic System. There will be one electric hydraulic drive unit for each swing gate. The hydraulic power unit (HPU) powers both of the hydraulic winches. The HPU contains two 125 HP electric motor driven hydraulic pumps mounted on a skid. The entire skid is placed on a platform four feet above deck to isolate the electric motor from high water. The HPU is rated at 50-ton capacity and a maximum pull at a rate of 50 feet per minute and a minimum pull rate of 25 feet per minute. The unit is specified as flow limited constant HP variable speed to reduce the HP required. The winches can operate with one winch pulling and the other acting as a brake.

C6.1.7 Electrical. The electrical power for the swing gate structures will be supplied from an electric distribution feeder located on the west side of Freshwater Bayou at the existing Lock Structure. The electrical feeder will be extended via routing underground to the east side of the Freshwater Bayou Bypass Channel. Routing will require boring under the Freshwater Bayou and the Freshwater Bypass Channel with one (1) 4-inch diameter conduit for the medium voltage feeder, and one (1) 2-inch diameter conduit for communications.

C6.2 Bulkhead Replacement.

C6.2.1 History. Due to a proposed dredging to deepen the Port canals, certain existing bulkheads were required to be analyzed for stability. The executive director of the Port of Iberia determined the selected bulkheads. A team from MVN and a representative from the Port of Iberia engineering consultant, Shaw Coastal Inc., met at the Port of Iberia to perform site inspections. Brief visits to sixteen (16) bulkheads were conducted over the span of two days. Since the initial site visit, the number of businesses has changed. Shaw Coastal Inc. and the Port of Iberia met with a number of business owners to discuss their present needs and future needs with a deeper channel. Results from the discussions with the owners are summarized in Annex 4. A summary of the type of sheet pile bulkhead at each business is listed below.

C6.2.2 Existing Conditions.

(a) Bayou Management (1). The area adjacent to the existing bulkhead was used primarily for pipe storage. The existing bulkhead was comprised of timber sheets with a tie-back system. The timber condition is poor with several timber piles showing failure and deterioration at the tie-back connection.

(b) Chart Coastal Fabrication (2). The area adjacent to the existing bulkhead was used as a loading facility with a relieving platform. The existing bulkhead was comprised of steel sheet piling, structural steel wales and a tie-back system.

(c) Dynamic (Canal) (3). The area adjacent to the existing bulkhead was used primarily for fabrication of large offshore structures. The existing bulkhead was comprised of steel sheet piling, structural steel wales and a tie-back system.

(d) Dynamic (4). This bulkhead will not be affected by the dredging project.

(e) Dynamic, (Slip) (5). The area adjacent to the existing bulkhead was used as a loading facility with a relieving platform. The existing bulkhead was comprised of steel sheet piling, structural steel wales and a tie-back system.

(f) Frank's Casing (6). The area adjacent to the newly constructed bulkhead was used primarily as a loading facility. The existing bulkhead was comprised of steel sheet piling, structural steel wales and a tie-back system.

(g) Omega Natchiq (7). The area adjacent to the existing bulkhead was used primarily as a loading facility. The existing bulkhead was comprised of timber sheets. This facility has been removed from the cost estimate based on discussion between the business owner, the Port of Iberia, and Shaw Coastal Group.

(h) Stolt (Canal and Slip) (8&9). The area adjacent to the existing bulkhead was used primarily as a loading facility. The existing bulkhead was comprised of steel sheet piling, structural steel wales and a tie-back system. The backfill has washed out from behind the bulkhead in several areas.

(i) Natco and Superior, NORTH (10N). The area adjacent to the existing bulkhead was used primarily for scrap storage. The existing bulkhead was comprised of steel sheets. The bulkhead appears to be a cantilever type since tie rods or wales could not be seen above the water.

(j) Natco and Superior, SOUTH (10S). The area adjacent to the existing bulkhead was used primarily for scrap storage and housed a prefabricated storage shed. The existing bulkhead was comprised of steel sheets. The bulkhead appears to be a cantilever type since tie rods or wales could not be seen above the water.

(k) Jamar Services (11). The area adjacent to the existing bulkhead was used primarily for scrap storage. Half of the existing bulkhead was comprised of timber

sheets with a tie-back system and the other half was comprised of steel sheets with a tie-back system. The timber bulkhead is in very poor condition with a portion of the bulkhead missing.

(l) D&D Fuel Dock (12). The area adjacent to the existing bulkhead was used primarily as a loading facility. Half of the existing bulkhead was comprised of timber sheets and the other half was comprised of steel sheet piling, structural steel wales and a tie-back system. The timber bulkhead is in very poor condition. A portion of the backfill behind the timber bulkhead has been washed-out.

(m) L-Con Indus (13). The main purpose of this bulkhead appears to provide bank protection for the pipeline that crosses Commercial Canal. The existing bulkhead was comprised of steel sheet piling. The bulkhead appears to be a cantilever type since tie rods or wales could not be seen above the water. This bulkhead will not be included in the cost estimate because the pipeline will be removed, and reinstalled via directional drilling beneath the channel. A new bulkhead will not be required.

(n) Bayou Management (14). The main purpose of this bulkhead appears to provide bank protection for the pipeline that crosses Commercial Canal. The existing bulkhead was comprised of steel sheet piling with a tie-back system. Steel sheets are a mix of cold and hot rolled members. This bulkhead will not be included in the cost estimate because the pipeline will be removed, and reinstalled via directional drilling beneath the channel. A new bulkhead will not be required.

(o) Port Public Dock (15). The area adjacent to the existing bulkhead was used as a loading facility and a storage facility. The existing bulkhead was comprised of steel sheet piling, structural steel wales and a tie-back system.

(p) Pipeline Bulkhead (16). The main purpose of this bulkhead appears to provide bank protection for the pipeline that crosses Commercial Canal. The existing bulkhead was comprised of timber sheets with a tie-back system. This bulkhead will not be

included in the cost estimate because the pipeline will be removed, and reinstalled via directional drilling beneath the channel. A new bulkhead will not be required.

6.2.3 Design Assumptions

6.2.3.1 Existing Conditions. The existing design conditions for most of the bulkheads were not known, therefore it was assumed that these bulkheads would be replaced. For certain businesses that provided as-built drawings of their bulkheads, time constraints prohibited an analysis of the existing bulkhead, therefore, it was assumed these bulkheads would also be replaced.

6.2.3.2 Loading Conditions. Based on the information provided by Shaw Coastal Engineering (see Annex 4), the surcharge loading used for preliminary analysis was 200 lbs per square foot. The owner will be required to design for larger loads, as stated in the last paragraph of Annex 4.

C6.2.3.3 Dredge Line At Bulkhead. For this investigation, the dredge line will be constructed to EL -20.0 NAVD88. However, based on conversations between Shaw Coastal Engineering and the Port of Iberia, the dredge line at the bulkhead will not be –20 NAVD88. The dredge line at the bulkhead was determined by cross sectional surveys at each existing bulkhead. This dredge elevation is not necessarily the final elevation immediately adjacent to the bulkhead wall. The design dredge elevation was lowered to an elevation of –23.0 NAVD88 (for advanced maintenance and over-dredging), and a 1V on 3H slope was used from the projected edge of the cut to the face of the wall. Each design section is site specific and is shown imposed on the existing cross sections.

C6.2.4 Structural Design of Bulkheads.

C6.2.4.1 General. The new steel sheet pile bulkhead walls are designed as single anchored walls. The parts of the anchored wall are described below.

C6.2.4.2 Bulkhead. The sheet pile bulkhead section was designed based on the moment provided by CWALSHT, using the factor of safety as shown in Para 3.3.2.1. EM 1110-2-2504 requires the allowable yield strength of the sheet pile steel to be 50% of the actual steel yield strength. The minimum yield strength for sheet pile steel will be 50 ksi. The sheet piling will be coated to protect against corrosion.

C6.2.4.3 Tie-back System. The tie-rods and wales were designed based on the anchor force per linear foot of wall provided by CWALSHT. The tie-rods and wales were designed according to EM 1110-2-2504 criteria. Clearance concerns for placing the tie-rods and anchor system were assumed to be negligible based on the site inspections. All steel will have a minimal yield strength of 50 ksi and will be galvanized to protect against corrosion.

C6.2.5 Proposed Improvements. Based on the above analysis for each business bulkhead, the following improvements are recommended:

(a) Bayou Management (1). New anchored bulkhead with 68.5-foot long AZ-17 steel sheet pile, 78-foot long #14 dywidag tie-rods spaced 6-feet center to center and a 9-foot long AZ-17 anchor sheet pile.

(b) Chart Coastal Fabrication (2). New anchored bulkhead with 61.5-foot long AZ-13 steel sheet pile, 70-foot long #14 dywidag tie-rods spaced 6-feet center to center and a 8-foot long AZ-17 anchor sheet pile. The relieving platform concrete slab will also be replaced.

(c) Dynamic (3). New anchored bulkhead with 52-foot long AZ-13 steel sheet pile, 61-foot long #14 dywidag tie-rods spaced 6-feet center to center and a 7-foot long AZ-13 anchor sheet pile.

(d) Dynamic (5). New anchored bulkhead with 61.5-foot long AZ-13 steel sheet pile, 70-foot long #14 dywidag tie-rods spaced 6-feet center to center and a 8-foot long AZ-17 anchor sheet pile. The relieving platform concrete slab will also be replaced.

(e) Frank's Casing (6). New anchored bulkhead with 68.5-foot long AZ-17 steel sheet pile, 78-foot long #14 dywidag tie-rods spaced 6-feet center to center and a 9-foot long AZ-17 anchor sheet pile.

(f) Stolt (8 & 9). New anchored bulkhead with 82.5-foot long AZ-34 steel sheet pile, 95-foot long #18 dywidag tie-rods spaced 6-feet center to center and a 13-foot long AZ-34 anchor sheet pile.

(g) Natco North (10N). New anchored bulkhead with 65.5-foot long AZ-13 steel sheet pile, 69-foot long #14 dywidag tie-rods spaced 6-feet center to center and a 8-foot long AZ-13 anchor sheet pile.

(h) Natco South (10S). New anchored bulkhead with 82.5-foot long AZ-34 steel sheet pile, 95-foot long #18 dywidag tie-rods spaced 6-feet center to center and a 13-foot long AZ-34 anchor sheet pile.

(i) Jamar Services (11). New anchored bulkhead with 65.5-foot long AZ-13 steel sheet pile, 69-foot long #14 dywidag tie-rods spaced 6-feet center to center and a 8-foot long AZ-13 anchor sheet pile.

(j) D&D Fuel Dock (12). New anchored bulkhead with 82.5-foot long AZ-34 steel sheet pile, 95-foot long #18 dywidag tie-rods spaced 6-feet center to center and a 13-foot long AZ-34 anchor sheet pile.

(k) Port Public Dock (15). New anchored bulkhead with 65.5-foot long AZ-13 steel sheet pile, 69-foot long #14 dywidag tie-rods spaced 6-feet center to center and a 8-foot long AZ-13 anchor sheet pile.

C7. OPERATION AND MAINTENANCE.

C7.1 Maintenance Dredging and Rock Placement Requirements.

C7.1.1 Maintenance Dredging. Maintenance dredging requirements are discussed in detail in above section C4.1.5, "Operation and Maintenance". Generally, the majority of maintenance dredging is expected to be in the Commercial Canal and Freshwater Bayou Bar Channel reaches of the project. Limited maintenance along both the GIWW and Freshwater Bayou is expected due to the placement of rock for bank protection along both of these reaches; however, tropical events in the project area may cause some sedimentation of the channels. Accordingly, three (3) maintenance cycles during the 50-year period of economic analysis have been included for these reaches. The first is at year 10, the second at year 25, and the third at year 40. It must be noted that placement of rock to elevation (+)3.5 NAVD88 along the GIWW (as opposed to (+)5.0 NAVD88 along Freshwater Bayou) will cause the loss of some bank material into the GIWW during the life of the project. However, it is anticipated that the maintenance events included to cover hurricane sedimentation will adequately remove this material.

C7.1.2 Rock Placement. Maintenance of the rock placed along both the GIWW and Freshwater Bayou is expected due to settlement and subsidence. To maintain these disposal sites, three (3) maintenance cycles during the 50-year project life have been included for these reaches. The first is at year 10, the second at year 25, and the third at year 40.

C7.2 By-Pass Channel Floodgates Requirements.

C7.2.1 General. The by-pass channel structures will be operated at specific times, when the existing locks cannot facilitate the needs of deep draft and wide vessels. The current locks at Freshwater Bayou are only eighty-four feet wide. Waterway traffic consists of a mix of commercial barge tows, recreational boats, fishing craft, and other vessels. Operation of the structures will be in accordance with an Operation,

Maintenance, Repair, Replacement and Rehabilitation (OMRR&R) Manual and a Water Control Manual written specifically for the structures during the construction phase.

C7.2.2 Normal Operations. Under normal conditions, the structures in the by-pass channel will be in closed position. The normal operation for north bound waterway traffic consists of opening south gates and admitting the traffic into the channel. After filling the channel, the south gate is closed and north gate would be opened to allow the vessels to exit the by-pass channel. The north gate will be closed after traffic exiting the channel. The reverse procedure will be followed for south bound traffic.

C7.2.3 Operations During Major Repair Events. Major repair to the structures will be carried out on about a twelve-year cycle. The repair would typically be scheduled for low water seasons or peak freshwater flow periods. The repairs for the concrete swing barge consist of blasting and painting of the pivot arm assembly, replacement of pivot pile, and the seal. The concrete swing gates would be removed from the bypass channel one at a time to avoid saltwater intrusion and repaired off site.

C7.2.4 Estimated Average Annual Operating Cost. Annual operations costs are based on available information and are included in Annex 6. These figures include payroll, utilities, and supplies used at structure and applicable overheads.

C7.2.5 Special Operating Conditions. Swing barges will be operated only when the current velocity is 0.5 feet per second or less.

C7.2.6 Maintenance Requirements. Freshwater Bayou bypass channel structures will be maintained in accordance with standard New Orleans District practices and all applicable regulations. Preventative maintenance will be carried out on structures equipment in accordance with manufacturer's recommendations. An automated maintenance management system will be used to facilitate effective execution of the preventative maintenance program, maintain inventories of equipment, spare parts and

supplies, and keep records for future reference. Estimated maintenance costs are contained in Annex 6.

C7.2.7 Schedule of Maintenance. Major repairs to the by-pass channel will be carried out on an approximate twelve-year cycle, or as needed to maintain the integrity of the paint coating system, and repair or replace work or damaged parts. Any repairs required to the gate bay monoliths will be executed concurrently with gate repairs. Repairs to guidewalls and dolphins will be carried out as needed to replace individual components, which become worn out through normal service or sustain damage in marine accidents. Approach structures will be replaced in their entirety when periodic maintenance is no longer a practicable solution to maintaining their structural integrity. Monthly operations and routine maintenance will be carried out to ensure effective functioning of the structures. Monthly operation will also help minimize silting of the channel and fouling of the operating cables by debris.

C7.2.8 Periodic Inspections. Comprehensive structural, mechanical, and electrical inspections of the structures will be carried out as prescribed by Periodic Inspection Program requirements. Scour and settlement surveys will also be conducted as prescribed by Periodic Inspection Program to detect conditions, which could compromise structural integrity. Any deficiencies noted in the periodic inspections or surveys will be remediated with all practicable dispatch.

C7.2.9 Project Security. Security fencing to be provided around any and all structures. Operating personnel will report damage to government property incidental to the lockage of watercraft as required by regulation. Reimbursement for damages will be sought through legal recourse.

C8. COST ESTIMATES.

C8.1 Basis of Cost Estimate.

C8.1.1 Detailed cost estimates for all alternatives studied are included in Annex 1 of this report. The final initial construction cost estimate for the selected plan was also finalized utilizing M-CACES, and is included in Annex 7. However, all data for equipment, labor, and materials were manually entered in lieu of referencing the M-CACES unit price book and database. The cost estimate reflects current and applicable pricing and addresses specific construction procedures for the various line items in the estimate.

C8.1.2 The estimated costs were based upon an analysis of each line item evaluating quantity, production rate, and time, together with the appropriate equipment, labor, and material costs. In addition, these costs were based on actual in-house knowledge and experience by MVN cost engineers who either personally designed or estimated similar projects.

C8.1.3 All the construction work is common to MVN.

C8.2 Contingencies.

C8.2.1 Contingencies for the cost estimates were based upon similar cost estimates that had a risk analysis performed using the Range Estimating computer program.

C8.2.2 Contingencies for engineering and design are based on uncertainties involved in the preparation of plans and specifications, and in engineering during construction. These include cost of field data collection; unanticipated design problems; change in design based on the review of the report, due to information from surveys and soil borings and changes in design criteria; and changes in overhead rates.

C8.2.3 Contingencies for construction management are based on using a historical average of time growth for similar type contracts in the area. The time growth includes additional duration for unusually severe weather and unknown changes to the contracts.

C8.3 Detailed Estimate. The project cost estimate for the selected plan in M-CACES format is included in Annex 7 of this report. The project estimate of first cost, which includes costs for lands and damages, and real estate costs during construction, as well as construction costs, is **$161,895,700**. Construction cost estimates for all alternatives studied are also included in Annex 1.

C9. FUTURE DESIGN PHASES.

C9.1 Surveying, Mapping, And Other Geospatial Data Requirements. Surveying, mapping and geospatial data were developed during the course of this study to the level required to support the information presented herein. For future design, Temporary Bench Marks (TBMs) will be established at the site, and detailed cross-section, topographical, and hydrologic surveys of the proposed site and areas adjacent thereto will be taken. Adequate property boundary surveys will also be taken to establish section and title, and to support development of project real estate requirements. Additionally, adequate surveys will be taken to develop Geographical Informational System (GIS) information.

C9.2 Future Design.

C9.2.1 Schedule. Approval of this Feasibility Report will signal completion of the Feasibility Phase of this project. Upon approval of this report, New Orleans District will proceed with the Preconstruction Engineering and Design (PED) Phase. The PED Phase will consist of finalization of design, and will include, but not be limited to, completion of Detailed Design Report for the by-pass channel floodgates, development of Plans and Specifications (P&S), and preparation of construction contracts for advertising.

C9.2.2 Design Data Management. All data and information developed during the feasibility study phase shall be cataloged and stored for all future phases of this project using the ProjectWise data management system. Internal Technical Review (ITR) was conducted using the Dr. Checks system.

C9.2.3 Use Of Metric System Measurement During Design. Use of the metric system of measurement will not be utilized for this project due to the major impact it would have on schedules and design and construction costs.

C10. CONSTRUCTION REQUIREMENTS.

C10.1 Project Access During Construction.

C10.1.1 Dredging Activities. Access to the project site will be available from the GIWW, Freshwater Bayou, and the Gulf of Mexico.

C10.1.2 By-Pass Channel Floodgates. For the floodgates, the contractor may mobilize his equipment by barge westward on the GIWW and southward on Freshwater Bayou from Intracoastal City. The construction site for the by-pass channel structures is located in an isolated location adjacent to the existing Freshwater Bayou Lock. The road accessing the construction site is only accessible to the existing Freshwater Bayou Lock; thus, limited construction access by road is available. All construction will be performed from barge or water access.

C10.2 Construction Requirements.

C10.2.1 Dredging and Rock Placement Activities. As discussed previously in paragraph C4.1.4, award of a maximum total of ten (10) construction contracts are anticipated to complete proposed dredging and rock placement:

- Freshwater Bayou Bar Channel - one (1) contract
- Freshwater Bayou Interior - five (5) contracts
- G.I.W.W. - three (3) contracts
- Commercial Canal - one (1) contract

C10.2.1.1 Freshwater Bayou Bar Channel. Construction for Freshwater Bayou Bar Channel will consist one (1) contract solely of hydraulic cutterhead dredging. All material from this reach will be disposed of in an unconfined manner in a beach nourishment disposal area. Placement of rock will not be required. Since maintenance

dredging is projected every four (4) years for this reach, initial construction will be after all other contracts for Commercial Canal, G.I.W.W., and Freshwater Bayou Interior are complete. Based on overall project construction lasting longer than four years, leaving this reach for last will preclude a maintenance cycle prior to completion of the project.

C10.2.1.2 Freshwater Bayou Interior and G.I.W.W. Dredging of Freshwater Bayou Interior and GIWW reaches will be completed using a combination of mechanical and hydraulic cutterhead dredge. A maximum of five (5) and three (3) contracts are projected for Freshwater Bayou Interior and G.I.W.W, respectively. Rock placement will be part of each contract. Due to availability of rock, it is anticipated that no more than two contracts can occur simultaneously.

C10.2.1.3 Commercial Canal. Dredging of Commercial Canal will be completed in one (1) contract using a combination of mechanical and hydraulic cutterhead dredge. All material from this reach will be disposed into an upland disposal site on the west bank of Commercial Canal, or into a disposal site in Weeks Bay. Placement of rock will not be required. Since a maintenance-dredging cycle is anticipated in Year 5 of project life, initial construction will be after all other contracts for G.I.W.W., and Freshwater Bayou Interior are complete. This will preclude a possible maintenance event prior to completion of the project.

C10.2.2 By-Pass Channel Floodgates. One contract will be awarded to construct the by-pass channel structures.

C10.2.2.1 Project Access. Access to the construction site will be available from the GIWW and Freshwater Bayou. The contractor may mobilize his equipment by barge westward on the GIWW and then southward on Freshwater Bayou from Intracoastal City. All construction will be performed from barges through water access. Specific requirements for project access should be coordinated with the USACE Operations Division. Access may not be available at all times during construction. The USACE

should not be held liable for any delays as a result of limited or delay access through the Freshwater Bayou Lock site.

C10.2.2.2 Sequence of Construction. The approximate sequence of construction for the concrete swing gate is as follows:

- Removal of the existing concrete barge structures on the north side only for construction access;
- Clearing and grubbing;
- Excavation and embankment;
- Driving sheet piles for cofferdams;
- Installation of Dewatering System;
- Driving cutoff sheet piles for receiving structure and T-walls;
- Driving PPC piles;
- Construction of concrete abutments, T-walls, pivot structures;
- Installation of pivot pile;
- Removal of cofferdam;
- Installation of concrete swing gate grade beams, sheet pile cutoff wall, and anchor structure;
- Simultaneous off-site formation of concrete swing gate during the above tasks;
- Transportation and installation of concrete swing gate;
- Construction of I-wall, cattle ramp, and walkways;
- Construction of boat dock;
- Installation of dolphins and navigation aids;
- Place both swing structures into operation; and
- Remove existing swing structure on south end.

C10.3 Sequence of Construction. The duration and scheduling of construction contracts will depend greatly on the amount of construction funding available. Assuming adequate funding is available, first construction could be completed in five (5) years as follows:

Construction Year	Project Construction Contract Award
1	G.I.W.W, Contracts 1 and 2
2	G.I.W.W, Contract 3 and Freshwater Bayou Interior, Contract 1
3	Freshwater Bayou Interior, Contracts 2 and 3
4	Freshwater Bayou Interior, Contracts 4 and 5
5	Commercial Canal, Freshwater Bayou Bar and By-Pass Channels, and By-Pass Channel Floodgates

C11. BERTHING AND BULKHEAD CONSIDERATIONS.

C11.1 Deepening of Berths. To determine if berths within the Port of Iberia required deepening, facility owners within the port were interviewed to determine their plans for modifying their facilities in response to the deeper channel. Of particular interest was information obtained from three facilities, Dynamic, Omega Natchiq, and UNIFAB. These companies are integrally involved in the construction of large oil-field related structures that are transported into place using the design vessel for this project, which is a special offshore petroleum industry barge that is 100-feet wide, 400-feet long, and a draft of 20 feet. Each company responded that they currently had sufficient water at their facility to accommodate these vessels. The remaining companies interviewed responded that they would continue to utilize their current off-loading techniques, and not deepen their berths. Based on the results of these interviews, the PDT determined that dredging of berthing areas would not be required for this project.

11.2 Bulkheads.

11.2.1 General. Due to a proposed increase in depth of the canals within the Port of Iberia proper, the PDT determined that certain existing bulkheads should be analyzed for stability. The executive director of the Port of Iberia determined the selected bulkheads. A team from MVN and representatives from the Local Sponsors A-E, Shaw Coastal, Inc. (SCI) met at the Port to perform site inspections. Site visits over the span of 2 days were conducted for sixteen (16) bulkhead at the following businesses:

- Bayou Management
- Chart Coastal Fabrication
- Dynamic
- Frank's Casing
- Omega Natchiq
- Stolt
- Natco & Superior
- Jamar Services
- D&D Fuel Dock

- L-con Indus
- Bayou Management
- Port Public Dock
- Miscellaneous Pipeline

11.2.2 Design Assumptions.

11.2.2.1 Team members conducted several days of field inspection to determine a very rough estimate for existing loading conditions. Sketches of the design sections were developed with the predicted loading conditions. Bulkheads are very sensitive to the effects of surcharge with or without adjacent dredging. The PDT determined that the level of surcharge to be adopted by the Port of the Iberia for this project would be a reasonable maximum recommended design surcharge currently experienced by Port properties. Facilities who own their sites and docking facilities would be required to comply with the Port's recommended design surcharge. This requirement corresponds to the policy of the Port's charter, which authorizes the Port to set such standards. The design surcharge as determined by the PDT for estimation of the costs of bulkhead replacements from dredging impacts was established at 200 pounds per square foot.

11.2.2.2 The PDT also determined that, when necessary, the practice of designing and constructing bulkhead relieving platforms and other load supporting improvements to accommodate the large surcharges associated with load-out of fabricated structures at slips within the Port is currently utilized. These items are designed for the appropriate slip draft and the specialized loadings occurring at all stages of the load-out processes. The costs associated with relieving platforms, etc. in most cases is included in the Port occupant's fabrication project budgets negotiated with their customer or borne by the fabricator. Due to the relieving platforms, the large surcharge loads from load outs are set back far enough away from bulkheads to avoid bulkhead overstress or global instability. Therefore, the feasibility study economic analysis did not require direct inclusion of costs associated with relieving platforms, load out surcharges, etc. The PDT also determined that, for this investigation, the design dredge elevation was elevation

(-)23.0 NAVD (for advanced maintenance and over-dredging), and a 1V on 3H slope was used from the projected edge of the cut to the face of the wall.

11.2.3 Design of bulkhead replacement as required for this project is further discussed in paragraph C6.2, "Bulkhead Replacement".

ANNEXES

ANNEX 1	**DETAILED CONSTRUCTION COST ESTIMATES FOR STUDIED ALTERNATIVES**
ANNEX 2	**INVESTIGATIONS OF ALTERNATIVE DISPOSAL PLANS**
ANNEX 3	**GEOTECHNICAL ENGINEERING DATA FOR DESIGN OF BULKHEADS**
ANNEX 4	**BULKHEAD DESIGN CRITERIA, SOIL BEARING CAPACITY, AND LOAD-OUT CAPBILITIES FOR THE PORT OF IBERIA**
ANNEX 5	**RESERVED**
ANNEX 6	**OMRR&R AND MAINTENANCE DREDGING COST ESTIMATES**
ANNEX 7	**MCACES**
ANNEX 8	**ITR COMMENT REPORTS FROM DR. CHECKS (REFER TO VOLUME 6, APPENDIX F)**
ANNEX 9	**DOCUMENTATION FOR TOW SIMULATION MODEL WAIVER**

ANNEX 1 – DETAILED CONSTRUCTION COST ESTIMATES FOR STUDIED ALTERNATIVES

PORT OF IBERIA FEASIBILITY STUDY
CONSTRUCTION / MAINTENANCE COSTS

Item	(-)16' X 150' Channel	(-)18' X 150' Channel	(-)20' X 150' Channel	(-)18' X 135' Channel	(-)20' X 135' Channel	(-)18' X 125' Channel	(-)20' X 125' Channel
Initial Construction	$155,534,929	$179,243,938	$202,843,808	$164,310,775	$187,985,315	$160,988,566	$178,844,268
Maintenance, Year 1	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 2	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320
Maintenance, Year 3	$4,644,820	$5,132,320	$6,476,070	$5,132,320	$6,476,070	$5,132,320	$6,476,070
Maintenance, Year 4	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)
Maintenance, Year 5	$3,095,063	$3,447,183	$3,659,515	$3,447,183	$3,659,515	$3,447,183	$3,659,515
Maintenance, Year 6	$4,733,820	$5,221,320	$6,565,070	$5,221,320	$6,565,070	$5,221,320	$6,565,070
Maintenance, Year 7	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 8	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)
Maintenance, Year 9	$4,644,820	$5,132,320	$6,476,070	$5,132,320	$6,476,070	$5,132,320	$6,476,070
Maintenance, Year 10	$16,133,891	$16,800,382	$20,946,522	$15,823,914	$19,655,753	$15,578,374	$19,134,957
Maintenance, Year 11	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 12	$288,195	$775,695	$2,119,445	$775,695	$2,119,445	$775,695	$2,119,445
Maintenance, Year 13	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 14	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320
Maintenance, Year 15	$5,291,820	$5,929,320	$7,273,070	$5,929,320	$7,273,070	$5,929,320	$7,273,070
Maintenance, Year 16	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)
Maintenance, Year 17	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 18	$4,733,820	$5,221,320	$6,565,070	$5,221,320	$6,565,070	$5,221,320	$6,565,070
Maintenance, Year 19	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 20	($1,951,493)	($1,762,018)	($1,070,630)	($1,762,018)	($1,070,630)	($1,762,018)	($1,070,630)
Maintenance, Year 21	$4,644,820	$5,132,320	$6,476,070	$5,132,320	$6,476,070	$5,132,320	$6,476,070
Maintenance, Year 22	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320
Maintenance, Year 23	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 24	$288,195	$775,695	$2,119,445	$775,695	$2,119,445	$775,695	$2,119,445
Maintenance, Year 25	$13,762,239	$14,283,907	$17,685,327	$13,307,439	$16,394,558	$13,061,899	$15,873,762
Maintenance, Year 26	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320
Maintenance, Year 27	$4,644,820	$5,132,320	$6,476,070	$5,132,320	$6,476,070	$5,132,320	$6,476,070
Maintenance, Year 28	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)
Maintenance, Year 29	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 30	$5,530,820	$6,018,320	$7,362,070	$6,018,320	$7,362,070	$6,018,320	$7,362,070
Maintenance, Year 31	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 32	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)
Maintenance, Year 33	$4,644,820	$5,132,320	$6,476,070	$5,132,320	$6,476,070	$5,132,320	$6,476,070
Maintenance, Year 34	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320
Maintenance, Year 35	$2,190,680	$2,571,883	$2,386,383	$2,571,883	$2,386,383	$2,571,883	$2,386,383
Maintenance, Year 36	$288,195	$775,695	$2,119,445	$775,695	$2,119,445	$775,695	$2,119,445
Maintenance, Year 37	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320

PORT OF IBERIA FEASIBILITY STUDY CONSTRUCTION / MAINTENANCE COSTS							
Item	**(-)16' X 150' Channel**	**(-)18' X 150' Channel**	**(-)20' X 150' Channel**	**(-)18' X 135' Channel**	**(-)20' X 135' Channel**	**(-)18' X 125' Channel**	**(-)20' X 125' Channel**
Maintenance, Year 38	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320
Maintenance, Year 39	$4,644,820	$5,132,320	$6,476,070	$5,132,320	$6,476,070	$5,132,320	$6,476,070
Maintenance, Year 40	$9,405,614	$9,927,282	$13,328,702	$8,950,814	$12,037,933	$8,705,274	$11,517,137
Maintenance, Year 41	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 42	$4,733,820	$5,221,320	$6,565,070	$5,221,320	$6,565,070	$5,221,320	$6,565,070
Maintenance, Year 43	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 44	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)	($4,074,305)
Maintenance, Year 45	$5,441,820	$5,929,320	$7,273,070	$5,929,320	$7,273,070	$5,929,320	$7,273,070
Maintenance, Year 46	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320	$371,320
Maintenance, Year 47	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 48	$288,195	$775,695	$2,119,445	$775,695	$2,119,445	$775,695	$2,119,445
Maintenance, Year 49	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320	$282,320
Maintenance, Year 50	$2,279,680	$2,660,883	$2,475,383	$2,660,883	$2,475,383	$2,660,883	$2,475,383

PORT OF IBERIA FEASIBILITY STUDY
INITIAL CONSTRUCTION COSTS CALCULATION

PROJECT FEATURE	(-)16' X 150' CHANNEL	(-)18' X 150' CHANNEL	(-)20' X 150' CHANNEL	(-)18' X 135' CHANNEL	(-)20' X 135' CHANNEL	(-)18' X 125' CHANNEL	(-)20' X 125' CHANNEL
Commercial Canal							
Mobilization/Demobilization	$ 664,500	$ 664,500	$ 664,500	$ 664,500	$ 664,500	$ 664,500	$ 664,500
Containment Dike Construction	$ 514,280	$ 514,280	$ 514,280	$ 514,280	$ 514,280	$ 514,280	$ 514,280
Dredging	$ 4,475,310	$ 6,610,070	$ 8,378,620	$ 5,826,600	$ 7,374,090	$ 5,015,070	$ 6,820,200
E&D	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000
S&A	$ 150,000	$ 170,000	$ 260,000	$ 165,000	$ 220,000	$ 160,000	$ 200,000
Subtotal	**$ 5,929,090**	**$ 8,083,850**	**$ 9,942,400**	**$ 7,295,380**	**$ 8,897,870**	**$ 6,478,850**	**$ 8,323,980**
Contingencies (15%)	$ 889,364	$ 1,212,578	$ 1,491,360	$ 1,094,307	$ 1,334,681	$ 971,828	$ 1,248,597
Total, Commercial Canal	**$ 6,818,454**	**$ 9,296,428**	**$ 11,433,760**	**$ 8,389,687**	**$ 10,232,551**	**$ 7,450,678**	**$ 9,572,577**
G.I.W.W.							
Mobilization/Demobilization, Dredge	$ 87,794	$ 1,153,200	$ 1,230,000	$ 192,273	$ 1,063,800	$ 87,794	$ 192,273
Mobilization/Demobilization, Rock	$ 60,000	$ 120,000	$ 180,000	$ 60,000	$ 120,000	$ 60,000	$ 120,000
Dredging	$ 3,092,880	$ 7,894,280	$ 8,546,450	$ 4,230,000	$ 4,826,280	$ 3,585,120	$ 4,857,750
Flotation Channel Access	$ 0	$ 184,000	$ 184,000	$ 0	$ 184,000	$ 0	$ 0
Rock Dike, Disposal Areas GIWW No. 5 & No. 6	$ 0	$ 1,156,450	$ 2,496,100	$ 0	$ 2,496,100	$ 0	$ 0
Earthen Dike Construction	$ 0	$ 350,000	$ 0	$ 0	$ 0	$ 0	$ 0
Channel Revetment Stone (28-Inch)	$ 7,517,650	$ 8,385,950	$ 14,349,800	$ 7,014,950	$ 10,648,100	$ 7,609,050	$ 9,574,150
Geotextile Fabric	$ 1,832,500	$ 1,832,500	$ 1,832,500	$ 1,832,500	$ 1,832,500	$ 1,832,500	$ 1,832,500
E&D	$ 125,000	$ 250,000	$ 375,000	$ 125,000	$ 250,000	$ 125,000	$ 250,000
S&A	$ 250,000	$ 450,000	$ 620,000	$ 350,000	$ 400,000	$ 300,000	$ 400,000
Subtotal	**$ 12,965,824**	**$ 21,776,380**	**$ 29,813,850**	**$ 13,804,723**	**$ 21,820,780**	**$ 13,599,464**	**$ 17,226,673**
Contingencies (15%)	$ 1,944,874	$ 3,266,457	$ 4,472,078	$ 2,070,708	$ 3,273,117	$ 2,039,920	$ 2,584,001
Total, G.I.W.W.	**$ 14,910,698**	**$ 25,042,837**	**$ 34,285,928**	**$ 15,875,431**	**$ 25,093,897**	**$ 15,639,384**	**$ 19,810,674**
Freshwater Bayou							
Mobilization/Demobilization, Dredge	$ 1,835,000	$ 2,660,000	$ 1,750,000	$ 1,750,000	$ 1,990,000	$ 1,580,000	$ 2,380,000
Mobilization/Demobilization, Rock	$ 240,000	$ 240,000	$ 300,000	$ 240,000	$ 300,000	$ 240,000	$ 240,000
Dredging	$ 6,504,960	$ 11,890,670	$ 18,200,000	$ 8,693,160	$ 14,112,350	$ 7,032,800	$ 13,044,800
Channel Revetment Stone (36-Inch)	$ 33,375,000	$ 33,375,000	$ 33,375,000	$ 33,375,000	$ 33,375,000	$ 33,375,000	$ 33,375,000
Freshwater Bayou Disposal Sites No. 2 & 3, Earthen Core	$ 0	$ 0	$ 140,250	$ 0	$ 148,750	$ 0	$ 32,000
Freshwater Bayou Disposal Sites No. 2 & 3, Rock Cover	$ 0	$ 0	$ 2,208,750	$ 0	$ 2,375,000	$ 0	$ 510,625
Geotextile Fabric	$ 2,832,500	$ 2,832,500	$ 2,832,500	$ 2,832,500	$ 2,832,500	$ 2,832,500	$ 2,832,500
E&D	$ 625,000	$ 625,000	$ 625,000	$ 625,000	$ 625,000	$ 625,000	$ 625,000
S&A	$ 430,000	$ 420,000	$ 600,000	$ 420,000	$ 500,000	$ 420,000	$ 440,000
Subtotal	**$ 45,842,460**	**$ 52,043,170**	**$ 60,031,500**	**$ 47,935,660**	**$ 56,258,600**	**$ 46,105,300**	**$ 53,479,925**
Contingencies (15%)	$ 6,876,369	$ 7,806,476	$ 9,004,725	$ 7,190,349	$ 8,438,790	$ 6,915,795	$ 8,021,989
Total, Freshwater Bayou	**$ 52,718,829**	**$ 59,849,646**	**$ 69,036,225**	**$ 55,126,009**	**$ 64,697,390**	**$ 53,021,095**	**$ 61,501,914**

PORT OF IBERIA FEASIBILITY STUDY
INITIAL CONSTRUCTION COSTS CALCULATION

PROJECT FEATURE	(-)16' X 150' CHANNEL	(-)18' X 150' CHANNEL	(-)20' X 150' CHANNEL	(-)18' X 135' CHANNEL	(-)20' X 135' CHANNEL	(-)18' X 125' CHANNEL	(-)20' X 125' CHANNEL
Freshwater Bayou By-Pass and Bar Channels							
Mobilization/Demobilization, Dredge	$ 745,000	$ 904,000	$ 939,000	$ 904,000	$ 939,000	$ 904,000	$ 939,000
Dredging , By-Pass Channel	$ 957,000	$ 1,160,700	$ 1,308,950	$ 1,094,800	$ 1,255,000	$ 1,064,950	$ 1,258,200
Dredging, Bar Channel	$ 4,089,149	$ 7,176,952	$ 9,585,978	$ 7,125,130	$ 9,530,000	$ 7,118,252	$ 9,524,735
E&D	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000	$ 125,000
S&A	$ 165,000	$ 165,000	$ 210,000	$ 165,000	$ 210,000	$ 165,000	$ 210,000
Subtotal	**$ 6,081,149**	**$ 9,531,652**	**$ 12,168,928**	**$ 9,413,930**	**$ 12,059,000**	**$ 9,377,202**	**$ 12,056,935**
Contingencies (15%)	$ 912,172	$ 1,429,748	$ 1,825,339	$ 1,412,090	$ 1,808,850	$ 1,406,580	$ 1,808,540
Total, Freshwater Bayou Bar Channel	**$ 6,993,321**	**$ 10,961,400**	**$ 13,994,267**	**$ 10,826,020**	**$ 13,867,850**	**$ 10,783,782**	**$ 13,865,475**
Borings, Centerline of Commercial Canal, GIWW and Freshwater Bayou[2]	**$ 350,000**	**$ 350,000**	**$ 350,000**	**$ 350,000**	**$ 350,000**	**$ 350,000**	**$ 350,000**
Surveys	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 300,000**	**$ 300,000**
By-Pass Channel Floodgate[3]	**$ 30,637,232**	**$ 30,637,232**	**$ 30,637,232**	**$ 30,637,232**	**$ 30,637,232**	**$ 30,637,232**	**$ 30,637,232**
Replacement of Bulkheads[4]	**$ 17,000,072**	**$ 17,000,072**	**$ 17,000,072**	**$ 17,000,072**	**$ 17,000,072**	**$ 17,000,072**	**$ 17,000,072**
Removals	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**
Mitigation	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**
Real Estate	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**
TOTAL	**$ 155,534,929**	**$ 179,243,938**	**$ 202,843,808**	**$ 164,310,775**	**$ 187,985,315**	**$ 160,988,566**	**$ 178,844,268**

NOTES:

1. Channel dredging includes 2 feet of advanced maintenance.
2. Borings include centerline borings deferred from Feasibility Phase.
3. By-pass channel floodgate includes 15% contingency, 8% E&D, and 8% S&A.
4. Costs for replacement of bulkheads include 25% contingency.

PORT OF IBERIA FEASIBILITY STUDY, DETAILED COST ESTIMATE FOR INITIAL DREDGING

ALT	REACH	NO. OF CONTRACTS	E & D PER CONTRACT	TOTAL E & D	CONTRACT DURATION (DAYS)	S & A COST PER DAY	TOTAL S&A
(-)18' x125'							
	Commercial Canal	1	$125,000	$125,000	160	$1,000	$160,000
	GIWW	1	$125,000	$125,000	300	$1,000	$300,000
	Freshwater Bayou Interior	5	$125,000	$625,000	420	$1,000	$420,000
	Freshwater Bar Channel	1	$125,000	$125,000	165	$1,000	$165,000
(-)20' x 125'							
	Commercial Canal	1	$125,000	$125,000	200	$1,000	$200,000
	GIWW	2	$125,000	$250,000	400	$1,000	$400,000
	Freshwater Bayou Interior	5	$125,000	$625,000	440	$1,000	$440,000
	Freshwater Bar Channel	1	$125,000	$125,000	210	$1,000	$210,000
(-)18' x 135'							
	Commercial Canal	1	$125,000	$125,000	165	$1,000	$165,000
	GIWW	1	$125,000	$125,000	350	$1,000	$350,000
	Freshwater Bayou Interior	5	$125,000	$625,000	420	$1,000	$420,000
	Freshwater Bar Channel	1	$125,000	$125,000	165	$1,000	$165,000
(-)20' x 135'							
	Commercial Canal	1	$125,000	$125,000	220	$1,000	$220,000
	GIWW	2	$125,000	$250,000	400	$1,000	$400,000
	Freshwater Bayou Interior	5	$125,000	$625,000	500	$1,000	$500,000
	Freshwater Bar Channel	1	$125,000	$125,000	210	$1,000	$210,000
(-)16' x 150'							
	Commercial Canal	1	$125,000	$125,000	150	$1,000	$150,000
	GIWW	1	$125,000	$125,000	250	$1,000	$250,000
	Freshwater Bayou Interior	5	$125,000	$625,000	430	$1,000	$430,000
	Freshwater Bar Channel	1	$125,000	$125,000	165	$1,000	$165,000
(-)18' x 150'							
	Commercial Canal	1	$125,000	$125,000	170	$1,000	$170,000
	GIWW	2	$125,000	$250,000	450	$1,000	$450,000
	Freshwater Bayou Interior	5	$125,000	$625,000	420	$1,000	$420,000
	Freshwater Bar Channel	1	$125,000	$125,000	165	$1,000	$165,000
(-)20' x 150'							
	Commercial Canal	1	$125,000	$125,000	260	$1,000	$260,000
	GIWW	3	$125,000	$375,000	620	$1,000	$620,000
	Freshwater Bayou Interior	5	$125,000	$625,000	600	$1,000	$600,000
	Freshwater Bar Channel	1	$125,000	$125,000	210	$1,000	$210,000

E&D Estimate per Contract:	$125,000
S&A Estimate per Day Duration:	$1,000
Mob Cost - Bucket Dredge (Cast):	$87,794
Mob Cost - Rock Placement:	$60,000

PORT OF IBERIA FEASIBILITY STUDY, DETAILED COST ESTIMATE FOR INITIAL DREDGING

ALT	REACH	MOB FOR DREDGING	EARTHEN DIKE QNTY (CY)	UNIT PRICE	TOTAL	DREDGING QNTY (CY)	UNIT PRICE	TOTAL
(-)18' x125'								
	Commercial Canal	$664,500	26,000	$19.78	$514,280	1,623,000	$3.09	$5,015,070
	GIWW	$87,794	0	$0.00	$0	2,037,000	$1.76	$3,585,120
	Freshwater Bayou Interior	$1,580,000	0	$0.00	$0	2,980,000	$2.36	$7,032,800
	Freshwater Bar Channel	$904,000	0	$0.00	$0	1,520,994	$4.68	$7,118,252
(-)20' x 125'								
	Commercial Canal	$664,500	26,000	$19.78	$514,280	2,105,000	$3.24	$6,820,200
	GIWW	$192,273	0	$0.00	$0	3,175,000	$1.53	$4,857,750
	Freshwater Bayou Interior	$2,380,000	0	$0.00	$0	4,208,000	$3.10	$13,044,800
	Freshwater Bar Channel	$939,000	0	$0.00	$0	2,284,109	$4.17	$9,524,735
(-)18' x 135'								
	Commercial Canal	$664,500	26,000	$19.78	$514,280	1,755,000	$3.32	$5,826,600
	GIWW	$192,273	0	$0.00	$0	2,250,000	$1.88	$4,230,000
	Freshwater Bayou Interior	$1,750,000	0	$0.00	$0	3,318,000	$2.62	$8,693,160
	Freshwater Bar Channel	$904,000	0	$0.00	$0	1,538,905	$4.63	$7,125,130
(-)20' x 135'								
	Commercial Canal	$664,500	26,000	$19.78	$514,280	2,283,000	$3.23	$7,374,090
	GIWW	$1,063,800	0	$0.00	$0	3,261,000	$1.48	$4,826,280
	Freshwater Bayou Interior	$1,990,000	0	$0.00	$0	4,627,000	$3.05	$14,112,350
	Freshwater Bar Channel	$939,000	0	$0.00	$0	2,307,506	$4.13	$9,530,000
(-)16' x 150'								
	Commercial Canal	$664,500	26,000	$19.78	$514,280	1,477,000	$3.03	$4,475,310
	GIWW	$87,794	0	$0.00	$0	1,578,000	$1.96	$3,092,880
	Freshwater Bayou Interior	$1,835,000	0	$0.00	$0	2,541,000	$2.56	$6,504,960
	Freshwater Bar Channel	$745,000	0	$0.00	$0	906,685	$4.51	$4,089,149
(-)18' x 150'								
	Commercial Canal	$664,500	26,000	$19.78	$514,280	1,997,000	$3.31	$6,610,070
	GIWW	$1,153,200	20,000	$17.50	$350,000	2,614,000	$3.02	$7,894,280
	Freshwater Bayou Interior	$2,660,000	0	$0.00	$0	3,487,000	$3.41	$11,890,670
	Freshwater Bar Channel	$904,000	0	$0.00	$0	1,567,020	$4.58	$7,176,952
(-)20' x 150'								
	Commercial Canal	$664,500	26,000	$19.78	$514,280	2,594,000	$3.23	$8,378,620
	GIWW	$1,230,000	0	$0.00	$0	4,169,000	$2.05	$8,546,450
	Freshwater Bayou Interior	$1,750,000	0	$0.00	$0	5,600,000	$3.25	$18,200,000
	Freshwater Bar Channel	$939,000	0	$0.00	$0	2,343,760	$4.09	$9,585,978

PORT OF IBERIA FEASIBILITY STUDY, DETAILED COST ESTIMATE FOR INITIAL DREDGING

ALT	REACH	FRESHWATER BAYOU BYPASS QNTY (CY)	UNIT PRICE	TOTAL	FLOTATION ACCESS TO DISPOSAL SITES 5 & 6 (LUMP SUM)	MOB FOR ROCK PLACEMENT
(-)18' x125'						
	Commercial Canal	0	$0.00	$0	$0	$0
	GIWW	0	$0.00	$0	$0	$60,000
	Freshwater Bayou Interior	0	$0.00	$0	$0	$240,000
	Freshwater Bar Channel	361,000	$2.95	$1,064,950	$0	$0
(-)20' x 125'						
	Commercial Canal	0	$0.00	$0	$0	$0
	GIWW	0	$0.00	$0	$0	$120,000
	Freshwater Bayou Interior	0	$0.00	$0	$0	$240,000
	Freshwater Bar Channel	466,000	$2.70	$1,258,200	$0	$0
(-)18' x 135'						
	Commercial Canal	0	$0.00	$0	$0	$0
	GIWW	0	$0.00	$0	$0	$60,000
	Freshwater Bayou Interior	0	$0.00	$0	$0	$240,000
	Freshwater Bar Channel	391,000	$2.80	$1,094,800	$0	$0
(-)20' x 135'						
	Commercial Canal	0	$0.00	$0	$0	$0
	GIWW	0	$0.00	$0	$184,000	$120,000
	Freshwater Bayou Interior	0	$0.00	$0	$0	$300,000
	Freshwater Bar Channel	502,000	$2.50	$1,255,000	$0	$0
(-)16' x 150'						
	Commercial Canal	0	$0.00	$0	$0	$0
	GIWW	0	$0.00	$0	$0	$60,000
	Freshwater Bayou Interior	0	$0.00	$0	$0	$240,000
	Freshwater Bar Channel	325,000	$3.00	$957,000	$0	$0
(-)18' x 150'						
	Commercial Canal	0	$0.00	$0	$0	$0
	GIWW	0	$0.00	$0	$184,000	$120,000
	Freshwater Bayou Interior	0	$0.00	$0	$0	$240,000
	Freshwater Bar Channel	438,000	$2.65	$1,160,700	$0	$0
(-)20' x 150'						
	Commercial Canal	0	$0.00	$0	$0	$0
	GIWW	0	$0.00	$0	$184,000	$180,000
	Freshwater Bayou Interior	0	$0.00	$0	$0	$300,000
	Freshwater Bar Channel	557,000	$2.35	$1,308,950	$0	$0

PORT OF IBERIA FEASIBILITY STUDY, DETAILED COST ESTIMATE FOR INITIAL DREDGING

ALT	REACH	CHANNEL ROCK QUANTITY (TONS)	ROCK UNIT PRICE	TOTAL	ROCK QNTY FOR DISPOSAL SITES #5 &#6 (TONS)	ROCK UNIT PRICE	TOTAL
(-)18' x125'							
	Commercial Canal	0	$0.00	$0	0	0	0
	GIWW	333,000	$22.85	$7,609,050	0	0	0
	Freshwater Bayou Interior	1,500,000	$22.25	$33,375,000	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)20' x 125'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	419,000	$22.85	$9,574,150	0	$0.00	$0
	Freshwater Bayou Interior	1,500,000	$22.25	$33,375,000	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)18' x 135'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	307,000	$22.85	$7,014,950	0	$0.00	$0
	Freshwater Bayou Interior	1,500,000	$22.25	$33,375,000	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)20' x 135'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	466,000	$22.85	$10,648,100	109,000	$22.90	$2,496,100
	Freshwater Bayou Interior	1,500,000	$22.25	$33,375,000	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)16' x 150'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	329,000	$22.85	$7,517,650	0	$0.00	$0
	Freshwater Bayou Interior	1,500,000	$22.25	$33,375,000	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)18' x 150'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	367,000	$22.85	$8,385,950	50,500	$22.90	$1,156,450
	Freshwater Bayou Interior	1,500,000	$22.25	$33,375,000	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)20' x 150'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	628,000	$22.85	$14,349,800	109,000	$22.90	$2,496,100
	Freshwater Bayou Interior	1,500,000	$22.25	$33,375,000	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0

PORT OF IBERIA FEASIBILITY STUDY, DETAILED COST ESTIMATE FOR INITIAL DREDGING

ALT	REACH	EARTHEN CORE FOR FRESHWATER BAYOU DISPOSAL SITES #2 & #3 (CY)	EARTHEN CORE UNIT PRICE	TOTAL	ROCK COVER FOR FRESHWATER BAYOU DISPOSAL SITES #2 & #3 (CY)	ROCK COVER UNIT COST	TOTAL
(-)18' x125'							
	Commercial Canal	0	0	0	0	0	0
	GIWW	0	0	0	0	0	0
	Freshwater Bayou Interior	0	$0.00	$0	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)20' x 125'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	0	$0.00	$0	0	$0.00	$0
	Freshwater Bayou Interior	12,800	$2.50	$32,000	21,500	$23.75	$510,625
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)18' x 135'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	0	$0.00	$0	0	$0.00	$0
	Freshwater Bayou Interior	0	$0.00	$0	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)20' x 135'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	0	$0.00	$0	0	$0.00	$0
	Freshwater Bayou Interior	59,500	$2.50	$148,750	100,000	$23.75	$2,375,000
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)16' x 150'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	0	$0.00	$0	0	$0.00	$0
	Freshwater Bayou Interior	0	$0.00	$0	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)18' x 150'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	0	$0.00	$0	0	$0.00	$0
	Freshwater Bayou Interior	0	$0.00	$0	0	$0.00	$0
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0
(-)20' x 150'							
	Commercial Canal	0	$0.00	$0	0	$0.00	$0
	GIWW	0	$0.00	$0	0	$0.00	$0
	Freshwater Bayou Interior	56,100	$2.50	$140,250	93,000	$23.75	$2,208,750
	Freshwater Bar Channel	0	$0.00	$0	0	$0.00	$0

PORT OF IBERIA FEASIBILITY STUDY, DETAILED COST ESTIMATE FOR INITIAL DREDGING

ALT	REACH	GEOTEXTILE FABRIC (SQ YDS)	UNIT COST	GEOTEXTILE FABRIC	GRAND TOTAL
(-)18' x125'					
	Commercial Canal	0	0	$0	$6,478,850
	GIWW	733,000	$2.50	$1,832,500	$13,599,464
	Freshwater Bayou Interior	1,133,000	$2.50	$2,832,500	$46,105,300
	Freshwater Bar Channel	0	$0.00	$0	$9,377,202
					$75,560,816
(-)20' x 125'					
	Commercial Canal	0	$0.00	$0	$8,323,980
	GIWW	733,000	$2.50	$1,832,500	$17,226,673
	Freshwater Bayou Interior	1,133,000	$2.50	$2,832,500	$53,479,925
	Freshwater Bar Channel	0	$0.00	$0	$12,056,935
					$91,087,513
(-)18' x 135'					
	Commercial Canal	0	$0.00	$0	$7,295,380
	GIWW	733,000	$2.50	$1,832,500	$13,804,723
	Freshwater Bayou Interior	1,133,000	$2.50	$2,832,500	$47,935,660
	Freshwater Bar Channel	0	$0.00	$0	$9,413,930
					$78,449,693
(-)20' x 135'					
	Commercial Canal	0	$0.00	$0	$8,897,870
	GIWW	733,000	$2.50	$1,832,500	$21,820,780
	Freshwater Bayou Interior	1,133,000	$2.50	$2,832,500	$56,258,600
	Freshwater Bar Channel	0	$0.00	$0	$12,059,000
					$99,036,250
(-)16' x 150'					
	Commercial Canal	0	$0.00	$0	$5,929,090
	GIWW	733,000	$2.50	$1,832,500	$12,965,824
	Freshwater Bayou Interior	1,133,000	$2.50	$2,832,500	$45,842,460
	Freshwater Bar Channel	0	$0.00	$0	$6,081,149
					$70,818,523
(-)18' x 150'					
	Commercial Canal	0	$0.00	$0	$8,083,850
	GIWW	733,000	$2.50	$1,832,500	$21,776,380
	Freshwater Bayou Interior	1,133,000	$2.50	$2,832,500	$52,043,170
	Freshwater Bar Channel	0	$0.00	$0	$9,531,652
					$91,435,052
(-)20' x 150'					
	Commercial Canal	0	$0.00	$0	$9,942,400
	GIWW	733,000	$2.50	$1,832,500	$29,813,850
	Freshwater Bayou Interior	1,133,000	$2.50	$2,832,500	$60,031,500
	Freshwater Bar Channel	0	$0.00	$0	$12,168,928
					$111,956,678

PORT OF IBERIA FEASIBILITY STUDY

CONSTRUCTION COST ESTIMATE FOR CONCRETE FLOODGATES

FLOODGATE FEATURE	COST ESTIMATE	15% CONTINGENCY	TOTAL COST ESTIMATE
Concrete Swing Gates	$5,214,012	$782,102	$5,996,114
Mechanical Costs	$1,597,944	$239,692	$1,837,636
Electrical Costs	$695,535	$104,330	$799,865
Concrete Receiving Structures	$12,586,730	$1,888,010	$14,474,740
Pivot Structures	$206,400	$30,960	$237,360
Anchor Strucutures	$375,820	$56,373	$432,193
Pile Tests	$970,000	$145,500	$1,115,500
Dewatering System	$1,000,000	$150,000	$1,150,000
Demolition of Existing Structures	$320,000	$48,000	$368,000
SUBTOTAL	**$22,966,441**	**$3,444,966**	**$26,411,407**
Engineering and Design (8%)	$1,837,315	$275,597	$2,112,913
Supervision and Administration (8%)	$1,837,315	$275,597	$2,112,913
TOTAL	**$26,641,072**	**$3,996,161**	**$30,637,232**

PORT OF IBERIA FEASIBILITY STUDY SUMMARY OF CONSTRUCTION COST ESTIMATES FOR REPLACEMENT OF BULKHEADS	
ITEM	**TOTAL COST ESTIMATE***
Bayou Pipes Management	$1,972,758
Chart Coastal Fab.	$547,877
Dynamic (Canal)	$1,028,364
Dynamic (Slip)	$653,592
Frank's Casing	$861,848
Stolt (Canal)	$1,091,718
Stolt (Slip)	$1,475,571
Natco / Superior NORTH	$555,188
Natco / Superior SOUTH	$960,551
Jamar Services	$888,377
D & D Fuel Dock	$990,315
POI Public Dock	$3,886,185
SUBTOTAL	**$14,912,344**
E&D (6%)	$894,741
S&A (8%)	$1,192,988
TOTAL	**$17,000,072**

* Includes 25% contingency

PORT OF IBERIA FEASIBILITY STUDY

CONSTRUCTION COST ESTIMATES FOR BULKHEAD REPLACEMENTS

Item	Quantity	Unit	Unit Price	Amount	25% Contingencies	Project Cost
Bayou Pipes Management						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Timber Bulkhead	760	LF	$15.00	$11,400	$2,850	$14,250
Bollards 18"f	6	EA	$100.00	$600	$150	$750
Bulkhead						
Timber Bumper 12"x12"	1,520	LF	$36.00	$54,720	$13,680	$68,400
Waler C7x12.5	38,000	LBS	$2.50	$95,000	$23,750	$118,750
Tie Rods #14 dywidag	9,880	LF	$13.50	$133,380	$33,345	$166,725
Sheet Pile AZ 17 (50 ksi)	58,900	SF	$14.00	$824,600	$206,150	$1,030,750
Granular Backfill (Re-use)	4,833	CY	$12.00	$57,996	$14,499	$72,495
Granular Backfill (New)	1,678	CY	$20.00	$33,560	$8,390	$41,950
Earthen Backfill	8,729	CY	$12.00	$104,748	$26,187	$130,935
Excavation	13,787	CY	$6.00	$82,722	$20,681	$103,403
Bollards 18"f x 3/8" x 50'	300	LF	$55.00	$16,500	$4,125	$20,625
1/2" Steel PL cap	35,192	LBS	$2.50	$87,980	$21,995	$109,975
			Total:	**$1,578,206**	**$394,552**	**$1,972,758**
Chart Coastal Fabricators						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Steel Bulkhead	151	LF	$15.00	$2,265	$566	$2,831
Bollards 18"f	2	EA	$100.00	$200	$50	$250
Concrete Relieving Platform	237	CY	$100.00	$23,700	$5,925	$29,625
Bulkhead						
Timber Bumper 12"x12"	302	LF	$36.00	$10,872	$2,718	$13,590
Waler C7x12.5	7,550	LBS	$2.50	$18,875	$4,719	$23,594
Tie Rods #14 dywidag	1,762	LF	$13.50	$23,787	$5,947	$29,734
Sheet Pile AZ 13 (50 ksi)	10,344	SF	$14.00	$144,816	$36,204	$181,020
Granular Backfill (Re-use)	918	CY	$12.00	$11,016	$2,754	$13,770
Granular Backfill (New)	330	CY	$20.00	$6,600	$1,650	$8,250
Earthen Backfill	1,449	CY	$12.00	$17,388	$4,347	$21,735
Excavation	2,367	CY	$6.00	$14,202	$3,551	$17,753
Bollards 18"f 3/8" x 50'	100	LF	$55.00	$5,500	$1,375	$6,875
Concrete Relieving Platform	296	CY	$225.00	$66,600	$16,650	$83,250
1/2" Steel PL cap	6,992	LBS	$2.50	$17,480	$4,370	$21,850
			Total:	**$438,301**	**$109,576**	**$547,877**
Dynamic (Canal)						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Steel Bulkhead	468	LF	$15.00	$7,020	$1,755	$8,775
Deadman w/ tie rods	78	EA	$110.00	$8,580	$2,145	$10,725
Bulkhead						
Timber Bumper 12"x12"	936	LF	$36.00	$33,696	$8,424	$42,120
Waler C7x12.5	23,400	LBS	$2.50	$58,500	$14,625	$73,125
Tie Rods #14 dywidag	4,758	LF	$13.50	$64,233	$16,058	$80,291
Sheet Pile AZ 13 (50 ksi)	27,612	SF	$14.00	$386,568	$96,642	$483,210
Granular Backfill (Re-use)	2,791	CY	$12.00	$33,492	$8,373	$41,865
Granular Backfill (New)	621	CY	$20.00	$12,420	$3,105	$15,525
Earthen Backfill	3,958	CY	$12.00	$47,496	$11,874	$59,370
Excavation	6,918	CY	$6.00	$41,508	$10,377	$51,885
1/2" Steel PL cap	21,671	LBS	$2.50	$54,178	$13,545	$67,723
			Total:	**$822,691**	**$205,673**	**$1,028,364**

PORT OF IBERIA FEASIBILITY STUDY

CONSTRUCTION COST ESTIMATES FOR BULKHEAD REPLACEMENTS

Item	Quantity	Unit	Unit Price	Amount	25% Contingencies	Project Cost
Dynamic (Slip)						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Steel Bulkhead	202	LF	$15.00	$3,030	$758	$3,788
Concrete Relieving Platform	237	CY	$100.00	$23,700	$5,925	$29,625
Bulkhead						
Timber Bumper 12"x12"	404	LF	$36.00	$14,544	$3,636	$18,180
Waler C7x12.5	10,100	LBS	$2.50	$25,250	$6,313	$31,563
Tie Rods #14 dywidag	2,357	LF	$13.50	$31,820	$7,955	$39,775
Sheet Pile AZ 13 (50 ksi)	13,837	SF	$14.00	$193,718	$48,430	$242,148
Granular Backfill (Re-use)	1,228	CY	$12.00	$14,736	$3,684	$18,420
Granular Backfill (New)	441	CY	$20.00	$8,820	$2,205	$11,025
Earthen Backfill	1,939	CY	$12.00	$23,268	$5,817	$29,085
Excavation	3,167	CY	$6.00	$19,002	$4,751	$23,753
Concrete Relieving Platform	296	CY	$225.00	$66,600	$16,650	$83,250
1/2" Steel PL cap	9,354	LBS	$2.50	$23,385	$5,846	$29,231
			Total:	**$522,873**	**$130,720**	**$653,592**
Frank's Casing						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Steel Bulkhead	299	LF	$15.00	$4,485	$1,121	$5,606
Bollards 18"f	7	EA	$100.00	$700	$175	$875
Bulkhead						
Timber Bumper 12"x12"	598	LF	$36.00	$21,528	$5,382	$26,910
Waler C7x12.5	14,950	LBS	$2.50	$37,375	$9,344	$46,719
Tie Rods #14 dywidag	3,887	LF	$13.50	$52,475	$13,119	$65,594
Sheet Pile AZ 17 (50 ksi)	23,173	SF	$14.00	$324,422	$81,106	$405,528
Granular Backfill (Re-use)	1,901	CY	$12.00	$22,812	$5,703	$28,515
Granular Backfill (New)	660	CY	$20.00	$13,200	$3,300	$16,500
Earthen Backfill	3,434	CY	$12.00	$41,208	$10,302	$51,510
Excavation	5,335	CY	$6.00	$32,010	$8,003	$40,013
Bollards 18"f x 3/8" x 50'	350	LF	$55.00	$19,250	$4,813	$24,063
1/2" Steel PL cap	13,845	LBS	$2.50	$34,613	$8,653	$43,266
Crushed stone	208	CY	$50.00	$10,400	$2,600	$13,000
			Total:	**$689,478**	**$172,371**	**$861,848**
Stolt (Canal)						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Steel Bulkhead	235	LF	$15.00	$3,525	$881	$4,406
Bollards 18"f	5	EA	$100.00	$500	$125	$625
Deadman w/ tie rods	39	EA	$110.00	$4,290	$1,073	$5,363
Bulkhead						
Timber Bumper 12"x12"	470	LF	$36.00	$16,920	$4,230	$21,150
Waler C9x15	14,100	LBS	$2.50	$35,250	$8,813	$44,063
Tie Rods #18 dywidag	3,721	LF	$24.00	$89,304	$22,326	$111,630
Sheet Pile AZ 34 (50 ksi)	22,443	SF	$21.00	$471,303	$117,826	$589,129
Granular Backfill (Re-use)	2,053	CY	$12.00	$24,636	$6,159	$30,795
Granular Backfill (New)	548	CY	$20.00	$10,960	$2,740	$13,700
Earthen Backfill	4,459	CY	$12.00	$53,508	$13,377	$66,885
Excavation	6,512	CY	$6.00	$39,072	$9,768	$48,840
Bollards 18"f x 3/8" x 50'	250	LF	$55.00	$13,750	$3,438	$17,188
1/2" Steel PL cap	10,882	LBS	$2.50	$27,205	$6,801	$34,006
Crushed stone	163	CY	$50.00	$8,150	$2,038	$10,188
			Total:	**$873,373**	**$218,345**	**$1,091,718**

PORT OF IBERIA FEASIBILITY STUDY

CONSTRUCTION COST ESTIMATES FOR BULKHEAD REPLACEMENTS

Item	Quantity	Unit	Unit Price	Amount	25% Contingencies	Project Cost
Stolt (Slip)						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Steel Bulkhead	327	LF	$15.00	$4,905	$1,226	$6,131
Bollards 18"f	5	EA	$100.00	$500	$125	$625
Deadman w/ tie rods	55	EA	$110.00	$6,050	$1,513	$7,563
Bulkhead						
Timber Bumper 12"x12"	654	LF	$36.00	$23,544	$5,886	$29,430
Waler C9x15	19,620	LBS	$2.50	$49,050	$12,263	$61,313
Tie Rods #18 dywidag	5,178	LF	$24.00	$124,272	$31,068	$155,340
Sheet Pile AZ 34 (50 ksi)	31,229	SF	$21.00	$655,809	$163,952	$819,761
Granular Backfill (Re-use)	2,857	CY	$12.00	$34,284	$8,571	$42,855
Granular Backfill (New)	763	CY	$20.00	$15,260	$3,815	$19,075
Earthen Backfill	6,205	CY	$12.00	$74,460	$18,615	$93,075
Excavation	9,061	CY	$6.00	$54,366	$13,592	$67,958
Bollards 18"f x 3/8" x 50'	250	LF	$55.00	$13,750	$3,438	$17,188
1/2" Steel PL cap	15,142	LBS	$2.50	$37,855	$9,464	$47,319
Crushed stone	227	CY	$50.00	$11,350	$2,838	$14,188
			Total:	**$1,180,455**	**$295,116**	**$1,475,571**
Natco/Superior (North)						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Steel Bulkhead	204	LF	$15.00	$3,060	$765	$3,825
Deadman w/ tie rods	34	EA	$110.00	$3,740	$935	$4,675
Bulkhead						
Timber Bumper 12"x12"	408	LF	$36.00	$14,688	$3,672	$18,360
Waler C6x13	10,608	LBS	$2.50	$26,520	$6,630	$33,150
Tie Rods #14 dywidag	2,346	LF	$13.50	$31,671	$7,918	$39,589
Sheet Pile AZ 13 (50 ksi)	15,157	SF	$14.00	$212,198	$53,050	$265,248
Granular Backfill (Re-use)	1,064	CY	$12.00	$12,768	$3,192	$15,960
Granular Backfill (New)	225	CY	$20.00	$4,500	$1,125	$5,625
Earthen Backfill	1,667	CY	$12.00	$20,004	$5,001	$25,005
Excavation	2,731	CY	$6.00	$16,386	$4,097	$20,483
1/2" Steel PL cap	9,446	LBS	$2.50	$23,615	$5,904	$29,519
			Total:	**$444,150**	**$111,038**	**$555,188**
Natco/Superior (South)						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Steel Bulkhead	210	LF	$15.00	$3,150	$788	$3,938
Deadman	35	EA	$110.00	$3,850	$963	$4,813
Bulkhead						
Timber Bumper 12"x12"	420	LF	$36.00	$15,120	$3,780	$18,900
Waler C9x15	12,600	LBS	$2.50	$31,500	$7,875	$39,375
Tie Rods #18 dywidag	3,325	LF	$24.00	$79,800	$19,950	$99,750
Sheet Pile AZ 34 (50 ksi)	20,055	SF	$21.00	$421,155	$105,289	$526,444
Granular Backfill (Re-use)	1,835	CY	$12.00	$22,020	$5,505	$27,525
Granular Backfill (New)	490	CY	$20.00	$9,800	$2,450	$12,250
Earthen Backfill	3,985	CY	$12.00	$47,820	$11,955	$59,775
Excavation	5,819	CY	$6.00	$34,914	$8,729	$43,643
1/2" Steel PL cap	9,724	LBS	$2.50	$24,310	$6,078	$30,388
			Total:	**$768,439**	**$192,112**	**$960,551**

PORT OF IBERIA FEASIBILITY STUDY

CONSTRUCTION COST ESTIMATES FOR BULKHEAD REPLACEMENTS

Item	Quantity	Unit	Unit Price	Amount	25% Contingencies	Project Cost
Jamar Services						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Timber Bulkhead	173	LF	$15.00	$2,595	$649	$3,244
Remove Existing Steel Bulkhead	172	LF	$15.00	$2,580	$645	$3,225
Bollards 18"f	3	EA	$100.00	$300	$75	$375
Deadman w/ tie rods	29	EA	$110.00	$3,190	$798	$3,988
Bulkhead						
Timber Bumper 12"x12"	690	LF	$36.00	$24,840	$6,210	$31,050
Waler C6x13	17,940	LBS	$2.50	$44,850	$11,213	$56,063
Tie Rods #14 dywidag	3,968	LF	$13.50	$53,568	$13,392	$66,960
Sheet Pile AZ 13 (50 ksi)	25,634	SF	$14.00	$358,876	$89,719	$448,595
Granular Backfill (Re-use)	1,800	CY	$12.00	$21,600	$5,400	$27,000
Granular Backfill (New)	381	CY	$20.00	$7,620	$1,905	$9,525
Earthen Backfill	2,819	CY	$12.00	$33,828	$8,457	$42,285
Excavation	4,619	CY	$6.00	$27,714	$6,929	$34,643
Bollards 18"f x 3/8" x 50'	150	LF	$55.00	$8,250	$2,063	$10,313
1/2" Steel PL cap	15,975	LBS	$2.50	$39,938	$9,985	$49,923
Crushed stone	119	CY	$50.00	$5,950	$1,488	$7,438
			Total:	**$710,699**	**$177,678**	**$888,377**
D&D Fuel Dock						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Timber Bulkhead	138	LF	$15.00	$2,070	$518	$2,588
Remove Existing Steel Bulkhead	69	LF	$15.00	$1,035	$259	$1,294
Bollards 18"f	10	EA	$100.00	$1,000	$250	$1,250
3 Pile Clusters 12"f x 40'	3	EA	$200.00	$600	$150	$750
Bulkhead						
Timber Bumper 12"x12"	414	LF	$36.00	$14,904	$3,726	$18,630
Waler C9x15	12,420	LBS	$2.50	$31,050	$7,763	$38,813
Tie Rods #18 dywidag	3,278	LF	$24.00	$78,672	$19,668	$98,340
Sheet Pile AZ 34 (50 ksi)	19,769	SF	$21.00	$415,149	$103,787	$518,936
Granular Backfill (Re-use)	1,808	CY	$12.00	$21,696	$5,424	$27,120
Granular Backfill (New)	483	CY	$20.00	$9,660	$2,415	$12,075
Earthen Backfill	3,928	CY	$12.00	$47,136	$11,784	$58,920
Excavation	5,736	CY	$6.00	$34,416	$8,604	$43,020
Bollards 18"f x 3/8" x 50'	500	LF	$55.00	$27,500	$6,875	$34,375
1/2" Steel PL cap	9,585	LBS	$2.50	$23,963	$5,991	$29,954
3 Pile Clusters 12"f x 40'	3	EA	$2,000.00	$6,000	$1,500	$7,500
Crushed stone	48	CY	$50.00	$2,400	$600	$3,000
			Total:	**$792,251**	**$198,064**	**$990,315**

PORT OF IBERIA FEASIBILITY STUDY

CONSTRUCTION COST ESTIMATES FOR BULKHEAD REPLACEMENTS

Item	Quantity	Unit	Unit Price	Amount	25% Contingencies	Project Cost
POI Public Dock						
Mob & Demob	1	LS	$75,000	$75,000	$18,750	$93,750
Demolition						
Remove Existing Steel Bulkhead	1,379	LF	$15.00	$20,685	$5,171	$25,856
Bollards 18"f	12	EA	$100.00	$1,200	$300	$1,500
Concrete Slab (10")	1,655	CY	$100.00	$165,500	$41,375	$206,875
Deadman w/ tie rods	230	EA	$110.00	$25,300	$6,325	$31,625
Bulkhead						
Timber Bumper 12"x12"	2,758	LF	$36.00	$99,288	$24,822	$124,110
Waler C6x13	71,708	LBS	$2.50	$179,270	$44,818	$224,088
Tie Rods #14 dywidag	15,859	LF	$13.50	$214,097	$53,524	$267,621
Sheet Pile AZ 13 (50 ksi)	102,460	SF	$14.00	$1,434,440	$358,610	$1,793,050
Granular Backfill (Re-use)	7,194	CY	$12.00	$86,328	$21,582	$107,910
Granular Backfill (New)	1,522	CY	$20.00	$30,440	$7,610	$38,050
Earthen Backfill	11,268	CY	$12.00	$135,216	$33,804	$169,020
Excavation	18,463	CY	$6.00	$110,778	$27,695	$138,473
1/2" Steel Pl. cap	63,348	LBS	$2.50	$158,370	$39,593	$197,963
Bollards 18"f x 3/8" x 50'	12	LF	$55.00	$660	$165	$825
Concrete Slab (10")	1,655	CY	$225.00	$372,375	$93,094	$465,469
			Total:	**$3,108,947**	**$777,238**	**$3,886,185**

PORT OF IBERIA FEASIBILITY STUDY COST ESTIMATE FOR REMOVALS				
NO.	COMPANY NAME	UTILITY SIZE AND TYPE	COST	PRODUCT
P-01	Tennessee Gas Pipeline Company (823x-300)	12" Pipeline	$466,350	Natural Gas
P-02	Tennessee Gas Pipeline Company (823x-1300)	16" Pipeline	$494,890	Natural Gas
P-03	Unocal Pipeline	NO RESPONSE	$445,000	Liquid
P-04	Transcontinental Gas Pipeline Corporation (Williams)	8" Pipeline	$325,470	Natural Gas
P-05	Exxonmobil Corporation	10" Pipeline	$317,000	Liquid
P-06	Cypress Gas Pipeline	14" Gas Pipeline	NOT REQUIRED	Natural Gas
P-07	Unocal Pipeline	NO RESPONSE	$445,000	Liquid
P-08	Texas Gas Transmission LLC	12" Pipeline	$466,350	Natural Gas
P-09	SLEMCO	I/O Cable 14,400 Volts	$40,000	Electrical
P-10	Trunkline Gas Company LLC	6" Pipeline	$316,698	Natural Gas
P-11	Amoco Gas	6" Pipeline	$316,698	Natural Gas
P-12	Unidentified Pipeline	Unidentified Pipeline	$445,000	Liquid
P-13	Acadian Gas	10" Pipeline	$334,485	Natural Gas
P-14	Transcontinental Gas Pipeline Corporation (Williams)	10" Pipeline	$334,485	Natural Gas
P-15a	ANR Pipeline Company	12" Pipeline	$466,350	Natural Gas
P-15b	ANR Pipeline Company	12" Pipeline	$466,350	Natural Gas
P-16	ANR Pipeline Company	8" Pipeline	$325,470	Natural Gas
P-17	SNG Company	36" Pipeline	$778,500	Natural Gas
P-18	Acadian Gas	20" Natural Gas	$540,905	Natural Gas
P-19a	Texaco Pipeline LLC	10" Pipeline	$334,485	Natural Gas
P-19b	Texaco Pipeline LLC	30" Pipeline	$747,225	Natural Gas
P-20	Shell Pipeline Co.	10" Crude Oil	$317,000	Liquid (Crude Oil)
P-21	Shell Pipeline Co.	12" Crude Oil	$443,000	Liquid (Crude Oil)
P-22	SLEMCO	I/O Cable 14,400 Volts	$40,000	Electrical
P-23	Texaco Pipeline LLC	8" Pipeline	$315,000	Liquid
P-24	Texaco Pipeline LLC	6" Pipeline	$311,000	Liquid
P-25	Trunkline Gas Company LLC	20" Pipeline	$540,905	Natural Gas
P-26	Shell Pipeline Co.	22" Pipeline	$467,000	Liquid (Crude Oil)
P-27	Texas Gas Transmission LLC	26" Pipeline	$728,000	Natural Gas
P-28	Texas Gas Transmission LLC	20" Pipeline	$540,905	Natural Gas
P-29	Gulf South Pipeline	30" Pipeline	$747,225	Natural Gas
P-30a	Tennessee Gas Pipeline Company (500-1)	24" Pipeline	$678,000	Natural Gas
P-30b	Tennessee Gas Pipeline Company (500-1)	24" Pipeline	$678,000	Natural Gas
P-31a	Tennessee Gas Pipeline Company (507g-100)	16" Pipeline	$494,890	Natural Gas
P-31b	Tennessee Gas Pipeline Company (507g-100)	16" Pipeline	$494,890	Natural Gas
P-32	Columbia Gulf Transmission Co.	30"	$747,225	Natural Gas
P-33	Columbia Gulf Transmission Co.	24"	$678,000	Natural Gas
P-34	Columbia Gulf Transmission Co.	20"	$540,905	Natural Gas
P-35	Union	NO RESPONSE	$445,000	Liquid
P-36	Franks Casing Crew	2" Sewer Force Main	NOT REQUIRED	Sewage
P-37	Atmos Energy Corp.	4"	$311,545	Natural Gas
P-38	RESERVED	RESERVED	$0	-
P-39	RESERVED	RESERVED	$0	-
P-40	Spicer Oil Company	12" Gas Pipeline	$466,350	Natural Gas
		TOTAL	$18,391,551	

NOTES:

1. Estimate based on relocating facilities by horizontal directional drilling; therefore, no new bulkheads are required.
2. Estimate includes the removal of existing bulkheads at pipeline crossing, and removal of abandoned pipeline.
3. Estimate includes surveying, engineering, and construction management for installation of new pipeline.

PORT OF IBERIA FEASIBILITY STUDY

COST ESTIMATE FOR REMOVALS - GAS PIPELINES											
LINE DIAMETER (INCHES)	NUMBER OF DAYS	BORING EQUIPMENT PER DAY	COST OF EQUIPMENT PER DAY	PERSONNEL PER DAY	HOT TAPS	COST OF PIPE & COATING	*LOST OF GAS/OIL	REMOVE EXISTING BULKHEADS & PIPELINE	MOBILIZATION & DEMOBILIZATION	SURVEYING & TESTING	TOTAL
4	20	$3,000	$3,000	$2,100	$12,545	$7,000	$0	$5,000	$100,000	$25,000	**$311,545**
6	20	$3,000	$3,000	$2,100	$15,698	$9,000	$0	$5,000	$100,000	$25,000	**$316,698**
8	20	$3,000	$3,000	$2,100	$20,470	$13,000	$0	$5,000	$100,000	$25,000	**$325,470**
10	20	$3,000	$3,000	$2,100	$27,485	$15,000	$0	$5,000	$100,000	$25,000	**$334,485**
12	25	$4,000	$4,500	$2,900	$33,350	$18,000	$0	$5,000	$100,000	$25,000	**$466,350**
14	25	$4,000	$4,500	$2,900	$51,750	$20,000	$0	$5,000	$100,000	$25,000	**$486,750**
16	25	$4,000	$4,500	$2,900	$55,890	$24,000	$0	$5,000	$100,000	$25,000	**$494,890**
20	25	$4,000	$4,500	$2,900	$85,905	$35,000	$0	$10,000	$100,000	$25,000	**$540,905**
24	30	$4,000	$4,500	$2,900	$161,000	$40,000	$0	$10,000	$100,000	$25,000	**$678,000**
26	30	$4,000	$4,500	$2,900	$207,000	$44,000	$0	$10,000	$100,000	$25,000	**$728,000**
30	30	$4,000	$4,500	$2,900	$220,225	$50,000	$0	$10,000	$100,000	$25,000	**$747,225**
36	30	$4,000	$4,500	$2,900	$241,500	$60,000	$0	$10,000	$100,000	$25,000	**$778,500**

* - ASSUMED 6 MILE STRETCH OF LINE BETWEEN VALVES

COST ESTIMATE FOR REMOVALS - OIL PIPELINES											
LINE DIAMETER (INCHES)	NUMBER OF DAYS	BORING EQUIPMENT PER DAY	COST OF EQUIPMENT PER DAY	PERSONNEL PER DAY	TIE-INS	COST OF PIPE & COATING	*LOST OF GAS/OIL	REMOVE EXISTING BULKHEADS & PIPELINE	MOBILIZATION & DEMOBILIZATION	SURVEYING & TESTING	TOTAL
6	20	$3,000	$3,000	$2,100	$10,000	$9,000	$0	$5,000	$100,000	$25,000	**$311,000**
8	20	$3,000	$3,000	$2,100	$10,000	$13,000	$0	$5,000	$100,000	$25,000	**$315,000**
10	20	$3,000	$3,000	$2,100	$10,000	$15,000	$0	$5,000	$100,000	$25,000	**$317,000**
12	25	$4,000	$4,500	$2,900	$10,000	$18,000	$0	$5,000	$100,000	$25,000	**$443,000**
14	25	$4,000	$4,500	$2,900	$10,000	$20,000	$0	$5,000	$100,000	$25,000	**$445,000**
16	25	$4,000	$4,500	$2,900	$10,000	$24,000	$0	$5,000	$100,000	$25,000	**$449,000**
20	25	$4,000	$4,500	$2,900	$10,000	$35,000	$0	$10,000	$100,000	$25,000	**$465,000**
22	25	$4,000	$4,500	$2,900	$10,000	$37,000	$0	$10,000	$100,000	$25,000	**$467,000**
24	30	$4,000	$4,500	$2,900	$10,000	$40,000	$0	$10,000	$100,000	$25,000	**$527,000**
26	30	$4,000	$4,500	$2,900	$10,000	$44,000	$0	$10,000	$100,000	$25,000	**$531,000**
30	30	$4,000	$4,500	$2,900	$10,000	$50,000	$0	$10,000	$100,000	$25,000	**$537,000**
36	30	$4,000	$4,500	$2,900	$10,000	$60,000	$0	$10,000	$100,000	$25,000	**$547,000**

* - ASSUMED 6 MILE STRETCH OF LINE BETWEEN VALVES

PORT OF IBERIA FEASIBILITY STUDY
MISCELLANEOUS FIRST COSTS

FIXED COSTS CALCULATION

	(-)16' X 150' Channel	(-)18' X 150' Channel	(-)20' X 150' Channel	(-)18' X 135' Channel	(-)20' X 135' Channel	(-)18' X 125' Channel	(-)20' X 125' Channel
Removals							
Subtotal	$ 18,391,551	$ 18,391,551	$ 18,391,551	$ 18,391,551	$ 18,391,551	$ 18,391,551	$ 18,391,551
E&D (6%)	$ 1,103,493	$ 1,103,493	$ 1,103,493	$ 1,103,493	$ 1,103,493	$ 1,103,493	$ 1,103,493
S&A (8%)	$ 1,471,324	$ 1,471,324	$ 1,471,324	$ 1,471,324	$ 1,471,324	$ 1,471,324	$ 1,471,324
Subtotal	**$ 20,966,368**	**$ 20,966,368**	**$ 20,966,368**	**$ 20,966,368**	**$ 20,966,368**	**$ 20,966,368**	**$ 20,966,368**
Contingency (15%)	$ 3,144,955	$ 3,144,955	$ 3,144,955	$ 3,144,955	$ 3,144,955	$ 3,144,955	$ 3,144,955
Total	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**	**$ 24,111,323**
Real Estate							
Subtotal	$ 1,356,000	$ 1,356,000	$ 1,356,000	$ 1,356,000	$ 1,356,000	$ 1,356,000	$ 1,356,000
Contingencies (25%)	$ 339,000	$ 339,000	$ 339,000	$ 339,000	$ 339,000	$ 339,000	$ 339,000
Total	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**	**$ 1,695,000**
Mitigation							
Subtotal							
Contingencies (10%)							
Total	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**	**$ 0**
TOTAL							

PORT OF IBERIA, LA FEASIBILITY STUDY	
SUMMARY OF PRECONSTRUCTION ENGINEERING AND DESIGN (PED) COSTS	
ITEM	**COST[1]**
Borings	$350,000
Surveys	$300,000
Commercial Canal	$143,750
G.I.W.W.	$431,250
Freshwater Bayou Interior	$718,750
Freshwater Bayou Bar and By-Pass Channels	$143,750
By-Pass Channel Floodgates	$2,112,913
Bulkheads[2]	$894,741
Relocations[3]	$1,103,493
TOTAL	**$6,198,646**

1. Costs include contingency.
2. Engineering and design (E&D) will be done by owners of bulkheads.
3. E&D will be done by owners of relocated pipelines and facilities.

ANNEX 2 – INVESTIGATIONS OF ALTERNATIVE DISPOSAL PLANS

ANNEX 2
PORT OF IBERIA FEASIBILITY STUDY
INVESTIGATIONS OF ALTERNATIVE DISPOSAL PLANS

1. **Disposal Alternative No. 1 - Disposal In Eroded Banklines Of The G.I.W.W. And Freshwater Bayou And Selected Open Water Disposal Sites - Preferred Disposal Plan.**

a. This plan, which is described in more details within the Engineering Appendix, consists of the following:

(1) Placement of Dredged Material in Deteriorated Banklines along the GIWW and Freshwater Bayou Interior. Along GIWW and Freshwater Bayou Interior, dredged material would be removed by bucket dredging and placed in eroded shelves of these channels (relatively flat areas of channel bank located a few feet below the water line). These shelves were created by wave action eroding the weak soils composing the bank and enlarging the top width of the channel. Rock fronting protection (28-inch and 36-inch stone) would be placed to maintain this readily erodible supply of material.

(2) Marshland Creation In Open Water Areas. Dredged material would also be used for marshland creation in open water areas, predominantly in Weeks Bay and Vermillion Bay.

(3) Marshland Nourishment In Areas West of Freshwater Bayou. Material from lower reached of Freshwater Bayou, over the amount being placed in the bank reclamation areas, would also be placed in a large area of deteriorating marsh west of Freshwater Bayou.

(4) Placement within Intertidal Zones. Material excavated from Mile 850 of Freshwater Bayou to the (-)20-foot NAVD88 contour of the bar channel, would be deposited in shallow water areas within intertidal zones zone along the gulf shoreline.

(5) Upland Disposal. Material being removed from the Port of Iberia proper and the upper reaches of Commercial Canal was limited to a 336-acre upland disposal site along the western side of Commercial Canal.

b. After analysis of the four (4) alternative disposal plan presented in this Annex, this plan was determined to be the least-cost, environmentally acceptable plan.

2. **Disposal Alternative No. 2 - Upland Disposal In Existing Disposal Easements And Selected Open Water Disposal Sites.**

a. Under this alternative, dredging would be accomplished by hydraulic dredges. Two contracts would be needed for Commercial Canal, G.I.W.W., and Freshwater Bayou (FWB) Interior. Approximately 12,363,000 cubic yards of material would be removed from the channels.

b. Material from Commercial Canal, G.I.W.W., and FWB Interior would be placed in existing disposal easements along the banks of these channels. Earthen dikes would be used to contain the material within the disposal areas. Material would be placed up to 4 feet above existing grade.

c. Disposal Alternative No. 2 does not include the following items included in the preferred disposal plan:

(1) Twenty-eight (28) and thirty-six (36) inch stone required for stability and protection of material in-place on eroded banks of the G.I.W.W. and FWB Interior.

(2) Rock dikes for other open water and marsh disposal sites in the project area.

(3) Geotextile fabric.

(4) Use of bucket dredging, which is slower and more expensive than hydraulic dredging.

(5) Flotation channel access along G.I.W.W.

d. Sufficient existing easement acreage is available for the total amount of material from the channels. Purchase of additional marsh areas for disposal, which is a feature of the preferred disposal plan, would not be required for Disposal Alternative No. 2. Thus, real estate costs were lowered from approximately $1.7 million to $312,500 (costs include 25% contingency).

e. Mitigation would be required for approximately 4,268 acres. Using $22,000 per acre, mitigation costs are estimated at approximately $103.3 million (includes 10% contingency).

f. Maintenance requirements are identical to those proposed in the preferred plan except for maintenance required for rock placement areas. For G.I.W.W and FWB Interior, it is anticipated that sufficient settlement would take place in the upland disposal sites used during initial construction to accommodate material from maintenance cycles at Years 10, 25 and 40. Thus, additional mitigation would not be required during maintenance.

g. The cost of initial construction for the project utilizing Disposal Alternative No. 2 is approximately $127.4 million. However, when mitigation costs are added, the total initial costs for this plan is approximately $230.7 million. The corresponding cost of the project with the preferred disposal plan is approximately $203 million. Thus, the preferred plan is $23.7 million less than Disposal Alternative No. 2.

h. The annual average OMRR&R cost for the project utilizing Disposal Alternative No. 2 is approximately $2.1 million. The corresponding OMRR&R cost for the project with the preferred disposal plan is $2.6 million. Thus, the average annual OMRR&R cost for the preferred plan is approximately $0.5 million more than Disposal Alternative 2.

i. The Average Annual Cost for the project with the preferred disposal plan is approximately $16 million. The corresponding cost using Disposal Alternative 2 is approximately $17.5 million.

3. **Disposal Alternative No. 3 - Placement Of Disposal Material In Eroded Bank Shelves Without Rock Except For Rock Stability Berm Along Freshwater Bayou**

a. Proposed disposal procedures for material from Commercial Canal and Freshwater Bayou (FWB) Bar and By-Pass Channels are identical for the project plan utilizing both the preferred disposal plan and this alternative (Disposal Alternative No. 3). For the G.I.W.W. and Freshwater Bayou (FWB) Interior, the initial dredging plans are also identical: using bucket dredges and placing the dredged material along the eroded shelves of these channels (relatively flat areas of channel bank located a few feet below the water line). These shelves were created by wave action eroding the weak soils composing the bank and enlarging the top width of the channel. However, in the preferred disposal plan, rock fronting protection was proposed to maintain this readily erodible supply of material. Disposal Alternative No. 3 proposes no such fronting protection. Please note,

the preferred alternative utilizes some open water and marsh areas for disposal. These features do not change in Disposal Alternative No. 3.

b. Placing dredged material along the G.I.W.W and FWB Shelves would provide readily erodible soils to refill the newly dredged channels. About 30% of this unconsolidated material would be lost within the first year after project construction to the erosive forces of wave action from vessel traffic, and it is assumed that all of this material would be redeposited into the channel. Within 5 years, approximately 75% of the material placed on the shelves would be repositioned into the channel, filling the bottom with sufficient material to require a dredging cycle to restore the channel's original design template. If Disposal Alternative No. 3 is adopted as part of the project, these channel reaches would require maintenance dredging at Year 1 of project life, and then at 5 years intervals. However, the material, which erodes back into the channel, could not be placed back on the shelves because it has a low strength, and after washing back into the channel through wave action, it would have almost no strength. Hydraulic dredging would then be required to remove it from the channel, and upland confined disposal areas would be needed. Thus, maintenance dredging cycles would be needed for G.I.W.W. and FWB Interior at Years 1, 5 and 10 in upland disposal areas, and mitigation would be required. After these events, there would be no material introduced back into the channels from the shelves, and the cycles originally anticipated for preferred alternative at Years 25 and 40 would be applicable.

c. Disposal Alternative No. 3 does not include the following items included in the preferred disposal plan:

(1) Twenty-eight (28) and thirty-six (36) inch stone required for protection of material in-place on eroded banks of the G.I.W.W. and FWB Interior. A stability berm requiring 36-inch stone and geotextile fabric is still required for FWB Interior.

(2) Rock plant mobilization for G.I.W.W.

(3) Geotextile fabric for G.I.W.W.

(4) Earthen dike construction for G.I.W.W.

d. Maintenance dredging for the G.I.W.W and FWB Interior would be accomplished using hydraulic dredges. Sufficient existing easement acreage along the banks of the G.I.W.W and FWB Interior is available for the total amount of maintenance material from these channels for the life of the project. However, mitigation ($22,000 per acre) would be required during the maintenance life of the project as follows:

G.I.W.W.
MITIGATION REQUIREMENTS FOR MAINTENANCE EVENTS

MITIGATION REQUIREMENTS	YEAR 1	YEAR 5	YEAR 10	YEAR 25	YEAR 40
Acres	310	810	567	360	360
Estimated Costs ($22,000 per Acre)	$6,815,945	$17,811,900	$12,465,082	$7,916,673	$7,916,673

FRESHWATER BAYOU INTERIOR
MITIGATION REQUIREMENTS FOR MAINTENANCE EVENTS

MITIGATION REQUIREMENTS	YEAR 1	YEAR 5	YEAR 10	YEAR 25	YEAR 40
Acres	0	642	627	312	312
Estimated Costs ($22,000 per Acre)	$0	$14,119,973	$13,791,668	$6,871,214	$6,871,214

e. The cost of initial construction for the project utilizing Disposal Alternative No. 3 is approximately $170 million. The corresponding cost of the project with the preferred disposal plan is $203 million. Thus, the preferred plan is $33 million more than Disposal Alternative No. 3.

f. The annual average OMRR&R cost for the project utilizing Disposal Alternative No. 3 is approximately $5.6 million. The corresponding OMRR&R cost for the project with the preferred disposal plan is $2.6 million. Thus, the average annual OMRR&R cost for the preferred plan is approximately $3 million less than Disposal Alternative No. 3.

g. The Average Annual Cost for the project with the preferred disposal plan is approximately $16 million. The corresponding cost using Disposal Alternative 3 is approximately $19.5 million.

2. **Disposal Alternative No. 4 - Deepwater Ocean Disposal.**

a. Under this alternative, dredging would be accomplished by bucket dredges. Three (3) contracts would be needed for Commercial Canal and G.I.W.W. Five (5) contracts would be needed for and Freshwater Bayou (FWB) Interior. Approximately 12,363,000 cubic yards of material would be removed from the channels.

b. Material from Commercial Canal, G.I.W.W., and FWB Interior would be placed on barges and transported through Freshwater Bayou Lock to a deepwater Ocean Dredge Material Disposal Site (ODMDS). No such approved site currently exists; thus, a lengthy process to identify and obtain approval from the Environmental Protection Agency (EPA) for a new ODMDS would be required prior to dredging activities beginning. It is estimated this process could take up to three (3) years and cost $1 million.

c. Disposal Alternative No. 4 does not include the following items included in the preferred disposal plan:

(1) Twenty-eight (28) and thirty-six (36) inch stone required for stability and protection of material in-place on eroded banks of the G.I.W.W. and FWB Interior.

(2) Rock dikes for other open water and marsh disposal sites in the project area.

(3) Geotextile fabric.

d. Under this disposal alternative, no mitigation would be required.

e. Maintenance requirements are identical to those proposed in the preferred plan except for maintenance required for rock placement areas. Material from maintenance dredging cycles for Commercial Canal, G.I.W.W and FWB Interior would be removed by bucket dredges in a manner similar to the initial cut and disposed into the OMSDS site.

g. The cost of initial construction for the project utilizing Disposal Alternative No. 4 is approximately $211.4 million. The corresponding cost of the project with the preferred disposal plan is approximately $203 million. Thus, the preferred plan is $8.4 million less than Disposal Alternative No. 4.

h. The annual average OMRR&R cost for the project utilizing Disposal Alternative No. 4 is approximately $4.8 million. The corresponding OMRR&R cost for the project with the preferred disposal plan is $2.6 million. Thus, the average annual OMRR&R cost for the preferred plan is approximately $2.2 million more than Disposal Alternative 4.

i. The Average Annual Cost for the project with the preferred disposal plan is approximately $16 million. The corresponding cost using Disposal Alternative 4 is approximately $19.4 million.

	COMPILED COSTS FOR DISPOSAL PLAN FOR SELECTED ALTERNATIVE			COMPILED COSTS FOR DISPOSAL ALTERNATIVE 2			COMPILED COST FOR DISPOSAL ALTERNATIVE 3			COMPILED COST FOR DISPOSAL ALTERNATIVE 4		
	Average Annual Cost Calculations											
	Year	**Cost**	**PV of Costs**	**Year**	**Cost**	**PV of Costs**	**Year**	**Cost**	**PV of Costs**	**Year**	**Cost**	**PV of Costs**
	-4	$29,505,863	$36,726,134				-4	$16,961,433	$21,112,003	-4	$36,367,212	$45,266,498
	-3	$30,188,153	$35,574,328				-3	$21,076,127	$24,836,533	-3	$29,089,604	$34,279,776
	-2	$41,066,791	$45,816,743	-2	$93,008,046	$103,765,734	-2	$35,387,171	$39,480,195	-2	$42,509,397	$47,426,207
	-1	$41,066,791	$43,376,798	-1	$92,695,546	$97,909,670	-1	$35,387,171	$37,377,699	-1	$42,509,397	$44,900,551
First Costs	0	$61,180,045	$61,180,045	0	$45,010,687	$45,010,687	0	$61,180,045	$61,180,045	0	$60,943,651	$60,943,651
	1	$282,320	$267,285	1	$282,320	$267,285	1	$29,080,898	$27,532,211	1	$282,320	$267,285
	2	$371,320	$332,824	2	$371,320	$332,824	2	$371,320	$332,824	2	$371,320	$332,824
	3	$6,476,070	$5,495,553	3	$6,476,070	$5,495,553	3	$6,476,070	$5,495,553	3	$6,476,070	$5,495,553
	4	($4,074,305)	($3,273,306)	4	($4,074,305)	($3,273,306)	4	($4,074,305)	($3,273,306)	4	($4,074,305)	($3,273,306)
	5	$3,659,515	$2,783,492	5	$3,659,515	$2,783,492	5	$64,092,946	$48,750,225	5	$24,400,933	$18,559,780
	6	$6,565,070	$4,727,582	6	$6,565,070	$4,727,582	6	$6,565,070	$4,727,582	6	$6,565,070	$4,727,582
	7	$282,320	$192,475	7	$282,320	$192,475	7	$282,320	$192,475	7	$282,320	$192,475
	8	($4,074,305)	($2,629,782)	8	($4,074,305)	($2,629,782)	8	($4,074,305)	($2,629,782)	8	($4,074,305)	($2,629,782)
	9	$6,476,070	$3,957,410	9	$6,476,070	$3,957,410	9	$6,476,070	$3,957,410	9	$6,476,070	$3,957,410
	10	$20,946,522	$12,118,384	10	$20,946,522	$12,118,384	10	$51,384,378	$29,727,876	10	$51,896,433	$30,024,120
	11	$282,320	$154,635	11	$282,320	$154,635	11	$282,320	$154,635	11	$282,320	$154,635
	12	$2,119,445	$1,099,060	12	$2,119,445	$1,099,060	12	$2,119,445	$1,099,060	12	$2,119,445	$1,099,060
	13	$282,320	$138,604	13	$282,320	$138,604	13	$282,320	$138,604	13	$282,320	$138,604
	14	$371,320	$172,589	14	$371,320	$172,589	14	$371,320	$172,589	14	$371,320	$172,589
	15	$7,273,070	$3,200,493	15	$7,273,070	$3,200,493	15	$7,273,070	$3,200,493	15	$7,273,070	$3,200,493
	16	($4,074,305)	($1,697,407)	16	($4,074,305)	($1,697,407)	16	($4,074,305)	($1,697,407)	16	($4,074,305)	($1,697,407)
	17	$282,320	$111,354	17	$282,320	$111,354	17	$282,320	$111,354	17	$282,320	$111,354
	18	$6,565,070	$2,451,537	18	$6,565,070	$2,451,537	18	$6,565,070	$2,451,537	18	$6,565,070	$2,451,537
	19	$282,320	$99,810	19	$282,320	$99,810	19	$282,320	$99,810	19	$282,320	$99,810
	20	($1,070,630)	($358,348)	20	($1,070,630)	($358,348)	20	($1,070,630)	($358,348)	20	$16,456,073	$5,507,972
	21	$6,476,070	$2,052,156	21	$6,476,070	$2,052,156	21	$6,476,070	$2,052,156	21	$6,476,070	$2,052,156
	22	$371,320	$111,399	22	$371,320	$111,399	22	$371,320	$111,399	22	$371,320	$111,399
	23	$282,320	$80,188	23	$282,320	$80,188	23	$282,320	$80,188	23	$282,320	$80,188
	24	$2,119,445	$569,929	24	$2,119,445	$569,929	24	$2,119,445	$569,929	24	$2,119,445	$569,929
	25	$17,685,327	$4,502,410	25	$17,685,327	$4,502,410	25	$31,789,610	$8,093,142	25	$27,893,820	$7,101,334
	26	$371,320	$89,498	26	$371,320	$89,498	26	$371,320	$89,498	26	$371,320	$89,498
	27	$6,476,070	$1,477,781	27	$6,476,070	$1,477,781	27	$6,476,070	$1,477,781	27	$6,476,070	$1,477,781
	28	($4,074,305)	($880,208)	28	($4,074,305)	($880,208)	28	($4,074,305)	($880,208)	28	($4,074,305)	($880,208)
	29	$282,320	$57,744	29	$282,320	$57,744	29	$282,320	$57,744	29	$282,320	$57,744
	30	$7,362,070	$1,425,602	30	$7,362,070	$1,425,602	30	$7,362,070	$1,425,602	30	$7,362,070	$1,425,602
	31	$282,320	$51,757	31	$282,320	$51,757	31	$282,320	$51,757	31	$282,320	$51,757
	32	($4,074,305)	($707,161)	32	($4,074,305)	($707,161)	32	($4,074,305)	($707,161)	32	($4,074,305)	($707,161)
	33	$6,476,070	$1,064,167	33	$6,476,070	$1,064,167	33	$6,476,070	$1,064,167	33	$6,476,070	$1,064,167
	34	$371,320	$57,767	34	$371,320	$57,767	34	$371,320	$57,767	34	$371,320	$57,767
	35	$2,386,383	$351,483	35	$2,386,383	$351,483	35	$2,386,383	$351,483	35	$11,909,953	$1,754,182
	36	$2,119,445	$295,543	36	$2,119,445	$295,543	36	$2,119,445	$295,543	36	$2,119,445	$295,543
	37	$282,320	$37,271	37	$282,320	$37,271	37	$282,320	$37,271	37	$282,320	$37,271
	38	$371,320	$46,410	38	$371,320	$46,410	38	$371,320	$46,410	38	$371,320	$46,410
	39	$6,476,070	$766,319	39	$6,476,070	$766,319	39	$6,476,070	$766,319	39	$6,476,070	$766,319
	40	$13,328,702	$1,493,203	40	$13,328,702	$1,493,203	40	$27,432,985	$3,073,295	40	$23,537,195	$2,636,852

	COMPILED COSTS FOR DISPOSAL PLAN FOR SELECTED ALTERNATIVE			COMPILED COSTS FOR DISPOSAL ALTERNATIVE 2			COMPILED COST FOR DISPOSAL ALTERNATIVE 3			COMPILED COST FOR DISPOSAL ALTERNATIVE 4		
	Average Annual Cost Calculations											
	Year	**Cost**	**PV of Costs**	**Year**	**Cost**	**PV of Costs**	**Year**	**Cost**	**PV of Costs**	**Year**	**Cost**	**PV of Costs**
	41	$282,320	$29,944	41	$282,320	$29,944	41	$282,320	$29,944	41	$282,320	$29,944
	42	$6,565,070	$659,230	42	$6,565,070	$659,230	42	$6,565,070	$659,230	42	$6,565,070	$659,230
	43	$282,320	$26,839	43	$282,320	$26,839	43	$282,320	$26,839	43	$282,320	$26,839
	44	($4,074,305)	($366,706)	44	($4,074,305)	($366,706)	44	($4,074,305)	($366,706)	44	($4,074,305)	($366,706)
	45	$7,273,070	$619,748	45	$7,273,070	$619,748	45	$7,273,070	$619,748	45	$7,273,070	$619,748
	46	$371,320	$29,956	46	$371,320	$29,956	46	$371,320	$29,956	46	$371,320	$29,956
	47	$282,320	$21,563	47	$282,320	$21,563	47	$282,320	$21,563	47	$282,320	$21,563
	48	$2,119,445	$153,257	48	$2,119,445	$153,257	48	$2,119,445	$153,257	48	$2,119,445	$153,257
	49	$282,320	$19,327	49	$282,320	$19,327	49	$282,320	$19,327	49	$282,320	$19,327
	50	$2,475,383	$160,438	50	$2,475,383	$160,438	50	$2,475,383	$160,438	50	$11,998,953	$777,691
	TOTAL PRESENT VALUE =>	**$ 333,462,354**	**$266,315,144**	**TOTAL PRESENT VALUE =>**	**$ 361,168,990**	**$290,327,189**	**TOTAL PRESENT VALUE =>**	**$ 448,325,089**	**$323,639,547**	**TOTAL PRESENT VALUE =>**	**$ 450,556,129**	**$321,768,649**
	Annual Average Cost		**$16,018,434**	**Annual Average Cost**		**$17,462,720**	**Annual Average Cost**		**$19,466,406**	**Annual Average Cost**		**$19,353,874**

	Fraction	**Decimal**
Interest Rate:	5 5/8	5.625
0.060148	50-Year Amortization Factor	

PORT OF IBERIA FEASIBILITY STUDY CONSTRUCTION / MAINTENANCE COSTS ALTERNATIVE 2 - UPLAND DISPOSAL IN EXISITING DISPOSAL EASEMENTS	
Item	**(-)20' X 150' Channel**
Initial Construction	$230,714,278
Maintenance, Year 1	$282,320
Maintenance, Year 2	$371,320
Maintenance, Year 3	$6,476,070
Maintenance, Year 4	($4,074,305)
Maintenance, Year 5	$3,659,515
Maintenance, Year 6	$6,565,070
Maintenance, Year 7	$282,320
Maintenance, Year 8	($4,074,305)
Maintenance, Year 9	$6,476,070
Maintenance, Year 10	$20,946,522
Maintenance, Year 11	$282,320
Maintenance, Year 12	$2,119,445
Maintenance, Year 13	$282,320
Maintenance, Year 14	$371,320
Maintenance, Year 15	$7,273,070
Maintenance, Year 16	($4,074,305)
Maintenance, Year 17	$282,320
Maintenance, Year 18	$6,565,070
Maintenance, Year 19	$282,320
Maintenance, Year 20	($1,070,630)
Maintenance, Year 21	$6,476,070
Maintenance, Year 22	$371,320
Maintenance, Year 23	$282,320
Maintenance, Year 24	$2,119,445
Maintenance, Year 25	$17,685,327
Maintenance, Year 26	$371,320
Maintenance, Year 27	$6,476,070
Maintenance, Year 28	($4,074,305)
Maintenance, Year 29	$282,320
Maintenance, Year 30	$7,362,070
Maintenance, Year 31	$282,320
Maintenance, Year 32	($4,074,305)
Maintenance, Year 33	$6,476,070
Maintenance, Year 34	$371,320
Maintenance, Year 35	$2,386,383
Maintenance, Year 36	$2,119,445
Maintenance, Year 37	$282,320
Maintenance, Year 38	$371,320
Maintenance, Year 39	$6,476,070
Maintenance, Year 40	$13,328,702
Maintenance, Year 41	$282,320
Maintenance, Year 42	$6,565,070
Maintenance, Year 43	$282,320
Maintenance, Year 44	($4,074,305)
Maintenance, Year 45	$7,273,070
Maintenance, Year 46	$371,320
Maintenance, Year 47	$282,320
Maintenance, Year 48	$2,119,445
Maintenance, Year 49	$282,320
Maintenance, Year 50	$2,475,383

PORT OF IBERIA FEASIBILITY STUDY INITIAL CONSTRUCTION COSTS CALCULATION FOR DISPOSAL ALTERNATIVE 2 - UPLAND DISPOSAL IN EXISITING DISPOSAL EASEMENTS	
PROJECT FEATURE	**(-)20' X 150' CHANNEL**
Commercial Canal, G.I.W.W., and Freshwater Bayou	
Mobilization/Demobilization	$ 920,000
Containment Dike Construction	$ 3,925,000
Dredging	$ 29,176,680
E&D	$ 500,000
S&A	$ 740,000
Subtotal	**$ 35,261,680**
Contingencies (15%)	$ 5,289,252
Total, Commercial Canal	**$ 40,550,932**
Freshwater Bayou By-Pass and Bar Channels	
Mobilization/Demobilization, Dredge	$ 1,039,100
Dredging , By-Pass Channel	$ 1,308,950
Dredging, Bar Channel	$ 9,627,200
E&D	$ 125,000
S&A	$ 210,000
Subtotal	**$ 12,310,250**
Contingencies (15%)	$ 1,846,538
Total, Freshwater Bayou Bar Channel	**$ 14,156,788**
Borings, Centerline of Commercial Canal, GIWW and Freshwater Bayou [2]	**$ 350,000**
Surveys	**$ 300,000**
By-Pass Channel Floodgate [3]	**$ 30,637,232**
Replacement of Bulkheads [4]	**$ 17,000,072**
Relocations	**$ 24,111,323**
Mitigation (4,268 acres x $22,000 per acre)	**$ 103,295,431**
Real Estate	**$ 312,500**
TOTAL	**$ 230,714,278**

NOTES:

1. Channel dredging includes 2 feet of advanced maintenance.
2. Borings include centerline borings deferred from Feasibility Phase.
3. By-pass channel floodgate includes 25% contingency, 8% E&D, and 8% S&A.
4. Costs for replacement of bulkheads include 25% contingency.

ALTERNATIVE 2 - UPLAND DISPOSAL IN EXISITING DISPOSAL EASEMENTS - (-)20.0 X 150-FOOT ALTERNATIVE MAINTENANCE COSTS SUMMARY											
Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$3,172,195	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$3,659,515
6	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
10	$3,172,195	$3,687,488	$4,599,072	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$12,035,074
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$2,798,675	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	($1,070,630)
21	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
25	$0	$3,687,488	$4,599,072	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$8,773,879
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$6,193,750	$0	$766,000	$0	$177,320	$75,000	$150,000	$7,362,070
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
33	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320

ALTERNATIVE 2 - UPLAND DISPOSAL IN EXISITING DISPOSAL EASEMENTS - (-)20.0 X 150-FOOT ALTERNATIVE
MAINTENANCE COSTS SUMMARY

Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
35	$1,899,063	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$2,386,383
36	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
40	$0	$3,687,488	$4,599,072	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$4,417,254
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
49	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
50	$1,899,063	$0	$0	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$2,475,383

TOTAL OMRR&R COSTS FOR PROJECT LI	$103,720,367
ANNUAL AVERAG OMRR&R C	$2,074,407.35

PORT OF IBERIA FEASIBILITY STUDY

MAINTENANCE DREDGING COST ESTIMATES FOR COMMERCIAL CANAL - ALTERNATIVE 2 - UPLAND DISPOSAL IN EXISITING DISPOSAL EASEMENTS

COMMERCIAL CANAL, (-)20.0' X 125-FEET, (-)20.0' X 135-FEET, (-)20.0' X 150-FEET PROJECTED MAINTENANCE DREDGING FOR PROPOSED PROJECT					
ITEM	**YEAR 5**	**YEAR 10**	**YEAR 20**	**YEAR 35**	**YEAR 50**
Mobilization/Demobilization	$845,000	$845,000	$845,000	$845,000	$845,000
Dike Construction	$207,600	$207,600	$174,000	$97,500	$97,500
Dredging	$1,200,000	$1,200,000	$980,000	$420,000	$420,000
E&D	$135,156	$135,156	$119,940	$81,750	$81,750
S&A	$150,000	$150,000	$120,000	$75,000	$75,000
SUBTOTAL	**$2,537,756**	**$2,537,756**	**$2,238,940**	**$1,519,250**	**$1,519,250**
Contingency (25%)	$634,439	$634,439	$559,735	$379,813	$379,813
TOTAL	**$3,172,195**	**$3,172,195**	**$2,798,675**	**$1,899,063**	**$1,899,063**

PORT OF IBERIA FEASIBILITY STUDY

MAINTENANCE DREDGING COST ESTIMATES FOR G.I.W.W.

ALTERNATIVE 2 - UPLAND DISPOSAL IN EXISITING DISPOSAL EASEMENTS

GIWW, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$586,000	$586,000	$586,000
Mobilization/Demobilization - Rock Placement	$35,000	$35,000	$35,000
Dredging	$1,545,500	$1,545,500	$1,545,500
Rock Placement	$475,000	$475,000	$475,000
E&D	$158,490	$158,490	$158,490
S&A	$150,000	$150,000	$150,000
SUBTOTAL	$2,949,990	$2,949,990	$2,949,990
Contingency (25%)	$737,498	$737,498	$737,498
TOTAL	$3,687,488	$3,687,488	$3,687,488

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR FRESHWATER BAYOU (INTERIOR)
ALTERNATIVE 2 - UPLAND DISPOSAL IN EXISITING DISPOSAL EASEMENTS

FRESHWATER BAYOU INTERIOR, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$890,000	$890,000	$890,000
Mobilization/Demobilization - Rock Placement	$35,000	$35,000	$35,000
Dredging	$1,394,400	$1,394,400	$1,394,400
Rock Placement	$1,010,088	$1,010,088	$1,010,088
E&D	$199,769	$199,769	$199,769
S&A	$150,000	$150,000	$150,000
SUBTOTAL	$3,679,257	$3,679,257	$3,679,257
Contingency (25%)	$919,814	$919,814	$919,814
TOTAL	$4,599,072	$4,599,072	$4,599,072

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING FOR FREASHWATER BAYOU BAR CHANNEL
PROPOSED MAINTENANCE CYCLE EVERY THREE (3) YEARS
ALTERNATIVE 2 - UPLAND DISPOSAL IN EXISITING DISPOSAL EASEMENTS

FRESHWATER BAYOU BAR CHANNEL (-)16.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$2,475,000
E&D	$125,000
S&A	$105,000
SUBTOTAL	**$3,490,000**
Contingency (25%)	$872,500
TOTAL	**$4,362,500**

FRESHWATER BAYOU BAR CHANNEL (-)18.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$2,850,000
E&D	$125,000
S&A	$120,000
SUBTOTAL	**$3,880,000**
Contingency (25%)	$970,000
TOTAL	**$4,850,000**

FRESHWATER BAYOU BAR CHANNEL (-)20.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$3,910,000
E&D	$125,000
S&A	$135,000
SUBTOTAL	**$4,955,000**
Contingency (25%)	$1,238,750
TOTAL	**$6,193,750**

FRESHWATER BAYOU BAR CHANNEL EXISTING MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$776,500
Dredging	$2,150,000
E&D	$125,000
S&A	$105,000
SUBTOTAL	**$3,156,500**
Contingency (25%)	$789,125
TOTAL	**$3,945,625**

PORT OF IBERIA FEASIBILITY STUDY DISPOSAL ALTERNATIVE 2 - UPLAND DISPOSAL IN EXISITING DISPOSAL EASEMENTS CONTRACT AWARD SCHEDULE										
CONSTRUCTION YEAR	CONTRACT AWARD	CONTRACT AMOUNT (AVERAGE)	ANNUAL TOTAL, CONSTRUCTION CONTRACTS	AVERAGE ANNUAL RELOCATIONS COST[1]	GEOTECHNICAL INVESTIGATIONS	SURVEYS	REAL ESTATE	BULKHEADS[2]	MITIGATION	ANNUAL TOTAL
1	Commercial Canal, G.I.W.W., and Freshwater Bayou Interior, Contract 1	$20,275,465	$20,275,466	$12,055,662	$116,667	$100,000	$312,500	$8,500,036	$51,647,716	**$93,008,046**
2	Commercial Canal, G.I.W.W., and Freshwater Bayou Interior, Contract 2	$20,275,465	$20,275,466	$12,055,662	$116,667	$100,000	$0	$8,500,036	$51,647,716	**$92,695,546**
3	Freshwater Bayou Bar and By-Pass Channels	$14,156,788	$44,794,020	$0	$116,667	$100,000	$0	$0	$0	**$45,010,687**
	By-Pass Channel Floodgates	$30,637,232								
		TOTAL	**$85,344,952**	**$24,111,323**	**$350,000**	**$300,000**	**$312,500**	**$17,000,072**	**$103,295,431**	**$230,714,278**

NOTES:

1. Responsible party for relocations will be determined by Determination of Compensability completed by MVN's Real Estate Division
2. Bulkhead replacement will be the responsibility of individual owners with the Port of Iberia.

PORT OF IBERIA FEASIBILITY STUDY
CONSTRUCTION / MAINTENANCE COSTS

ALTERNATIVE 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

Item	(-)20' X 150' Channel
Initial Construction	$169,991,945
Maintenance, Year 1	$29,080,898
Maintenance, Year 2	$371,320
Maintenance, Year 3	$6,476,070
Maintenance, Year 4	($4,074,305)
Maintenance, Year 5	$64,092,946
Maintenance, Year 6	$6,565,070
Maintenance, Year 7	$282,320
Maintenance, Year 8	($4,074,305)
Maintenance, Year 9	$6,476,070
Maintenance, Year 10	$51,384,378
Maintenance, Year 11	$282,320
Maintenance, Year 12	$2,119,445
Maintenance, Year 13	$282,320
Maintenance, Year 14	$371,320
Maintenance, Year 15	$7,273,070
Maintenance, Year 16	($4,074,305)
Maintenance, Year 17	$282,320
Maintenance, Year 18	$6,565,070
Maintenance, Year 19	$282,320
Maintenance, Year 20	($1,070,630)
Maintenance, Year 21	$6,476,070
Maintenance, Year 22	$371,320
Maintenance, Year 23	$282,320
Maintenance, Year 24	$2,119,445
Maintenance, Year 25	$31,789,610
Maintenance, Year 26	$371,320
Maintenance, Year 27	$6,476,070
Maintenance, Year 28	($4,074,305)
Maintenance, Year 29	$282,320
Maintenance, Year 30	$7,362,070
Maintenance, Year 31	$282,320
Maintenance, Year 32	($4,074,305)
Maintenance, Year 33	$6,476,070
Maintenance, Year 34	$371,320
Maintenance, Year 35	$2,386,383
Maintenance, Year 36	$2,119,445
Maintenance, Year 37	$282,320
Maintenance, Year 38	$371,320
Maintenance, Year 39	$6,476,070
Maintenance, Year 40	$27,432,985
Maintenance, Year 41	$282,320
Maintenance, Year 42	$6,565,070
Maintenance, Year 43	$282,320
Maintenance, Year 44	($4,074,305)
Maintenance, Year 45	$7,273,070
Maintenance, Year 46	$371,320
Maintenance, Year 47	$282,320
Maintenance, Year 48	$2,119,445
Maintenance, Year 49	$282,320
Maintenance, Year 50	$2,475,383

PORT OF IBERIA FEASIBILITY STUDY
INITIAL CONSTRUCTION COSTS CALCULATION
ALTERNATIVE 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

PROJECT FEATURE	(-)20' X 150' CHANNEL
Commercial Canal	
Mobilization/Demobilization	$ 664,500
Containment Dike Construction	$ 514,280
Dredging	$ 8,378,620
E&D	$ 125,000
S&A	$ 260,000
Subtotal	**$ 9,942,400**
Contingencies (15%)	$ 1,491,360
Total, Commercial Canal	**$ 11,433,760**
G.I.W.W.	
Mobilization/Demobilization, Dredge	$ 1,230,000
Mobilization/Demobilization, Rock	$ 0
Dredging	$ 8,546,450
Flotation Channel Access	$ 184,000
Rock Dike, Disposal Areas GIWW No. 5 & No. 6	$ 2,496,100
Earthen Dike Construction	$ 0
Channel Revetment Stone (28-Inch)	$ 0
Geotextile Fabric	$ 0
E&D	$ 375,000
S&A	$ 620,000
Subtotal	**$ 13,451,550**
Contingencies (15%)	$ 2,017,733
Total, G.I.W.W.	**$ 15,469,283**
Freshwater Bayou	
Mobilization/Demobilization, Dredge	$ 1,750,000
Mobilization/Demobilization, Rock	$ 300,000
Dredging	$ 18,200,000
Channel Revetment Stone (36-Inch)	$ 22,161,000
Freshwater Bayou Disposal Sites No. 2 & 3, Earthen Core	$ 140,250
Freshwater Bayou Disposal Sites No. 2 & 3, Rock Cover	$ 2,208,750
Geotextile Fabric	$ 1,699,500
E&D	$ 625,000
S&A	$ 600,000
Subtotal	**$ 47,684,500**
Contingencies (15%)	$ 7,152,675
Total, Freshwater Bayou	**$ 54,837,175**

PORT OF IBERIA FEASIBILITY STUDY INITIAL CONSTRUCTION COSTS CALCULATION ALTERNATIVE 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU	
PROJECT FEATURE	**(-)20' X 150' CHANNEL**
Freshwater Bayou By-Pass and Bar Channels	
Mobilization/Demobilization, Dredge	$ 1,039,100
Dredging , By-Pass Channel	$ 1,308,950
Dredging, Bar Channel	$ 9,627,200
E&D	$ 125,000
S&A	$ 210,000
Subtotal	**$ 12,310,250**
Contingencies (15%)	$ 1,846,538
Total, Freshwater Bayou Bar Channel	**$ 14,156,788**
Borings, Centerline of Commercial Canal, GIWW and Freshwater Bayou[2]	**$ 350,000**
Surveys	**$ 300,000**
By-Pass Channel Floodgate[3]	**$ 30,637,232**
Replacement of Bulkheads[4]	**$ 17,000,072**
Relocations	**$ 24,111,323**
Mitigation	**$ 0**
Real Estate	**$ 1,696,313**
TOTAL	**$ 169,991,945**

NOTES:

1. Channel dredging includes 2 feet of advanced maintenance.
2. Borings include centerline borings deferred from Feasibility Phase.
3. By-pass channel floodgate includes 25% contingency, 8% E&D, and 8% S&A.
4. Costs for replacement of bulkheads include 25% contingency.

ALT 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

MAINTENANCE COSTS SUMMARY FOR (-)20.0 X 150-FOOT ALTERNATIVE

Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$17,721,688	$11,076,890	$0	$0	$30,000	$0	$177,320	$75,000	$0	$29,080,898
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$3,172,195	$30,625,864	$29,807,567	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$64,092,946
6	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
10	$3,172,195	$23,011,104	$24,624,759	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$51,384,378
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$2,798,675	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	($1,070,630)
21	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
25	$0	$16,533,411	$14,768,878	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$31,789,610
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$6,193,750	$0	$766,000	$0	$177,320	$75,000	$150,000	$7,362,070
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
33	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070

ALT 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

MAINTENANCE COSTS SUMMARY FOR (-)20.0 X 150-FOOT ALTERNATIVE

Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
35	$1,899,063	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$2,386,383
36	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
40	$0	$16,533,411	$14,768,878	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$27,432,985
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
49	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
50	$1,899,063	$0	$0	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$2,475,383

TOTAL OMRR&R COSTS FOR PROJECT LI	$278,333,142
ANNUAL AVERAG OMRR&R C(	$5,556,662.84

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR COMMERCIAL CANAL
ALTERNATIVE 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

COMMERCIAL CANAL, (-)20.0' X 125-FEET, (-)20.0' X 135-FEET, (-)20.0' X 150-FEET
PROJECTED MAINTENANCE DREDGING FOR PROPOSED PROJECT

ITEM	YEAR 5	YEAR 10	YEAR 20	YEAR 35	YEAR 50
Mobilization/Demobilization	$845,000	$845,000	$845,000	$845,000	$845,000
Dike Construction	$207,600	$207,600	$174,000	$97,500	$97,500
Dredging	$1,200,000	$1,200,000	$980,000	$420,000	$420,000
E&D	$135,156	$135,156	$119,940	$81,750	$81,750
S&A	$150,000	$150,000	$120,000	$75,000	$75,000
SUBTOTAL	**$2,537,756**	**$2,537,756**	**$2,238,940**	**$1,519,250**	**$1,519,250**
Contingency (25%)	$634,439	$634,439	$559,735	$379,813	$379,813
TOTAL	**$3,172,195**	**$3,172,195**	**$2,798,675**	**$1,899,063**	**$1,899,063**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR G.I.W.W.
ALTERNATIVE 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

GIWW, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 1				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	755,040	$2.92	$2,204,717
Dredging, Upland Disposal on Banks	CY	999,672	$0.95	$949,688
Confinement Dikes	EA	11	$147,000.00	$1,617,000
Mitigation	AC	310	$22,000.00	$6,815,945
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				$14,177,351
Contingency (25%)				$3,544,338
TOTAL				$17,721,688

GIWW, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 5				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	0	$2.92	$0
Dredging, Upland Disposal on Banks	CY	2,612,412	$0.95	$2,481,791
Confinement Dikes	EA	11	$147,000.00	$1,617,000
Mitigation	AC	810	$22,000.00	$17,811,900
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				$24,500,691
Contingency (25%)				$6,125,173
TOTAL				$30,625,864

GIWW, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 10				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	0	$2.92	$0
Dredging, Upland Disposal on Banks	CY	1,828,212	$0.95	$1,736,801
Confinement Dikes	EA	11	$147,000.00	$1,617,000
Mitigation	AC	567	$22,000.00	$12,465,082
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				$18,408,883
Contingency (25%)				$4,602,221
TOTAL				$23,011,104

GIWW, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 25				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	0	$2.92	$0
Dredging, Upland Disposal on Banks	CY	1,161,112	$0.95	$1,103,056
Confinement Dikes	EA	11	$147,000.00	$1,617,000
Mitigation	AC	360	$22,000.00	$7,916,673
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				$13,226,729
Contingency (25%)				$3,306,682
TOTAL				$16,533,411

GIWW, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 40				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	0	$2.92	$0
Dredging, Upland Disposal on Banks	CY	1,161,112	$0.95	$1,103,056
Confinement Dikes	EA	11	$147,000.00	$1,617,000
Mitigation	AC	360	$22,000.00	$7,916,673
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				$13,226,729
Contingency (25%)				$3,306,682
TOTAL				$16,533,411

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR FRESHWATER BAYOU INTERIOR (FWB)
ALTERNATIVE 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

FWB, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 1				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	2,147,778	$2.92	$6,271,512
Dredging, Upland Disposal on Banks	CY	0	$0.95	$0
Confinement Dikes	EA	0	$147,000.00	$0
Mitigation	AC	0	$22,000.00	$0
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$8,861,512**
Contingency (25%)				$2,215,378
TOTAL				**$11,076,890**

FWB, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 5				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	1,291,849	$2.92	$3,772,198
Dredging, Upland Disposal on Banks	CY	2,070,929	$0.95	$1,967,383
Confinement Dikes	EA	10	$147,000.00	$1,396,500
Mitigation	AC	642	$22,000.00	$14,119,973
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$23,846,054**
Contingency (25%)				$5,961,513
TOTAL				**$29,807,567**

FWB, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 10				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	0	$2.92	$0
Dredging, Upland Disposal on Banks	CY	2,022,778	$0.95	$1,921,639
Confinement Dikes	EA	10	$147,000.00	$1,396,500
Mitigation	AC	627	$22,000.00	$13,791,668
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$19,699,807**
Contingency (25%)				$4,924,952
TOTAL				**$24,624,759**

FWB, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 25				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	0	$2.92	$0
Dredging, Upland Disposal on Banks	CY	1,007,778	$0.95	$957,389
Confinement Dikes	EA	10	$147,000.00	$1,396,500
Mitigation	AC	312	$22,000.00	$6,871,214
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$11,815,103**
Contingency (25%)				$2,953,776
TOTAL				**$14,768,878**

FWB, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 40				
ITEM	UNIT	QUANTITY	UNIT COST	TOTAL
Mobilization/Demobilization (2 Contracts)	EA	2	$920,000.00	$1,840,000
Dredging, Disposal in Marsh/Open Water Areas	CY	0	$2.92	$0
Dredging, Upland Disposal on Banks	CY	1,007,778	$0.95	$957,389
Confinement Dikes	EA	10	$147,000.00	$1,396,500
Mitigation	AC	312	$22,000.00	$6,871,214
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$11,815,103**
Contingency (25%)				$2,953,776
TOTAL				**$14,768,878**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING FOR FREASHWATER BAYOU BAR CHANNEL
PROPOSED MAINTENANCE CYCLE EVERY THREE (3) YEARS

ALTERNATIVE 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

FRESHWATER BAYOU BAR CHANNEL (-)16.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$2,475,000
E&D	$125,000
S&A	$105,000
SUBTOTAL	**$3,490,000**
Contingency (25%)	$872,500
TOTAL	**$4,362,500**

FRESHWATER BAYOU BAR CHANNEL (-)18.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$2,850,000
E&D	$125,000
S&A	$120,000
SUBTOTAL	**$3,880,000**
Contingency (25%)	$970,000
TOTAL	**$4,850,000**

FRESHWATER BAYOU BAR CHANNEL (-)20.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$3,910,000
E&D	$125,000
S&A	$135,000
SUBTOTAL	**$4,955,000**
Contingency (25%)	$1,238,750
TOTAL	**$6,193,750**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING FOR FREASHWATER BAYOU BAR CHANNEL
EXISTING MAINTENANCE CYCLE EVERY FOUR (4) YEARS

ALTERNATIVE 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

FRESHWATER BAYOU BAR CHANNEL EXISTING MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$776,500
Dredging	$2,150,000
E&D	$125,000
S&A	$105,000
SUBTOTAL	**$3,156,500**
Contingency (25%)	$789,125
TOTAL	**$3,945,625**

PORT OF IBERIA FEASIBILITY STUDY

DISPOSAL ALTERNATIVE 3 - PLACEMENT OF DISPOSAL MATERIAL IN ERODED BANK SHELVES WITHOUT ROCK EXCEPT FOR ROCK STABILITY BERM ALONG FRESHWATER BAYOU

CONTRACT AWARD SCHEDULE

CONSTRUCTION YEAR	CONTRACT AWARD	CONTRACT AMOUNT (AVERAGE)	ANNUAL TOTAL, CONSTRUCTION CONTRACTS	AVERAGE ANNUAL RELOCATIONS COST[1]	GEOTECHNICAL INVESTIGATIONS	SURVEYS	REAL ESTATE	BULKHEADS[2]	ANNUAL TOTAL
1	G.I.W.W., Contract 1	$5,156,428	$10,312,855	$4,822,265	$70,000	$60,000	$1,696,313	$0	**$16,961,433**
	G.I.W.W., Contract 2	$5,156,428							
2	Freshwater Bayou Interior, Contract 1	$10,967,435	$16,123,863	$4,822,265	$70,000	$60,000	$0	$0	**$21,076,127**
	G.I.W.W., Contract 3	$5,156,428							
3	Freshwater Bayou Interior, Contract 2	$10,967,435	$21,934,870	$4,822,265	$70,000	$60,000	$0	$8,503,036	**$35,387,171**
	Freshwater Bayou Interior, Contract 3	$10,967,435							
4	Freshwater Bayou Interior, Contract 4	$10,967,435	$21,934,870	$4,822,265	$70,000	$60,000	$0	$8,503,036	**$35,387,171**
	Freshwater Bayou Interior, Contract 5	$10,967,435							
5	Commercial Canal	$11,433,760	$11,433,760	$4,822,265	$70,000	$60,000	$0	$0	**$61,180,045**
	Freshwater Bayou Bar and By-Pass Channels	$14,156,788	$44,794,020	$0	$0	$0	$0	$0	
	By-Pass Channel Floodgates	$30,637,232							
		TOTAL	**$126,534,238**	**$24,111,323**	**$350,000**	**$300,000**	**$1,696,313**	**$17,000,072**	**$169,991,946**

NOTES:

1. Responsible party for relocations will be determined by Determination of Compensability completed by MVN's Real Estate Division
2. Bulkhead replacement will be the responsibility of individual owners with the Port of Iberia.

PORT OF IBERIA FEASIBILITY STUDY
CONSTRUCTION / MAINTENANCE COSTS

ALTERNATIVE 4 - DEEPWATER OCEAN DISPOSAL

Item	(-)20' X 150' Channel
Initial Construction	$211,419,259
Maintenance, Year 1	$282,320
Maintenance, Year 2	$371,320
Maintenance, Year 3	$6,476,070
Maintenance, Year 4	($4,074,305)
Maintenance, Year 5	$24,400,933
Maintenance, Year 6	$6,565,070
Maintenance, Year 7	$282,320
Maintenance, Year 8	($4,074,305)
Maintenance, Year 9	$6,476,070
Maintenance, Year 10	$51,896,433
Maintenance, Year 11	$282,320
Maintenance, Year 12	$2,119,445
Maintenance, Year 13	$282,320
Maintenance, Year 14	$371,320
Maintenance, Year 15	$7,273,070
Maintenance, Year 16	($4,074,305)
Maintenance, Year 17	$282,320
Maintenance, Year 18	$6,565,070
Maintenance, Year 19	$282,320
Maintenance, Year 20	$16,456,073
Maintenance, Year 21	$6,476,070
Maintenance, Year 22	$371,320
Maintenance, Year 23	$282,320
Maintenance, Year 24	$2,119,445
Maintenance, Year 25	$27,893,820
Maintenance, Year 26	$371,320
Maintenance, Year 27	$6,476,070
Maintenance, Year 28	($4,074,305)
Maintenance, Year 29	$282,320
Maintenance, Year 30	$7,362,070
Maintenance, Year 31	$282,320
Maintenance, Year 32	($4,074,305)
Maintenance, Year 33	$6,476,070
Maintenance, Year 34	$371,320
Maintenance, Year 35	$11,909,953
Maintenance, Year 36	$2,119,445
Maintenance, Year 37	$282,320
Maintenance, Year 38	$371,320
Maintenance, Year 39	$6,476,070
Maintenance, Year 40	$23,537,195
Maintenance, Year 41	$282,320
Maintenance, Year 42	$6,565,070
Maintenance, Year 43	$282,320
Maintenance, Year 44	($4,074,305)
Maintenance, Year 45	$7,273,070
Maintenance, Year 46	$371,320
Maintenance, Year 47	$282,320
Maintenance, Year 48	$2,119,445
Maintenance, Year 49	$282,320
Maintenance, Year 50	$11,998,953

PORT OF IBERIA FEASIBILITY STUDY
INITIAL CONSTRUCTION COSTS CALCULATION
ALTERNATIVE 4 - DEEPWATER OCEAN DISPOSAL

PROJECT FEATURE	(-)20' X 150' CHANNEL
Commercial Canal	
Mobilization/Demobilization (3 Contracts)	$ 726,000
Dredging	$ 27,444,520
E&D	$ 375,000
S&A	$ 665,000
Subtotal	**$ 29,210,520**
Contingencies (15%)	$ 4,381,578
Total, Commercial Canal	**$ 33,592,098**
G.I.W.W.	
Mobilization/Demobilization (3 Contracts)	$ 660,600
Dredging	$ 37,646,070
E&D	$ 375,000
S&A	$ 990,000
Subtotal	**$ 39,671,670**
Contingencies (15%)	$ 5,950,751
Total, G.I.W.W.	**$ 45,622,421**
Freshwater Bayou	
Mobilization/Demobilization (5 Contracts)	$ 766,500
Dredging	$ 36,176,000
E&D	$ 625,000
S&A	$ 1,258,000
Subtotal	**$ 38,825,500**
Contingencies (15%)	$ 5,823,825
Total, Freshwater Bayou	**$ 44,649,325**
Freshwater Bayou By-Pass and Bar Channels	
Mobilization/Demobilization, Dredge	$ 1,039,100
Dredging , By-Pass Channel	$ 1,308,950
Dredging, Bar Channel	$ 9,627,200
E&D	$ 125,000
S&A	$ 210,000
Subtotal	**$ 12,310,250**
Contingencies (15%)	$ 1,846,538
Total, Freshwater Bayou Bar Channel	**$ 14,156,788**
Borings, Centerline of Commercial Canal, GIWW and Freshwater Bayou[2]	**$ 350,000**
Surveys	**$ 300,000**
By-Pass Channel Floodgate[3]	**$ 30,637,232**
Replacement of Bulkheads[4]	**$ 17,000,072**
Relocations	**$ 24,111,323**
Deepwater Ocean Disposal Site Approval Process	**$ 1,000,000**
Mitigation	**$ 0**
Real Estate	**$ 0**
TOTAL	**$ 211,419,259**

NOTES:

1. Channel dredging includes 2 feet of advanced maintenance.
2. Borings include centerline borings deferred from Feasibility Phase.
3. By-pass channel floodgate includes 25% contingency, 8% E&D, and 8% S&A.
4. Costs for replacement of bulkheads include 25% contingency.

ALT 4 - DEEPWATER OCEAN DISPOSAL
MAINTENANCE COSTS SUMMARY FOR (-)20.0 X 150-FOOT ALTERNATIVE

Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$23,913,613	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$24,400,933
6	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
10	$23,913,613	$15,953,000	$11,453,500	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$51,896,433
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$20,325,378	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$16,456,073
21	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
25	$0	$15,953,000	$11,453,500	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$27,893,820
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$6,193,750	$0	$766,000	$0	$177,320	$75,000	$150,000	$7,362,070
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
33	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070

ALT 4 - DEEPWATER OCEAN DISPOSAL
MAINTENANCE COSTS SUMMARY FOR (-)20.0 X 150-FOOT ALTERNATIVE

Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
35	$11,422,633	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$11,909,953
36	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
40	$0	$15,953,000	$11,453,500	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$23,537,195
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
49	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
50	$11,422,633	$0	$0	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$11,998,953

TOTAL OMRR&R COSTS FOR PROJECT LIF	$239,136,868
ANNUAL AVERAG OMRR&R CO	$4,782,737.35

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR COMMERCIAL CANAL
ALTERNATIVE 4 - DEEPWATER OCEAN DISPOSAL

COMMERCIAL CANAL, (-)20.0' X 150-FEET PROJECTED MAINTENANCE DREDGING FOR PROPOSED PROJECT					
ITEM	**YEAR 5**	**YEAR 10**	**YEAR 20**	**YEAR 35**	**YEAR 50**
Mobilization/Demobilization	$242,500	$242,500	$242,500	$242,500	$242,500
Dredging	$17,664,000	$17,664,000	$14,984,200	$8,307,600	$8,307,600
E&D	$1,074,390	$1,074,390	$913,602	$513,006	$513,006
S&A	$150,000	$150,000	$120,000	$75,000	$75,000
SUBTOTAL	**$19,130,890**	**$19,130,890**	**$16,260,302**	**$9,138,106**	**$9,138,106**
Contingency (25%)	$4,782,723	$4,782,723	$4,065,076	$2,284,527	$2,284,527
TOTAL	**$23,913,613**	**$23,913,613**	**$20,325,378**	**$11,422,633**	**$11,422,633**

1. Years 5 and 10: 1.2 million CY @ $14.72/CY
2. Years 20: 0.98 million CY @ $15.29/CY
3. Years 35 and 50: 0.42 million CY @ $19.78/CY

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR G.I.W.W.
ALTERNATIVE 4 - DEEPWATER OCEN DISPOSAL

GIWW, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 10				
ITEM	**UNIT**	**QUANTITY**	**UNIT COST**	**TOTAL**
Mobilization/Demobilization (2 Contracts)	EA	2	$220,200.00	$440,400
Dredging	CY	550,000	$21.04	$11,572,000
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$12,762,400**
Contingency (25%)				$3,190,600
TOTAL				**$15,953,000**

GIWW, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 25				
ITEM	**UNIT**	**QUANTITY**	**UNIT COST**	**TOTAL**
Mobilization/Demobilization (2 Contracts)	EA	2	$220,200.00	$440,400
Dredging	CY	550,000	$21.04	$11,572,000
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$12,762,400**
Contingency (25%)				$3,190,600
TOTAL				**$15,953,000**

GIWW, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 40				
ITEM	**UNIT**	**QUANTITY**	**UNIT COST**	**TOTAL**
Mobilization/Demobilization (2 Contracts)	EA	2	$220,200.00	$440,400
Dredging	CY	550,000	$21.04	$11,572,000
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$12,762,400**
Contingency (25%)				$3,190,600
TOTAL				**$15,953,000**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR FRESHWATER BAYOU INTERIOR (FWB)
ALTERNATIVE 4 - DEEPWATER OCEAN DISPOSAL

FWB, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 10				
ITEM	**UNIT**	**QUANTITY**	**UNIT COST**	**TOTAL**
Mobilization/Demobilization (1 Contract)	EA	1	$920,000.00	$920,000
Dredging	CY	480,000	$15.61	$7,492,800
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$9,162,800**
Contingency (25%)				$2,290,700
TOTAL				**$11,453,500**

FWB, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 25				
ITEM	**UNIT**	**QUANTITY**	**UNIT COST**	**TOTAL**
Mobilization/Demobilization (1 Contract)	EA	1	$920,000.00	$920,000
Dredging	CY	480,000	$15.61	$7,492,800
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$9,162,800**
Contingency (25%)				$2,290,700
TOTAL				**$11,453,500**

FWB, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING, YEAR 40				
ITEM	**UNIT**	**QUANTITY**	**UNIT COST**	**TOTAL**
Mobilization/Demobilization (1 Contract)	EA	1	$920,000.00	$920,000
Dredging	CY	480,000	$15.61	$7,492,800
E&D	LS	2	$125,000.00	$250,000
S&A	LS	2	$250,000.00	$500,000
SUBTOTAL				**$9,162,800**
Contingency (25%)				$2,290,700
TOTAL				**$11,453,500**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING FOR FREASHWATER BAYOU BAR CHANNEL
PROPOSED MAINTENANCE CYCLE EVERY THREE (3) YEARS

ALTERNATIVE 4 - DEEPWATER OCEAN DISPOSAL

FRESHWATER BAYOU BAR CHANNEL (-)20.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$3,910,000
E&D	$125,000
S&A	$135,000
SUBTOTAL	**$4,955,000**
Contingency (25%)	$1,238,750
TOTAL	**$6,193,750**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING FOR FREASHWATER BAYOU BAR CHANNEL
EXISTING MAINTENANCE CYCLE EVERY FOUR (4) YEARS

ALTERNATIVE 4 - DEEPWATER OCEAN DISPOSAL

FRESHWATER BAYOU BAR CHANNEL EXISTING MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$776,500
Dredging	$2,150,000
E&D	$125,000
S&A	$105,000
SUBTOTAL	**$3,156,500**
Contingency (25%)	$789,125
TOTAL	**$3,945,625**

PORT OF IBERIA FEASIBILITY STUDY
DISPOSAL ALTERNATIVE 4 - DEEPWATER OCEAN DISPOSAL
CONTRACT AWARD SCHEDULE

CONSTRUCTION YEAR	CONTRACT AWARD	CONTRACT AMOUNT (AVERAGE)	ANNUAL TOTAL, CONSTRUCTION CONTRACTS	AVERAGE ANNUAL RELOCATIONS COST[1]	GEOTECHNICAL INVESTIGATIONS	SURVEYS	DEEPWATER OCEAN DISPOSAL PLAN DEVELOPMENT	BULKHEADS[2]	ANNUAL TOTAL
1	G.I.W.W., Contract 1	$15,207,474	$30,414,948	$4,822,265	$70,000	$60,000	$1,000,000	$0	**$36,367,212**
	G.I.W.W., Contract 2	$15,207,474							
2	Freshwater Bayou Interior, Contract 1	$8,929,865	$24,137,339	$4,822,265	$70,000	$60,000	$0	$0	**$29,089,604**
	G.I.W.W., Contract 3	$15,207,474							
3	Freshwater Bayou Interior, Contract 2	$8,929,865	$29,057,096	$4,822,265	$70,000	$60,000	$0	$8,500,036	**$42,509,397**
	Freshwater Bayou Interior, Contract 3	$8,929,865							
	Commerical Canal, Contract 1	$11,197,366							
4	Freshwater Bayou Interior, Contract 4	$8,929,865	$29,057,096	$4,822,265	$70,000	$60,000	$0	$8,500,036	**$42,509,397**
	Freshwater Bayou Interior, Contract 5	$8,929,865							
	Commerical Canal, Contract 2	$11,197,366							
5	Commerical Canal, Contract 3	$11,197,366	$55,991,386	$4,822,265	$70,000	$60,000	$0	$0	**$60,943,651**
	Freshwater Bayou Bar and By-Pass Channels	$14,156,788							
	By-Pass Channel Floodgates	$30,637,232							
		TOTAL	**$168,657,865**	**$24,111,323**	**$350,000**	**$300,000**	**$1,000,000**	**$17,000,072**	**$211,419,260**

NOTES:
1. Resposible party for relocations will be determined by Determination of Compensability completed by MVN's Real Estate Division
2. Bulkhead replacement will be the resposibility of individual owners with the Port of Iberia.

ANNEX 3 – GEOTECHNICAL ENGINEERING DATA FOR DESIGN OF BULKHEADS

```
'Port of Iberia Bulkhead Replacement
'BAYOU PIPE MANAGEMENT #1
'S-CASE 1.0 WITH 200# UNIFORM LOAD NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.00  1.00
WALL   6.8    1
SURFACE RIGHTSIDE   2    0    6.8
                  200    6.8
SURFACE LEFTSIDE   3    0   -11
                  40   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
```

```
'Port of Iberia Bulkhead Replacement
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.5 NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.50  1.50
WALL   6.8    1
SURFACE RIGHTSIDE   2    0    6.8
                  200    6.8
SURFACE LEFTSIDE   3    0   -11
                  40   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
```

```
'Port of Iberia Bulkhead Replacement
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.25 NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   6.8    1
SURFACE RIGHTSIDE   2    0    6.8
                  200    6.8
SURFACE LEFTSIDE   3    0   -11
                  40   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
```

DESIGN GROUP #1
Ground Surface EL 6.8

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-49.2	117140	14850
S Free Earth	norm	1.25	-39	72680	11291
S Free Earth	norm	1	-30.4	42095	8142
S Fixed Earth	norm	1.5	-61.5	100430	13856
S Fixed Earth	norm	1.25	-48.8	61635	10501
S Fixed Earth	norm	1	-37.8	34940	7534

For Cost Purposes, use for Bulkhead #1 AND 6

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

```
'Port of Iberia Bulkhead Replacement
'Dynamic Industries #3 & 4
'Soils Reach 1 - S-case 1.0 with 200 uniform load normal water
CONTROL  ANCHORED  DESIGN  1.0  1.0
WALL   6.9    1
SURFACE RIGHTSIDE   2    0    6.9
                  200    6.9
SURFACE LEFTSIDE   5    0   -11
                  40   -12.5
                  76   -12.5
                  107   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0   0
V U 200
FINISHED
```

```
'Port of Iberia Bulkhead Replacement
'Dynamic Industries #3 & 4
'Soils Reach 1 - S-case 1.5 with 200 uniform load normal water
CONTROL  ANCHORED  DESIGN  1.50  1.50
WALL   6.9    1
SURFACE RIGHTSIDE   2    0    6.9
                  200    6.9
SURFACE LEFTSIDE   5    0   -11
                  40   -12.5
                  76   -12.5
                  107   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0   0
V U 200
FINISHED
```

```
'Port of Iberia Bulkhead Replacement
'Dynamic Industries #3 & 4
'Soils Reach 1 - S-case 1.25 with 200 uniform load normal water
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   6.9    1
SURFACE RIGHTSIDE   2    0    6.9
                  200    6.9
SURFACE LEFTSIDE   5    0   -11
                  40   -12.5
                  76   -12.5
                  107   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0   0
V U 200
FINISHED
```

DESIGN GROUP #2
Ground Surface EL 6.9

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-36	72215	12068
S Free Earth	norm	1.25	-30.4	49611	9658
S Free Earth	norm	1	-25	31284	7283
S Fixed Earth	norm	1.5	-45	60854	11209
S Fixed Earth	norm	1.25	-37.8	41165	8941
S Fixed Earth	norm	1	-31	25346	6712

For Cost Purposes, use for Bulkhead #3, 4, AND 7

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

```
'Port of Iberia Bulkhead Replacement
'Dynamic Industries #5
'Soils Reach 1 - 200 UNIFORM LOAD S-case 1.0 normal water
CONTROL  ANCHORED  DESIGN  1.00  1.00
WALL   6.5    1
SURFACE RIGHTSIDE   2    0    6.5
                  200    6.5
SURFACE LEFTSIDE   4    0   -11
                  8.5   -12
                  51.5   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0   0
V U 200
FINISHED
```

```
'Port of Iberia Bulkhead Replacement
'Dynamic Industries #5
'Soils Reach 1 - 200 UNIFORM LOAD S-case 1.5 normal water
CONTROL  ANCHORED  DESIGN  1.5  1.5
WALL   6.5    1
SURFACE RIGHTSIDE   2    0    6.5
                  200    6.5
SURFACE LEFTSIDE   4    0   -11
                  8.5   -12
                  51.5   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0   0
V U 200
FINISHED
```

```
'Port of Iberia Bulkhead Replacement
'Dynamic Industries #5
'Soils Reach 1 - 200 UNIFORM LOAD S-case 1.25 normal water
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   6.5    1
SURFACE RIGHTSIDE   2    0    6.5
                  200    6.5
SURFACE LEFTSIDE   4    0   -11
                  8.5   -12
                  51.5   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0   0
V U 200
FINISHED
```

DESIGN GROUP #3
Ground Surface EL 6.5

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-42.7	87587	12696
S Free Earth	norm	1.25	-34.4	56431	9826
S Free Earth	norm	1	-27.2	33849	72064
S Fixed Earth	norm	1.5	-53.7	75145	11851
S Fixed Earth	norm	1.25	-43.1	47744	9135
S Fixed Earth	norm	1	-33.9	27948	6663

For cost purposes, use for bulkhead # 2 AND 5

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

```
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.0 NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.00  1.00
WALL   8.5    1
SURFACE RIGHTSIDE   2    0    8.5
                   200    8.5
SURFACE LEFTSIDE   3    0   -14
                  27   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
VERTICAL UNIFORM  200
FINISHED
```

```
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.5 NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.50  1.50
WALL   8.5    1
SURFACE RIGHTSIDE   2    0    8.5
                   200    8.5
SURFACE LEFTSIDE   3    0   -14
                  27   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
VERTICAL UNIFORM  200
FINISHED
```

```
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.25 NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   8.5    1
SURFACE RIGHTSIDE   2    0    8.5
                   200    8.5
SURFACE LEFTSIDE   3    0   -14
                  27   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
VERTICAL UNIFORM  200
FINISHED
```

DESIGN GROUP #4
Ground Surface EL 8.5

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-59.7	233390	23157
S Free Earth	norm	1.25	-49.8	147440	17728
S Free Earth	norm	1	-39.3	84018	12675
S Fixed Earth	norm	1.5	-73.4	195160	21354
S Fixed Earth	norm	1.25	-61	123430	16385
S Fixed Earth	norm	1	-48.6	69921	11733

For cost purposes, use for bulkhead # 13, 14, 8, 9, 10 (south), 12, AND 16

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

```
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.0 WITH 200# UNIFORM NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.00  1.00
WALL   5.9    1
SURFACE RIGHTSIDE   2    0    5.9
                  200    5.9
SURFACE LEFTSIDE   3    0   -9
                  43   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
```

```
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.5 200# UNIFORM NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.50  1.50
WALL   5.9    1
SURFACE RIGHTSIDE   2    0    5.9
                  200    5.9
SURFACE LEFTSIDE   3    0   -9
                  43   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
```

```
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.25 200# UNIFORM NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   5.9    1
SURFACE RIGHTSIDE   2    0    5.9
                  200    5.9
SURFACE LEFTSIDE   3    0   -9
                  43   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
```

DESIGN GROUP #5
Ground Surface EL 5.9

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-42.5	75242	11167
S Free Earth	norm	1.25	-33.5	46294	8474
S Free Earth	norm	1	-26	26537	6095
S Fixed Earth	norm	1.5	-53.4	64598	10434
S Fixed Earth	norm	1.25	-42	39295	7891
S Fixed Earth	norm	1	-32.4	22103	5652

For cost purposes, use for bulkhead # 15, 10 (north), AND 11

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

DESIGN GROUP #1
Ground Surface EL 6.8

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-49.2	117140	14850
S Free Earth	norm	1.25	-39	72680	11291
S Free Earth	norm	1	-30.4	42095	8142
S Fixed Earth	norm	1.5	-61.5	100430	13856
S Fixed Earth	norm	1.25	-48.8	61635	10501
S Fixed Earth	norm	1	-37.8	34940	7534

For Cost Purposes, use for Bulkhead #1 AND 6

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

```
'Port of Iberia Bulkhead Replacement
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.25 NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   6.8    1
SURFACE RIGHTSIDE   2    0    6.8
                  200    6.8
SURFACE LEFTSIDE   3    0   -11
                  40   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
```

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:34:20

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****************
*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.25 NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.25
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.25

III.--WALL DATA
ELEVATION AT TOP OF WALL = 6.80 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	6.80
200.00	6.80

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-11.00
40.00	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- ACT.
FACTOR-> PASS.								
115.00	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF
DEF								
118.00	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF
DEF								
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
DEF								
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
DEF								
121.00	121.00	23.00	0.00	0.00	0.00			DEF

DEF

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. FACTOR-> WGHT. PASS. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- <- ACT.
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
DEF								
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
DEF								
121.00	121.00	23.00	0.00	0.00	0.00			DEF
DEF								

VI.--WATER DATA
UNIT WEIGHT = 62.50 (PCF)
RIGHTSIDE ELEVATION = 0.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS

VII.A.--VERTICAL LINE LOADS
NONE

VII.B.--VERTICAL UNIFORM LOADS

LEFTSIDE (PSF)	RIGHTSIDE (PSF)
0.00	200.00

VII.C.--VERTICAL STRIP LOADS
NONE

VII.D.--VERTICAL RAMP LOADS
NONE

VII.E.--VERTICAL TRIANGULAR LOADS
NONE

VII.F.--VERTICAL VARIABLE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:34:24

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*   SOIL PRESSURES FOR  *
*  ANCHORED WALL DESIGN *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.25 NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
6.8	0.0	0.0	0.0	102.7	102.7	389.6
5.8	0.0	0.0	0.0	161.7	161.7	613.6
4.8	0.0	0.0	0.0	220.8	220.8	837.6
3.8	0.0	0.0	0.0	279.8	279.8	1061.6
2.8	0.0	0.0	0.0	338.8	338.8	1285.6
2.0	0.0	0.0	0.0	386.2	386.2	1465.4
1.8	0.0	0.0	0.0	398.2	398.2	1510.9
1.0	0.0	0.0	0.0	446.7	446.7	1694.7
0.8	0.0	0.0	0.0	458.8	458.8	1740.8
0.0	0.0	0.0	0.0	503.8	503.8	1911.5
-0.2	0.0	0.0	0.0	512.0	512.0	1942.7
-1.2	0.0	0.0	0.0	541.5	541.5	2054.5
-2.2	0.0	0.0	0.0	569.9	569.9	2162.3
-3.2	0.0	0.0	0.0	598.4	598.4	2270.4
-4.2	0.0	0.0	0.0	626.9	626.9	2378.6
-5.2	0.0	0.0	0.0	655.4	655.4	

2486.7					
-6.2	0.0	0.0	0.0	683.9	683.9
2594.8					
-7.2	0.0	0.0	0.0	712.4	712.4
2702.9					
-8.2	0.0	0.0	0.0	740.9	740.9
2811.0					
-9.2	0.0	0.0	0.0	769.3	769.3
2919.1					
-10.0	0.0	0.0	0.0	792.6	792.6
3007.2					
-10.2	0.0	0.0	0.0	798.8	798.8
3030.7					
-11.0	0.0	0.0	0.0	824.7	824.7
3129.3					
-11.2	0.0	17.4	5.4	813.8	831.3
3154.0					
-12.0	0.0	87.2	26.8	770.2	857.3
3253.0					
-12.2	0.0	104.6	32.2	759.2	863.9
3277.7					
-13.2	0.0	191.8	59.0	704.7	896.5
3401.4					
-14.2	0.0	279.0	85.9	650.1	929.1
3525.1					
-15.2	0.0	366.2	112.7	595.5	961.7
3648.8					
-16.2	0.0	453.4	139.5	540.9	994.3
3772.5					
-17.2	0.0	540.6	166.4	486.3	1026.9
3896.1					
-18.2	0.0	627.7	193.2	431.7	1059.5
4019.8					
-19.2	0.0	714.9	220.0	377.1	1092.1
4143.5					
-20.2	0.0	802.1	246.9	322.6	1124.7
4267.2					
-21.2	0.0	889.3	273.7	268.0	1157.3
4390.9					
-22.2	0.0	976.5	300.5	213.4	1189.9
4514.6					
-23.2	0.0	1063.7	327.4	158.8	1222.5
4638.3					
-24.2	0.0	1150.9	354.2	104.2	1255.1
4762.0					
-25.2	0.0	1238.0	381.0	49.6	1287.7
4885.7					
-26.1	0.0	1317.3	405.4	0.0	1317.3
4998.1					
-26.2	0.0	1325.2	407.8	-5.0	1320.3
5009.4					
-27.2	0.0	1412.4	434.7	-59.6	1352.9
5133.1					
-28.2	0.0	1499.6	461.5	-114.1	1385.5
5256.7					
-29.2	0.0	1586.8	488.3	-168.7	1418.1
5380.4					
-30.0	0.0	1655.9	509.6	-211.9	1444.0
5478.8					
-30.2	0.0	1672.6	514.8	-222.3	1450.3
5502.8					

-31.2	0.0	1754.1	540.2	-272.7	1481.4
5620.8					
-32.2	0.0	1835.5	565.4	-323.0	1512.5
5738.6					
-33.2	0.0	1916.8	590.7	-373.3	1543.5
5856.5					
-34.2	0.0	1998.2	616.0	-423.6	1574.6
5974.3					
-35.2	0.0	2079.5	641.3	-473.9	1605.6
6092.2					
-36.2	0.0	2160.9	666.6	-524.1	1636.7
6210.0					
-37.2	0.0	2242.2	691.9	-574.4	1667.8
6327.9					
-38.0	0.0	2306.8	712.0	-614.3	1692.5
6421.7					
-38.2	0.0	2322.6	717.0	-624.1	1698.6
6444.8					
-39.2	0.0	2400.2	741.3	-671.6	1728.7
6558.9					
-40.2	0.0	2477.6	765.5	-719.0	1758.7
6672.8					
-41.2	0.0	2555.1	789.8	-766.4	1788.7
6786.8					
-42.2	0.0	2632.5	814.1	-813.8	1818.7
6900.8					
-43.2	0.0	2710.0	838.3	-861.2	1848.8
7014.7					
-44.2	0.0	2787.4	862.6	-908.6	1878.8
7128.7					
-45.2	0.0	2864.9	886.9	-956.0	1908.8
7242.6					
-46.2	0.0	2942.3	911.1	-1003.4	1938.9
7356.6					
-47.2	0.0	3019.8	935.4	-1050.9	1968.9
7470.5					
-48.2	0.0	3097.2	959.6	-1098.3	1998.9
7584.5					
-49.2	0.0	3174.7	983.9	-1145.7	2029.0
7698.4					
-50.2	0.0	3251.5	1008.2	-1192.5	2059.0
7812.4					
-51.2	0.0	3332.7	1032.4	-1243.7	2089.0
7926.3					
-52.2	0.0	3429.2	1056.7	-1310.2	2119.1
8040.3					
-53.2	0.0	3540.1	1081.0	-1391.0	2149.1
8154.2					
-54.2	0.0	3654.6	1105.2	-1475.5	2179.1
8268.2					
-55.2	0.0	3768.6	1129.5	-1559.4	2209.2
8382.1					
-56.2	0.0	3882.5	1153.8	-1643.3	2239.2
8496.1					
-57.2	0.0	3996.5	1178.0	-1727.2	2269.2
8610.0					
-58.2	0.0	4110.4	1202.3	-1811.1	2299.3
8724.0					
-59.2	0.0	4224.4	1226.6	-1895.1	2329.3
8837.9					
-60.2	0.0	4338.3	1250.8	-1979.0	2359.3

8951.9					
-61.2	0.0	4452.3	1275.1	-2062.9	2389.4
9065.8					
-62.2	0.0	4566.2	1299.4	-2146.8	2419.4
9179.8					
-63.2	0.0	4680.2	1323.6	-2230.7	2449.4
9293.7					
-64.2	0.0	4794.1	1347.9	-2314.7	2479.5
9407.7					
-65.2	0.0	4908.1	1372.2	-2398.6	2509.5
9521.6					

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:34:25

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****************************
*  SUMMARY OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.25 NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-38.92	-48.75
PENETRATION (FT)	:	27.92	37.75
MAXIMUM BENDING MOMENT (LB-FT)	:	-7.2680E+04	-6.1635E+04
AT ELEVATION (FT)	:	-13.54	-12.44
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	1.7951E+10	1.3468E+10
AT ELEVATION (FT)	:	-17.20	-

16.20

ANCHOR FORCE (LB) : 1.1291E+04
1.0501E+04

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:34:25

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****************************
* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FREE EARTH METHOD   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.25 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 11291. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.80	0.0000E+00	0.	-9.2552E+09	102.68
5.80	6.1178E+01	132.	-7.6619E+09	161.71
4.80	2.8407E+02	323.	-6.0684E+09	220.75
3.80	7.2771E+02	574.	-4.4744E+09	279.79
2.80	1.4512E+03	883.	-2.8792E+09	338.83
2.00	2.2710E+03	1173.	-1.6012E+09	386.22
1.80	2.5134E+03	1251.	-1.2813E+09	398.21
1.00	3.6472E+03	1589.	0.0000E+00	446.66
1.00	3.6472E+03	-9702.	0.0000E+00	446.66
0.80	1.7159E+03	-9611.	3.2088E+08	458.81
0.00	-5.8215E+03	-9226.	1.6043E+09	503.79
-0.20	-7.6567E+03	-9125.	1.9245E+09	512.01

	-1.20	-1.6520E+04	-8598.	3.5149E+09
541.47				
	-2.20	-2.4843E+04	-8042.	5.0768E+09
569.90				
	-3.20	-3.2595E+04	-7458.	6.5959E+09
598.39				
	-4.20	-3.9750E+04	-6845.	8.0588E+09
626.89				
	-5.20	-4.6277E+04	-6204.	9.4531E+09
655.38				
	-6.20	-5.2149E+04	-5535.	1.0767E+10
683.87				
	-7.20	-5.7337E+04	-4837.	1.1992E+10
712.36				
	-8.20	-6.1812E+04	-4110.	1.3117E+10
740.86				
	-9.20	-6.5547E+04	-3355.	1.4136E+10
769.34				
	-10.00	-6.7982E+04	-2730.	1.4870E+10
792.57				
	-10.20	-6.8513E+04	-2571.	1.5041E+10
798.76				
	-11.00	-7.0311E+04	-1922.	1.5681E+10
824.74				
	-11.20	-7.0679E+04	-1758.	1.5829E+10
813.83				
	-12.00	-7.1829E+04	-1124.	1.6371E+10
770.16				
	-12.20	-7.2039E+04	-971.	1.6494E+10
759.24				
	-13.20	-7.2639E+04	-239.	1.7035E+10
704.65				
	-14.20	-7.2535E+04	438.	1.7450E+10
650.07				
	-15.20	-7.1781E+04	1061.	1.7741E+10
595.48				
	-16.20	-7.0432E+04	1629.	1.7907E+10
540.90				
	-17.20	-6.8541E+04	2143.	1.7951E+10
486.31				
	-18.20	-6.6165E+04	2602.	1.7878E+10
431.72				
	-19.20	-6.3356E+04	3006.	1.7690E+10
377.14				
	-20.20	-6.0170E+04	3356.	1.7392E+10
322.55				
	-21.20	-5.6662E+04	3651.	1.6991E+10
267.96				
	-22.20	-5.2886E+04	3892.	1.6492E+10
213.38				
	-23.20	-4.8897E+04	4078.	1.5901E+10
158.79				
	-24.20	-4.4748E+04	4209.	1.5226E+10
104.21				
	-25.20	-4.0496E+04	4286.	1.4474E+10
49.62				
	-26.11	-3.6586E+04	4309.	1.3729E+10
0.00				
	-26.20	-3.6194E+04	4309.	1.3651E+10
4.97				
	-27.20	-3.1897E+04	4276.	1.2766E+10

59.55					
	-28.20	-2.7659E+04	4190.	1.1826E+10	-
114.14					
	-29.20	-2.3536E+04	4048.	1.0839E+10	-
168.73					
	-30.00	-2.0356E+04	3896.	1.0019E+10	-
211.93					
	-30.20	-1.9581E+04	3852.	9.8101E+09	-
222.33					
	-31.20	-1.5848E+04	3605.	8.7477E+09	-
272.74					
	-32.20	-1.2388E+04	3307.	7.6579E+09	-
323.02					
	-33.20	-9.2504E+03	2959.	6.5467E+09	-
373.30					
	-34.20	-6.4865E+03	2560.	5.4194E+09	-
423.58					
	-35.20	-4.1462E+03	2112.	4.2808E+09	-
473.86					
	-36.20	-2.2797E+03	1613.	3.1350E+09	-
524.15					
	-37.20	-9.3740E+02	1063.	1.9852E+09	-
574.43					
	-38.00	-2.7470E+02	588.	1.0641E+09	-
614.35					
	-38.20	-1.6946E+02	464.	8.3369E+08	-
624.06					
	-38.92	0.0000E+00	0.	0.0000E+00	-
658.44					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
	WATER	<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.80	0.	0.	0.	103.	390.
5.80	0.	0.	0.	162.	614.
4.80	0.	0.	0.	221.	838.
3.80	0.	0.	0.	280.	1062.
2.80	0.	0.	0.	339.	1286.
2.00	0.	0.	0.	386.	1465.
1.80	0.	0.	0.	398.	1511.
1.00	0.	0.	0.	447.	1695.
0.80	0.	0.	0.	459.	1741.
0.00	0.	0.	0.	504.	1911.
-0.20	0.	0.	0.	512.	1943.
-1.20	0.	0.	0.	541.	2054.
-2.20	0.	0.	0.	570.	2162.
-3.20	0.	0.	0.	598.	2270.
-4.20	0.	0.	0.	627.	2379.
-5.20	0.	0.	0.	655.	2487.
-6.20	0.	0.	0.	684.	2595.
-7.20	0.	0.	0.	712.	2703.
-8.20	0.	0.	0.	741.	2811.
-9.20	0.	0.	0.	769.	2919.

-10.00	0.	0.	0.	793.	3007.
-10.20	0.	0.	0.	799.	3031.
-11.00	0.	0.	0.	825.	3129.
-11.20	0.	17.	5.	831.	3154.
-12.00	0.	87.	27.	857.	3253.
-12.20	0.	105.	32.	864.	3278.
-13.20	0.	192.	59.	896.	3401.
-14.20	0.	279.	86.	929.	3525.
-15.20	0.	366.	113.	962.	3649.
-16.20	0.	453.	140.	994.	3772.
-17.20	0.	541.	166.	1027.	3896.
-18.20	0.	628.	193.	1059.	4020.
-19.20	0.	715.	220.	1092.	4144.
-20.20	0.	802.	247.	1125.	4267.
-21.20	0.	889.	274.	1157.	4391.
-22.20	0.	976.	301.	1190.	4515.
-23.20	0.	1064.	327.	1222.	4638.
-24.20	0.	1151.	354.	1255.	4762.
-25.20	0.	1238.	381.	1288.	4886.
-26.11	0.	1317.	405.	1317.	4998.
-26.20	0.	1325.	408.	1320.	5009.
-27.20	0.	1412.	435.	1353.	5133.
-28.20	0.	1500.	462.	1385.	5257.
-29.20	0.	1587.	488.	1418.	5380.
-30.00	0.	1656.	510.	1444.	5479.
-30.20	0.	1673.	515.	1450.	5503.
-31.20	0.	1754.	540.	1481.	5621.
-32.20	0.	1835.	565.	1512.	5739.
-33.20	0.	1917.	591.	1544.	5856.
-34.20	0.	1998.	616.	1575.	5974.
-35.20	0.	2080.	641.	1606.	6092.
-36.20	0.	2161.	667.	1637.	6210.
-37.20	0.	2242.	692.	1668.	6328.
-38.00	0.	2307.	712.	1693.	6422.
-38.20	0.	2323.	717.	1699.	6445.
-39.20	0.	2400.	741.	1729.	6559.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:34:25

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****************************
* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FIXED EARTH METHOD  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.25 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 10501. (LB))

	BENDING	SCALED	NET

ELEVATION (FT)	MOMENT (LB-FT)	SHEAR (LB)	DEFLECTION (LB-IN^3)	PRESSURE (PSF)
6.80	0.0000E+00	0.	-7.3682E+09	102.68
5.80	6.1178E+01	132.	-6.1002E+09	161.71
4.80	2.8407E+02	323.	-4.8321E+09	220.75
3.80	7.2771E+02	574.	-3.5635E+09	279.79
2.80	1.4512E+03	883.	-2.2935E+09	338.83
2.00	2.2710E+03	1173.	-1.2758E+09	386.22
1.80	2.5134E+03	1251.	-1.0211E+09	398.21
1.00	3.6472E+03	1589.	0.0000E+00	446.66
1.00	3.6472E+03	-8912.	0.0000E+00	446.66
0.80	1.8738E+03	-8821.	2.5582E+08	458.81
0.00	-5.0317E+03	-8436.	1.2792E+09	503.79
-0.20	-6.7089E+03	-8335.	1.5344E+09	512.01
-1.20	-1.4783E+04	-7808.	2.8015E+09	541.47
-2.20	-2.2315E+04	-7252.	4.0432E+09	569.90
-3.20	-2.9278E+04	-6668.	5.2463E+09	598.39
-4.20	-3.5642E+04	-6056.	6.3990E+09	626.89
-5.20	-4.1380E+04	-5414.	7.4902E+09	655.38
-6.20	-4.6462E+04	-4745.	8.5099E+09	683.87
-7.20	-5.0860E+04	-4047.	9.4495E+09	712.36
-8.20	-5.4546E+04	-3320.	1.0301E+10	740.86
-9.20	-5.7491E+04	-2565.	1.1059E+10	769.34
-10.00	-5.9294E+04	-1940.	1.1594E+10	792.57
-10.20	-5.9666E+04	-1781.	1.1717E+10	798.76
-11.00	-6.0833E+04	-1132.	1.2170E+10	824.74
-11.20	-6.1043E+04	-968.	1.2273E+10	813.83
-12.00	-6.1562E+04	-334.	1.2641E+10	770.16
-12.20	-6.1613E+04	-181.	1.2723E+10	759.24
-13.20	-6.1424E+04	551.	1.3066E+10	704.65
-14.20	-6.0530E+04	1228.	1.3304E+10	650.07

	-15.20	-5.8986E+04	1851.	1.3437E+10	
595.48					
	-16.20	-5.6847E+04	2419.	1.3468E+10	
540.90					
	-17.20	-5.4167E+04	2933.	1.3402E+10	
486.31					
	-18.20	-5.1000E+04	3392.	1.3241E+10	
431.72					
	-19.20	-4.7402E+04	3796.	1.2993E+10	
377.14					
	-20.20	-4.3426E+04	4146.	1.2662E+10	
322.55					
	-21.20	-3.9128E+04	4441.	1.2257E+10	
267.96					
	-22.20	-3.4562E+04	4682.	1.1784E+10	
213.38					
	-23.20	-2.9783E+04	4868.	1.1252E+10	
158.79					
	-24.20	-2.4845E+04	4999.	1.0668E+10	
104.21					
	-25.20	-1.9803E+04	5076.	1.0041E+10	
49.62					
	-26.11	-1.5174E+04	5099.	9.4409E+09	
0.00					
	-26.20	-1.4711E+04	5099.	9.3796E+09	-
4.97					
	-27.20	-9.6236E+03	5066.	8.6930E+09	-
59.55					
	-28.20	-4.5962E+03	4979.	7.9898E+09	-
114.14					
	-29.20	3.1708E+02	4838.	7.2786E+09	-
168.73					
	-30.00	4.1289E+03	4686.	6.7097E+09	-
211.93					
	-30.20	5.0617E+03	4642.	6.5680E+09	-
222.33					
	-31.20	9.5845E+03	4395.	5.8661E+09	-
272.74					
	-32.20	1.3835E+04	4097.	5.1807E+09	-
323.02					
	-33.20	1.7762E+04	3749.	4.5191E+09	-
373.30					
	-34.20	2.1315E+04	3350.	3.8882E+09	-
423.58					
	-35.20	2.4445E+04	2902.	3.2941E+09	-
473.86					
	-36.20	2.7102E+04	2403.	2.7422E+09	-
524.15					
	-37.20	2.9234E+04	1853.	2.2370E+09	-
574.43					
	-38.00	3.0528E+04	1378.	1.8690E+09	-
614.35					
	-38.20	3.0792E+04	1254.	1.7822E+09	-
624.06					
	-39.20	3.1726E+04	606.	1.3805E+09	-
671.56					
	-40.20	3.1988E+04	-89.	1.0336E+09	-
718.97					
	-41.20	3.1532E+04	-832.	7.4186E+08	-
766.38					
	-42.20	3.0309E+04	-1622.	5.0448E+08	-

813.79					
	-43.20	2.8272E+04	-2459.	3.1936E+08	-
861.21					
	-44.20	2.5374E+04	-3344.	1.8297E+08	-
908.62					
	-45.20	2.1568E+04	-4277.	9.0295E+07	-
956.03					
	-46.20	1.6805E+04	-5256.	3.4751E+07	-
1003.45					
	-47.20	1.1039E+04	-6284.	8.1019E+06	-
1050.86					
	-48.20	4.2221E+03	-7358.	3.7652E+05	-
1098.27					
	-49.20	0.0000E+00	-7970.	0.0000E+00	-
1124.40					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
	WATER	<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.80	0.	0.	0.	103.	390.
5.80	0.	0.	0.	162.	614.
4.80	0.	0.	0.	221.	838.
3.80	0.	0.	0.	280.	1062.
2.80	0.	0.	0.	339.	1286.
2.00	0.	0.	0.	386.	1465.
1.80	0.	0.	0.	398.	1511.
1.00	0.	0.	0.	447.	1695.
0.80	0.	0.	0.	459.	1741.
0.00	0.	0.	0.	504.	1911.
-0.20	0.	0.	0.	512.	1943.
-1.20	0.	0.	0.	541.	2054.
-2.20	0.	0.	0.	570.	2162.
-3.20	0.	0.	0.	598.	2270.
-4.20	0.	0.	0.	627.	2379.
-5.20	0.	0.	0.	655.	2487.
-6.20	0.	0.	0.	684.	2595.
-7.20	0.	0.	0.	712.	2703.
-8.20	0.	0.	0.	741.	2811.
-9.20	0.	0.	0.	769.	2919.
-10.00	0.	0.	0.	793.	3007.
-10.20	0.	0.	0.	799.	3031.
-11.00	0.	0.	0.	825.	3129.
-11.20	0.	17.	5.	831.	3154.
-12.00	0.	87.	27.	857.	3253.
-12.20	0.	105.	32.	864.	3278.
-13.20	0.	192.	59.	896.	3401.
-14.20	0.	279.	86.	929.	3525.
-15.20	0.	366.	113.	962.	3649.
-16.20	0.	453.	140.	994.	3772.
-17.20	0.	541.	166.	1027.	3896.
-18.20	0.	628.	193.	1059.	4020.
-19.20	0.	715.	220.	1092.	4144.
-20.20	0.	802.	247.	1125.	4267.

-21.20	0.	889.	274.	1157.	4391.
-22.20	0.	976.	301.	1190.	4515.
-23.20	0.	1064.	327.	1222.	4638.
-24.20	0.	1151.	354.	1255.	4762.
-25.20	0.	1238.	381.	1288.	4886.
-26.11	0.	1317.	405.	1317.	4998.
-26.20	0.	1325.	408.	1320.	5009.
-27.20	0.	1412.	435.	1353.	5133.
-28.20	0.	1500.	462.	1385.	5257.
-29.20	0.	1587.	488.	1418.	5380.
-30.00	0.	1656.	510.	1444.	5479.
-30.20	0.	1673.	515.	1450.	5503.
-31.20	0.	1754.	540.	1481.	5621.
-32.20	0.	1835.	565.	1512.	5739.
-33.20	0.	1917.	591.	1544.	5856.
-34.20	0.	1998.	616.	1575.	5974.
-35.20	0.	2080.	641.	1606.	6092.
-36.20	0.	2161.	667.	1637.	6210.
-37.20	0.	2242.	692.	1668.	6328.
-38.00	0.	2307.	712.	1693.	6422.
-38.20	0.	2323.	717.	1699.	6445.
-39.20	0.	2400.	741.	1729.	6559.
-40.20	0.	2478.	766.	1759.	6673.
-41.20	0.	2555.	790.	1789.	6787.
-42.20	0.	2633.	814.	1819.	6901.
-43.20	0.	2710.	838.	1849.	7015.
-44.20	0.	2787.	863.	1879.	7129.
-45.20	0.	2865.	887.	1909.	7243.
-46.20	0.	2942.	911.	1939.	7357.
-47.20	0.	3020.	935.	1969.	7471.
-48.20	0.	3097.	960.	1999.	7584.
-49.20	0.	3175.	984.	2029.	7698.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:34:27

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* PRELIMINARY DESIGN DATA FOR *
*  FREE EARTH DESIGN IN SAND  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.25 NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.39

ANCHOR HEIGHT RATIO (BETA) = 0.13

SHEET PILE DATA:

SHEET PILE NAME	<SECTION PROPERTIES> (PER FOOT OF WALL) SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07
PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07
PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-3.51	1.0 (***)	1.67
PZ38	-3.27	1.0 (***)	1.29
PZ35	-3.38	1.0 (***)	1.33
PZ32	-3.17	1.0 (***)	1.05
PZ27	-3.09	1.0 (***)	0.83
PZ22	-2.75	1.0 (***)	0.50
PLZ25	-3.17	1.0 (***)	0.90
PLZ23	-3.13	1.0 (***)	0.83

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

```
'Port of Iberia Bulkhead Replacement
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.5 NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.50  1.50
WALL   6.8    1
SURFACE RIGHTSIDE   2    0    6.8
                  200    6.8
SURFACE LEFTSIDE   3    0   -11
                  40   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
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PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 7:37:36

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*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.5 NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.50
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.50

III.--WALL DATA
ELEVATION AT TOP OF WALL = 6.80 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	6.80
200.00	6.80

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-11.00
40.00	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<-SAFETY-> ACT.	<-FACTOR-> PASS.
115.00	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF	DEF
118.00	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF	DEF
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF	DEF
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF	DEF
121.00	121.00	23.00	0.00	0.00	0.00			DEF	

DEF

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT.	MOIST	ANGLE OF INTERNAL	COH-	ANGLE OF WALL	ADH-	<--BOTTOM-->		<-
FACTOR-> WGHT.	WGHT.	FRICTION	ESION	FRICTION	ESION	ELEV.	SLOPE	ACT.
PASS. (PCF)	(PCF)	(DEG)	(PSF)	(DEG)	(PSF)	(FT)	(FT/FT)	
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
DEF 123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
DEF 121.00	121.00	23.00	0.00	0.00	0.00			DEF
DEF								

VI.--WATER DATA
UNIT WEIGHT = 62.50 (PCF)
RIGHTSIDE ELEVATION = 0.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS

VII.A.--VERTICAL LINE LOADS
NONE

VII.B.--VERTICAL UNIFORM LOADS

LEFTSIDE (PSF)	RIGHTSIDE (PSF)
0.00	200.00

VII.C.--VERTICAL STRIP LOADS
NONE

VII.D.--VERTICAL RAMP LOADS
NONE

VII.E.--VERTICAL TRIANGULAR LOADS
NONE

VII.F.--VERTICAL VARIABLE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 7:37:39

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*   SOIL PRESSURES FOR  *
*  ANCHORED WALL DESIGN *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.5 NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

RIGHTSIDE---> ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- ACTIVE (PSF)	PASSIVE (PSF)
6.8	0.0	0.0	0.0	114.4	114.4	349.7
5.8	0.0	0.0	0.0	180.2	180.2	550.7
4.8	0.0	0.0	0.0	245.9	245.9	751.8
3.8	0.0	0.0	0.0	311.7	311.7	952.8
2.8	0.0	0.0	0.0	377.5	377.5	1153.9
2.0	0.0	0.0	0.0	430.3	430.3	1315.3
1.8	0.0	0.0	0.0	443.7	443.7	1356.1
1.0	0.0	0.0	0.0	497.6	497.6	1521.1
0.8	0.0	0.0	0.0	511.2	511.2	1562.5
0.0	0.0	0.0	0.0	561.3	561.3	1715.7
-0.2	0.0	0.0	0.0	570.4	570.4	1743.7
-1.2	0.0	0.0	0.0	603.3	603.3	1844.0
-2.2	0.0	0.0	0.0	634.9	634.9	1940.8
-3.2	0.0	0.0	0.0	666.7	666.7	2037.9
-4.2	0.0	0.0	0.0	698.4	698.4	2134.9
-5.2	0.0	0.0	0.0	730.2	730.2	

2231.9 -6.2	0.0	0.0	0.0	761.9	761.9
2329.0 -7.2	0.0	0.0	0.0	793.7	793.7
2426.0 -8.2	0.0	0.0	0.0	825.4	825.4
2523.0 -9.2	0.0	0.0	0.0	857.1	857.1
2620.1 -10.0	0.0	0.0	0.0	883.0	883.0
2699.2 -10.2	0.0	0.0	0.0	889.9	889.9
2720.2 -11.0	0.0	0.0	0.0	918.9	918.9
2808.7 -11.2	0.0	15.9	5.9	910.2	926.1
2830.9 -12.0	0.0	79.5	29.6	875.7	955.2
2919.7 -12.2	0.0	95.4	35.5	867.1	962.5
2941.9 -13.2	0.0	174.9	65.1	823.9	998.8
3053.0 -14.2	0.0	254.4	94.7	780.7	1035.1
3164.0 -15.2	0.0	333.9	124.3	737.6	1071.4
3275.0 -16.2	0.0	413.3	153.9	694.4	1107.7
3386.0 -17.2	0.0	492.8	183.5	651.2	1144.0
3497.1 -18.2	0.0	572.3	213.1	608.0	1180.4
3608.1 -19.2	0.0	651.8	242.7	564.9	1216.7
3719.1 -20.2	0.0	731.3	272.4	521.7	1253.0
3830.1 -21.2	0.0	810.8	302.0	478.5	1289.3
3941.1 -22.2	0.0	890.3	331.6	435.4	1325.6
4052.2 -23.2	0.0	969.8	361.2	392.2	1362.0
4163.2 -24.2	0.0	1049.3	390.8	349.0	1398.3
4274.2 -25.2	0.0	1128.7	420.4	305.9	1434.6
4385.2 -26.2	0.0	1208.2	450.0	262.7	1470.9
4496.2 -27.2	0.0	1287.7	479.6	219.5	1507.2
4607.3 -28.2	0.0	1367.2	509.2	176.4	1543.6
4718.3 -29.2	0.0	1446.7	538.8	133.2	1579.9
4829.3 -30.0	0.0	1509.7	562.3	99.0	1608.8
4917.5 -30.2	0.0	1525.0	568.0	90.8	1615.8
4939.1 -31.2	0.0	1599.4	595.9	51.1	1650.5
5045.0					

8034.9					
-61.2	0.0	3996.2	1406.0	-1334.2	2662.1
8137.2					
-62.2	0.0	4098.5	1432.8	-1403.0	2695.5
8239.4					
-63.2	0.0	4200.8	1459.5	-1471.8	2729.0
8341.7					
-64.2	0.0	4303.0	1486.2	-1540.6	2762.4
8444.0					
-65.2	0.0	4405.3	1513.0	-1609.4	2795.9
8546.3					

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 7:37:40

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*  SUMMARY OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.5 NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-49.19	-61.44
PENETRATION (FT)	:	38.19	50.44
MAXIMUM BENDING MOMENT (LB-FT)	:	-1.1714E+05	-1.0043E+05
AT ELEVATION (FT)	:	-16.52	-15.12
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	4.5381E+10	3.4244E+10
AT ELEVATION (FT)	:	-21.20	-

20.20

ANCHOR FORCE (LB) : 1.4850E+04
1.3856E+04

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 7:37:40

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FREE EARTH METHOD   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.5 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 14850. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.80	0.0000E+00	0.	-1.9084E+10	114.39
5.80	6.8159E+01	147.	-1.5796E+10	180.17
4.80	3.1649E+02	360.	-1.2508E+10	245.95
3.80	8.1076E+02	639.	-9.2200E+09	311.72
2.80	1.6168E+03	984.	-5.9302E+09	377.50
2.00	2.5302E+03	1307.	-3.2964E+09	430.30
1.80	2.8003E+03	1394.	-2.6375E+09	443.66
1.00	4.0635E+03	1771.	0.0000E+00	497.64
1.00	4.0635E+03	-13079.	0.0000E+00	497.64
0.80	1.4576E+03	-12978.	6.5999E+08	511.17
0.00	-8.7562E+03	-12549.	3.2992E+09	561.28
-0.20	-1.1255E+04	-12436.	3.9579E+09	570.44

	-1.20	-2.3400E+04	-11849.	7.2365E+09
603.26				
	-2.20	-3.4943E+04	-11230.	1.0475E+10
634.94				
	-3.20	-4.5850E+04	-10579.	1.3653E+10
666.69				
	-4.20	-5.6091E+04	-9897.	1.6751E+10
698.43				
	-5.20	-6.5634E+04	-9183.	1.9753E+10
730.17				
	-6.20	-7.4446E+04	-8437.	2.2642E+10
761.92				
	-7.20	-8.2496E+04	-7659.	2.5402E+10
793.66				
	-8.20	-8.9753E+04	-6849.	2.8020E+10
825.41				
	-9.20	-9.6184E+04	-6008.	3.0482E+10
857.14				
	-10.00	-1.0071E+05	-5312.	3.2334E+10
883.02				
	-10.20	-1.0176E+05	-5135.	3.2779E+10
889.92				
	-11.00	-1.0558E+05	-4411.	3.4490E+10
918.86				
	-11.20	-1.0644E+05	-4228.	3.4900E+10
910.23				
	-12.00	-1.0954E+05	-3514.	3.6465E+10
875.70				
	-12.20	-1.1022E+05	-3340.	3.6837E+10
867.06				
	-13.20	-1.1314E+05	-2494.	3.8584E+10
823.89				
	-14.20	-1.1522E+05	-1692.	4.0135E+10
780.73				
	-15.20	-1.1653E+05	-933.	4.1488E+10
737.56				
	-16.20	-1.1710E+05	-217.	4.2639E+10
694.39				
	-17.20	-1.1698E+05	456.	4.3588E+10
651.22				
	-18.20	-1.1621E+05	1086.	4.4334E+10
608.05				
	-19.20	-1.1482E+05	1672.	4.4881E+10
564.88				
	-20.20	-1.1288E+05	2216.	4.5228E+10
521.71				
	-21.20	-1.1041E+05	2716.	4.5381E+10
478.54				
	-22.20	-1.0746E+05	3173.	4.5343E+10
435.37				
	-23.20	-1.0408E+05	3586.	4.5120E+10
392.20				
	-24.20	-1.0030E+05	3957.	4.4716E+10
349.04				
	-25.20	-9.6177E+04	4284.	4.4140E+10
305.87				
	-26.20	-9.1746E+04	4569.	4.3397E+10
262.70				
	-27.20	-8.7053E+04	4810.	4.2496E+10
219.53				
	-28.20	-8.2141E+04	5008.	4.1444E+10

176.36	-29.20	-7.7052E+04	5163.	4.0250E+10	
133.18	-30.00	-7.2883E+04	5255.	3.9199E+10	
99.03	-30.20	-7.1830E+04	5274.	3.8924E+10	
90.83	-31.20	-6.6517E+04	5345.	3.7473E+10	
51.08	-32.20	-6.1152E+04	5377.	3.5907E+10	
11.45	-32.49	-5.9599E+04	5378.	3.5435E+10	
0.00	-33.20	-5.5777E+04	5368.	3.4236E+10	-
28.19	-34.20	-5.0429E+04	5320.	3.2468E+10	-
67.83	-35.20	-4.5149E+04	5233.	3.0613E+10	-
107.47	-36.20	-3.9977E+04	5105.	2.8680E+10	-
147.11	-37.20	-3.4952E+04	4938.	2.6678E+10	-
186.76	-38.00	-3.1064E+04	4776.	2.5032E+10	-
218.21	-38.20	-3.0113E+04	4732.	2.4616E+10	-
225.85	-39.20	-2.5500E+04	4488.	2.2501E+10	-
263.21	-40.20	-2.1151E+04	4206.	2.0342E+10	-
300.49	-41.20	-1.7101E+04	3887.	1.8147E+10	-
337.78	-42.20	-1.3390E+04	3530.	1.5922E+10	-
375.07	-43.20	-1.0054E+04	3136.	1.3674E+10	-
412.36	-44.20	-7.1296E+03	2705.	1.1409E+10	-
449.64	-45.20	-4.6553E+03	2237.	9.1308E+09	-
486.93	-46.20	-2.6679E+03	1732.	6.8448E+09	-
524.22	-47.20	-1.2047E+03	1189.	4.5542E+09	-
561.50	-48.20	-3.0297E+02	609.	2.2613E+09	-
598.79	-49.19	0.0000E+00	0.	0.0000E+00	-
635.56					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)

6.80	0.	0.	0.	114.	350.
5.80	0.	0.	0.	180.	551.
4.80	0.	0.	0.	246.	752.
3.80	0.	0.	0.	312.	953.
2.80	0.	0.	0.	377.	1154.
2.00	0.	0.	0.	430.	1315.
1.80	0.	0.	0.	444.	1356.
1.00	0.	0.	0.	498.	1521.
0.80	0.	0.	0.	511.	1562.
0.00	0.	0.	0.	561.	1716.
-0.20	0.	0.	0.	570.	1744.
-1.20	0.	0.	0.	603.	1844.
-2.20	0.	0.	0.	635.	1941.
-3.20	0.	0.	0.	667.	2038.
-4.20	0.	0.	0.	698.	2135.
-5.20	0.	0.	0.	730.	2232.
-6.20	0.	0.	0.	762.	2329.
-7.20	0.	0.	0.	794.	2426.
-8.20	0.	0.	0.	825.	2523.
-9.20	0.	0.	0.	857.	2620.
-10.00	0.	0.	0.	883.	2699.
-10.20	0.	0.	0.	890.	2720.
-11.00	0.	0.	0.	919.	2809.
-11.20	0.	16.	6.	926.	2831.
-12.00	0.	79.	30.	955.	2920.
-12.20	0.	95.	36.	962.	2942.
-13.20	0.	175.	65.	999.	3053.
-14.20	0.	254.	95.	1035.	3164.
-15.20	0.	334.	124.	1071.	3275.
-16.20	0.	413.	154.	1108.	3386.
-17.20	0.	493.	184.	1144.	3497.
-18.20	0.	572.	213.	1180.	3608.
-19.20	0.	652.	243.	1217.	3719.
-20.20	0.	731.	272.	1253.	3830.
-21.20	0.	811.	302.	1289.	3941.
-22.20	0.	890.	332.	1326.	4052.
-23.20	0.	970.	361.	1362.	4163.
-24.20	0.	1049.	391.	1398.	4274.
-25.20	0.	1129.	420.	1435.	4385.
-26.20	0.	1208.	450.	1471.	4496.
-27.20	0.	1288.	480.	1507.	4607.
-28.20	0.	1367.	509.	1544.	4718.
-29.20	0.	1447.	539.	1580.	4829.
-30.00	0.	1510.	562.	1609.	4918.
-30.20	0.	1525.	568.	1616.	4939.
-31.20	0.	1599.	596.	1650.	5045.
-32.20	0.	1674.	624.	1685.	5151.
-32.49	0.	1695.	632.	1695.	5181.
-33.20	0.	1748.	652.	1720.	5257.
-34.20	0.	1822.	680.	1754.	5362.
-35.20	0.	1896.	707.	1789.	5468.
-36.20	0.	1971.	735.	1823.	5574.
-37.20	0.	2045.	763.	1858.	5680.
-38.00	0.	2104.	785.	1886.	5764.
-38.20	0.	2118.	791.	1892.	5785.
-39.20	0.	2189.	818.	1926.	5887.
-40.20	0.	2260.	844.	1959.	5989.
-41.20	0.	2331.	871.	1993.	6092.
-42.20	0.	2401.	898.	2026.	6194.
-43.20	0.	2472.	925.	2060.	6296.
-44.20	0.	2543.	951.	2093.	6398.

-45.20	0.	2614.	978.	2127.	6501.
-46.20	0.	2684.	1005.	2160.	6603.
-47.20	0.	2755.	1032.	2194.	6705.
-48.20	0.	2826.	1058.	2227.	6808.
-49.20	0.	2897.	1085.	2261.	6910.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 7:37:40

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FIXED EARTH METHOD  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.5 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 13856. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.80	0.0000E+00	0.	-1.5332E+10	114.39
5.80	6.8159E+01	147.	-1.2691E+10	180.17
4.80	3.1649E+02	360.	-1.0050E+10	245.95
3.80	8.1076E+02	639.	-7.4089E+09	311.72
2.80	1.6168E+03	984.	-4.7659E+09	377.50
2.00	2.5302E+03	1307.	-2.6496E+09	430.30
1.80	2.8003E+03	1394.	-2.1201E+09	443.66
1.00	4.0635E+03	1771.	0.0000E+00	497.64
1.00	4.0635E+03	-12085.	0.0000E+00	497.64
0.80	1.6564E+03	-11984.	5.3063E+08	511.17
0.00	-7.7622E+03	-11555.	2.6527E+09	561.28
-0.20	-1.0062E+04	-11442.	3.1822E+09	570.44
-1.20	-2.1214E+04	-10855.	5.8165E+09	603.26
-2.20	-3.1762E+04	-10236.	8.4143E+09	634.94

	-3.20	-4.1676E+04	-9585.	1.0957E+10
666.69				
	-4.20	-5.0922E+04	-8903.	1.3428E+10
698.43				
	-5.20	-5.9471E+04	-8189.	1.5811E+10
730.17				
	-6.20	-6.7289E+04	-7443.	1.8092E+10
761.92				
	-7.20	-7.4345E+04	-6665.	2.0256E+10
793.66				
	-8.20	-8.0608E+04	-5855.	2.2292E+10
825.41				
	-9.20	-8.6045E+04	-5014.	2.4189E+10
857.14				
	-10.00	-8.9780E+04	-4318.	2.5600E+10
883.02				
	-10.20	-9.0625E+04	-4141.	2.5937E+10
889.92				
	-11.00	-9.3650E+04	-3417.	2.7223E+10
918.86				
	-11.20	-9.4315E+04	-3234.	2.7529E+10
910.23				
	-12.00	-9.6615E+04	-2520.	2.8685E+10
875.70				
	-12.20	-9.7101E+04	-2346.	2.8958E+10
867.06				
	-13.20	-9.9021E+04	-1500.	3.0219E+10
823.89				
	-14.20	-1.0012E+05	-698.	3.1309E+10
780.73				
	-15.20	-1.0043E+05	61.	3.2226E+10
737.56				
	-16.20	-1.0001E+05	777.	3.2970E+10
694.39				
	-17.20	-9.8890E+04	1450.	3.3541E+10
651.22				
	-18.20	-9.7122E+04	2080.	3.3942E+10
608.05				
	-19.20	-9.4745E+04	2666.	3.4175E+10
564.88				
	-20.20	-9.1804E+04	3210.	3.4244E+10
521.71				
	-21.20	-8.8340E+04	3710.	3.4154E+10
478.54				
	-22.20	-8.4399E+04	4167.	3.3912E+10
435.37				
	-23.20	-8.0022E+04	4580.	3.3524E+10
392.20				
	-24.20	-7.5252E+04	4951.	3.2998E+10
349.04				
	-25.20	-7.0134E+04	5278.	3.2342E+10
305.87				
	-26.20	-6.4710E+04	5563.	3.1565E+10
262.70				
	-27.20	-5.9023E+04	5804.	3.0676E+10
219.53				
	-28.20	-5.3116E+04	6002.	2.9685E+10
176.36				
	-29.20	-4.7033E+04	6157.	2.8602E+10
133.18				
	-30.00	-4.2069E+04	6249.	2.7677E+10

99.03	-30.20	-4.0817E+04	6268.	2.7438E+10	
90.83	-31.20	-3.4510E+04	6339.	2.6203E+10	
51.08	-32.20	-2.8152E+04	6371.	2.4909E+10	
11.45	-32.49	-2.6312E+04	6372.	2.4526E+10	
0.00	-33.20	-2.1782E+04	6362.	2.3566E+10	-
28.19	-34.20	-1.5440E+04	6314.	2.2186E+10	-
67.83	-35.20	-9.1665E+03	6227.	2.0779E+10	-
107.47	-36.20	-3.0002E+03	6099.	1.9356E+10	-
147.11	-37.20	3.0190E+03	5932.	1.7928E+10	-
186.76	-38.00	7.7018E+03	5770.	1.6788E+10	-
218.21	-38.20	8.8515E+03	5726.	1.6505E+10	-
225.85	-39.20	1.4458E+04	5482.	1.5097E+10	-
263.21	-40.20	1.9802E+04	5200.	1.3714E+10	-
300.49	-41.20	2.4845E+04	4881.	1.2365E+10	-
337.78	-42.20	2.9551E+04	4524.	1.1060E+10	-
375.07	-43.20	3.3881E+04	4130.	9.8049E+09	-
412.36	-44.20	3.7799E+04	3699.	8.6087E+09	-
449.64	-45.20	4.1267E+04	3231.	7.4777E+09	-
486.93	-46.20	4.4249E+04	2726.	6.4180E+09	-
524.22	-47.20	4.6706E+04	2183.	5.4346E+09	-
561.50	-48.20	4.8602E+04	1603.	4.5319E+09	-
598.79	-49.20	4.9899E+04	985.	3.7130E+09	-
636.08	-50.20	5.0559E+04	330.	2.9803E+09	-
673.36	-51.20	5.0547E+04	-362.	2.3349E+09	-
710.55	-52.20	4.9824E+04	-1091.	1.7767E+09	-
747.80	-53.20	4.8352E+04	-1861.	1.3045E+09	-
792.57	-54.20	4.6084E+04	-2684.	9.1576E+08	-
852.59	-55.20	4.2963E+04	-3570.	6.0651E+08	-
921.09	-56.20	3.8921E+04	-4526.	3.7136E+08	-
990.06	-57.20	3.3888E+04	-5550.	2.0333E+08	-
1058.88					

-58.20	2.7797E+04	-6644.	9.3701E+07	-
1127.70				
-59.20	2.0578E+04	-7806.	3.1945E+07	-
1196.51				
-60.20	1.2162E+04	-9037.	5.5756E+06	-
1265.33				
-61.20	2.4815E+03	-10336.	4.0259E+04	-
1334.15				
-62.20	0.0000E+00	-10654.	0.0000E+00	-
1350.43				

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.80	0.	0.	0.	114.	350.
5.80	0.	0.	0.	180.	551.
4.80	0.	0.	0.	246.	752.
3.80	0.	0.	0.	312.	953.
2.80	0.	0.	0.	377.	1154.
2.00	0.	0.	0.	430.	1315.
1.80	0.	0.	0.	444.	1356.
1.00	0.	0.	0.	498.	1521.
0.80	0.	0.	0.	511.	1562.
0.00	0.	0.	0.	561.	1716.
-0.20	0.	0.	0.	570.	1744.
-1.20	0.	0.	0.	603.	1844.
-2.20	0.	0.	0.	635.	1941.
-3.20	0.	0.	0.	667.	2038.
-4.20	0.	0.	0.	698.	2135.
-5.20	0.	0.	0.	730.	2232.
-6.20	0.	0.	0.	762.	2329.
-7.20	0.	0.	0.	794.	2426.
-8.20	0.	0.	0.	825.	2523.
-9.20	0.	0.	0.	857.	2620.
-10.00	0.	0.	0.	883.	2699.
-10.20	0.	0.	0.	890.	2720.
-11.00	0.	0.	0.	919.	2809.
-11.20	0.	16.	6.	926.	2831.
-12.00	0.	79.	30.	955.	2920.
-12.20	0.	95.	36.	962.	2942.
-13.20	0.	175.	65.	999.	3053.
-14.20	0.	254.	95.	1035.	3164.
-15.20	0.	334.	124.	1071.	3275.
-16.20	0.	413.	154.	1108.	3386.
-17.20	0.	493.	184.	1144.	3497.
-18.20	0.	572.	213.	1180.	3608.
-19.20	0.	652.	243.	1217.	3719.
-20.20	0.	731.	272.	1253.	3830.
-21.20	0.	811.	302.	1289.	3941.
-22.20	0.	890.	332.	1326.	4052.
-23.20	0.	970.	361.	1362.	4163.
-24.20	0.	1049.	391.	1398.	4274.
-25.20	0.	1129.	420.	1435.	4385.

-26.20	0.	1208.	450.	1471.	4496.
-27.20	0.	1288.	480.	1507.	4607.
-28.20	0.	1367.	509.	1544.	4718.
-29.20	0.	1447.	539.	1580.	4829.
-30.00	0.	1510.	562.	1609.	4918.
-30.20	0.	1525.	568.	1616.	4939.
-31.20	0.	1599.	596.	1650.	5045.
-32.20	0.	1674.	624.	1685.	5151.
-32.49	0.	1695.	632.	1695.	5181.
-33.20	0.	1748.	652.	1720.	5257.
-34.20	0.	1822.	680.	1754.	5362.
-35.20	0.	1896.	707.	1789.	5468.
-36.20	0.	1971.	735.	1823.	5574.
-37.20	0.	2045.	763.	1858.	5680.
-38.00	0.	2104.	785.	1886.	5764.
-38.20	0.	2118.	791.	1892.	5785.
-39.20	0.	2189.	818.	1926.	5887.
-40.20	0.	2260.	844.	1959.	5989.
-41.20	0.	2331.	871.	1993.	6092.
-42.20	0.	2401.	898.	2026.	6194.
-43.20	0.	2472.	925.	2060.	6296.
-44.20	0.	2543.	951.	2093.	6398.
-45.20	0.	2614.	978.	2127.	6501.
-46.20	0.	2684.	1005.	2160.	6603.
-47.20	0.	2755.	1032.	2194.	6705.
-48.20	0.	2826.	1058.	2227.	6808.
-49.20	0.	2897.	1085.	2261.	6910.
-50.20	0.	2967.	1112.	2294.	7012.
-51.20	0.	3038.	1139.	2327.	7114.
-52.20	0.	3109.	1165.	2361.	7217.
-53.20	0.	3187.	1192.	2394.	7319.
-54.20	0.	3280.	1219.	2428.	7421.
-55.20	0.	3382.	1246.	2461.	7524.
-56.20	0.	3485.	1272.	2495.	7626.
-57.20	0.	3587.	1299.	2528.	7728.
-58.20	0.	3689.	1326.	2562.	7830.
-59.20	0.	3792.	1353.	2595.	7933.
-60.20	0.	3894.	1379.	2629.	8035.
-61.20	0.	3996.	1406.	2662.	8137.
-62.20	0.	4098.	1433.	2696.	8239.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 7:37:42

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*******************************
* PRELIMINARY DESIGN DATA FOR *
*  FREE EARTH DESIGN IN SAND  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'BAYOU PIPE MANAGEMENT #1
'S-CASE WITH 200# UNIFORM LOAD 1.5 NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.32
ANCHOR HEIGHT RATIO (BETA) = 0.10

SHEET PILE DATA:

SHEET PILE NAME	<SECTION PROPERTIES> (PER FOOT OF WALL) SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07
PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07
PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-3.16	1.0 (***)	1.04
PZ38	-2.92	1.0 (***)	0.80
PZ35	-3.03	1.0 (***)	0.83
PZ32	-2.81	1.0 (***)	0.65
PZ27	-2.74	1.0 (***)	0.52
PZ22	-2.40	1.0 (***)	0.31
PLZ25	-2.82	1.0 (***)	0.56
PLZ23	-2.78	1.0 (***)	0.52

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

DESIGN GROUP #2

Ground Surface EL 6.9

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-36	72215	12068
S Free Earth	norm	1.25	-30.4	49611	9658
S Free Earth	norm	1	-25	31284	7283
S Fixed Earth	norm	1.5	-45	60854	11209
S Fixed Earth	norm	1.25	-37.8	41165	8941
S Fixed Earth	norm	1	-31	25346	6712

For Cost Purposes, use for Bulkhead #3, 4, AND 7

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

```
'Port of Iberia Bulkhead Replacement
'Dynamic Industries #3 & 4
'Soils Reach 1 - S-case 1.25 with 200 uniform load normal water
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   6.9    1
SURFACE RIGHTSIDE   2    0    6.9
                  200    6.9
SURFACE LEFTSIDE   5    0   -11
                  40   -12.5
                  76   -12.5
                  107   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
WATER ELEVATIONS   62.5    0   0
V U 200
FINISHED
```

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:43:31

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*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.25 WITH 200 UNIFORM LOAD NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.25
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.25

III.--WALL DATA
ELEVATION AT TOP OF WALL = 6.90 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	6.90
200.00	6.90

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-11.00
40.00	-12.50
76.00	-12.50
107.00	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. FACTOR-> WGHT. PASS. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- <- ACT.
115.00	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF DEF
118.00	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF DEF
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF DEF
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF DEF

```
DEF
 121.00  121.00    23.00    0.00     0.00    0.00                    DEF
DEF

          V.B.--LEFTSIDE
              LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE  = DEFAULT
              LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

                ANGLE OF          ANGLE OF                              <-
SAFETY->
   SAT.   MOIST  INTERNAL  COH-     WALL    ADH-    <--BOTTOM-->      <-
FACTOR->
  WGHT.   WGHT.  FRICTION  ESION  FRICTION  ESION   ELEV.   SLOPE    ACT.
PASS.
  (PCF)   (PCF)   (DEG)    (PSF)    (DEG)   (PSF)   (FT)   (FT/FT)
 126.00  126.00   23.00    0.00     0.00    0.00  -30.00   0.00      DEF
DEF
 123.00  123.00   23.00    0.00     0.00    0.00  -38.00   0.00      DEF
DEF
 121.00  121.00   23.00    0.00     0.00    0.00                     DEF
DEF

       VI.--WATER DATA
          UNIT WEIGHT          = 62.50 (PCF)
          RIGHTSIDE ELEVATION = 0.00 (FT)
          LEFTSIDE ELEVATION  = 0.00 (FT)
          NO SEEPAGE

      VII.--VERTICAL SURCHARGE LOADS

          VII.A.--VERTICAL LINE LOADS
               NONE

          VII.B.--VERTICAL UNIFORM LOADS
                    LEFTSIDE     RIGHTSIDE
                      (PSF)        (PSF)
                      0.00        200.00

          VII.C.--VERTICAL STRIP LOADS
               NONE

          VII.D.--VERTICAL RAMP LOADS
               NONE

          VII.E.--VERTICAL TRIANGULAR LOADS
               NONE

          VII.F.--VERTICAL VARIABLE LOADS
               NONE

     VIII.--HORIZONTAL LOADS
          NONE
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PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:43:34

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*************************
*   SOIL PRESSURES FOR  *
*  ANCHORED WALL DESIGN *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.25 WITH 200 UNIFORM LOAD NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
6.9	0.0	0.0	0.0	102.7	102.7	389.6
5.9	0.0	0.0	0.0	161.7	161.7	613.6
4.9	0.0	0.0	0.0	220.8	220.8	837.6
3.9	0.0	0.0	0.0	279.8	279.8	1061.6
2.9	0.0	0.0	0.0	338.8	338.8	1285.6
2.0	0.0	0.0	0.0	392.1	392.1	1487.7
1.9	0.0	0.0	0.0	398.1	398.1	1510.4
1.0	0.0	0.0	0.0	452.6	452.6	1717.1
0.9	0.0	0.0	0.0	458.6	458.6	1740.1
0.0	0.0	0.0	0.0	510.3	510.3	1936.2
-0.1	0.0	0.0	0.0	514.6	514.6	1952.5
-1.1	0.0	0.0	0.0	544.5	544.5	2066.0
-2.1	0.0	0.0	0.0	573.0	573.0	2173.9
-3.1	0.0	0.0	0.0	601.4	601.4	2282.0
-4.1	0.0	0.0	0.0	629.9	629.9	

2390.1					
-5.1	0.0	0.0	0.0	658.4	658.4
2498.3					
-6.1	0.0	0.0	0.0	686.9	686.9
2606.4					
-7.1	0.0	0.0	0.0	715.4	715.4
2714.5					
-8.1	0.0	0.0	0.0	743.9	743.9
2822.6					
-9.1	0.0	0.0	0.0	772.4	772.4
2930.7					
-10.0	0.0	0.0	0.0	798.4	798.4
3029.3					
-10.1	0.0	0.0	0.0	801.5	801.5
3041.0					
-11.0	0.0	0.0	0.0	830.6	830.6
3151.7					
-11.1	0.0	11.8	3.2	822.2	833.9
3164.0					
-12.0	0.0	117.5	31.7	745.7	863.2
3275.4					
-12.1	0.0	129.3	34.9	737.2	866.5
3287.7					
-13.1	0.0	246.8	66.7	652.3	899.1
3411.4					
-14.1	0.0	364.4	98.4	567.3	931.7
3535.1					
-15.1	0.0	481.9	130.2	482.4	964.3
3658.8					
-16.1	0.0	599.4	161.9	397.5	996.9
3782.5					
-17.1	0.0	717.0	193.7	312.5	1029.5
3906.2					
-18.1	0.0	834.5	225.4	227.6	1062.1
4029.9					
-19.1	0.0	952.1	257.1	142.6	1094.7
4153.6					
-20.1	0.0	1069.6	288.9	57.7	1127.3
4277.3					
-20.8	0.0	1149.4	310.5	0.0	1149.4
4361.3					
-21.1	0.0	1187.1	320.6	-27.2	1159.9
4400.9					
-22.1	0.0	1304.7	352.4	-112.2	1192.5
4524.6					
-23.1	0.0	1422.2	384.1	-197.1	1225.1
4648.3					
-24.1	0.0	1539.8	415.9	-282.1	1257.7
4772.0					
-25.1	0.0	1657.3	447.6	-367.0	1290.3
4895.7					
-26.1	0.0	1774.8	479.4	-451.9	1322.9
5019.4					
-27.1	0.0	1892.4	511.1	-536.9	1355.5
5143.1					
-28.1	0.0	2009.9	542.9	-621.8	1388.1
5266.8					
-29.1	0.0	2127.5	574.6	-706.8	1420.7
5390.5					
-30.0	0.0	2232.7	603.0	-782.8	1449.9
5501.3					

-30.1	0.0	2244.2	606.1	-791.1	1453.1
5513.3					
-31.1	0.0	2356.1	636.4	-871.9	1484.2
5631.4					
-32.1	0.0	2467.8	666.6	-952.5	1515.3
5749.3					
-33.1	0.0	2579.5	696.8	-1033.2	1546.3
5867.1					
-34.1	0.0	2691.2	727.0	-1113.8	1577.4
5985.0					
-35.1	0.0	2802.9	757.2	-1194.4	1608.4
6102.8					
-36.1	0.0	2914.6	787.4	-1275.1	1639.5
6220.6					
-37.1	0.0	3026.3	817.7	-1355.7	1670.6
6338.5					
-38.0	0.0	3126.5	844.7	-1428.0	1698.4
6444.2					
-38.1	0.0	3137.4	847.7	-1435.9	1701.5
6455.8					
-39.1	0.0	3245.4	876.9	-1513.8	1731.6
6569.9					
-40.1	0.0	3353.1	906.1	-1591.6	1761.6
6683.9					
-41.1	0.0	3462.4	935.3	-1670.8	1791.6
6797.8					
-42.1	0.0	3574.6	964.5	-1752.9	1821.6
6911.8					
-43.1	0.0	3688.5	993.7	-1836.8	1851.7
7025.7					
-44.1	0.0	3802.5	1022.8	-1920.7	1881.7
7139.7					
-45.1	0.0	3916.4	1052.0	-2004.7	1911.7
7253.6					
-46.1	0.0	4030.4	1081.2	-2088.6	1941.8
7367.6					
-47.1	0.0	4144.3	1110.4	-2172.5	1971.8
7481.5					
-48.1	0.0	4258.3	1139.6	-2256.4	2001.8
7595.5					
-49.1	0.0	4372.2	1168.7	-2340.3	2031.9
7709.4					
-50.1	0.0	4486.2	1197.9	-2424.3	2061.9
7823.4					
-51.1	0.0	4600.1	1227.1	-2508.2	2091.9
7937.3					
-52.1	0.0	4714.1	1256.3	-2592.1	2122.0
8051.3					
-53.1	0.0	4828.0	1285.4	-2676.0	2152.0
8165.2					
-54.1	0.0	4942.0	1314.6	-2759.9	2182.0
8279.2					
-55.1	0.0	5055.9	1343.8	-2843.8	2212.1
8393.1					
-56.1	0.0	5169.9	1373.0	-2927.8	2242.1
8507.1					
-57.1	0.0	5283.8	1402.2	-3011.7	2272.1
8621.0					
-58.1	0.0	5397.8	1431.3	-3095.6	2302.2
8735.0					
-59.1	0.0	5511.7	1460.5	-3179.5	2332.2

8848.9					
-60.1	0.0	5625.7	1489.7	-3263.4	2362.2
8962.9					
-61.1	0.0	5739.6	1518.9	-3347.4	2392.3
9076.8					
-62.1	0.0	5853.6	1548.1	-3431.3	2422.3
9190.8					
-63.1	0.0	5967.5	1577.2	-3515.2	2452.3
9304.7					
-64.1	0.0	6081.5	1606.4	-3599.1	2482.4
9418.7					
-65.1	0.0	6195.7	1635.6	-3683.3	2512.4
9532.6					

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:43:35

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*  SUMMARY OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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I.--HEADING

'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.25 WITH 200 UNIFORM LOAD NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-30.35	-37.77
PENETRATION (FT)	:	19.35	26.77
MAXIMUM BENDING MOMENT (LB-FT)	:	-4.9611E+04	-4.1165E+04
AT ELEVATION (FT)	:	-11.21	-10.34
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	7.6350E+09	

5.6245E+09
AT ELEVATION (FT) : -13.10 -
12.10

ANCHOR FORCE (LB) : 9.6584E+03
8.9411E+03

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:43:35

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FREE EARTH METHOD   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.25 WITH 200 UNIFORM LOAD NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 9658. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.90	0.0000E+00	0.	-4.9135E+09	102.68
5.90	6.1178E+01	132.	-4.0832E+09	161.71
4.90	2.8407E+02	323.	-3.2528E+09	220.75
3.90	7.2771E+02	574.	-2.4219E+09	279.79
2.90	1.4512E+03	883.	-1.5897E+09	338.83
2.00	2.3903E+03	1212.	-8.3861E+08	392.10
1.90	2.5134E+03	1251.	-7.5498E+08	398.08
1.00	3.8083E+03	1634.	0.0000E+00	452.55
1.00	3.8083E+03	-8024.	0.0000E+00	452.55
0.90	3.0082E+03	-7979.	8.4177E+07	458.62
0.00	-3.9799E+03	-7543.	8.4248E+08	510.31

	-0.10	-4.7316E+03	-7491.	9.2657E+08	
514.59					
	-1.10	-1.1961E+04	-6962.	1.7609E+09	
544.50					
	-2.10	-1.8646E+04	-6403.	2.5745E+09	
572.96					
	-3.10	-2.4758E+04	-5816.	3.3561E+09	
601.45					
	-4.10	-3.0268E+04	-5200.	4.0950E+09	
629.94					
	-5.10	-3.5148E+04	-4556.	4.7816E+09	
658.43					
	-6.10	-3.9371E+04	-3883.	5.4076E+09	
686.93					
	-7.10	-4.2906E+04	-3182.	5.9657E+09	
715.42					
	-8.10	-4.5725E+04	-2453.	6.4498E+09	
743.91					
	-9.10	-4.7801E+04	-1694.	6.8549E+09	
772.40					
	-10.00	-4.9010E+04	-988.	7.1491E+09	
798.40					
	-10.10	-4.9105E+04	-908.	7.1775E+09	
801.47					
	-11.00	-4.9593E+04	-173.	7.3955E+09	
830.65					
	-11.10	-4.9606E+04	-90.	7.4154E+09	
822.15					
	-12.00	-4.9365E+04	615.	7.5564E+09	
745.71					
	-12.10	-4.9300E+04	689.	7.5677E+09	
737.21					
	-13.10	-4.8256E+04	1384.	7.6350E+09	
652.27					
	-14.10	-4.6560E+04	1994.	7.6189E+09	
567.34					
	-15.10	-4.4296E+04	2519.	7.5224E+09	
482.40					
	-16.10	-4.1551E+04	2959.	7.3495E+09	
397.46					
	-17.10	-3.8408E+04	3314.	7.1049E+09	
312.52					
	-18.10	-3.4952E+04	3584.	6.7939E+09	
227.58					
	-19.10	-3.1269E+04	3769.	6.4225E+09	
142.64					
	-20.10	-2.7443E+04	3869.	5.9972E+09	
57.70					
	-20.78	-2.4806E+04	3889.	5.6808E+09	
0.00					
	-21.10	-2.3559E+04	3884.	5.5244E+09	-
27.24					
	-22.10	-1.9703E+04	3814.	5.0109E+09	-
112.18					
	-23.10	-1.5959E+04	3660.	4.4634E+09	-
197.12					
	-24.10	-1.2411E+04	3420.	3.8882E+09	-
282.05					
	-25.10	-9.1464E+03	3096.	3.2916E+09	-
366.99					
	-26.10	-6.2484E+03	2686.	2.6791E+09	-

451.93					
	-27.10	-3.8023E+03	2192.	2.0557E+09	-
536.87					
	-28.10	-1.8930E+03	1612.	1.4257E+09	-
621.81					
	-29.10	-6.0560E+02	948.	7.9232E+08	-
706.76					
	-30.00	-4.8729E+01	278.	2.2127E+08	-
782.82					
	-30.10	-2.4868E+01	199.	1.5780E+08	-
791.07					
	-30.35	0.0000E+00	0.	0.0000E+00	-
811.17					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.90	0.	0.	0.	103.	390.
5.90	0.	0.	0.	162.	614.
4.90	0.	0.	0.	221.	838.
3.90	0.	0.	0.	280.	1062.
2.90	0.	0.	0.	339.	1286.
2.00	0.	0.	0.	392.	1488.
1.90	0.	0.	0.	398.	1510.
1.00	0.	0.	0.	453.	1717.
0.90	0.	0.	0.	459.	1740.
0.00	0.	0.	0.	510.	1936.
-0.10	0.	0.	0.	515.	1952.
-1.10	0.	0.	0.	545.	2066.
-2.10	0.	0.	0.	573.	2174.
-3.10	0.	0.	0.	601.	2282.
-4.10	0.	0.	0.	630.	2390.
-5.10	0.	0.	0.	658.	2498.
-6.10	0.	0.	0.	687.	2606.
-7.10	0.	0.	0.	715.	2714.
-8.10	0.	0.	0.	744.	2823.
-9.10	0.	0.	0.	772.	2931.
-10.00	0.	0.	0.	798.	3029.
-10.10	0.	0.	0.	801.	3041.
-11.00	0.	0.	0.	831.	3152.
-11.10	0.	12.	3.	834.	3164.
-12.00	0.	118.	32.	863.	3275.
-12.10	0.	129.	35.	867.	3288.
-13.10	0.	247.	67.	899.	3411.
-14.10	0.	364.	98.	932.	3535.
-15.10	0.	482.	130.	964.	3659.
-16.10	0.	599.	162.	997.	3782.
-17.10	0.	717.	194.	1030.	3906.
-18.10	0.	835.	225.	1062.	4030.
-19.10	0.	952.	257.	1095.	4154.
-20.10	0.	1070.	289.	1127.	4277.
-20.78	0.	1149.	310.	1149.	4361.
-21.10	0.	1187.	321.	1160.	4401.

-22.10	0.	1305.	352.	1193.	4525.
-23.10	0.	1422.	384.	1225.	4648.
-24.10	0.	1540.	416.	1258.	4772.
-25.10	0.	1657.	448.	1290.	4896.
-26.10	0.	1775.	479.	1323.	5019.
-27.10	0.	1892.	511.	1356.	5143.
-28.10	0.	2010.	543.	1388.	5267.
-29.10	0.	2127.	575.	1421.	5390.
-30.00	0.	2233.	603.	1450.	5501.
-30.10	0.	2244.	606.	1453.	5513.
-31.10	0.	2356.	636.	1484.	5631.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:43:35

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****************************
* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FIXED EARTH METHOD  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.25 WITH 200 UNIFORM LOAD NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 8941. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.90	0.0000E+00	0.	-3.8291E+09	102.68
5.90	6.1178E+01	132.	-3.1826E+09	161.71
4.90	2.8407E+02	323.	-2.5360E+09	220.75
3.90	7.2771E+02	574.	-1.8889E+09	279.79
2.90	1.4512E+03	883.	-1.2405E+09	338.83
2.00	2.3903E+03	1212.	-6.5482E+08	392.10
1.90	2.5134E+03	1251.	-5.8956E+08	398.08
1.00	3.8083E+03	1634.	0.0000E+00	452.55
1.00	3.8083E+03	-7307.	0.0000E+00	452.55
0.90	3.0799E+03	-7261.	6.5798E+07	458.62
0.00	-3.2626E+03	-6825.	6.5889E+08	510.31

	-0.10	-3.9426E+03	-6774.	7.2467E+08	
514.59					
	-1.10	-1.0454E+04	-6245.	1.3768E+09	
544.50					
	-2.10	-1.6422E+04	-5686.	2.0110E+09	
572.96					
	-3.10	-2.1817E+04	-5099.	2.6168E+09	
601.45					
	-4.10	-2.6610E+04	-4483.	3.1850E+09	
629.94					
	-5.10	-3.0773E+04	-3839.	3.7074E+09	
658.43					
	-6.10	-3.4278E+04	-3166.	4.1767E+09	
686.93					
	-7.10	-3.7096E+04	-2465.	4.5868E+09	
715.42					
	-8.10	-3.9198E+04	-1735.	4.9329E+09	
743.91					
	-9.10	-4.0556E+04	-977.	5.2115E+09	
772.40					
	-10.00	-4.1119E+04	-270.	5.4023E+09	
798.40					
	-10.10	-4.1142E+04	-190.	5.4200E+09	
801.47					
	-11.00	-4.0985E+04	544.	5.5470E+09	
830.65					
	-11.10	-4.0927E+04	627.	5.5576E+09	
822.15					
	-12.00	-4.0040E+04	1332.	5.6210E+09	
745.71					
	-12.10	-3.9903E+04	1407.	5.6245E+09	
737.21					
	-13.10	-3.8142E+04	2101.	5.6226E+09	
652.27					
	-14.10	-3.5728E+04	2711.	5.5549E+09	
567.34					
	-15.10	-3.2748E+04	3236.	5.4256E+09	
482.40					
	-16.10	-2.9285E+04	3676.	5.2397E+09	
397.46					
	-17.10	-2.5424E+04	4031.	5.0033E+09	
312.52					
	-18.10	-2.1251E+04	4301.	4.7230E+09	
227.58					
	-19.10	-1.6851E+04	4486.	4.4060E+09	
142.64					
	-20.10	-1.2307E+04	4586.	4.0599E+09	
57.70					
	-20.78	-9.1831E+03	4606.	3.8121E+09	
0.00					
	-21.10	-7.7066E+03	4601.	3.6925E+09	-
27.24					
	-22.10	-3.1329E+03	4532.	3.3118E+09	-
112.18					
	-23.10	1.3286E+03	4377.	2.9257E+09	-
197.12					
	-24.10	5.5930E+03	4138.	2.5419E+09	-
282.05					
	-25.10	9.5754E+03	3813.	2.1676E+09	-
366.99					
	-26.10	1.3191E+04	3404.	1.8099E+09	-

451.93	-27.10	1.6354E+04	2909.	1.4749E+09	-
536.87	-28.10	1.8981E+04	2330.	1.1681E+09	-
621.81	-29.10	2.0985E+04	1666.	8.9400E+08	-
706.76	-30.00	2.2188E+04	995.	6.7815E+08	-
782.82	-30.10	2.2283E+04	917.	6.5606E+08	-
791.07	-31.10	2.2791E+04	85.	4.5651E+08	-
871.90	-32.10	2.2427E+04	-827.	2.9621E+08	-
952.53	-33.10	2.1110E+04	-1820.	1.7454E+08	-
1033.17	-34.10	1.8760E+04	-2894.	8.9187E+07	-
1113.80	-35.10	1.5296E+04	-4048.	3.6093E+07	-
1194.44	-36.10	1.0637E+04	-5282.	9.2586E+06	-
1275.07	-37.10	4.7040E+03	-6598.	6.2187E+05	-
1355.71	-38.00	0.0000E+00	-7519.	0.0000E+00	-
1409.28					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.90	0.	0.	0.	103.	390.
5.90	0.	0.	0.	162.	614.
4.90	0.	0.	0.	221.	838.
3.90	0.	0.	0.	280.	1062.
2.90	0.	0.	0.	339.	1286.
2.00	0.	0.	0.	392.	1488.
1.90	0.	0.	0.	398.	1510.
1.00	0.	0.	0.	453.	1717.
0.90	0.	0.	0.	459.	1740.
0.00	0.	0.	0.	510.	1936.
-0.10	0.	0.	0.	515.	1952.
-1.10	0.	0.	0.	545.	2066.
-2.10	0.	0.	0.	573.	2174.
-3.10	0.	0.	0.	601.	2282.
-4.10	0.	0.	0.	630.	2390.
-5.10	0.	0.	0.	658.	2498.
-6.10	0.	0.	0.	687.	2606.
-7.10	0.	0.	0.	715.	2714.
-8.10	0.	0.	0.	744.	2823.
-9.10	0.	0.	0.	772.	2931.
-10.00	0.	0.	0.	798.	3029.
-10.10	0.	0.	0.	801.	3041.

-11.00	0.	0.	0.	831.	3152.
-11.10	0.	12.	3.	834.	3164.
-12.00	0.	118.	32.	863.	3275.
-12.10	0.	129.	35.	867.	3288.
-13.10	0.	247.	67.	899.	3411.
-14.10	0.	364.	98.	932.	3535.
-15.10	0.	482.	130.	964.	3659.
-16.10	0.	599.	162.	997.	3782.
-17.10	0.	717.	194.	1030.	3906.
-18.10	0.	835.	225.	1062.	4030.
-19.10	0.	952.	257.	1095.	4154.
-20.10	0.	1070.	289.	1127.	4277.
-20.78	0.	1149.	310.	1149.	4361.
-21.10	0.	1187.	321.	1160.	4401.
-22.10	0.	1305.	352.	1193.	4525.
-23.10	0.	1422.	384.	1225.	4648.
-24.10	0.	1540.	416.	1258.	4772.
-25.10	0.	1657.	448.	1290.	4896.
-26.10	0.	1775.	479.	1323.	5019.
-27.10	0.	1892.	511.	1356.	5143.
-28.10	0.	2010.	543.	1388.	5267.
-29.10	0.	2127.	575.	1421.	5390.
-30.00	0.	2233.	603.	1450.	5501.
-30.10	0.	2244.	606.	1453.	5513.
-31.10	0.	2356.	636.	1484.	5631.
-32.10	0.	2468.	667.	1515.	5749.
-33.10	0.	2579.	697.	1546.	5867.
-34.10	0.	2691.	727.	1577.	5985.
-35.10	0.	2803.	757.	1608.	6103.
-36.10	0.	2915.	787.	1640.	6221.
-37.10	0.	3026.	818.	1671.	6339.
-38.00	0.	3126.	845.	1698.	6444.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:43:37

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* PRELIMINARY DESIGN DATA FOR *
*  FREE EARTH DESIGN IN SAND  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.25 WITH 200 UNIFORM LOAD NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.48

ANCHOR HEIGHT RATIO (BETA) = 0.16

SHEET PILE DATA:

SHEET PILE NAME	<SECTION PROPERTIES> (PER FOOT OF WALL) SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07
PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07
PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-3.87	1.0 (***)	2.45
PZ38	-3.63	1.0 (***)	1.89
PZ35	-3.74	1.0 (***)	1.96
PZ32	-3.52	1.0 (***)	1.54
PZ27	-3.44	1.0 (***)	1.22
PZ22	-3.10	1.0 (***)	0.73
PLZ25	-3.53	1.0 (***)	1.32
PLZ23	-3.49	1.0 (***)	1.22

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

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'Port of Iberia Bulkhead Replacement
'Dynamic Industries #3 & 4
'Soils Reach 1 - S-case 1.5 with 200 uniform load normal water
CONTROL  ANCHORED  DESIGN  1.50  1.50
WALL   6.9    1
SURFACE RIGHTSIDE   2    0    6.9
                  200    6.9
SURFACE LEFTSIDE   5    0   -11
                  40   -12.5
                  76   -12.5
                  107   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2    0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
WATER ELEVATIONS   62.5    0   0
V U 200
FINISHED
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PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:45:47

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*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.5 WITH 200 UNIFORM LOAD NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.50
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.50

III.--WALL DATA
ELEVATION AT TOP OF WALL = 6.90 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	6.90
200.00	6.90

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-11.00
40.00	-12.50
76.00	-12.50
107.00	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. FACTOR-> WGHT. PASS. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- <- ACT.
115.00	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF
DEF 118.00	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF
DEF 126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
DEF 123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF

```
DEF
 121.00  121.00    23.00    0.00     0.00     0.00                    DEF
DEF

          V.B.--LEFTSIDE
              LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE  = DEFAULT
              LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

                 ANGLE OF          ANGLE OF                              <-
SAFETY->
   SAT.   MOIST  INTERNAL  COH-     WALL     ADH-     <--BOTTOM-->      <-
FACTOR->
  WGHT.   WGHT.  FRICTION  ESION  FRICTION  ESION    ELEV.   SLOPE    ACT.
PASS.
  (PCF)   (PCF)   (DEG)    (PSF)    (DEG)    (PSF)    (FT)   (FT/FT)
 126.00  126.00    23.00    0.00     0.00     0.00  -30.00    0.00    DEF
DEF
 123.00  123.00    23.00    0.00     0.00     0.00  -38.00    0.00    DEF
DEF
 121.00  121.00    23.00    0.00     0.00     0.00                    DEF
DEF

       VI.--WATER DATA
          UNIT WEIGHT          = 62.50 (PCF)
          RIGHTSIDE ELEVATION = 0.00 (FT)
          LEFTSIDE ELEVATION  = 0.00 (FT)
          NO SEEPAGE

      VII.--VERTICAL SURCHARGE LOADS

          VII.A.--VERTICAL LINE LOADS
               NONE

          VII.B.--VERTICAL UNIFORM LOADS
                     LEFTSIDE      RIGHTSIDE
                       (PSF)         (PSF)
                       0.00         200.00

          VII.C.--VERTICAL STRIP LOADS
               NONE

          VII.D.--VERTICAL RAMP LOADS
               NONE

          VII.E.--VERTICAL TRIANGULAR LOADS
               NONE

          VII.F.--VERTICAL VARIABLE LOADS
               NONE

     VIII.--HORIZONTAL LOADS
          NONE
```

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:45:50

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*   SOIL PRESSURES FOR  *
*  ANCHORED WALL DESIGN *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.5 WITH 200 UNIFORM LOAD NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
6.9	0.0	0.0	0.0	114.4	114.4	349.7
5.9	0.0	0.0	0.0	180.2	180.2	550.7
4.9	0.0	0.0	0.0	245.9	245.9	751.8
3.9	0.0	0.0	0.0	311.7	311.7	952.9
2.9	0.0	0.0	0.0	377.5	377.5	1153.9
2.0	0.0	0.0	0.0	436.8	436.8	1335.3
1.9	0.0	0.0	0.0	443.5	443.5	1355.7
1.0	0.0	0.0	0.0	504.2	504.2	1541.2
0.9	0.0	0.0	0.0	511.0	511.0	1561.9
0.0	0.0	0.0	0.0	568.5	568.5	1737.9
-0.1	0.0	0.0	0.0	573.3	573.3	1752.5
-1.1	0.0	0.0	0.0	606.6	606.6	1854.3
-2.1	0.0	0.0	0.0	638.3	638.3	1951.2
-3.1	0.0	0.0	0.0	670.1	670.1	2048.3
-4.1	0.0	0.0	0.0	701.8	701.8	

2145.3 -5.1	0.0	0.0	0.0	733.6	733.6
2242.3 -6.1	0.0	0.0	0.0	765.3	765.3
2339.4 -7.1	0.0	0.0	0.0	797.1	797.1
2436.4 -8.1	0.0	0.0	0.0	828.8	828.8
2533.4 -9.1	0.0	0.0	0.0	860.5	860.5
2630.5 -10.0	0.0	0.0	0.0	889.5	889.5
2719.0 -10.1	0.0	0.0	0.0	892.9	892.9
2729.5 -11.0	0.0	0.0	0.0	925.4	925.4
2828.8 -11.1	0.0	10.6	3.5	918.5	929.1
2839.9 -12.0	0.0	105.8	35.3	856.0	961.8
2939.9 -12.1	0.0	116.4	38.9	849.0	965.4
2951.0 -13.1	0.0	222.1	74.2	779.6	1001.7
3062.0 -14.1	0.0	327.9	109.5	710.1	1038.0
3173.0 -15.1	0.0	433.7	144.8	640.7	1074.4
3284.0 -16.1	0.0	539.5	180.1	571.2	1110.7
3395.0 -17.1	0.0	645.2	215.4	501.8	1147.0
3506.1 -18.1	0.0	751.0	250.8	432.3	1183.3
3617.1 -19.1	0.0	856.8	286.1	362.9	1219.6
3728.1 -20.1	0.0	962.6	321.4	293.4	1256.0
3839.1 -21.1	0.0	1068.3	356.7	223.9	1292.3
3950.1 -22.1	0.0	1174.1	392.0	154.5	1328.6
4061.2 -23.1	0.0	1279.9	427.4	85.0	1364.9
4172.2 -24.1	0.0	1385.7	462.7	15.6	1401.2
4283.2 -24.3	0.0	1409.4	470.6	0.0	1409.4
4308.1 -25.1	0.0	1491.4	498.0	-53.9	1437.6
4394.2 -26.1	0.0	1597.2	533.3	-123.3	1473.9
4505.2 -27.1	0.0	1703.0	568.6	-192.8	1510.2
4616.3 -28.1	0.0	1808.8	603.9	-262.2	1546.5
4727.3 -29.1	0.0	1914.5	639.3	-331.7	1582.8
4838.3 -30.0	0.0	2009.3	670.9	-393.9	1615.4
4937.8					

-30.1	0.0	2019.6	674.3	-400.7	1618.9
4948.6					
-31.1	0.0	2120.3	708.0	-466.7	1653.6
5054.6					
-32.1	0.0	2220.8	741.6	-532.7	1688.2
5160.3					
-33.1	0.0	2321.4	775.2	-598.6	1722.8
5266.1					
-34.1	0.0	2421.9	808.8	-664.5	1757.4
5371.9					
-35.1	0.0	2522.4	842.4	-730.4	1792.0
5477.7					
-36.1	0.0	2623.0	876.0	-796.4	1826.6
5583.4					
-37.1	0.0	2723.5	909.6	-862.3	1861.2
5689.2					
-38.0	0.0	2813.7	939.8	-921.4	1892.3
5784.1					
-38.1	0.0	2823.5	943.1	-927.9	1895.7
5794.5					
-39.1	0.0	2920.7	975.6	-991.6	1929.2
5896.9					
-40.1	0.0	3017.7	1008.0	-1055.1	1962.6
5999.2					
-41.1	0.0	3114.7	1040.5	-1118.6	1996.1
6101.5					
-42.1	0.0	3212.1	1072.9	-1182.5	2029.5
6203.8					
-43.1	0.0	3311.3	1105.4	-1248.3	2063.0
6306.0					
-44.1	0.0	3412.9	1137.9	-1316.4	2096.5
6408.3					
-45.1	0.0	3515.2	1170.3	-1385.3	2129.9
6510.6					
-46.1	0.0	3617.5	1202.8	-1454.1	2163.4
6612.9					
-47.1	0.0	3719.8	1235.2	-1522.9	2196.8
6715.2					
-48.1	0.0	3822.1	1267.7	-1591.8	2230.3
6817.4					
-49.1	0.0	3924.3	1300.2	-1660.6	2263.8
6919.7					
-50.1	0.0	4026.6	1332.6	-1729.4	2297.2
7022.0					
-51.1	0.0	4128.9	1365.1	-1798.2	2330.7
7124.3					
-52.1	0.0	4231.2	1397.5	-1867.0	2364.1
7226.5					
-53.1	0.0	4333.5	1430.0	-1935.9	2397.6
7328.8					
-54.1	0.0	4435.7	1462.4	-2004.7	2431.1
7431.1					
-55.1	0.0	4538.0	1494.9	-2073.5	2464.5
7533.4					
-56.1	0.0	4640.3	1527.4	-2142.3	2498.0
7635.7					
-57.1	0.0	4742.6	1559.8	-2211.1	2531.4
7737.9					
-58.1	0.0	4844.9	1592.3	-2279.9	2564.9
7840.2					
-59.1	0.0	4947.1	1624.7	-2348.8	2598.4

7942.5					
-60.1	0.0	5049.4	1657.2	-2417.6	2631.8
8044.8					
-61.1	0.0	5151.7	1689.7	-2486.4	2665.3
8147.0					
-62.1	0.0	5254.0	1722.1	-2555.2	2698.7
8249.3					
-63.1	0.0	5356.2	1754.6	-2624.0	2732.2
8351.6					
-64.1	0.0	5458.5	1787.0	-2692.9	2765.7
8453.9					
-65.1	0.0	5560.8	1819.6	-2761.7	2799.1
8556.2					

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:45:52

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*****************************
*  SUMMARY OF RESULTS FOR   *
*   ANCHORED WALL DESIGN    *
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I.--HEADING

'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.5 WITH 200 UNIFORM LOAD NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-35.99	-44.96
PENETRATION (FT)	:	24.99	33.96
MAXIMUM BENDING MOMENT (LB-FT)	:	-7.2215E+04	-6.0854E+04
AT ELEVATION (FT)	:	-12.73	-11.71
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	1.5364E+10	

1.1458E+10

AT ELEVATION (FT) : -16.10 -

15.10

ANCHOR FORCE (LB) : 1.2068E+04

1.1209E+04

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:45:52

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****************************
* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FREE EARTH METHOD   *
****************************
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.5 WITH 200 UNIFORM LOAD NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 12068. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.90	0.0000E+00	0.	-8.5993E+09	114.39
5.90	6.8159E+01	147.	-7.1446E+09	180.17
4.90	3.1649E+02	360.	-5.6898E+09	245.95
3.90	8.1076E+02	639.	-4.2344E+09	311.72
2.90	1.6168E+03	984.	-2.7775E+09	377.50
2.00	2.6631E+03	1350.	-1.4640E+09	436.84
1.90	2.8003E+03	1394.	-1.3178E+09	443.52
1.00	4.2429E+03	1821.	0.0000E+00	504.20
1.00	4.2429E+03	-10248.	0.0000E+00	504.20
0.90	3.2207E+03	-10197.	1.4675E+08	510.96
0.00	-5.7418E+03	-9711.	1.4679E+09	568.55

	-0.10	-6.7100E+03	-9654.	1.6145E+09
573.31				
	-1.10	-1.6072E+04	-9064.	3.0706E+09
606.64				
	-2.10	-2.4827E+04	-8442.	4.4992E+09
638.34				
	-3.10	-3.2944E+04	-7787.	5.8849E+09
670.09				
	-4.10	-4.0391E+04	-7101.	7.2137E+09
701.83				
	-5.10	-4.7136E+04	-6384.	8.4729E+09
733.58				
	-6.10	-5.3148E+04	-5634.	9.6507E+09
765.32				
	-7.10	-5.8394E+04	-4853.	1.0737E+10
797.07				
	-8.10	-6.2843E+04	-4040.	1.1722E+10
828.81				
	-9.10	-6.6464E+04	-3195.	1.2599E+10
860.55				
	-10.00	-6.8987E+04	-2408.	1.3290E+10
889.51				
	-10.10	-6.9224E+04	-2319.	1.3361E+10
892.94				
	-11.00	-7.0944E+04	-1500.	1.3945E+10
925.44				
	-11.10	-7.1090E+04	-1408.	1.4004E+10
918.50				
	-12.00	-7.1994E+04	-610.	1.4477E+10
855.99				
	-12.10	-7.2050E+04	-524.	1.4524E+10
849.04				
	-13.10	-7.2162E+04	290.	1.4919E+10
779.59				
	-14.10	-7.1494E+04	1035.	1.5190E+10
710.13				
	-15.10	-7.0116E+04	1710.	1.5338E+10
640.68				
	-16.10	-6.8097E+04	2316.	1.5364E+10
571.22				
	-17.10	-6.5507E+04	2853.	1.5273E+10
501.77				
	-18.10	-6.2415E+04	3320.	1.5069E+10
432.31				
	-19.10	-5.8891E+04	3717.	1.4756E+10
362.85				
	-20.10	-5.5004E+04	4045.	1.4343E+10
293.40				
	-21.10	-5.0824E+04	4304.	1.3834E+10
223.94				
	-22.10	-4.6419E+04	4493.	1.3237E+10
154.49				
	-23.10	-4.1860E+04	4613.	1.2561E+10
85.03				
	-24.10	-3.7216E+04	4663.	1.1811E+10
15.58				
	-24.32	-3.6170E+04	4665.	1.1634E+10
0.00				
	-25.10	-3.2557E+04	4644.	1.0998E+10
53.88				
	-26.10	-2.7952E+04	4555.	1.0128E+10

123.33	-27.10	-2.3469E+04	4397.	9.2104E+09	-
192.79	-28.10	-1.9180E+04	4170.	8.2518E+09	-
262.24	-29.10	-1.5153E+04	3873.	7.2601E+09	-
331.70	-30.00	-1.1810E+04	3546.	6.3449E+09	-
393.90	-30.10	-1.1457E+04	3507.	6.2421E+09	-
400.65	-31.10	-8.1618E+03	3073.	5.2043E+09	-
466.73	-32.10	-5.3332E+03	2573.	4.1523E+09	-
532.66	-33.10	-3.0372E+03	2008.	3.0910E+09	-
598.58	-34.10	-1.3398E+03	1376.	2.0244E+09	-
664.51	-35.10	-3.0696E+02	679.	9.5531E+08	-
730.43	-35.99	0.0000E+00	0.	0.0000E+00	-
789.31					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.90	0.	0.	0.	114.	350.
5.90	0.	0.	0.	180.	551.
4.90	0.	0.	0.	246.	752.
3.90	0.	0.	0.	312.	953.
2.90	0.	0.	0.	377.	1154.
2.00	0.	0.	0.	437.	1335.
1.90	0.	0.	0.	444.	1356.
1.00	0.	0.	0.	504.	1541.
0.90	0.	0.	0.	511.	1562.
0.00	0.	0.	0.	569.	1738.
-0.10	0.	0.	0.	573.	1752.
-1.10	0.	0.	0.	607.	1854.
-2.10	0.	0.	0.	638.	1951.
-3.10	0.	0.	0.	670.	2048.
-4.10	0.	0.	0.	702.	2145.
-5.10	0.	0.	0.	734.	2242.
-6.10	0.	0.	0.	765.	2339.
-7.10	0.	0.	0.	797.	2436.
-8.10	0.	0.	0.	829.	2533.
-9.10	0.	0.	0.	861.	2630.
-10.00	0.	0.	0.	890.	2719.
-10.10	0.	0.	0.	893.	2729.
-11.00	0.	0.	0.	925.	2829.
-11.10	0.	11.	4.	929.	2840.
-12.00	0.	106.	35.	962.	2940.
-12.10	0.	116.	39.	965.	2951.

-13.10	0.	222.	74.	1002.	3062.
-14.10	0.	328.	109.	1038.	3173.
-15.10	0.	434.	145.	1074.	3284.
-16.10	0.	539.	180.	1111.	3395.
-17.10	0.	645.	215.	1147.	3506.
-18.10	0.	751.	251.	1183.	3617.
-19.10	0.	857.	286.	1220.	3728.
-20.10	0.	963.	321.	1256.	3839.
-21.10	0.	1068.	357.	1292.	3950.
-22.10	0.	1174.	392.	1329.	4061.
-23.10	0.	1280.	427.	1365.	4172.
-24.10	0.	1386.	463.	1401.	4283.
-24.32	0.	1409.	471.	1409.	4308.
-25.10	0.	1491.	498.	1438.	4394.
-26.10	0.	1597.	533.	1474.	4505.
-27.10	0.	1703.	569.	1510.	4616.
-28.10	0.	1809.	604.	1547.	4727.
-29.10	0.	1915.	639.	1583.	4838.
-30.00	0.	2009.	671.	1615.	4938.
-30.10	0.	2020.	674.	1619.	4949.
-31.10	0.	2120.	708.	1654.	5055.
-32.10	0.	2221.	742.	1688.	5160.
-33.10	0.	2321.	775.	1723.	5266.
-34.10	0.	2422.	809.	1757.	5372.
-35.10	0.	2522.	842.	1792.	5478.
-36.10	0.	2623.	876.	1827.	5583.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:45:52

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FIXED EARTH METHOD  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.5 WITH 200 UNIFORM LOAD NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 11209. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.90	0.0000E+00	0.	-6.7991E+09	114.39
5.90	6.8159E+01	147.	-5.6495E+09	180.17
4.90	3.1649E+02	360.	-4.4998E+09	245.95
3.90	8.1076E+02	639.	-3.3495E+09	

311.72	2.90	1.6168E+03	984.	-2.1978E+09
377.50	2.00	2.6631E+03	1350.	-1.1589E+09
436.84	1.90	2.8003E+03	1394.	-1.0432E+09
443.52	1.00	4.2429E+03	1821.	0.0000E+00
504.20	1.00	4.2429E+03	-9388.	0.0000E+00
504.20	0.90	3.3067E+03	-9337.	1.1624E+08
510.96	0.00	-4.8821E+03	-8851.	1.1630E+09
568.55	-0.10	-5.7643E+03	-8794.	1.2791E+09
573.31	-1.10	-1.4266E+04	-8204.	2.4322E+09
606.64	-2.10	-2.2162E+04	-7582.	3.5606E+09
638.34	-3.10	-2.9419E+04	-6928.	4.6509E+09
670.09	-4.10	-3.6007E+04	-6242.	5.6904E+09
701.83	-5.10	-4.1892E+04	-5524.	6.6678E+09
733.58	-6.10	-4.7044E+04	-4774.	7.5729E+09
765.32	-7.10	-5.1430E+04	-3993.	8.3969E+09
797.07	-8.10	-5.5020E+04	-3180.	9.1320E+09
828.81	-9.10	-5.7781E+04	-2336.	9.7722E+09
860.55	-10.00	-5.9530E+04	-1548.	1.0263E+10
889.51	-10.10	-5.9681E+04	-1459.	1.0313E+10
892.94	-11.00	-6.0628E+04	-641.	1.0711E+10
925.44	-11.10	-6.0687E+04	-549.	1.0750E+10
918.50	-12.00	-6.0817E+04	250.	1.1054E+10
855.99	-12.10	-6.0788E+04	335.	1.1083E+10
849.04	-13.10	-6.0040E+04	1150.	1.1311E+10
779.59	-14.10	-5.8512E+04	1894.	1.1435E+10
710.13	-15.10	-5.6274E+04	2570.	1.1458E+10
640.68	-16.10	-5.3396E+04	3176.	1.1384E+10
571.22	-17.10	-4.9946E+04	3712.	1.1218E+10
501.77	-18.10	-4.5994E+04	4179.	1.0966E+10
432.31	-19.10	-4.1610E+04	4577.	1.0634E+10
362.85				

	-20.10	-3.6864E+04	4905.	1.0230E+10	
293.40					
	-21.10	-3.1824E+04	5164.	9.7631E+09	
223.94					
	-22.10	-2.6560E+04	5353.	9.2409E+09	
154.49					
	-23.10	-2.1141E+04	5473.	8.6727E+09	
85.03					
	-24.10	-1.5637E+04	5523.	8.0681E+09	
15.58					
	-24.32	-1.4398E+04	5525.	7.9284E+09	
0.00					
	-25.10	-1.0118E+04	5504.	7.4364E+09	-
53.88					
	-26.10	-4.6530E+03	5415.	6.7873E+09	-
123.33					
	-27.10	6.8897E+02	5257.	6.1301E+09	-
192.79					
	-28.10	5.8381E+03	5030.	5.4740E+09	-
262.24					
	-29.10	1.0725E+04	4733.	4.8280E+09	-
331.70					
	-30.00	1.4842E+04	4406.	4.2622E+09	-
393.90					
	-30.10	1.5280E+04	4366.	4.2005E+09	-
400.65					
	-31.10	1.9435E+04	3933.	3.5993E+09	-
466.73					
	-32.10	2.3124E+04	3433.	3.0317E+09	-
532.66					
	-33.10	2.6279E+04	2867.	2.5039E+09	-
598.58					
	-34.10	2.8836E+04	2236.	2.0215E+09	-
664.51					
	-35.10	3.0729E+04	1538.	1.5887E+09	-
730.43					
	-36.10	3.1891E+04	775.	1.2090E+09	-
796.36					
	-37.10	3.2257E+04	-54.	8.8430E+08	-
862.29					
	-38.00	3.1851E+04	-857.	6.3962E+08	-
921.41					
	-38.10	3.1761E+04	-949.	6.1520E+08	-
927.88					
	-39.10	3.0337E+04	-1909.	4.0084E+08	-
991.55					
	-40.10	2.7921E+04	-2933.	2.3876E+08	-
1055.13					
	-41.10	2.4450E+04	-4019.	1.2477E+08	-
1118.64					
	-42.10	1.9861E+04	-5170.	5.2877E+07	-
1182.52					
	-43.10	1.4089E+04	-6385.	1.5130E+07	-
1248.29					
	-44.10	7.0678E+03	-7668.	1.5498E+06	-
1316.40					
	-45.10	0.0000E+00	-8822.	0.0000E+00	-
1375.50					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT

OF INERTIA IN IN^4 TO OBTAIN DEFLECTION
IN INCHES.

III.--WATER AND SOIL PRESSURES

ELEVATION (FT)	WATER PRESSURE (PSF)	<----------SOIL PRESSURES----------> <----LEFTSIDE-----> PASSIVE (PSF)	ACTIVE (PSF)	<---RIGHTSIDE----> ACTIVE (PSF)	PASSIVE (PSF)
6.90	0.	0.	0.	114.	350.
5.90	0.	0.	0.	180.	551.
4.90	0.	0.	0.	246.	752.
3.90	0.	0.	0.	312.	953.
2.90	0.	0.	0.	377.	1154.
2.00	0.	0.	0.	437.	1335.
1.90	0.	0.	0.	444.	1356.
1.00	0.	0.	0.	504.	1541.
0.90	0.	0.	0.	511.	1562.
0.00	0.	0.	0.	569.	1738.
-0.10	0.	0.	0.	573.	1752.
-1.10	0.	0.	0.	607.	1854.
-2.10	0.	0.	0.	638.	1951.
-3.10	0.	0.	0.	670.	2048.
-4.10	0.	0.	0.	702.	2145.
-5.10	0.	0.	0.	734.	2242.
-6.10	0.	0.	0.	765.	2339.
-7.10	0.	0.	0.	797.	2436.
-8.10	0.	0.	0.	829.	2533.
-9.10	0.	0.	0.	861.	2630.
-10.00	0.	0.	0.	890.	2719.
-10.10	0.	0.	0.	893.	2729.
-11.00	0.	0.	0.	925.	2829.
-11.10	0.	11.	4.	929.	2840.
-12.00	0.	106.	35.	962.	2940.
-12.10	0.	116.	39.	965.	2951.
-13.10	0.	222.	74.	1002.	3062.
-14.10	0.	328.	109.	1038.	3173.
-15.10	0.	434.	145.	1074.	3284.
-16.10	0.	539.	180.	1111.	3395.
-17.10	0.	645.	215.	1147.	3506.
-18.10	0.	751.	251.	1183.	3617.
-19.10	0.	857.	286.	1220.	3728.
-20.10	0.	963.	321.	1256.	3839.
-21.10	0.	1068.	357.	1292.	3950.
-22.10	0.	1174.	392.	1329.	4061.
-23.10	0.	1280.	427.	1365.	4172.
-24.10	0.	1386.	463.	1401.	4283.
-24.32	0.	1409.	471.	1409.	4308.
-25.10	0.	1491.	498.	1438.	4394.
-26.10	0.	1597.	533.	1474.	4505.
-27.10	0.	1703.	569.	1510.	4616.
-28.10	0.	1809.	604.	1547.	4727.
-29.10	0.	1915.	639.	1583.	4838.
-30.00	0.	2009.	671.	1615.	4938.
-30.10	0.	2020.	674.	1619.	4949.
-31.10	0.	2120.	708.	1654.	5055.
-32.10	0.	2221.	742.	1688.	5160.
-33.10	0.	2321.	775.	1723.	5266.
-34.10	0.	2422.	809.	1757.	5372.
-35.10	0.	2522.	842.	1792.	5478.
-36.10	0.	2623.	876.	1827.	5583.

-37.10	0.	2724.	910.	1861.	5689.
-38.00	0.	2814.	940.	1892.	5784.
-38.10	0.	2824.	943.	1896.	5794.
-39.10	0.	2921.	976.	1929.	5897.
-40.10	0.	3018.	1008.	1963.	5999.
-41.10	0.	3115.	1040.	1996.	6101.
-42.10	0.	3212.	1073.	2030.	6204.
-43.10	0.	3311.	1105.	2063.	6306.
-44.10	0.	3413.	1138.	2096.	6408.
-45.10	0.	3515.	1170.	2130.	6511.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:45:54

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* PRELIMINARY DESIGN DATA FOR *
*  FREE EARTH DESIGN IN SAND  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #3 & 4
'SOILS REACH 1 - S-CASE 1.5 WITH 200 UNIFORM LOAD NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.42
ANCHOR HEIGHT RATIO (BETA) = 0.14

SHEET PILE DATA:

SHEET PILE NAME	<SECTION PROPERTIES> (PER FOOT OF WALL) SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07
PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07
PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET

PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-3.62	1.0 (***)	1.68
PZ38	-3.38	1.0 (***)	1.30
PZ35	-3.49	1.0 (***)	1.34
PZ32	-3.28	1.0 (***)	1.06
PZ27	-3.20	1.0 (***)	0.84
PZ22	-2.86	1.0 (***)	0.50
PLZ25	-3.28	1.0 (***)	0.91
PLZ23	-3.24	1.0 (***)	0.84

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

DESIGN GROUP #3

Ground Surface EL 6.5

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-42.7	87587	12696
S Free Earth	norm	1.25	-34.4	56431	9826
S Free Earth	norm	1	-27.2	33849	72064
S Fixed Earth	norm	1.5	-53.7	75145	11851
S Fixed Earth	norm	1.25	-43.1	47744	9135
S Fixed Earth	norm	1	-33.9	27948	6663

For cost purposes, use for bulkhead # 2 AND 5

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

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'Port of Iberia Bulkhead Replacement
'Dynamic Industries #5
'Soils Reach 1 - 200 UNIFORM LOAD S-case 1.25 normal water
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   6.5    1
SURFACE RIGHTSIDE   2    0    6.5
                   200    6.5
SURFACE LEFTSIDE    4    0   -11
                   8.5   -12
                   51.5   -23
                   200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2    0
   118    118    23    0    0    0   -10    0
   126    126    23    0    0    0   -30    0
   123    123    23    0    0    0   -38    0
   121    121    23    0    0    0        0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30    0
   123    123    23    0    0    0   -38    0
   121    121    23    0    0    0        0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
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PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 16-MARCH-2004 TIME: 9:13:30

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*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.25 NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.25
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.25

III.--WALL DATA
ELEVATION AT TOP OF WALL = 6.50 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	6.50
200.00	6.50

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-11.00
8.50	-12.00
51.50	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- ACT.
FACTOR-> PASS.								
115.00	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF
DEF								
118.00	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF
DEF								
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
DEF								
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
DEF								

121.00	121.00	23.00	0.00	0.00	0.00			DEF
DEF								

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT.	MOIST	ANGLE OF INTERNAL	COH-	ANGLE OF WALL	ADH-	<--BOTTOM-->		<- <-
FACTOR-> WGHT.	WGHT.	FRICTION	ESION	FRICTION	ESION	ELEV.	SLOPE	ACT.
PASS. (PCF)	(PCF)	(DEG)	(PSF)	(DEG)	(PSF)	(FT)	(FT/FT)	
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
DEF								
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
DEF								
121.00	121.00	23.00	0.00	0.00	0.00			DEF
DEF								

VI.--WATER DATA
UNIT WEIGHT = 62.50 (PCF)
RIGHTSIDE ELEVATION = 0.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS

VII.A.--VERTICAL LINE LOADS
NONE

VII.B.--VERTICAL UNIFORM LOADS

LEFTSIDE (PSF)	RIGHTSIDE (PSF)
0.00	200.00

VII.C.--VERTICAL STRIP LOADS
NONE

VII.D.--VERTICAL RAMP LOADS
NONE

VII.E.--VERTICAL TRIANGULAR LOADS
NONE

VII.F.--VERTICAL VARIABLE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 16-MARCH-2004 TIME: 9:13:34

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*   SOIL PRESSURES FOR   *
*  ANCHORED WALL DESIGN  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.25 NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
6.5	0.0	0.0	0.0	102.7	102.7	389.6
5.5	0.0	0.0	0.0	161.7	161.7	613.6
4.5	0.0	0.0	0.0	220.8	220.8	837.6
3.5	0.0	0.0	0.0	279.8	279.8	1061.6
2.5	0.0	0.0	0.0	338.8	338.8	1285.6
2.0	0.0	0.0	0.0	368.5	368.5	1398.4
1.5	0.0	0.0	0.0	398.6	398.6	1512.5
1.0	0.0	0.0	0.0	429.0	429.0	1627.7
0.5	0.0	0.0	0.0	459.2	459.2	1742.4
0.0	0.0	0.0	0.0	485.3	485.3	1841.5
-0.5	0.0	0.0	0.0	503.6	503.6	1910.9
-1.5	0.0	0.0	0.0	532.3	532.3	2019.7
-2.5	0.0	0.0	0.0	560.7	560.7	2127.6
-3.5	0.0	0.0	0.0	589.2	589.2	2235.7
-4.5	0.0	0.0	0.0	617.7	617.7	2343.8

-5.5	0.0	0.0	0.0	646.2	646.2
2451.9					
-6.5	0.0	0.0	0.0	674.7	674.7
2560.0					
-7.5	0.0	0.0	0.0	703.2	703.2
2668.1					
-8.5	0.0	0.0	0.0	731.7	731.7
2776.2					
-9.5	0.0	0.0	0.0	760.2	760.2
2884.4					
-10.0	0.0	0.0	0.0	775.0	775.0
2940.4					
-10.5	0.0	0.0	0.0	790.7	790.7
3000.2					
-11.0	0.0	0.0	0.0	807.0	807.0
3062.0					
-11.5	0.0	53.1	15.0	770.2	823.3
3123.9					
-12.0	0.0	106.2	30.1	733.4	839.6
3185.8					
-12.5	0.0	159.4	45.1	696.6	855.9
3247.6					
-13.5	0.0	265.6	75.2	622.9	888.5
3371.3					
-14.5	0.0	371.9	105.2	549.3	921.1
3495.0					
-15.5	0.0	478.1	135.3	475.6	953.7
3618.7					
-16.5	0.0	584.5	165.4	401.8	986.3
3742.4					
-17.5	0.0	689.7	195.4	329.2	1018.9
3866.1					
-18.5	0.0	789.1	225.5	262.4	1051.5
3989.7					
-19.5	0.0	882.1	255.6	202.1	1084.1
4113.4					
-20.5	0.0	973.0	285.6	143.8	1116.7
4237.1					
-21.5	0.0	1064.1	315.7	85.2	1149.3
4360.8					
-22.5	0.0	1155.2	345.8	26.7	1181.9
4484.5					
-23.0	0.0	1196.8	359.3	0.0	1196.8
4540.9					
-23.5	0.0	1246.4	375.5	-31.9	1214.5
4608.2					
-24.5	0.0	1337.5	404.2	-90.4	1247.1
4731.9					
-25.5	0.0	1428.7	431.9	-149.0	1279.7
4855.6					
-26.5	0.0	1519.8	459.4	-207.5	1312.3
4979.3					
-27.5	0.0	1611.0	486.9	-266.1	1344.9
5103.0					
-28.5	0.0	1702.1	514.5	-324.6	1377.5
5226.7					
-29.5	0.0	1793.3	542.0	-383.1	1410.1
5350.3					
-30.0	0.0	1838.1	555.6	-411.9	1426.2
5411.4					
-30.5	0.0	1881.5	568.8	-439.5	1441.9

5471.1					
-31.5	0.0	1966.8	594.8	-493.8	1473.0
5589.0					
-32.5	0.0	2052.1	620.8	-548.0	1504.1
5706.8					
-33.5	0.0	2137.4	646.8	-602.3	1535.1
5824.6					
-34.5	0.0	2222.7	672.8	-656.5	1566.2
5942.5					
-35.5	0.0	2308.0	698.9	-710.8	1597.3
6060.3					
-36.5	0.0	2393.3	724.9	-765.0	1628.3
6178.2					
-37.5	0.0	2478.6	750.9	-819.3	1659.4
6296.0					
-38.0	0.0	2520.8	763.7	-846.0	1674.8
6354.4					
-38.5	0.0	2562.0	776.4	-872.1	1689.9
6411.9					
-39.5	0.0	2643.4	801.4	-923.5	1719.9
6525.9					
-40.5	0.0	2724.8	826.3	-974.8	1750.0
6639.8					
-41.5	0.0	2806.2	851.3	-1026.2	1780.0
6753.8					
-42.5	0.0	2887.6	876.3	-1077.6	1810.0
6867.7					
-43.5	0.0	2969.0	901.3	-1129.0	1840.1
6981.7					
-44.5	0.0	3050.4	926.3	-1180.3	1870.1
7095.6					
-45.5	0.0	3131.8	951.3	-1231.7	1900.1
7209.6					
-46.5	0.0	3213.3	976.2	-1283.1	1930.2
7323.5					
-47.5	0.0	3294.7	1001.2	-1334.5	1960.2
7437.5					
-48.5	0.0	3376.1	1026.2	-1385.8	1990.2
7551.4					
-49.5	0.0	3457.5	1051.2	-1437.2	2020.3
7665.4					
-50.5	0.0	3538.9	1076.2	-1488.6	2050.3
7779.3					
-51.5	0.0	3620.3	1101.2	-1540.0	2080.3
7893.3					
-52.5	0.0	3701.7	1126.1	-1591.3	2110.4
8007.2					
-53.5	0.0	3783.1	1151.1	-1642.7	2140.4
8121.2					
-54.5	0.0	3864.5	1176.1	-1694.1	2170.4
8235.1					
-55.5	0.0	3945.9	1201.1	-1745.5	2200.5
8349.1					
-56.5	0.0	4027.3	1226.1	-1796.8	2230.5
8463.0					
-57.5	0.0	4108.7	1251.0	-1848.2	2260.5
8577.0					
-58.5	0.0	4189.6	1276.0	-1899.0	2290.6
8690.9					
-59.5	0.0	4274.9	1301.0	-1954.3	2320.6
8804.9					

-60.5	0.0	4374.4	1326.0	-2023.7	2350.6
8918.9					
-61.5	0.0	4486.0	1351.0	-2105.4	2380.7
9032.8					
-62.5	0.0	4600.4	1376.0	-2189.7	2410.7
9146.8					
-63.5	0.0	4714.4	1400.9	-2273.6	2440.7
9260.7					
-64.5	0.0	4828.3	1425.9	-2357.5	2470.8
9374.7					

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 16-MARCH-2004 TIME: 9:13:41

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*  SUMMARY OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.25 NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-34.36	-43.06
PENETRATION (FT)	:	23.36	32.06
MAXIMUM BENDING MOMENT (LB-FT)	:	-5.6431E+04	-4.7744E+04
AT ELEVATION (FT)	:	-12.04	-11.14
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	1.0887E+10	8.1645E+09
AT ELEVATION (FT)	:	-15.50	-14.50

ANCHOR FORCE (LB) : 9.8255E+03
9.1349E+03

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 16-MARCH-2004 TIME: 9:13:43

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FREE EARTH METHOD   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.25 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 9825. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.50	0.0000E+00	0.	-5.9703E+09	102.68
5.50	6.1178E+01	132.	-4.8868E+09	161.71
4.50	2.8407E+02	323.	-3.8031E+09	220.75
3.50	7.2771E+02	574.	-2.7190E+09	279.79
2.50	1.4511E+03	883.	-1.6335E+09	338.84
2.00	1.9362E+03	1060.	-1.0899E+09	368.55
1.50	2.5135E+03	1252.	-5.4551E+08	398.64
1.00	3.1904E+03	1459.	0.0000E+00	428.99
1.00	3.1904E+03	-8367.	0.0000E+00	428.99
0.50	-9.3814E+02	-8145.	5.4654E+08	459.23
0.00	-4.9521E+03	-7909.	1.0927E+09	485.33
-0.50	-8.8450E+03	-7661.	1.6367E+09	503.64
-1.50	-1.6250E+04	-7143.	2.7116E+09	

532.30	-2.50	-2.3122E+04	-6597.	3.7586E+09	
560.74	-3.50	-2.9434E+04	-6022.	4.7656E+09	
589.23	-4.50	-3.5157E+04	-5419.	5.7219E+09	
617.72	-5.50	-4.0262E+04	-4787.	6.6175E+09	
646.22	-6.50	-4.4720E+04	-4126.	7.4437E+09	
674.71	-7.50	-4.8504E+04	-3437.	8.1926E+09	
703.20	-8.50	-5.1585E+04	-2720.	8.8579E+09	
731.69	-9.50	-5.3934E+04	-1974.	9.4341E+09	
760.20	-10.00	-5.4825E+04	-1590.	9.6875E+09	
774.97	-10.50	-5.5523E+04	-1199.	9.9172E+09	
790.73	-11.00	-5.6023E+04	-799.	1.0123E+10	
807.02	-11.50	-5.6323E+04	-405.	1.0304E+10	
770.21	-12.00	-5.6430E+04	-29.	1.0462E+10	
733.39	-12.50	-5.6355E+04	329.	1.0595E+10	
696.56	-13.50	-5.5690E+04	988.	1.0787E+10	
622.92	-14.50	-5.4403E+04	1574.	1.0884E+10	
549.27	-15.50	-5.2566E+04	2087.	1.0887E+10	
475.63	-16.50	-5.0253E+04	2526.	1.0799E+10	
401.78	-17.50	-4.7539E+04	2891.	1.0624E+10	
329.23	-18.50	-4.4494E+04	3187.	1.0367E+10	
262.39	-19.50	-4.1186E+04	3419.	1.0033E+10	
202.06	-20.50	-3.7676E+04	3592.	9.6283E+09	
143.78	-21.50	-3.4022E+04	3707.	9.1583E+09	
85.23	-22.50	-3.0282E+04	3763.	8.6295E+09	
26.68	-22.96	-2.8566E+04	3769.	8.3708E+09	
0.00	-23.50	-2.6516E+04	3760.	8.0484E+09	-
31.87	-24.50	-2.2782E+04	3699.	7.4215E+09	-
90.42	-25.50	-1.9138E+04	3579.	6.7552E+09	-
148.96	-26.50	-1.5643E+04	3401.	6.0558E+09	-
207.51	-27.50	-1.2356E+04	3164.	5.3294E+09	-
266.06					

324.61	-28.50	-9.3345E+03	2869.	4.5816E+09	-
383.14	-29.50	-6.6378E+03	2515.	3.8175E+09	-
411.87	-30.00	-5.4295E+03	2316.	3.4309E+09	-
439.54	-30.50	-4.3241E+03	2103.	3.0420E+09	-
493.80	-31.50	-2.4496E+03	1637.	2.2589E+09	-
548.04	-32.50	-1.0690E+03	1116.	1.4715E+09	-
602.29	-33.50	-2.3636E+02	541.	6.8223E+08	-
649.14	-34.36	0.0000E+00	0.	0.0000E+00	-

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.50	0.	0.	0.	103.	390.
5.50	0.	0.	0.	162.	614.
4.50	0.	0.	0.	221.	838.
3.50	0.	0.	0.	280.	1062.
2.50	0.	0.	0.	339.	1286.
2.00	0.	0.	0.	369.	1398.
1.50	0.	0.	0.	399.	1513.
1.00	0.	0.	0.	429.	1628.
0.50	0.	0.	0.	459.	1742.
0.00	0.	0.	0.	485.	1841.
-0.50	0.	0.	0.	504.	1911.
-1.50	0.	0.	0.	532.	2020.
-2.50	0.	0.	0.	561.	2128.
-3.50	0.	0.	0.	589.	2236.
-4.50	0.	0.	0.	618.	2344.
-5.50	0.	0.	0.	646.	2452.
-6.50	0.	0.	0.	675.	2560.
-7.50	0.	0.	0.	703.	2668.
-8.50	0.	0.	0.	732.	2776.
-9.50	0.	0.	0.	760.	2884.
-10.00	0.	0.	0.	775.	2940.
-10.50	0.	0.	0.	791.	3000.
-11.00	0.	0.	0.	807.	3062.
-11.50	0.	53.	15.	823.	3124.
-12.00	0.	106.	30.	840.	3186.
-12.50	0.	159.	45.	856.	3248.
-13.50	0.	266.	75.	889.	3371.
-14.50	0.	372.	105.	921.	3495.
-15.50	0.	478.	135.	954.	3619.
-16.50	0.	585.	165.	986.	3742.
-17.50	0.	690.	195.	1019.	3866.
-18.50	0.	789.	225.	1052.	3990.
-19.50	0.	882.	256.	1084.	4113.

-20.50	0.	973.	286.	1117.	4237.
-21.50	0.	1064.	316.	1149.	4361.
-22.50	0.	1155.	346.	1182.	4485.
-22.96	0.	1197.	359.	1197.	4541.
-23.50	0.	1246.	376.	1215.	4608.
-24.50	0.	1338.	404.	1247.	4732.
-25.50	0.	1429.	432.	1280.	4856.
-26.50	0.	1520.	459.	1312.	4979.
-27.50	0.	1611.	487.	1345.	5103.
-28.50	0.	1702.	514.	1378.	5227.
-29.50	0.	1793.	542.	1410.	5350.
-30.00	0.	1838.	556.	1426.	5411.
-30.50	0.	1881.	569.	1442.	5471.
-31.50	0.	1967.	595.	1473.	5589.
-32.50	0.	2052.	621.	1504.	5707.
-33.50	0.	2137.	647.	1535.	5825.
-34.50	0.	2223.	673.	1566.	5942.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 16-MARCH-2004 TIME: 9:13:44

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FIXED EARTH METHOD  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.25 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 9135. (LB))

ELEVATION (FT)	BENDING MOMENT. (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.50	0.0000E+00	0.	-4.7425E+09	102.68
5.50	6.1178E+01	132.	-3.8822E+09	161.71
4.50	2.8407E+02	323.	-3.0218E+09	220.75
3.50	7.2771E+02	574.	-2.1609E+09	279.79
2.50	1.4511E+03	883.	-1.2987E+09	338.84
2.00	1.9362E+03	1060.	-8.6671E+08	368.55
1.50	2.5135E+03	1252.	-4.3390E+08	398.64
1.00	3.1904E+03	1459.	0.0000E+00	428.99

	1.00	3.1904E+03	-7676.	0.0000E+00
428.99				
	0.50	-5.9287E+02	-7454.	4.3495E+08
459.23				
	0.00	-4.2615E+03	-7218.	8.6965E+08
485.33				
	-0.50	-7.8092E+03	-6971.	1.3025E+09
503.64				
	-1.50	-1.4523E+04	-6453.	2.1567E+09
532.30				
	-2.50	-2.0706E+04	-5906.	2.9858E+09
560.74				
	-3.50	-2.6327E+04	-5331.	3.7792E+09
589.23				
	-4.50	-3.1359E+04	-4728.	4.5272E+09
617.72				
	-5.50	-3.5773E+04	-4096.	5.2211E+09
646.22				
	-6.50	-3.9541E+04	-3436.	5.8533E+09
674.71				
	-7.50	-4.2635E+04	-2747.	6.4173E+09
703.20				
	-8.50	-4.5025E+04	-2029.	6.9077E+09
731.69				
	-9.50	-4.6684E+04	-1283.	7.3203E+09
760.20				
	-10.00	-4.7230E+04	-899.	7.4966E+09
774.97				
	-10.50	-4.7582E+04	-508.	7.6525E+09
790.73				
	-11.00	-4.7736E+04	-109.	7.7878E+09
807.02				
	-11.50	-4.7691E+04	286.	7.9025E+09
770.21				
	-12.00	-4.7454E+04	662.	7.9966E+09
733.39				
	-12.50	-4.7033E+04	1019.	8.0702E+09
696.56				
	-13.50	-4.5677E+04	1679.	8.1568E+09
622.92				
	-14.50	-4.3699E+04	2265.	8.1645E+09
549.27				
	-15.50	-4.1172E+04	2777.	8.0968E+09
475.63				
	-16.50	-3.8169E+04	3216.	7.9580E+09
401.78				
	-17.50	-3.4764E+04	3582.	7.7533E+09
329.23				
	-18.50	-3.1029E+04	3877.	7.4885E+09
262.39				
	-19.50	-2.7030E+04	4110.	7.1702E+09
202.06				
	-20.50	-2.2829E+04	4283.	6.8052E+09
143.78				
	-21.50	-1.8485E+04	4397.	6.4008E+09
85.23				
	-22.50	-1.4055E+04	4453.	5.9645E+09
26.68				
	-22.96	-1.2024E+04	4459.	5.7571E+09
0.00				
	-23.50	-9.5981E+03	4450.	5.5039E+09

31.87	-24.50	-5.1733E+03	4389.	5.0267E+09	-
90.42	-25.50	-8.3898E+02	4270.	4.5405E+09	-
148.96	-26.50	3.3464E+03	4091.	4.0528E+09	-
207.51	-27.50	7.3243E+03	3855.	3.5710E+09	-
266.06	-28.50	1.1036E+04	3559.	3.1017E+09	-
324.61	-29.50	1.4423E+04	3205.	2.6514E+09	-
383.14	-30.00	1.5977E+04	3007.	2.4353E+09	-
411.87	-30.50	1.7428E+04	2794.	2.2261E+09	-
439.54	-31.50	1.9993E+04	2327.	1.8307E+09	-
493.80	-32.50	2.2064E+04	1806.	1.4699E+09	-
548.04	-33.50	2.3587E+04	1231.	1.1471E+09	-
602.29	-34.50	2.4508E+04	602.	8.6497E+08	-
656.53	-35.50	2.4772E+04	-82.	6.2510E+08	-
710.78	-36.50	2.4326E+04	-820.	4.2793E+08	-
765.03	-37.50	2.3114E+04	-1612.	2.7268E+08	-
819.26	-38.00	2.2205E+04	-2028.	2.1018E+08	-
846.01	-38.50	2.1084E+04	-2458.	1.5726E+08	-
872.07	-39.50	1.8181E+04	-3356.	7.8145E+07	-
923.46	-40.50	1.4355E+04	-4305.	3.0314E+07	-
974.83	-41.50	9.5543E+03	-5305.	7.1478E+06	-
1026.20	-42.50	3.7273E+03	-6357.	3.4381E+05	-
1077.58	-43.50	0.0000E+00	-6968.	0.0000E+00	-
1106.33					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.50	0.	0.	0.	103.	390.
5.50	0.	0.	0.	162.	614.
4.50	0.	0.	0.	221.	838.
3.50	0.	0.	0.	280.	1062.

2.50	0.	0.	0.	339.	1286.
2.00	0.	0.	0.	369.	1398.
1.50	0.	0.	0.	399.	1513.
1.00	0.	0.	0.	429.	1628.
0.50	0.	0.	0.	459.	1742.
0.00	0.	0.	0.	485.	1841.
-0.50	0.	0.	0.	504.	1911.
-1.50	0.	0.	0.	532.	2020.
-2.50	0.	0.	0.	561.	2128.
-3.50	0.	0.	0.	589.	2236.
-4.50	0.	0.	0.	618.	2344.
-5.50	0.	0.	0.	646.	2452.
-6.50	0.	0.	0.	675.	2560.
-7.50	0.	0.	0.	703.	2668.
-8.50	0.	0.	0.	732.	2776.
-9.50	0.	0.	0.	760.	2884.
-10.00	0.	0.	0.	775.	2940.
-10.50	0.	0.	0.	791.	3000.
-11.00	0.	0.	0.	807.	3062.
-11.50	0.	53.	15.	823.	3124.
-12.00	0.	106.	30.	840.	3186.
-12.50	0.	159.	45.	856.	3248.
-13.50	0.	266.	75.	889.	3371.
-14.50	0.	372.	105.	921.	3495.
-15.50	0.	478.	135.	954.	3619.
-16.50	0.	585.	165.	986.	3742.
-17.50	0.	690.	195.	1019.	3866.
-18.50	0.	789.	225.	1052.	3990.
-19.50	0.	882.	256.	1084.	4113.
-20.50	0.	973.	286.	1117.	4237.
-21.50	0.	1064.	316.	1149.	4361.
-22.50	0.	1155.	346.	1182.	4485.
-22.96	0.	1197.	359.	1197.	4541.
-23.50	0.	1246.	376.	1215.	4608.
-24.50	0.	1338.	404.	1247.	4732.
-25.50	0.	1429.	432.	1280.	4856.
-26.50	0.	1520.	459.	1312.	4979.
-27.50	0.	1611.	487.	1345.	5103.
-28.50	0.	1702.	514.	1378.	5227.
-29.50	0.	1793.	542.	1410.	5350.
-30.00	0.	1838.	556.	1426.	5411.
-30.50	0.	1881.	569.	1442.	5471.
-31.50	0.	1967.	595.	1473.	5589.
-32.50	0.	2052.	621.	1504.	5707.
-33.50	0.	2137.	647.	1535.	5825.
-34.50	0.	2223.	673.	1566.	5942.
-35.50	0.	2308.	699.	1597.	6060.
-36.50	0.	2393.	725.	1628.	6178.
-37.50	0.	2479.	751.	1659.	6296.
-38.00	0.	2521.	764.	1675.	6354.
-38.50	0.	2562.	776.	1690.	6412.
-39.50	0.	2643.	801.	1720.	6526.
-40.50	0.	2725.	826.	1750.	6640.
-41.50	0.	2806.	851.	1780.	6754.
-42.50	0.	2888.	876.	1810.	6868.
-43.50	0.	2969.	901.	1840.	6982.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 16-MARCH-2004 TIME: 9:13:47

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*******************************
* PRELIMINARY DESIGN DATA FOR *
*  FREE EARTH DESIGN IN SAND  *
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I.--HEADING

'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.25 NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.43
ANCHOR HEIGHT RATIO (BETA) = 0.13

SHEET PILE DATA:

SHEET PILE NAME	<SECTION PROPERTIES> (PER FOOT OF WALL) SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07
PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07
PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-3.71	1.0 (***)	2.15
PZ38	-3.47	1.0 (***)	1.66
PZ35	-3.57	1.0 (***)	1.72
PZ32	-3.36	1.0 (***)	1.36
PZ27	-3.28	1.0 (***)	1.07
PZ22	-2.94	1.0 (***)	0.64
PLZ25	-3.37	1.0 (***)	1.16
PLZ23	-3.33	1.0 (***)	1.07

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

```
'Port of Iberia Bulkhead Replacement
'Dynamic Industries #5
'Soils Reach 1 - 200 UNIFORM LOAD S-case 1.5 normal water
CONTROL  ANCHORED  DESIGN  1.5  1.5
WALL   6.5    1
SURFACE RIGHTSIDE   2    0    6.5
                  200    6.5
SURFACE LEFTSIDE   4    0   -11
                  8.5   -12
                  51.5   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2    0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
WATER ELEVATIONS   62.5    0   0
V U 200
FINISHED
```

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 15-MARCH-2004 TIME: 9:56:17

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*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.5 NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.50
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.50

III.--WALL DATA
ELEVATION AT TOP OF WALL = 6.50 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	6.50
200.00	6.50

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-11.00
8.50	-12.00
51.50	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. FACTOR-> WGHT. PASS. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- <- ACT.
115.00 DEF	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF
118.00 DEF	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF
126.00 DEF	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
123.00 DEF	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF

121.00	121.00	23.00	0.00	0.00	0.00			DEF
DEF								

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. FACTOR-> WGHT. PASS. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- <- ACT.
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
DEF								
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
DEF								
121.00	121.00	23.00	0.00	0.00	0.00			DEF
DEF								

VI.--WATER DATA
UNIT WEIGHT = 62.50 (PCF)
RIGHTSIDE ELEVATION = 0.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS

VII.A.--VERTICAL LINE LOADS
NONE

VII.B.--VERTICAL UNIFORM LOADS

LEFTSIDE (PSF)	RIGHTSIDE (PSF)
0.00	200.00

VII.C.--VERTICAL STRIP LOADS
NONE

VII.D.--VERTICAL RAMP LOADS
NONE

VII.E.--VERTICAL TRIANGULAR LOADS
NONE

VII.F.--VERTICAL VARIABLE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 15-MARCH-2004 TIME: 9:56:22

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*   SOIL PRESSURES FOR  *
*  ANCHORED WALL DESIGN *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.5 NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
6.5	0.0	0.0	0.0	114.4	114.4	349.7
5.5	0.0	0.0	0.0	180.2	180.2	550.7
4.5	0.0	0.0	0.0	245.9	245.9	751.8
3.5	0.0	0.0	0.0	311.7	311.7	952.8
2.5	0.0	0.0	0.0	377.5	377.5	1153.9
2.0	0.0	0.0	0.0	410.6	410.6	1255.1
1.5	0.0	0.0	0.0	444.1	444.1	1357.6
1.0	0.0	0.0	0.0	477.9	477.9	1460.9
0.5	0.0	0.0	0.0	511.6	511.6	1563.9
0.0	0.0	0.0	0.0	540.7	540.7	1652.8
-0.5	0.0	0.0	0.0	561.1	561.1	1715.2
-1.5	0.0	0.0	0.0	593.0	593.0	1812.8
-2.5	0.0	0.0	0.0	624.7	624.7	1909.6
-3.5	0.0	0.0	0.0	656.5	656.5	2006.7
-4.5	0.0	0.0	0.0	688.2	688.2	2103.7

-5.5	0.0	0.0	0.0	720.0	720.0
2200.7					
-6.5	0.0	0.0	0.0	751.7	751.7
2297.8					
-7.5	0.0	0.0	0.0	783.5	783.5
2394.8					
-8.5	0.0	0.0	0.0	815.2	815.2
2491.8					
-9.5	0.0	0.0	0.0	847.0	847.0
2588.9					
-10.0	0.0	0.0	0.0	863.4	863.4
2639.2					
-10.5	0.0	0.0	0.0	881.0	881.0
2692.9					
-11.0	0.0	0.0	0.0	899.1	899.1
2748.4					
-11.5	0.0	48.0	16.7	869.3	917.3
2803.9					
-12.0	0.0	96.1	33.4	839.4	935.5
2859.4					
-12.5	0.0	144.1	50.0	809.5	953.6
2914.9					
-13.5	0.0	240.2	83.4	749.7	989.9
3026.0					
-14.5	0.0	336.3	116.7	690.0	1026.3
3137.0					
-15.5	0.0	432.3	150.1	630.2	1062.6
3248.0					
-16.5	0.0	528.5	183.4	570.4	1098.9
3359.0					
-17.5	0.0	624.4	216.8	510.8	1135.2
3470.0					
-18.5	0.0	716.7	250.1	454.8	1171.5
3581.1					
-19.5	0.0	802.7	283.5	405.2	1207.9
3692.1					
-20.5	0.0	885.6	316.8	358.6	1244.2
3803.1					
-21.5	0.0	968.5	350.2	312.0	1280.5
3914.1					
-22.5	0.0	1051.5	383.5	265.4	1316.8
4025.1					
-23.5	0.0	1134.4	415.7	218.7	1353.1
4136.2					
-24.5	0.0	1217.4	446.6	172.1	1389.5
4247.2					
-25.5	0.0	1300.3	477.0	125.4	1425.8
4358.2					
-26.5	0.0	1383.3	507.4	78.8	1462.1
4469.2					
-27.5	0.0	1466.3	537.9	32.2	1498.4
4580.2					
-28.2	0.0	1523.5	558.9	0.0	1523.5
4656.8					
-28.5	0.0	1549.2	568.3	-14.5	1534.7
4691.3					
-29.5	0.0	1632.2	598.7	-61.1	1571.0
4802.3					
-30.0	0.0	1673.0	613.7	-84.0	1589.0
4857.1					
-30.5	0.0	1712.5	628.3	-106.0	1606.5

4910.7					
-31.5	0.0	1790.2	657.0	-149.1	1641.1
5016.5					
-32.5	0.0	1867.9	685.7	-192.2	1675.7
5122.2					
-33.5	0.0	1945.7	714.5	-235.3	1710.3
5228.0					
-34.5	0.0	2023.4	743.2	-278.4	1744.9
5333.8					
-35.5	0.0	2101.1	771.9	-321.5	1779.5
5439.6					
-36.5	0.0	2178.8	800.6	-364.7	1814.1
5545.3					
-37.5	0.0	2256.5	829.3	-407.8	1848.7
5651.1					
-38.0	0.0	2294.9	843.5	-429.0	1865.9
5703.5					
-38.5	0.0	2332.5	857.5	-449.7	1882.8
5755.1					
-39.5	0.0	2406.7	885.0	-490.5	1916.2
5857.4					
-40.5	0.0	2480.9	912.6	-531.2	1949.7
5959.7					
-41.5	0.0	2555.1	940.2	-572.0	1983.2
6062.0					
-42.5	0.0	2629.3	967.8	-612.7	2016.6
6164.2					
-43.5	0.0	2703.6	995.3	-653.5	2050.1
6266.5					
-44.5	0.0	2777.8	1022.9	-694.2	2083.5
6368.8					
-45.5	0.0	2852.0	1050.5	-735.0	2117.0
6471.1					
-46.5	0.0	2926.2	1078.1	-775.8	2150.5
6573.4					
-47.5	0.0	3000.4	1105.6	-816.5	2183.9
6675.6					
-48.5	0.0	3074.7	1133.2	-857.3	2217.4
6777.9					
-49.5	0.0	3148.9	1160.8	-898.0	2250.8
6880.2					
-50.5	0.0	3223.1	1188.3	-938.8	2284.3
6982.5					
-51.5	0.0	3297.3	1215.9	-979.5	2317.8
7084.8					
-52.5	0.0	3371.5	1243.5	-1020.3	2351.2
7187.0					
-53.5	0.0	3445.7	1271.1	-1061.1	2384.7
7289.3					
-54.5	0.0	3520.0	1298.6	-1101.8	2418.1
7391.6					
-55.5	0.0	3594.2	1326.2	-1142.6	2451.6
7493.9					
-56.5	0.0	3668.4	1353.8	-1183.3	2485.1
7596.1					
-57.5	0.0	3742.6	1381.3	-1224.1	2518.5
7698.4					
-58.5	0.0	3816.8	1408.9	-1264.8	2552.0
7800.7					
-59.5	0.0	3891.0	1436.5	-1305.6	2585.4
7903.0					

-60.5	0.0	3964.8	1464.1	-1345.9	2618.9
8005.3					
-61.5	0.0	4042.0	1491.6	-1389.6	2652.4
8107.5					
-62.5	0.0	4131.1	1519.2	-1445.2	2685.8
8209.8					
-63.5	0.0	4231.0	1546.8	-1511.8	2719.3
8312.1					
-64.5	0.0	4333.7	1574.4	-1581.0	2752.7
8414.4					

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 15-MARCH-2004 TIME: 9:56:26

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****************************
*  SUMMARY OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.5 NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-42.73	-53.68
PENETRATION (FT)	:	31.73	42.68
MAXIMUM BENDING MOMENT (LB-FT)	:	-8.7587E+04	-7.5145E+04
AT ELEVATION (FT)	:	-14.30	-13.15
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	2.5690E+10	1.9448E+10
AT ELEVATION (FT)	:	-18.50	-17.50

ANCHOR FORCE (LB) : 1.2696E+04
1.1851E+04

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 15-MARCH-2004 TIME: 9:56:27

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FREE EARTH METHOD   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.5 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 12696. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
6.50	0.0000E+00	0.	-1.1692E+10	114.39
5.50	6.8159E+01	147.	-9.5681E+09	180.17
4.50	3.1649E+02	360.	-7.4444E+09	245.95
3.50	8.1076E+02	639.	-5.3202E+09	311.72
2.50	1.6168E+03	984.	-3.1945E+09	377.50
2.00	2.1572E+03	1181.	-2.1307E+09	410.61
1.50	2.8004E+03	1394.	-1.0659E+09	444.13
1.00	3.5545E+03	1625.	0.0000E+00	477.95
1.00	3.5545E+03	-11071.	0.0000E+00	477.95
0.50	-1.9201E+03	-10824.	1.0670E+09	511.64
0.00	-7.2669E+03	-10561.	2.1332E+09	540.72
-0.50	-1.2479E+04	-10286.	3.1963E+09	561.11
-1.50	-2.2479E+04	-9708.	5.3041E+09	

593.04				
	-2.50	-3.1885E+04	-9100.	7.3731E+09
624.73				
	-3.50	-4.0667E+04	-8459.	9.3872E+09
656.48				
	-4.50	-4.8793E+04	-7787.	1.1331E+10
688.22				
	-5.50	-5.6230E+04	-7083.	1.3191E+10
719.96				
	-6.50	-6.2947E+04	-6347.	1.4953E+10
751.71				
	-7.50	-6.8913E+04	-5579.	1.6607E+10
783.45				
	-8.50	-7.4095E+04	-4780.	1.8142E+10
815.19				
	-9.50	-7.8462E+04	-3949.	1.9549E+10
846.96				
	-10.00	-8.0329E+04	-3521.	2.0202E+10
863.41				
	-10.50	-8.1981E+04	-3085.	2.0821E+10
880.97				
	-11.00	-8.3413E+04	-2640.	2.1404E+10
899.12				
	-11.50	-8.4622E+04	-2198.	2.1951E+10
869.26				
	-12.00	-8.5613E+04	-1771.	2.2461E+10
839.38				
	-12.50	-8.6395E+04	-1359.	2.2935E+10
809.50				
	-13.50	-8.7359E+04	-579.	2.3769E+10
749.75				
	-14.50	-8.7573E+04	141.	2.4453E+10
689.99				
	-15.50	-8.7097E+04	801.	2.4986E+10
630.24				
	-16.50	-8.5991E+04	1401.	2.5368E+10
570.41				
	-17.50	-8.4314E+04	1942.	2.5602E+10
510.82				
	-18.50	-8.2126E+04	2425.	2.5690E+10
454.84				
	-19.50	-7.9482E+04	2855.	2.5636E+10
405.19				
	-20.50	-7.6432E+04	3237.	2.5445E+10
358.59				
	-21.50	-7.3024E+04	3572.	2.5122E+10
311.99				
	-22.50	-6.9304E+04	3861.	2.4673E+10
265.35				
	-23.50	-6.5318E+04	4103.	2.4104E+10
218.71				
	-24.50	-6.1114E+04	4298.	2.3423E+10
172.07				
	-25.50	-5.6737E+04	4447.	2.2635E+10
125.43				
	-26.50	-5.2235E+04	4549.	2.1750E+10
78.80				
	-27.50	-4.7655E+04	4605.	2.0774E+10
32.16				
	-28.19	-4.4475E+04	4616.	2.0053E+10
0.00				

	-28.50	-4.3042E+04	4613.	1.9716E+10	-
14.49					
	-29.50	-3.8443E+04	4576.	1.8584E+10	-
61.11					
	-30.00	-3.6164E+04	4539.	1.7993E+10	-
83.98					
	-30.50	-3.3906E+04	4492.	1.7385E+10	-
105.99					
	-31.50	-2.9475E+04	4364.	1.6128E+10	-
149.11					
	-32.50	-2.5192E+04	4194.	1.4820E+10	-
192.22					
	-33.50	-2.1102E+04	3980.	1.3468E+10	-
235.33					
	-34.50	-1.7247E+04	3723.	1.2080E+10	-
278.44					
	-35.50	-1.3670E+04	3423.	1.0661E+10	-
321.55					
	-36.50	-1.0415E+04	3080.	9.2195E+09	-
364.66					
	-37.50	-7.5251E+03	2694.	7.7596E+09	-
407.76					
	-38.00	-6.2301E+03	2484.	7.0244E+09	-
429.01					
	-38.50	-5.0424E+03	2265.	6.2866E+09	-
449.69					
	-39.50	-3.0093E+03	1795.	4.8049E+09	-
490.46					
	-40.50	-1.4667E+03	1284.	3.3178E+09	-
531.22					
	-41.50	-4.5531E+02	732.	1.8282E+09	-
571.97					
	-42.50	-1.5882E+01	140.	3.3769E+08	-
612.73					
	-42.73	0.0000E+00	0.	0.0000E+00	-
621.96					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.50	0.	0.	0.	114.	350.
5.50	0.	0.	0.	180.	551.
4.50	0.	0.	0.	246.	752.
3.50	0.	0.	0.	312.	953.
2.50	0.	0.	0.	378.	1154.
2.00	0.	0.	0.	411.	1255.
1.50	0.	0.	0.	444.	1358.
1.00	0.	0.	0.	478.	1461.
0.50	0.	0.	0.	512.	1564.
0.00	0.	0.	0.	541.	1653.
-0.50	0.	0.	0.	561.	1715.
-1.50	0.	0.	0.	593.	1813.
-2.50	0.	0.	0.	625.	1910.

-3.50	0.	0.	0.	656.	2007.
-4.50	0.	0.	0.	688.	2104.
-5.50	0.	0.	0.	720.	2201.
-6.50	0.	0.	0.	752.	2298.
-7.50	0.	0.	0.	783.	2395.
-8.50	0.	0.	0.	815.	2492.
-9.50	0.	0.	0.	847.	2589.
-10.00	0.	0.	0.	863.	2639.
-10.50	0.	0.	0.	881.	2693.
-11.00	0.	0.	0.	899.	2748.
-11.50	0.	48.	17.	917.	2804.
-12.00	0.	96.	33.	935.	2859.
-12.50	0.	144.	50.	954.	2915.
-13.50	0.	240.	83.	990.	3026.
-14.50	0.	336.	117.	1026.	3137.
-15.50	0.	432.	150.	1063.	3248.
-16.50	0.	528.	183.	1099.	3359.
-17.50	0.	624.	217.	1135.	3470.
-18.50	0.	717.	250.	1172.	3581.
-19.50	0.	803.	283.	1208.	3692.
-20.50	0.	886.	317.	1244.	3803.
-21.50	0.	969.	350.	1280.	3914.
-22.50	0.	1051.	383.	1317.	4025.
-23.50	0.	1134.	416.	1353.	4136.
-24.50	0.	1217.	447.	1389.	4247.
-25.50	0.	1300.	477.	1426.	4358.
-26.50	0.	1383.	507.	1462.	4469.
-27.50	0.	1466.	538.	1498.	4580.
-28.19	0.	1523.	559.	1523.	4657.
-28.50	0.	1549.	568.	1535.	4691.
-29.50	0.	1632.	599.	1571.	4802.
-30.00	0.	1673.	614.	1589.	4857.
-30.50	0.	1712.	628.	1607.	4911.
-31.50	0.	1790.	657.	1641.	5016.
-32.50	0.	1868.	686.	1676.	5122.
-33.50	0.	1946.	714.	1710.	5228.
-34.50	0.	2023.	743.	1745.	5334.
-35.50	0.	2101.	772.	1780.	5440.
-36.50	0.	2179.	801.	1814.	5545.
-37.50	0.	2256.	829.	1849.	5651.
-38.00	0.	2295.	844.	1866.	5704.
-38.50	0.	2332.	857.	1883.	5755.
-39.50	0.	2407.	885.	1916.	5857.
-40.50	0.	2481.	913.	1950.	5960.
-41.50	0.	2555.	940.	1983.	6062.
-42.50	0.	2629.	968.	2017.	6164.
-43.50	0.	2704.	995.	2050.	6267.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 15-MARCH-2004 TIME: 9:56:30

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****************************
* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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* BY FIXED EARTH METHOD *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.5 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 11851. (LB))

PRESSURE	ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET (PSF)
	6.50	0.0000E+00	0.	-9.4035E+09	
114.39					
	5.50	6.8159E+01	147.	-7.6960E+09	
180.17					
	4.50	3.1649E+02	360.	-5.9884E+09	
245.95					
	3.50	8.1076E+02	639.	-4.2801E+09	
311.72					
	2.50	1.6168E+03	984.	-2.5705E+09	
377.50					
	2.00	2.1572E+03	1181.	-1.7147E+09	
410.61					
	1.50	2.8004E+03	1394.	-8.5794E+08	
444.13					
	1.00	3.5545E+03	1625.	0.0000E+00	
477.95					
	1.00	3.5545E+03	-10226.	0.0000E+00	
477.95					
	0.50	-1.4973E+03	-9979.	8.5906E+08	
511.64					
	0.00	-6.4214E+03	-9715.	1.7175E+09	
540.72					
	-0.50	-1.1211E+04	-9440.	2.5731E+09	
561.11					
	-1.50	-2.0365E+04	-8863.	4.2679E+09	
593.04					
	-2.50	-2.8926E+04	-8254.	5.9275E+09	
624.73					
	-3.50	-3.6862E+04	-7613.	7.5373E+09	
656.48					
	-4.50	-4.4142E+04	-6941.	9.0835E+09	
688.22					
	-5.50	-5.0734E+04	-6237.	1.0553E+10	
719.96					
	-6.50	-5.6606E+04	-5501.	1.1936E+10	
751.71					
	-7.50	-6.1726E+04	-4734.	1.3221E+10	
783.45					
	-8.50	-6.6062E+04	-3934.	1.4399E+10	
815.19					
	-9.50	-6.9584E+04	-3103.	1.5463E+10	
846.96					
	-10.00	-7.1029E+04	-2676.	1.5950E+10	
863.41					
	-10.50	-7.2258E+04	-2239.	1.6407E+10	
880.97					
	-11.00	-7.3267E+04	-1794.	1.6832E+10	

899.12	-11.50	-7.4053E+04	-1352.	1.7226E+10	
869.26	-12.00	-7.4621E+04	-925.	1.7588E+10	
839.38	-12.50	-7.4980E+04	-513.	1.7918E+10	
809.50	-13.50	-7.5099E+04	267.	1.8480E+10	
749.75	-14.50	-7.4467E+04	987.	1.8912E+10	
689.99	-15.50	-7.3145E+04	1647.	1.9216E+10	
630.24	-16.50	-7.1194E+04	2247.	1.9393E+10	
570.41	-17.50	-6.8671E+04	2788.	1.9448E+10	
510.82	-18.50	-6.5638E+04	3270.	1.9384E+10	
454.84	-19.50	-6.2148E+04	3700.	1.9206E+10	
405.19	-20.50	-5.8253E+04	4082.	1.8921E+10	
358.59	-21.50	-5.3999E+04	4418.	1.8536E+10	
311.99	-22.50	-4.9433E+04	4706.	1.8057E+10	
265.35	-23.50	-4.4602E+04	4948.	1.7493E+10	
218.71	-24.50	-3.9552E+04	5144.	1.6852E+10	
172.07	-25.50	-3.4330E+04	5292.	1.6143E+10	
125.43	-26.50	-2.8983E+04	5395.	1.5374E+10	
78.80	-27.50	-2.3557E+04	5450.	1.4555E+10	
32.16	-28.19	-1.9795E+04	5461.	1.3967E+10	
0.00	-28.50	-1.8098E+04	5459.	1.3696E+10	-
14.49	-29.50	-1.2655E+04	5421.	1.2805E+10	-
61.11	-30.00	-9.9527E+03	5385.	1.2351E+10	-
83.98	-30.50	-7.2717E+03	5337.	1.1892E+10	-
105.99	-31.50	-1.9945E+03	5210.	1.0967E+10	-
149.11	-32.50	3.1335E+03	5039.	1.0039E+10	-
192.22	-33.50	8.0693E+03	4825.	9.1152E+09	-
235.33	-34.50	1.2770E+04	4568.	8.2059E+09	-
278.44	-35.50	1.7192E+04	4268.	7.3185E+09	-
321.55	-36.50	2.1292E+04	3925.	6.4608E+09	-
364.66	-37.50	2.5028E+04	3539.	5.6399E+09	-
407.76					

429.01	-38.00	2.6746E+04	3330.	5.2452E+09	-
449.69	-38.50	2.8356E+04	3110.	4.8621E+09	-
490.46	-39.50	3.1235E+04	2640.	4.1333E+09	-
531.22	-40.50	3.3623E+04	2129.	3.4583E+09	-
571.97	-41.50	3.5480E+04	1578.	2.8414E+09	-
612.73	-42.50	3.6765E+04	985.	2.2858E+09	-
653.49	-43.50	3.7437E+04	352.	1.7935E+09	-
694.25	-44.50	3.7456E+04	-322.	1.3659E+09	-
735.00	-45.50	3.6780E+04	-1036.	1.0029E+09	-
775.76	-46.50	3.5370E+04	-1792.	7.0332E+08	-
816.52	-47.50	3.3184E+04	-2588.	4.6477E+08	-
857.28	-48.50	3.0181E+04	-3425.	2.8344E+08	-
898.03	-49.50	2.6321E+04	-4302.	1.5414E+08	-
938.79	-50.50	2.1563E+04	-5221.	7.0196E+07	-
979.55	-51.50	1.5866E+04	-6180.	2.3374E+07	-
1020.30	-52.50	9.1895E+03	-7180.	3.8278E+06	-
1061.06	-53.50	1.4928E+03	-8220.	1.3932E+04	-
1068.38	-54.50	0.0000E+00	-8412.	0.0000E+00	-

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
6.50	0.	0.	0.	114.	350.
5.50	0.	0.	0.	180.	551.
4.50	0.	0.	0.	246.	752.
3.50	0.	0.	0.	312.	953.
2.50	0.	0.	0.	378.	1154.
2.00	0.	0.	0.	411.	1255.
1.50	0.	0.	0.	444.	1358.
1.00	0.	0.	0.	478.	1461.
0.50	0.	0.	0.	512.	1564.
0.00	0.	0.	0.	541.	1653.
-0.50	0.	0.	0.	561.	1715.
-1.50	0.	0.	0.	593.	1813.
-2.50	0.	0.	0.	625.	1910.

-3.50	0.	0.	0.	656.	2007.
-4.50	0.	0.	0.	688.	2104.
-5.50	0.	0.	0.	720.	2201.
-6.50	0.	0.	0.	752.	2298.
-7.50	0.	0.	0.	783.	2395.
-8.50	0.	0.	0.	815.	2492.
-9.50	0.	0.	0.	847.	2589.
-10.00	0.	0.	0.	863.	2639.
-10.50	0.	0.	0.	881.	2693.
-11.00	0.	0.	0.	899.	2748.
-11.50	0.	48.	17.	917.	2804.
-12.00	0.	96.	33.	935.	2859.
-12.50	0.	144.	50.	954.	2915.
-13.50	0.	240.	83.	990.	3026.
-14.50	0.	336.	117.	1026.	3137.
-15.50	0.	432.	150.	1063.	3248.
-16.50	0.	528.	183.	1099.	3359.
-17.50	0.	624.	217.	1135.	3470.
-18.50	0.	717.	250.	1172.	3581.
-19.50	0.	803.	283.	1208.	3692.
-20.50	0.	886.	317.	1244.	3803.
-21.50	0.	969.	350.	1280.	3914.
-22.50	0.	1051.	383.	1317.	4025.
-23.50	0.	1134.	416.	1353.	4136.
-24.50	0.	1217.	447.	1389.	4247.
-25.50	0.	1300.	477.	1426.	4358.
-26.50	0.	1383.	507.	1462.	4469.
-27.50	0.	1466.	538.	1498.	4580.
-28.19	0.	1523.	559.	1523.	4657.
-28.50	0.	1549.	568.	1535.	4691.
-29.50	0.	1632.	599.	1571.	4802.
-30.00	0.	1673.	614.	1589.	4857.
-30.50	0.	1712.	628.	1607.	4911.
-31.50	0.	1790.	657.	1641.	5016.
-32.50	0.	1868.	686.	1676.	5122.
-33.50	0.	1946.	714.	1710.	5228.
-34.50	0.	2023.	743.	1745.	5334.
-35.50	0.	2101.	772.	1780.	5440.
-36.50	0.	2179.	801.	1814.	5545.
-37.50	0.	2256.	829.	1849.	5651.
-38.00	0.	2295.	844.	1866.	5704.
-38.50	0.	2332.	857.	1883.	5755.
-39.50	0.	2407.	885.	1916.	5857.
-40.50	0.	2481.	913.	1950.	5960.
-41.50	0.	2555.	940.	1983.	6062.
-42.50	0.	2629.	968.	2017.	6164.
-43.50	0.	2704.	995.	2050.	6267.
-44.50	0.	2778.	1023.	2084.	6369.
-45.50	0.	2852.	1050.	2117.	6471.
-46.50	0.	2926.	1078.	2150.	6573.
-47.50	0.	3000.	1106.	2184.	6676.
-48.50	0.	3075.	1133.	2217.	6778.
-49.50	0.	3149.	1161.	2251.	6880.
-50.50	0.	3223.	1188.	2284.	6982.
-51.50	0.	3297.	1216.	2318.	7085.
-52.50	0.	3372.	1243.	2351.	7187.
-53.50	0.	3446.	1271.	2385.	7289.
-54.50	0.	3520.	1299.	2418.	7392.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 15-MARCH-2004 TIME: 9:56:33

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* PRELIMINARY DESIGN DATA FOR *
*  FREE EARTH DESIGN IN SAND  *
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I.--HEADING

'PORT OF IBERIA BULKHEAD REPLACEMENT
'DYNAMIC INDUSTRIES #5
'SOILS REACH 1 - 200 UNIFORM LOAD S-CASE 1.5 NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.36
ANCHOR HEIGHT RATIO (BETA) = 0.11

SHEET PILE DATA:

SHEET PILE NAME	<SECTION PROPERTIES> (PER FOOT OF WALL) SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07
PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07
PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-3.38	1.0 (***)	1.39
PZ38	-3.14	1.0 (***)	1.07
PZ35	-3.25	1.0 (***)	1.11
PZ32	-3.04	1.0 (***)	0.87
PZ27	-2.96	1.0 (***)	0.69
PZ22	-2.62	1.0 (***)	0.41
PLZ25	-3.04	1.0 (***)	0.75
PLZ23	-3.00	1.0 (***)	0.69

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

DESIGN GROUP #4
Ground Surface EL 8.5

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-59.7	233390	23157
S Free Earth	norm	1.25	-49.8	147440	17728
S Free Earth	norm	1	-39.3	84018	12675
S Fixed Earth	norm	1.5	-73.4	195160	21354
S Fixed Earth	norm	1.25	-61	123430	16385
S Fixed Earth	norm	1	-48.6	69921	11733

For cost purposes, use for bulkhead # 13, 14, 8, 9, 10 (south), 12, AND 16

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

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'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.25 NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   8.5    1
SURFACE RIGHTSIDE   2    0    8.5
                   200    8.5
SURFACE LEFTSIDE   3    0   -14
                  27   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
WATER ELEVATIONS   62.5    0    0
VERTICAL UNIFORM  200
FINISHED
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PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:01:56

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*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA, BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.25 NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.25
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.25

III.--WALL DATA
ELEVATION AT TOP OF WALL = 8.50 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	8.50
200.00	8.50

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-14.00
27.00	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- SAFETY-> ACT.	<- SAFETY-> PASS.
115.00	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF	DEF
118.00	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF	DEF
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF	DEF
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF	DEF
121.00	121.00	23.00	0.00	0.00	0.00			DEF	

DEF

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. FACTOR-> WGHT. PASS. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- ACT.
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
DEF								
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
DEF								
121.00	121.00	23.00	0.00	0.00	0.00			DEF
DEF								

VI.--WATER DATA
UNIT WEIGHT = 62.50 (PCF)
RIGHTSIDE ELEVATION = 0.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS

VII.A.--VERTICAL LINE LOADS
NONE

VII.B.--VERTICAL UNIFORM LOADS

LEFTSIDE (PSF)	RIGHTSIDE (PSF)
0.00	200.00

VII.C.--VERTICAL STRIP LOADS
NONE

VII.D.--VERTICAL RAMP LOADS
NONE

VII.E.--VERTICAL TRIANGULAR LOADS
NONE

VII.F.--VERTICAL VARIABLE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:02:00

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*   SOIL PRESSURES FOR  *
*  ANCHORED WALL DESIGN *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.25 NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
8.5	0.0	0.0	0.0	102.7	102.7	389.6
7.5	0.0	0.0	0.0	161.7	161.7	613.6
6.5	0.0	0.0	0.0	220.8	220.8	837.6
5.5	0.0	0.0	0.0	279.8	279.8	1061.6
4.5	0.0	0.0	0.0	338.8	338.8	1285.6
3.5	0.0	0.0	0.0	397.9	397.9	1509.6
2.5	0.0	0.0	0.0	456.9	456.9	1733.6
2.0	0.0	0.0	0.0	486.6	486.6	1846.4
1.5	0.0	0.0	0.0	516.7	516.7	1960.5
1.0	0.0	0.0	0.0	547.1	547.1	2075.7
0.5	0.0	0.0	0.0	577.3	577.3	2190.4
0.0	0.0	0.0	0.0	603.4	603.4	2289.5
-0.5	0.0	0.0	0.0	621.7	621.7	2358.9
-1.5	0.0	0.0	0.0	650.4	650.4	2467.7
-2.5	0.0	0.0	0.0	678.8	678.8	2575.6
-3.5	0.0	0.0	0.0	707.3	707.3	

2683.7					
-4.5	0.0	0.0	0.0	735.8	735.8
2791.8					
-5.5	0.0	0.0	0.0	764.3	764.3
2899.9					
-6.5	0.0	0.0	0.0	792.8	792.8
3008.0					
-7.5	0.0	0.0	0.0	821.3	821.3
3116.1					
-8.5	0.0	0.0	0.0	849.8	849.8
3224.2					
-9.5	0.0	0.0	0.0	878.3	878.3
3332.4					
-10.0	0.0	0.0	0.0	893.0	893.0
3388.4					
-10.5	0.0	0.0	0.0	908.8	908.8
3448.3					
-11.5	0.0	0.0	0.0	941.4	941.4
3571.9					
-12.5	0.0	0.0	0.0	974.0	974.0
3695.6					
-13.5	0.0	0.0	0.0	1006.6	1006.6
3819.3					
-14.0	0.0	0.0	0.0	1022.9	1022.9
3881.1					
-14.5	0.0	42.2	13.2	997.0	1039.2
3943.0					
-15.0	0.0	84.4	26.3	971.1	1055.5
4004.8					
-15.5	0.0	126.6	39.5	945.2	1071.8
4066.7					
-16.5	0.0	211.0	65.8	893.4	1104.4
4190.4					
-17.5	0.0	295.5	92.1	841.5	1137.0
4314.1					
-18.5	0.0	379.9	118.4	789.7	1169.6
4437.8					
-19.5	0.0	464.3	144.7	737.9	1202.2
4561.4					
-20.5	0.0	548.7	171.0	686.1	1234.8
4685.1					
-21.5	0.0	633.1	197.4	634.3	1267.4
4808.8					
-22.5	0.0	717.5	223.7	582.5	1300.0
4932.5					
-23.5	0.0	802.0	250.0	530.6	1332.6
5056.2					
-24.5	0.0	886.4	276.3	478.8	1365.2
5179.9					
-25.5	0.0	970.8	302.6	427.0	1397.8
5303.6					
-26.5	0.0	1055.2	328.9	375.2	1430.4
5427.3					
-27.5	0.0	1139.6	355.2	323.4	1463.0
5551.0					
-28.5	0.0	1224.1	381.6	271.5	1495.6
5674.7					
-29.5	0.0	1308.5	407.9	219.7	1528.2
5798.3					
-30.0	0.0	1349.9	420.8	194.4	1544.3
5859.4					

-30.5	0.0	1389.9	433.4	170.1	1560.0	5919.1
-31.5	0.0	1468.5	458.2	122.5	1591.1	6037.0
-32.5	0.0	1547.1	483.0	75.0	1622.1	6154.8
-33.5	0.0	1625.7	507.7	27.5	1653.2	6272.7
-34.1	0.0	1671.2	522.1	0.0	1671.2	6340.9
-34.5	0.0	1704.3	532.5	-20.0	1684.3	6390.5
-35.5	0.0	1782.8	557.3	-67.5	1715.3	6508.4
-36.5	0.0	1861.4	582.1	-115.0	1746.4	6626.2
-37.5	0.0	1940.0	606.8	-162.5	1777.4	6744.0
-38.0	0.0	1978.8	619.1	-185.9	1792.8	6802.5
-38.5	0.0	2016.6	631.1	-208.6	1808.0	6859.9
-39.5	0.0	2091.3	654.9	-253.3	1838.0	6973.9
-40.5	0.0	2165.7	678.6	-297.6	1868.1	7087.8
-41.5	0.0	2241.3	702.3	-343.2	1898.1	7201.8
-42.5	0.0	2328.7	726.1	-400.6	1928.1	7315.7
-43.5	0.0	2434.9	749.8	-476.7	1958.2	7429.7
-44.5	0.0	2549.2	773.6	-561.0	1988.2	7543.6
-45.5	0.0	2663.2	797.3	-645.0	2018.2	7657.6
-46.5	0.0	2777.2	821.1	-728.9	2048.3	7771.6
-47.5	0.0	2891.1	844.8	-812.9	2078.3	7885.5
-48.5	0.0	3005.1	868.6	-896.8	2108.3	7999.5
-49.5	0.0	3119.0	892.3	-980.7	2138.4	8113.4
-50.5	0.0	3233.0	916.1	-1064.6	2168.4	8227.4
-51.5	0.0	3346.9	939.8	-1148.5	2198.4	8341.3
-52.5	0.0	3460.9	963.6	-1232.4	2228.4	8455.3
-53.5	0.0	3574.8	987.3	-1316.4	2258.5	8569.2
-54.5	0.0	3688.8	1011.1	-1400.3	2288.5	8683.2
-55.5	0.0	3802.7	1034.8	-1484.2	2318.5	8797.1
-56.5	0.0	3916.7	1058.6	-1568.1	2348.6	8911.1
-57.5	0.0	4030.6	1082.3	-1652.0	2378.6	9025.0
-58.5	0.0	4144.6	1106.1	-1736.0	2408.6	

9139.0					
-59.5	0.0	4258.6	1129.7	-1819.9	2438.7
9252.9					
-60.5	0.0	4372.5	1154.7	-1903.8	2468.7
9366.9					
-61.5	0.0	4486.5	1182.6	-1987.7	2498.7
9480.8					
-62.5	0.0	4600.4	1212.4	-2071.6	2528.8
9594.8					
-63.5	0.0	4714.4	1242.5	-2155.5	2558.8
9708.7					
-64.5	0.0	4828.3	1272.5	-2239.5	2588.8
9822.7					
-65.5	0.0	4942.3	1302.6	-2323.4	2618.9
9936.6					
-66.5	0.0	5056.2	1332.6	-2407.3	2648.9
10050.6					
-67.5	0.0	5170.2	1362.6	-2491.2	2678.9
10164.5					
-68.5	0.0	5284.1	1392.7	-2575.1	2709.0
10278.5					
-69.5	0.0	5398.1	1422.7	-2659.1	2739.0
10392.4					
-70.5	0.0	5512.0	1452.7	-2743.0	2769.0
10506.4					
-71.5	0.0	5626.0	1482.8	-2826.9	2799.1
10620.3					
-72.5	0.0	5739.9	1512.8	-2910.8	2829.1
10734.3					
-73.5	0.0	5853.9	1542.8	-2994.7	2859.1
10848.2					
-74.5	0.0	5967.8	1572.9	-3078.6	2889.2
10962.2					
-75.5	0.0	6081.8	1602.9	-3162.6	2919.2
11076.1					
-76.5	0.0	6195.7	1632.9	-3246.5	2949.2
11190.1					
-77.5	0.0	6309.7	1663.0	-3330.4	2979.3
11304.0					
-78.5	0.0	6423.6	1693.0	-3414.3	3009.3
11418.0					
-79.5	0.0	6537.6	1723.0	-3498.2	3039.3
11531.9					
-80.5	0.0	6651.5	1753.1	-3582.2	3069.4
11645.9					
-81.5	0.0	6765.5	1783.1	-3666.1	3099.4
11759.8					
-82.5	0.0	6879.4	1813.1	-3750.0	3129.4
11873.8					

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:02:01

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*  SUMMARY OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.25 NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-49.77	-61.01
PENETRATION (FT)	:	35.77	47.01
MAXIMUM BENDING MOMENT (LB-FT)	:	-1.4744E+05	-1.2343E+05
AT ELEVATION (FT)	:	-17.65	-16.11
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	5.9499E+10	4.3399E+10
AT ELEVATION (FT)	:	-22.50	-20.50
ANCHOR FORCE (LB)	:	1.7728E+04	1.6385E+04

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:02:01

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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* BY FREE EARTH METHOD *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.25 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 17728. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
8.50	0.0000E+00	0.	-3.1048E+10	
				102.68
7.50	6.1178E+01	132.	-2.6914E+10	
				161.71
6.50	2.8407E+02	323.	-2.2780E+10	
				220.75
5.50	7.2771E+02	574.	-1.8646E+10	
				279.79
4.50	1.4512E+03	883.	-1.4510E+10	
				338.83
3.50	2.5134E+03	1251.	-1.0371E+10	
				397.87
2.50	3.9736E+03	1679.	-6.2283E+09	
				456.91
2.00	4.8713E+03	1915.	-4.1545E+09	
				486.63
1.50	5.8907E+03	2165.	-2.0785E+09	
				516.72
1.00	7.0393E+03	2431.	0.0000E+00	
				547.06
1.00	7.0393E+03	-15297.	0.0000E+00	
				547.06
0.50	-5.3947E+02	-15016.	2.0809E+09	
				577.31
0.00	-7.9741E+03	-14720.	4.1616E+09	
				603.41
-0.50	-1.5258E+04	-14414.	6.2389E+09	
				621.71
-1.50	-2.9357E+04	-13778.	1.0371E+10	
				650.37
-2.50	-4.2805E+04	-13114.	1.4452E+10	
				678.82
-3.50	-5.5574E+04	-12421.	1.8459E+10	
				707.31
-4.50	-6.7636E+04	-11699.	2.2370E+10	
				735.80
-5.50	-7.8963E+04	-10949.	2.6164E+10	
				764.29
-6.50	-8.9525E+04	-10170.	2.9823E+10	
				792.79
-7.50	-9.9294E+04	-9363.	3.3326E+10	
				821.28
-8.50	-1.0824E+05	-8528.	3.6658E+10	
				849.76
-9.50	-1.1634E+05	-7664.	3.9803E+10	
				878.28
-10.00	-1.2006E+05	-7221.	4.1301E+10	

893.05	-10.50	-1.2356E+05	-6770.	4.2748E+10
908.82	-11.50	-1.2987E+05	-5845.	4.5478E+10
941.40	-12.50	-1.3524E+05	-4888.	4.7985E+10
974.01	-13.50	-1.3963E+05	-3897.	5.0258E+10
1006.61	-14.00	-1.4146E+05	-3390.	5.1304E+10
1022.91	-14.50	-1.4303E+05	-2885.	5.2290E+10
997.00	-15.00	-1.4434E+05	-2393.	5.3213E+10
971.09	-15.50	-1.4542E+05	-1914.	5.4075E+10
945.18	-16.50	-1.4687E+05	-995.	5.5608E+10
893.36	-17.50	-1.4743E+05	-127.	5.6889E+10
841.54	-18.50	-1.4714E+05	688.	5.7914E+10
789.73	-19.50	-1.4607E+05	1452.	5.8685E+10
737.91	-20.50	-1.4425E+05	2164.	5.9204E+10
686.09	-21.50	-1.4176E+05	2824.	5.9474E+10
634.27	-22.50	-1.3862E+05	3433.	5.9499E+10
582.46	-23.50	-1.3491E+05	3989.	5.9285E+10
530.64	-24.50	-1.3066E+05	4494.	5.8837E+10
478.82	-25.50	-1.2594E+05	4947.	5.8164E+10
427.00	-26.50	-1.2079E+05	5348.	5.7273E+10
375.18	-27.50	-1.1526E+05	5697.	5.6173E+10
323.37	-28.50	-1.0941E+05	5995.	5.4875E+10
271.54	-29.50	-1.0329E+05	6240.	5.3387E+10
219.74	-30.00	-1.0014E+05	6344.	5.2576E+10
194.39	-30.50	-9.6944E+04	6435.	5.1721E+10
170.08	-31.50	-9.0432E+04	6581.	4.9888E+10
122.54	-32.50	-8.3797E+04	6680.	4.7898E+10
75.03	-33.50	-7.7087E+04	6731.	4.5763E+10
27.52	-34.08	-7.3185E+04	6739.	4.4465E+10
0.00	-34.50	-7.0350E+04	6735.	4.3495E+10
19.99	-35.50	-6.3633E+04	6691.	4.1106E+10
67.51				

	-36.50	-5.6983E+04	6600.	3.8607E+10	-
115.03					
	-37.50	-5.0448E+04	6461.	3.6009E+10	-
162.53					
	-38.00	-4.7238E+04	6374.	3.4677E+10	-
185.92					
	-38.50	-4.4076E+04	6276.	3.3324E+10	-
208.61					
	-39.50	-3.7912E+04	6045.	3.0563E+10	-
253.27					
	-40.50	-3.2001E+04	5769.	2.7736E+10	-
297.65					
	-41.50	-2.6388E+04	5449.	2.4854E+10	-
343.24					
	-42.50	-2.1120E+04	5077.	2.1926E+10	-
400.62					
	-43.50	-1.6256E+04	4638.	1.8962E+10	-
476.73					
	-44.50	-1.1871E+04	4119.	1.5969E+10	-
561.03					
	-45.50	-8.0457E+03	3516.	1.2956E+10	-
645.02					
	-46.50	-4.8658E+03	2829.	9.9291E+09	-
728.93					
	-47.50	-2.4149E+03	2058.	6.8936E+09	-
812.85					
	-48.50	-7.7682E+02	1204.	3.8537E+09	-
896.77					
	-49.50	-3.5517E+01	265.	8.1239E+08	-
980.69					
	-49.77	0.0000E+00	0.	0.0000E+00	-
1003.10					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
8.50	0.	0.	0.	103.	390.
7.50	0.	0.	0.	162.	614.
6.50	0.	0.	0.	221.	838.
5.50	0.	0.	0.	280.	1062.
4.50	0.	0.	0.	339.	1286.
3.50	0.	0.	0.	398.	1510.
2.50	0.	0.	0.	457.	1734.
2.00	0.	0.	0.	487.	1846.
1.50	0.	0.	0.	517.	1961.
1.00	0.	0.	0.	547.	2076.
0.50	0.	0.	0.	577.	2190.
0.00	0.	0.	0.	603.	2289.
-0.50	0.	0.	0.	622.	2359.
-1.50	0.	0.	0.	650.	2468.
-2.50	0.	0.	0.	679.	2576.
-3.50	0.	0.	0.	707.	2684.
-4.50	0.	0.	0.	736.	2792.

-5.50	0.	0.	0.	764.	2900.
-6.50	0.	0.	0.	793.	3008.
-7.50	0.	0.	0.	821.	3116.
-8.50	0.	0.	0.	850.	3224.
-9.50	0.	0.	0.	878.	3332.
-10.00	0.	0.	0.	893.	3388.
-10.50	0.	0.	0.	909.	3448.
-11.50	0.	0.	0.	941.	3572.
-12.50	0.	0.	0.	974.	3696.
-13.50	0.	0.	0.	1007.	3819.
-14.00	0.	0.	0.	1023.	3881.
-14.50	0.	42.	13.	1039.	3943.
-15.00	0.	84.	26.	1056.	4005.
-15.50	0.	127.	39.	1072.	4067.
-16.50	0.	211.	66.	1104.	4190.
-17.50	0.	295.	92.	1137.	4314.
-18.50	0.	380.	118.	1170.	4438.
-19.50	0.	464.	145.	1202.	4561.
-20.50	0.	549.	171.	1235.	4685.
-21.50	0.	633.	197.	1267.	4809.
-22.50	0.	718.	224.	1300.	4933.
-23.50	0.	802.	250.	1333.	5056.
-24.50	0.	886.	276.	1365.	5180.
-25.50	0.	971.	303.	1398.	5304.
-26.50	0.	1055.	329.	1430.	5427.
-27.50	0.	1140.	355.	1463.	5551.
-28.50	0.	1224.	382.	1496.	5675.
-29.50	0.	1308.	408.	1528.	5798.
-30.00	0.	1350.	421.	1544.	5859.
-30.50	0.	1390.	433.	1560.	5919.
-31.50	0.	1469.	458.	1591.	6037.
-32.50	0.	1547.	483.	1622.	6155.
-33.50	0.	1626.	508.	1653.	6273.
-34.08	0.	1671.	522.	1671.	6341.
-34.50	0.	1704.	533.	1684.	6391.
-35.50	0.	1783.	557.	1715.	6508.
-36.50	0.	1861.	582.	1746.	6626.
-37.50	0.	1940.	607.	1777.	6744.
-38.00	0.	1979.	619.	1793.	6802.
-38.50	0.	2017.	631.	1808.	6860.
-39.50	0.	2091.	655.	1838.	6974.
-40.50	0.	2166.	679.	1868.	7088.
-41.50	0.	2241.	702.	1898.	7202.
-42.50	0.	2329.	726.	1928.	7316.
-43.50	0.	2435.	750.	1958.	7430.
-44.50	0.	2549.	774.	1988.	7544.
-45.50	0.	2663.	797.	2018.	7658.
-46.50	0.	2777.	821.	2048.	7772.
-47.50	0.	2891.	845.	2078.	7886.
-48.50	0.	3005.	869.	2108.	7999.
-49.50	0.	3119.	892.	2138.	8113.
-50.50	0.	3233.	916.	2168.	8227.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME:

12:02:01

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****************************
* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FIXED EARTH METHOD  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.25 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 16385. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
8.50	0.0000E+00	0.	-2.4194E+10	102.68
7.50	6.1178E+01	132.	-2.0974E+10	161.71
6.50	2.8407E+02	323.	-1.7753E+10	220.75
5.50	7.2771E+02	574.	-1.4533E+10	279.79
4.50	1.4512E+03	883.	-1.1311E+10	338.83
3.50	2.5134E+03	1251.	-8.0863E+09	397.87
2.50	3.9736E+03	1679.	-4.8574E+09	456.91
2.00	4.8713E+03	1915.	-3.2405E+09	486.63
1.50	5.8907E+03	2165.	-1.6215E+09	516.72
1.00	7.0393E+03	2431.	0.0000E+00	547.06
1.00	7.0393E+03	-13954.	0.0000E+00	547.06
0.50	1.3214E+02	-13672.	1.6240E+09	577.31
0.00	-6.6308E+03	-13377.	3.2480E+09	603.41
-0.50	-1.3243E+04	-13071.	4.8692E+09	621.71
-1.50	-2.5999E+04	-12435.	8.0917E+09	650.37
-2.50	-3.8104E+04	-11770.	1.1269E+10	678.82
-3.50	-4.9530E+04	-11077.	1.4381E+10	707.31
-4.50	-6.0249E+04	-10356.	1.7407E+10	735.80
-5.50	-7.0232E+04	-9606.	2.0330E+10	764.29
-6.50	-7.9451E+04	-8827.	2.3131E+10	792.79
-7.50	-8.7877E+04	-8020.	2.5795E+10	821.28

	-8.50	-9.5481E+04	-7185.	2.8307E+10
849.76				
	-9.50	-1.0224E+05	-6321.	3.0654E+10
878.28				
	-10.00	-1.0529E+05	-5878.	3.1763E+10
893.05				
	-10.50	-1.0811E+05	-5427.	3.2825E+10
908.82				
	-11.50	-1.1308E+05	-4502.	3.4809E+10
941.40				
	-12.50	-1.1711E+05	-3544.	3.6598E+10
974.01				
	-13.50	-1.2016E+05	-2554.	3.8185E+10
1006.61				
	-14.00	-1.2131E+05	-2047.	3.8901E+10
1022.91				
	-14.50	-1.2221E+05	-1542.	3.9564E+10
997.00				
	-15.00	-1.2285E+05	-1050.	4.0175E+10
971.09				
	-15.50	-1.2326E+05	-571.	4.0732E+10
945.18				
	-16.50	-1.2336E+05	349.	4.1687E+10
893.36				
	-17.50	-1.2258E+05	1216.	4.2430E+10
841.54				
	-18.50	-1.2095E+05	2032.	4.2960E+10
789.73				
	-19.50	-1.1853E+05	2795.	4.3282E+10
737.91				
	-20.50	-1.1538E+05	3507.	4.3399E+10
686.09				
	-21.50	-1.1153E+05	4168.	4.3316E+10
634.27				
	-22.50	-1.0706E+05	4776.	4.3041E+10
582.46				
	-23.50	-1.0200E+05	5333.	4.2581E+10
530.64				
	-24.50	-9.6410E+04	5837.	4.1945E+10
478.82				
	-25.50	-9.0342E+04	6290.	4.1143E+10
427.00				
	-26.50	-8.3847E+04	6691.	4.0184E+10
375.18				
	-27.50	-7.6976E+04	7041.	3.9081E+10
323.37				
	-28.50	-6.9783E+04	7338.	3.7844E+10
271.54				
	-29.50	-6.2318E+04	7584.	3.6487E+10
219.74				
	-30.00	-5.8499E+04	7687.	3.5768E+10
194.39				
	-30.50	-5.4632E+04	7778.	3.5023E+10
170.08				
	-31.50	-4.6777E+04	7925.	3.3464E+10
122.54				
	-32.50	-3.8799E+04	8023.	3.1824E+10
75.03				
	-33.50	-3.0746E+04	8075.	3.0117E+10
27.52				
	-34.08	-2.6066E+04	8083.	2.9103E+10

0.00					
	-34.50	-2.2666E+04	8078.	2.8357E+10	-
19.99					
	-35.50	-1.4605E+04	8035.	2.6558E+10	-
67.51					
	-36.50	-6.6119E+03	7943.	2.4733E+10	-
115.03					
	-37.50	1.2661E+03	7805.	2.2897E+10	-
162.53					
	-38.00	5.1471E+03	7718.	2.1979E+10	-
185.92					
	-38.50	8.9817E+03	7619.	2.1064E+10	-
208.61					
	-39.50	1.6489E+04	7388.	1.9245E+10	-
253.27					
	-40.50	2.3743E+04	7113.	1.7456E+10	-
297.65					
	-41.50	3.0699E+04	6792.	1.5707E+10	-
343.24					
	-42.50	3.7310E+04	6420.	1.4011E+10	-
400.62					
	-43.50	4.3517E+04	5981.	1.2380E+10	-
476.73					
	-44.50	4.9246E+04	5463.	1.0824E+10	-
561.03					
	-45.50	5.4414E+04	4860.	9.3523E+09	-
645.02					
	-46.50	5.8937E+04	4173.	7.9751E+09	-
728.93					
	-47.50	6.2731E+04	3402.	6.6995E+09	-
812.85					
	-48.50	6.5713E+04	2547.	5.5323E+09	-
896.77					
	-49.50	6.7797E+04	1608.	4.4784E+09	-
980.69					
	-50.50	6.8901E+04	586.	3.5416E+09	-
1064.61					
	-51.50	6.8940E+04	-521.	2.7237E+09	-
1148.53					
	-52.50	6.7831E+04	-1712.	2.0248E+09	-
1232.44					
	-53.50	6.5489E+04	-2986.	1.4428E+09	-
1316.36					
	-54.50	6.1831E+04	-4344.	9.7390E+08	-
1400.28					
	-55.50	5.6773E+04	-5787.	6.1160E+08	-
1484.20					
	-56.50	5.0230E+04	-7313.	3.4719E+08	-
1568.12					
	-57.50	4.2119E+04	-8923.	1.6935E+08	-
1652.04					
	-58.50	3.2357E+04	-10617.	6.4060E+07	-
1735.95					
	-59.50	2.0858E+04	-12395.	1.4428E+07	-
1819.87					
	-60.50	7.5393E+03	-14256.	5.7700E+05	-
1903.79					
	-61.50	0.0000E+00	-15241.	0.0000E+00	-
1946.69					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF

ELASTICITY IN PSI TIMES PILE MOMENT
OF INERTIA IN IN^4 TO OBTAIN DEFLECTION
IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
	WATER	<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
8.50	0.	0.	0.	103.	390.
7.50	0.	0.	0.	162.	614.
6.50	0.	0.	0.	221.	838.
5.50	0.	0.	0.	280.	1062.
4.50	0.	0.	0.	339.	1286.
3.50	0.	0.	0.	398.	1510.
2.50	0.	0.	0.	457.	1734.
2.00	0.	0.	0.	487.	1846.
1.50	0.	0.	0.	517.	1961.
1.00	0.	0.	0.	547.	2076.
0.50	0.	0.	0.	577.	2190.
0.00	0.	0.	0.	603.	2289.
-0.50	0.	0.	0.	622.	2359.
-1.50	0.	0.	0.	650.	2468.
-2.50	0.	0.	0.	679.	2576.
-3.50	0.	0.	0.	707.	2684.
-4.50	0.	0.	0.	736.	2792.
-5.50	0.	0.	0.	764.	2900.
-6.50	0.	0.	0.	793.	3008.
-7.50	0.	0.	0.	821.	3116.
-8.50	0.	0.	0.	850.	3224.
-9.50	0.	0.	0.	878.	3332.
-10.00	0.	0.	0.	893.	3388.
-10.50	0.	0.	0.	909.	3448.
-11.50	0.	0.	0.	941.	3572.
-12.50	0.	0.	0.	974.	3696.
-13.50	0.	0.	0.	1007.	3819.
-14.00	0.	0.	0.	1023.	3881.
-14.50	0.	42.	13.	1039.	3943.
-15.00	0.	84.	26.	1056.	4005.
-15.50	0.	127.	39.	1072.	4067.
-16.50	0.	211.	66.	1104.	4190.
-17.50	0.	295.	92.	1137.	4314.
-18.50	0.	380.	118.	1170.	4438.
-19.50	0.	464.	145.	1202.	4561.
-20.50	0.	549.	171.	1235.	4685.
-21.50	0.	633.	197.	1267.	4809.
-22.50	0.	718.	224.	1300.	4933.
-23.50	0.	802.	250.	1333.	5056.
-24.50	0.	886.	276.	1365.	5180.
-25.50	0.	971.	303.	1398.	5304.
-26.50	0.	1055.	329.	1430.	5427.
-27.50	0.	1140.	355.	1463.	5551.
-28.50	0.	1224.	382.	1496.	5675.
-29.50	0.	1308.	408.	1528.	5798.
-30.00	0.	1350.	421.	1544.	5859.
-30.50	0.	1390.	433.	1560.	5919.
-31.50	0.	1469.	458.	1591.	6037.
-32.50	0.	1547.	483.	1622.	6155.
-33.50	0.	1626.	508.	1653.	6273.
-34.08	0.	1671.	522.	1671.	6341.

-34.50	0.	1704.	533.	1684.	6391.
-35.50	0.	1783.	557.	1715.	6508.
-36.50	0.	1861.	582.	1746.	6626.
-37.50	0.	1940.	607.	1777.	6744.
-38.00	0.	1979.	619.	1793.	6802.
-38.50	0.	2017.	631.	1808.	6860.
-39.50	0.	2091.	655.	1838.	6974.
-40.50	0.	2166.	679.	1868.	7088.
-41.50	0.	2241.	702.	1898.	7202.
-42.50	0.	2329.	726.	1928.	7316.
-43.50	0.	2435.	750.	1958.	7430.
-44.50	0.	2549.	774.	1988.	7544.
-45.50	0.	2663.	797.	2018.	7658.
-46.50	0.	2777.	821.	2048.	7772.
-47.50	0.	2891.	845.	2078.	7886.
-48.50	0.	3005.	869.	2108.	7999.
-49.50	0.	3119.	892.	2138.	8113.
-50.50	0.	3233.	916.	2168.	8227.
-51.50	0.	3347.	940.	2198.	8341.
-52.50	0.	3461.	964.	2228.	8455.
-53.50	0.	3575.	987.	2258.	8569.
-54.50	0.	3689.	1011.	2289.	8683.
-55.50	0.	3803.	1035.	2319.	8797.
-56.50	0.	3917.	1059.	2349.	8911.
-57.50	0.	4031.	1082.	2379.	9025.
-58.50	0.	4145.	1106.	2409.	9139.
-59.50	0.	4259.	1130.	2439.	9253.
-60.50	0.	4373.	1155.	2469.	9367.
-61.50	0.	4486.	1183.	2499.	9481.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:02:06

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* PRELIMINARY DESIGN DATA FOR *
*  FREE EARTH DESIGN IN SAND  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.25 NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.39
ANCHOR HEIGHT RATIO (BETA) = 0.13

SHEET PILE DATA:

<SECTION PROPERTIES>
(PER FOOT OF WALL)

SHEET PILE NAME	SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07
PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07
PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-3.09	1.0 (***)	0.82
PZ38	-2.85	1.0 (***)	0.63
PZ35	-2.96	1.0 (***)	0.66
PZ32	-2.74	1.0 (***)	0.52
PZ27	-2.67	1.0 (***)	0.41
PZ22	-2.33	1.0 (***)	0.25
PLZ25	-2.75	1.0 (***)	0.44
PLZ23	-2.71	1.0 (***)	0.41

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

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'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.5 NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.50  1.50
WALL   8.5    1
SURFACE RIGHTSIDE   2    0    8.5
                   200    8.5
SURFACE LEFTSIDE   3    0   -14
                  27   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
VERTICAL UNIFORM  200
FINISHED
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PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 9:05:17

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*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.5 NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.50
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.50

III.--WALL DATA
ELEVATION AT TOP OF WALL = 8.50 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	8.50
200.00	8.50

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-14.00
27.00	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<-SAFETY-> ACT.	<-FACTOR-> PASS.
115.00	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF	DEF
118.00	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF	DEF
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF	DEF
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF	DEF
121.00	121.00	23.00	0.00	0.00	0.00			DEF	

DEF

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<-SAFETY-> <-FACTOR-> ACT.	PASS.
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF	DEF
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF	DEF
121.00	121.00	23.00	0.00	0.00	0.00			DEF	DEF

VI.--WATER DATA
UNIT WEIGHT = 62.50 (PCF)
RIGHTSIDE ELEVATION = 0.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS

VII.A.--VERTICAL LINE LOADS
NONE

VII.B.--VERTICAL UNIFORM LOADS

LEFTSIDE (PSF)	RIGHTSIDE (PSF)
0.00	200.00

VII.C.--VERTICAL STRIP LOADS
NONE

VII.D.--VERTICAL RAMP LOADS
NONE

VII.E.--VERTICAL TRIANGULAR LOADS
NONE

VII.F.--VERTICAL VARIABLE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 9:05:20

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*************************
*   SOIL PRESSURES FOR  *
*  ANCHORED WALL DESIGN *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.5 NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
8.5	0.0	0.0	0.0	114.4	114.4	349.7
7.5	0.0	0.0	0.0	180.2	180.2	550.7
6.5	0.0	0.0	0.0	245.9	245.9	751.8
5.5	0.0	0.0	0.0	311.7	311.7	952.9
4.5	0.0	0.0	0.0	377.5	377.5	1153.9
3.5	0.0	0.0	0.0	443.3	443.3	1355.0
2.5	0.0	0.0	0.0	509.1	509.1	1556.1
2.0	0.0	0.0	0.0	542.2	542.2	1657.2
1.5	0.0	0.0	0.0	575.7	575.7	1759.7
1.0	0.0	0.0	0.0	609.5	609.5	1863.1
0.5	0.0	0.0	0.0	643.2	643.2	1966.1
0.0	0.0	0.0	0.0	672.3	672.3	2055.0
-0.5	0.0	0.0	0.0	692.7	692.7	2117.3
-1.5	0.0	0.0	0.0	724.6	724.6	2214.9
-2.5	0.0	0.0	0.0	756.3	756.3	2311.8
-3.5	0.0	0.0	0.0	788.0	788.0	

2408.8					
-4.5	0.0	0.0	0.0	819.8	819.8
2505.8					
-5.5	0.0	0.0	0.0	851.5	851.5
2602.9					
-6.5	0.0	0.0	0.0	883.3	883.3
2699.9					
-7.5	0.0	0.0	0.0	915.0	915.0
2796.9					
-8.5	0.0	0.0	0.0	946.7	946.7
2893.9					
-9.5	0.0	0.0	0.0	978.5	978.5
2991.0					
-10.0	0.0	0.0	0.0	995.0	995.0
3041.3					
-10.5	0.0	0.0	0.0	1012.5	1012.5
3095.1					
-11.5	0.0	0.0	0.0	1048.8	1048.8
3206.0					
-12.5	0.0	0.0	0.0	1085.2	1085.2
3317.1					
-13.5	0.0	0.0	0.0	1121.5	1121.5
3428.1					
-14.0	0.0	0.0	0.0	1139.6	1139.6
3483.6					
-14.5	0.0	38.5	14.5	1119.3	1157.8
3539.1					
-15.0	0.0	77.1	29.0	1098.9	1176.0
3594.6					
-15.5	0.0	115.6	43.5	1078.5	1194.1
3650.1					
-16.5	0.0	192.6	72.5	1037.8	1230.4
3761.1					
-17.5	0.0	269.7	101.5	997.1	1266.8
3872.2					
-18.5	0.0	346.8	130.5	956.3	1303.1
3983.2					
-19.5	0.0	423.8	159.5	915.6	1339.4
4094.2					
-20.5	0.0	500.9	188.5	874.9	1375.7
4205.2					
-21.5	0.0	577.9	217.6	834.1	1412.0
4316.2					
-22.5	0.0	655.0	246.6	793.4	1448.4
4427.3					
-23.5	0.0	732.0	275.6	752.6	1484.7
4538.3					
-24.5	0.0	809.1	304.6	711.9	1521.0
4649.3					
-25.5	0.0	886.2	333.6	671.2	1557.3
4760.3					
-26.5	0.0	963.2	362.6	630.4	1593.6
4871.3					
-27.5	0.0	1040.3	391.6	589.7	1630.0
4982.4					
-28.5	0.0	1117.3	420.6	548.9	1666.3
5093.4					
-29.5	0.0	1194.4	449.6	508.2	1702.6
5204.4					
-30.0	0.0	1232.2	463.9	488.3	1720.5
5259.2					

-30.5	0.0	1268.8	477.8	469.3	1738.1
5312.8					
-31.5	0.0	1340.6	505.1	432.0	1772.7
5418.6					
-32.5	0.0	1412.4	532.3	394.8	1807.3
5524.3					
-33.5	0.0	1484.3	559.6	357.6	1841.9
5630.1					
-34.5	0.0	1556.1	586.9	320.4	1876.5
5735.9					
-35.5	0.0	1627.9	614.2	283.2	1911.1
5841.7					
-36.5	0.0	1699.7	641.5	246.0	1945.7
5947.5					
-37.5	0.0	1771.5	668.8	208.8	1980.3
6053.2					
-38.0	0.0	1807.0	682.3	190.5	1997.4
6105.7					
-38.5	0.0	1841.6	695.5	172.8	2014.3
6157.2					
-39.5	0.0	1909.9	721.7	137.9	2047.8
6259.5					
-40.5	0.0	1978.2	747.8	103.0	2081.2
6361.8					
-41.5	0.0	2046.3	774.0	68.4	2114.7
6464.1					
-42.5	0.0	2115.1	800.1	33.1	2148.2
6566.4					
-43.2	0.0	2172.9	819.4	0.0	2172.9
6641.9					
-43.5	0.0	2193.3	826.3	-11.7	2181.6
6668.6					
-44.5	0.0	2287.9	852.4	-72.8	2215.1
6770.9					
-45.5	0.0	2390.3	878.6	-141.8	2248.5
6873.2					
-46.5	0.0	2492.7	904.7	-210.7	2282.0
6975.5					
-47.5	0.0	2595.0	930.9	-279.5	2315.5
7077.8					
-48.5	0.0	2697.3	957.0	-348.3	2348.9
7180.0					
-49.5	0.0	2799.5	983.1	-417.2	2382.4
7282.3					
-50.5	0.0	2901.8	1009.3	-486.0	2415.8
7384.6					
-51.5	0.0	3004.1	1035.4	-554.8	2449.3
7486.9					
-52.5	0.0	3106.4	1061.6	-623.6	2482.8
7589.2					
-53.5	0.0	3208.7	1087.7	-692.4	2516.2
7691.4					
-54.5	0.0	3310.9	1113.9	-761.2	2549.7
7793.7					
-55.5	0.0	3413.2	1140.0	-830.1	2583.1
7896.0					
-56.5	0.0	3515.5	1166.2	-898.9	2616.6
7998.3					
-57.5	0.0	3617.8	1192.2	-967.7	2650.1
8100.5					
-58.5	0.0	3720.1	1219.7	-1036.5	2683.5

8202.8					
-59.5	0.0	3822.3	1250.6	-1105.3	2717.0
8305.1					
-60.5	0.0	3924.6	1283.9	-1174.2	2750.5
8407.4					
-61.5	0.0	4026.9	1317.4	-1243.0	2783.9
8509.7					
-62.5	0.0	4129.2	1350.8	-1311.8	2817.4
8611.9					
-63.5	0.0	4231.4	1384.3	-1380.6	2850.8
8714.2					
-64.5	0.0	4333.7	1417.8	-1449.4	2884.3
8816.5					
-65.5	0.0	4436.0	1451.2	-1518.3	2917.8
8918.8					
-66.5	0.0	4538.3	1484.7	-1587.1	2951.2
9021.0					
-67.5	0.0	4640.6	1518.1	-1655.9	2984.7
9123.3					
-68.5	0.0	4742.8	1551.6	-1724.7	3018.1
9225.6					
-69.5	0.0	4845.1	1585.1	-1793.5	3051.6
9327.9					
-70.5	0.0	4947.4	1618.5	-1862.3	3085.1
9430.2					
-71.5	0.0	5049.7	1652.0	-1931.2	3118.5
9532.4					
-72.5	0.0	5152.0	1685.4	-2000.0	3152.0
9634.7					
-73.5	0.0	5254.2	1718.9	-2068.8	3185.4
9737.0					
-74.5	0.0	5356.5	1752.4	-2137.6	3218.9
9839.3					
-75.5	0.0	5458.8	1785.8	-2206.4	3252.4
9941.6					
-76.5	0.0	5561.1	1819.3	-2275.3	3285.8
10043.8					
-77.5	0.0	5663.3	1852.7	-2344.1	3319.3
10146.1					
-78.5	0.0	5765.6	1886.2	-2412.9	3352.7
10248.4					
-79.5	0.0	5867.9	1919.7	-2481.7	3386.2
10350.7					
-80.5	0.0	5970.2	1953.1	-2550.5	3419.7
10452.9					
-81.5	0.0	6072.5	1986.6	-2619.3	3453.1
10555.2					
-82.5	0.0	6174.7	2020.0	-2688.2	3486.6
10657.5					

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 9:05:22

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*  SUMMARY OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.5 NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-59.67	-73.35
PENETRATION (FT)	:	45.67	59.35
MAXIMUM BENDING MOMENT (LB-FT)	:	-2.3339E+05	-1.9516E+05
AT ELEVATION (FT)	:	-21.24	-19.20
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	1.3635E+11	9.9517E+10
AT ELEVATION (FT)	:	-26.50	-24.50
ANCHOR FORCE (LB)	:	2.3157E+04	2.1354E+04

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 9:05:22

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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* BY FREE EARTH METHOD *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.5 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 23157. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
8.50	0.0000E+00	0.	-5.9918E+10	114.39
7.50	6.8159E+01	147.	-5.1935E+10	180.17
6.50	3.1649E+02	360.	-4.3953E+10	245.95
5.50	8.1076E+02	639.	-3.5969E+10	311.72
4.50	1.6168E+03	984.	-2.7985E+10	377.50
3.50	2.8003E+03	1394.	-1.9997E+10	443.27
2.50	4.4270E+03	1870.	-1.2004E+10	509.06
2.00	5.4272E+03	2133.	-8.0055E+09	542.16
1.50	6.5629E+03	2413.	-4.0041E+09	575.68
1.00	7.8426E+03	2709.	0.0000E+00	609.50
1.00	7.8426E+03	-20448.	0.0000E+00	609.50
0.50	-2.3037E+03	-20135.	4.0067E+09	643.19
0.00	-1.2289E+04	-19806.	8.0124E+09	672.27
-0.50	-2.2108E+04	-19465.	1.2013E+10	692.67
-1.50	-4.1220E+04	-18756.	1.9981E+10	724.60
-2.50	-5.9609E+04	-18016.	2.7878E+10	756.28
-3.50	-7.7241E+04	-17243.	3.5672E+10	788.03
-4.50	-9.4085E+04	-16439.	4.3332E+10	819.77
-5.50	-1.1011E+05	-15604.	5.0831E+10	851.52
-6.50	-1.2528E+05	-14736.	5.8139E+10	883.26
-7.50	-1.3957E+05	-13837.	6.5230E+10	915.01
-8.50	-1.5295E+05	-12906.	7.2081E+10	946.74
-9.50	-1.6537E+05	-11944.	7.8667E+10	978.51
-10.00	-1.7122E+05	-11450.	8.1855E+10	

994.97				
	-10.50	-1.7682E+05	-10949.	8.4968E+10
1012.54				
	-11.50	-1.8726E+05	-9918.	9.0964E+10
1048.84				
	-12.50	-1.9665E+05	-8851.	9.6636E+10
1085.17				
	-13.50	-2.0495E+05	-7748.	1.0197E+11
1121.49				
	-14.00	-2.0868E+05	-7182.	1.0450E+11
1139.65				
	-14.50	-2.1213E+05	-6618.	1.0695E+11
1119.28				
	-15.00	-2.1530E+05	-6063.	1.0930E+11
1098.91				
	-15.50	-2.1820E+05	-5519.	1.1156E+11
1078.54				
	-16.50	-2.2318E+05	-4460.	1.1579E+11
1037.80				
	-17.50	-2.2713E+05	-3443.	1.1964E+11
997.07				
	-18.50	-2.3008E+05	-2466.	1.2310E+11
956.33				
	-19.50	-2.3208E+05	-1530.	1.2616E+11
915.59				
	-20.50	-2.3316E+05	-635.	1.2882E+11
874.85				
	-21.50	-2.3336E+05	219.	1.3108E+11
834.12				
	-22.50	-2.3273E+05	1033.	1.3293E+11
793.38				
	-23.50	-2.3131E+05	1806.	1.3438E+11
752.64				
	-24.50	-2.2913E+05	2538.	1.3543E+11
711.90				
	-25.50	-2.2625E+05	3230.	1.3609E+11
671.17				
	-26.50	-2.2269E+05	3881.	1.3635E+11
630.43				
	-27.50	-2.1850E+05	4491.	1.3623E+11
589.69				
	-28.50	-2.1372E+05	5060.	1.3573E+11
548.95				
	-29.50	-2.0839E+05	5589.	1.3487E+11
508.23				
	-30.00	-2.0553E+05	5838.	1.3430E+11
488.31				
	-30.50	-2.0255E+05	6077.	1.3364E+11
469.26				
	-31.50	-1.9625E+05	6528.	1.3206E+11
432.03				
	-32.50	-1.8951E+05	6941.	1.3015E+11
394.83				
	-33.50	-1.8238E+05	7317.	1.2790E+11
357.62				
	-34.50	-1.7489E+05	7657.	1.2535E+11
320.41				
	-35.50	-1.6708E+05	7958.	1.2249E+11
283.20				
	-36.50	-1.5898E+05	8223.	1.1934E+11
245.99				

	-37.50	-1.5064E+05	8450.	1.1591E+11	
208.80					
	-38.00	-1.4639E+05	8550.	1.1410E+11	
190.49					
	-38.50	-1.4210E+05	8641.	1.1223E+11	
172.76					
	-39.50	-1.3337E+05	8796.	1.0830E+11	
137.90					
	-40.50	-1.2452E+05	8917.	1.0414E+11	
103.05					
	-41.50	-1.1555E+05	9002.	9.9763E+10	
68.37					
	-42.50	-1.0652E+05	9053.	9.5189E+10	
33.05					
	-43.24	-9.9830E+04	9065.	9.1691E+10	
0.00					
	-43.50	-9.7460E+04	9064.	9.0430E+10	-
11.70					
	-44.50	-8.8412E+04	9022.	8.5502E+10	-
72.84					
	-45.50	-7.9438E+04	8914.	8.0422E+10	-
141.79					
	-46.50	-7.0606E+04	8738.	7.5205E+10	-
210.70					
	-47.50	-6.1985E+04	8493.	6.9865E+10	-
279.52					
	-48.50	-5.3643E+04	8179.	6.4419E+10	-
348.34					
	-49.50	-4.5650E+04	7796.	5.8879E+10	-
417.16					
	-50.50	-3.8074E+04	7345.	5.3261E+10	-
485.98					
	-51.50	-3.0984E+04	6824.	4.7577E+10	-
554.79					
	-52.50	-2.4448E+04	6235.	4.1839E+10	-
623.61					
	-53.50	-1.8536E+04	5577.	3.6059E+10	-
692.43					
	-54.50	-1.3317E+04	4850.	3.0247E+10	-
761.25					
	-55.50	-8.8589E+03	4055.	2.4411E+10	-
830.07					
	-56.50	-5.2308E+03	3190.	1.8560E+10	-
898.89					
	-57.50	-2.5016E+03	2257.	1.2700E+10	-
967.70					
	-58.50	-7.4017E+02	1255.	6.8360E+09	-
1036.52					
	-59.50	-1.5220E+01	184.	9.7014E+08	-
1105.34					
	-59.67	0.0000E+00	0.	0.0000E+00	-
1116.72					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

<----------SOIL PRESSURES---------->

ELEVATION (FT)	WATER PRESSURE (PSF)	<----LEFTSIDE-----> PASSIVE (PSF)	ACTIVE (PSF)	<---RIGHTSIDE----> ACTIVE (PSF)	PASSIVE (PSF)
8.50	0.	0.	0.	114.	350.
7.50	0.	0.	0.	180.	551.
6.50	0.	0.	0.	246.	752.
5.50	0.	0.	0.	312.	953.
4.50	0.	0.	0.	377.	1154.
3.50	0.	0.	0.	443.	1355.
2.50	0.	0.	0.	509.	1556.
2.00	0.	0.	0.	542.	1657.
1.50	0.	0.	0.	576.	1760.
1.00	0.	0.	0.	609.	1863.
0.50	0.	0.	0.	643.	1966.
0.00	0.	0.	0.	672.	2055.
-0.50	0.	0.	0.	693.	2117.
-1.50	0.	0.	0.	725.	2215.
-2.50	0.	0.	0.	756.	2312.
-3.50	0.	0.	0.	788.	2409.
-4.50	0.	0.	0.	820.	2506.
-5.50	0.	0.	0.	852.	2603.
-6.50	0.	0.	0.	883.	2700.
-7.50	0.	0.	0.	915.	2797.
-8.50	0.	0.	0.	947.	2894.
-9.50	0.	0.	0.	979.	2991.
-10.00	0.	0.	0.	995.	3041.
-10.50	0.	0.	0.	1013.	3095.
-11.50	0.	0.	0.	1049.	3206.
-12.50	0.	0.	0.	1085.	3317.
-13.50	0.	0.	0.	1121.	3428.
-14.00	0.	0.	0.	1140.	3484.
-14.50	0.	39.	15.	1158.	3539.
-15.00	0.	77.	29.	1176.	3595.
-15.50	0.	116.	44.	1194.	3650.
-16.50	0.	193.	73.	1230.	3761.
-17.50	0.	270.	102.	1267.	3872.
-18.50	0.	347.	131.	1303.	3983.
-19.50	0.	424.	160.	1339.	4094.
-20.50	0.	501.	189.	1376.	4205.
-21.50	0.	578.	218.	1412.	4316.
-22.50	0.	655.	247.	1448.	4427.
-23.50	0.	732.	276.	1485.	4538.
-24.50	0.	809.	305.	1521.	4649.
-25.50	0.	886.	334.	1557.	4760.
-26.50	0.	963.	363.	1594.	4871.
-27.50	0.	1040.	392.	1630.	4982.
-28.50	0.	1117.	421.	1666.	5093.
-29.50	0.	1194.	450.	1703.	5204.
-30.00	0.	1232.	464.	1721.	5259.
-30.50	0.	1269.	478.	1738.	5313.
-31.50	0.	1341.	505.	1773.	5419.
-32.50	0.	1412.	532.	1807.	5524.
-33.50	0.	1484.	560.	1842.	5630.
-34.50	0.	1556.	587.	1876.	5736.
-35.50	0.	1628.	614.	1911.	5842.
-36.50	0.	1700.	642.	1946.	5947.
-37.50	0.	1771.	669.	1980.	6053.
-38.00	0.	1807.	682.	1997.	6106.
-38.50	0.	1842.	696.	2014.	6157.
-39.50	0.	1910.	722.	2048.	6260.
-40.50	0.	1978.	748.	2081.	6362.

-41.50	0.	2046.	774.	2115.	6464.
-42.50	0.	2115.	800.	2148.	6566.
-43.24	0.	2173.	819.	2173.	6642.
-43.50	0.	2193.	826.	2182.	6669.
-44.50	0.	2288.	852.	2215.	6771.
-45.50	0.	2390.	879.	2249.	6873.
-46.50	0.	2493.	905.	2282.	6975.
-47.50	0.	2595.	931.	2315.	7078.
-48.50	0.	2697.	957.	2349.	7180.
-49.50	0.	2800.	983.	2382.	7282.
-50.50	0.	2902.	1009.	2416.	7385.
-51.50	0.	3004.	1035.	2449.	7487.
-52.50	0.	3106.	1062.	2483.	7589.
-53.50	0.	3209.	1088.	2516.	7691.
-54.50	0.	3311.	1114.	2550.	7794.
-55.50	0.	3413.	1140.	2583.	7896.
-56.50	0.	3515.	1166.	2617.	7998.
-57.50	0.	3618.	1192.	2650.	8101.
-58.50	0.	3720.	1220.	2684.	8203.
-59.50	0.	3822.	1251.	2717.	8305.
-60.50	0.	3925.	1284.	2750.	8407.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 9:05:22

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****************************
* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FIXED EARTH METHOD  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.5 NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 21354. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
8.50	0.0000E+00	0.	-4.6823E+10	114.39
7.50	6.8159E+01	147.	-4.0587E+10	180.17
6.50	3.1649E+02	360.	-3.4350E+10	245.95
5.50	8.1076E+02	639.	-2.8112E+10	311.72
4.50	1.6168E+03	984.	-2.1874E+10	377.50
3.50	2.8003E+03	1394.	-1.5632E+10	443.27

	2.50	4.4270E+03	1870.	-9.3854E+09
509.06				
	2.00	5.4272E+03	2133.	-6.2595E+09
542.16				
	1.50	6.5629E+03	2413.	-3.1312E+09
575.68				
	1.00	7.8426E+03	2709.	0.0000E+00
609.50				
	1.00	7.8426E+03	-18645.	0.0000E+00
609.50				
	0.50	-1.4024E+03	-18332.	3.1338E+09
643.19				
	0.00	-1.0487E+04	-18003.	6.2670E+09
672.27				
	-0.50	-1.9403E+04	-17662.	9.3956E+09
692.67				
	-1.50	-3.6714E+04	-16953.	1.5624E+10
724.60				
	-2.50	-5.3299E+04	-16213.	2.1789E+10
756.28				
	-3.50	-6.9129E+04	-15441.	2.7862E+10
788.03				
	-4.50	-8.4170E+04	-14637.	3.3816E+10
819.77				
	-5.50	-9.8392E+04	-13801.	3.9624E+10
851.52				
	-6.50	-1.1176E+05	-12934.	4.5263E+10
883.26				
	-7.50	-1.2425E+05	-12035.	5.0708E+10
915.01				
	-8.50	-1.3582E+05	-11104.	5.5939E+10
946.74				
	-9.50	-1.4645E+05	-10141.	6.0936E+10
978.51				
	-10.00	-1.5139E+05	-9648.	6.3340E+10
994.97				
	-10.50	-1.5609E+05	-9146.	6.5679E+10
1012.54				
	-11.50	-1.6473E+05	-8115.	7.0153E+10
1048.84				
	-12.50	-1.7231E+05	-7048.	7.4342E+10
1085.17				
	-13.50	-1.7881E+05	-5945.	7.8234E+10
1121.49				
	-14.00	-1.8164E+05	-5380.	8.0065E+10
1139.65				
	-14.50	-1.8419E+05	-4815.	8.1817E+10
1119.28				
	-15.00	-1.8646E+05	-4260.	8.3490E+10
1098.91				
	-15.50	-1.8845E+05	-3716.	8.5082E+10
1078.54				
	-16.50	-1.9163E+05	-2658.	8.8021E+10
1037.80				
	-17.50	-1.9378E+05	-1640.	9.0630E+10
997.07				
	-18.50	-1.9493E+05	-664.	9.2903E+10
956.33				
	-19.50	-1.9512E+05	272.	9.4840E+10
915.59				
	-20.50	-1.9440E+05	1168.	9.6440E+10

874.85					
	-21.50	-1.9280E+05	2022.	9.7704E+10	
834.12					
	-22.50	-1.9037E+05	2836.	9.8635E+10	
793.38					
	-23.50	-1.8714E+05	3609.	9.9238E+10	
752.64					
	-24.50	-1.8316E+05	4341.	9.9517E+10	
711.90					
	-25.50	-1.7847E+05	5033.	9.9479E+10	
671.17					
	-26.50	-1.7311E+05	5683.	9.9133E+10	
630.43					
	-27.50	-1.6712E+05	6293.	9.8489E+10	
589.69					
	-28.50	-1.6054E+05	6863.	9.7555E+10	
548.95					
	-29.50	-1.5341E+05	7391.	9.6344E+10	
508.23					
	-30.00	-1.4965E+05	7641.	9.5639E+10	
488.31					
	-30.50	-1.4577E+05	7880.	9.4868E+10	
469.26					
	-31.50	-1.3766E+05	8331.	9.3141E+10	
432.03					
	-32.50	-1.2912E+05	8744.	9.1175E+10	
394.83					
	-33.50	-1.2019E+05	9120.	8.8987E+10	
357.62					
	-34.50	-1.1089E+05	9459.	8.6591E+10	
320.41					
	-35.50	-1.0128E+05	9761.	8.4003E+10	
283.20					
	-36.50	-9.1383E+04	10026.	8.1240E+10	
245.99					
	-37.50	-8.1240E+04	10253.	7.8320E+10	
208.80					
	-38.00	-7.6088E+04	10353.	7.6806E+10	
190.49					
	-38.50	-7.0889E+04	10444.	7.5259E+10	
172.76					
	-39.50	-6.0365E+04	10599.	7.2075E+10	
137.90					
	-40.50	-4.9703E+04	10719.	6.8788E+10	
103.05					
	-41.50	-3.8937E+04	10805.	6.5414E+10	
68.37					
	-42.50	-2.8104E+04	10856.	6.1973E+10	
33.05					
	-43.24	-2.0080E+04	10868.	5.9400E+10	
0.00					
	-43.50	-1.7239E+04	10867.	5.8484E+10	-
11.70					
	-44.50	-6.3885E+03	10824.	5.4965E+10	-
72.84					
	-45.50	4.3879E+03	10717.	5.1434E+10	-
141.79					
	-46.50	1.5023E+04	10541.	4.7912E+10	-
210.70					
	-47.50	2.5446E+04	10296.	4.4415E+10	-
279.52					

-48.50	3.5591E+04	9982.	4.0962E+10	- 348.34
-49.50	4.5387E+04	9599.	3.7571E+10	- 417.16
-50.50	5.4766E+04	9147.	3.4258E+10	- 485.98
-51.50	6.3659E+04	8627.	3.1039E+10	- 554.79
-52.50	7.1997E+04	8038.	2.7931E+10	- 623.61
-53.50	7.9711E+04	7380.	2.4947E+10	- 692.43
-54.50	8.6733E+04	6653.	2.2100E+10	- 761.25
-55.50	9.2994E+04	5857.	1.9403E+10	- 830.07
-56.50	9.8425E+04	4993.	1.6867E+10	- 898.89
-57.50	1.0296E+05	4060.	1.4501E+10	- 967.70
-58.50	1.0652E+05	3057.	1.2312E+10	- 1036.52
-59.50	1.0905E+05	1986.	1.0308E+10	- 1105.34
-60.50	1.1047E+05	847.	8.4914E+09	- 1174.16
-61.50	1.1072E+05	-362.	6.8659E+09	- 1242.98
-62.50	1.0972E+05	-1639.	5.4314E+09	- 1311.80
-63.50	1.0742E+05	-2985.	4.1864E+09	- 1380.61
-64.50	1.0373E+05	-4400.	3.1268E+09	- 1449.43
-65.50	9.8594E+04	-5884.	2.2463E+09	- 1518.25
-66.50	9.1939E+04	-7437.	1.5359E+09	- 1587.07
-67.50	8.3697E+04	-9058.	9.8413E+08	- 1655.89
-68.50	7.3799E+04	-10749.	5.7676E+08	- 1724.71
-69.50	6.2177E+04	-12508.	2.9667E+08	- 1793.52
-70.50	4.8760E+04	-14336.	1.2376E+08	- 1862.34
-71.50	3.3482E+04	-16233.	3.4836E+07	- 1931.16
-72.50	1.6272E+04	-18198.	3.4935E+06	- 1999.98
-73.50	0.0000E+00	-19931.	0.0000E+00	- 2058.73

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

<----------SOIL PRESSURES---------->

ELEVATION (FT)	WATER PRESSURE (PSF)	<----LEFTSIDE-----> PASSIVE (PSF)	ACTIVE (PSF)	<---RIGHTSIDE----> ACTIVE (PSF)	PASSIVE (PSF)
8.50	0.	0.	0.	114.	350.
7.50	0.	0.	0.	180.	551.
6.50	0.	0.	0.	246.	752.
5.50	0.	0.	0.	312.	953.
4.50	0.	0.	0.	377.	1154.
3.50	0.	0.	0.	443.	1355.
2.50	0.	0.	0.	509.	1556.
2.00	0.	0.	0.	542.	1657.
1.50	0.	0.	0.	576.	1760.
1.00	0.	0.	0.	609.	1863.
0.50	0.	0.	0.	643.	1966.
0.00	0.	0.	0.	672.	2055.
-0.50	0.	0.	0.	693.	2117.
-1.50	0.	0.	0.	725.	2215.
-2.50	0.	0.	0.	756.	2312.
-3.50	0.	0.	0.	788.	2409.
-4.50	0.	0.	0.	820.	2506.
-5.50	0.	0.	0.	852.	2603.
-6.50	0.	0.	0.	883.	2700.
-7.50	0.	0.	0.	915.	2797.
-8.50	0.	0.	0.	947.	2894.
-9.50	0.	0.	0.	979.	2991.
-10.00	0.	0.	0.	995.	3041.
-10.50	0.	0.	0.	1013.	3095.
-11.50	0.	0.	0.	1049.	3206.
-12.50	0.	0.	0.	1085.	3317.
-13.50	0.	0.	0.	1121.	3428.
-14.00	0.	0.	0.	1140.	3484.
-14.50	0.	39.	15.	1158.	3539.
-15.00	0.	77.	29.	1176.	3595.
-15.50	0.	116.	44.	1194.	3650.
-16.50	0.	193.	73.	1230.	3761.
-17.50	0.	270.	102.	1267.	3872.
-18.50	0.	347.	131.	1303.	3983.
-19.50	0.	424.	160.	1339.	4094.
-20.50	0.	501.	189.	1376.	4205.
-21.50	0.	578.	218.	1412.	4316.
-22.50	0.	655.	247.	1448.	4427.
-23.50	0.	732.	276.	1485.	4538.
-24.50	0.	809.	305.	1521.	4649.
-25.50	0.	886.	334.	1557.	4760.
-26.50	0.	963.	363.	1594.	4871.
-27.50	0.	1040.	392.	1630.	4982.
-28.50	0.	1117.	421.	1666.	5093.
-29.50	0.	1194.	450.	1703.	5204.
-30.00	0.	1232.	464.	1721.	5259.
-30.50	0.	1269.	478.	1738.	5313.
-31.50	0.	1341.	505.	1773.	5419.
-32.50	0.	1412.	532.	1807.	5524.
-33.50	0.	1484.	560.	1842.	5630.
-34.50	0.	1556.	587.	1876.	5736.
-35.50	0.	1628.	614.	1911.	5842.
-36.50	0.	1700.	642.	1946.	5947.
-37.50	0.	1771.	669.	1980.	6053.
-38.00	0.	1807.	682.	1997.	6106.
-38.50	0.	1842.	696.	2014.	6157.
-39.50	0.	1910.	722.	2048.	6260.
-40.50	0.	1978.	748.	2081.	6362.

-41.50	0.	2046.	774.	2115.	6464.
-42.50	0.	2115.	800.	2148.	6566.
-43.24	0.	2173.	819.	2173.	6642.
-43.50	0.	2193.	826.	2182.	6669.
-44.50	0.	2288.	852.	2215.	6771.
-45.50	0.	2390.	879.	2249.	6873.
-46.50	0.	2493.	905.	2282.	6975.
-47.50	0.	2595.	931.	2315.	7078.
-48.50	0.	2697.	957.	2349.	7180.
-49.50	0.	2800.	983.	2382.	7282.
-50.50	0.	2902.	1009.	2416.	7385.
-51.50	0.	3004.	1035.	2449.	7487.
-52.50	0.	3106.	1062.	2483.	7589.
-53.50	0.	3209.	1088.	2516.	7691.
-54.50	0.	3311.	1114.	2550.	7794.
-55.50	0.	3413.	1140.	2583.	7896.
-56.50	0.	3515.	1166.	2617.	7998.
-57.50	0.	3618.	1192.	2650.	8101.
-58.50	0.	3720.	1220.	2684.	8203.
-59.50	0.	3822.	1251.	2717.	8305.
-60.50	0.	3925.	1284.	2750.	8407.
-61.50	0.	4027.	1317.	2784.	8510.
-62.50	0.	4129.	1351.	2817.	8612.
-63.50	0.	4231.	1384.	2851.	8714.
-64.50	0.	4334.	1418.	2884.	8816.
-65.50	0.	4436.	1451.	2918.	8919.
-66.50	0.	4538.	1485.	2951.	9021.
-67.50	0.	4641.	1518.	2985.	9123.
-68.50	0.	4743.	1552.	3018.	9226.
-69.50	0.	4845.	1585.	3052.	9328.
-70.50	0.	4947.	1619.	3085.	9430.
-71.50	0.	5050.	1652.	3119.	9532.
-72.50	0.	5152.	1685.	3152.	9635.
-73.50	0.	5254.	1719.	3185.	9737.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 9:05:24

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* PRELIMINARY DESIGN DATA FOR *
*  FREE EARTH DESIGN IN SAND  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PAUL LAINE PIPE XING #13 & 14
'SOILS REACH 1 - S-CASE 1.5 NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.33
ANCHOR HEIGHT RATIO (BETA) = 0.11

SHEET PILE DATA:

SHEET PILE NAME	<SECTION PROPERTIES> (PER FOOT OF WALL) SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07
PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07
PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-2.82	1.0 (***)	0.52
PZ38	-2.58	1.0 (***)	0.40
PZ35	-2.69	1.0 (***)	0.42
PZ32	-2.47	1.0 (***)	0.33
PZ27	-2.39	1.0 (***)	0.26
PZ22	-2.05	1.0 (***)	0.16
PLZ25	-2.48	1.0 (***)	0.28
PLZ23	-2.44	1.0 (***)	0.26

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

DESIGN GROUP #5

round Surface EL 5.9

Case	Water Level	FS	Tip EL	Max Mom (ft lbs)	Anchor Force (lbs)
S Free Earth	norm	1.5	-42.5	75242	11167
S Free Earth	norm	1.25	-33.5	46294	8474
S Free Earth	norm	1	-26	26537	6095
S Fixed Earth	norm	1.5	-53.4	64598	10434
S Fixed Earth	norm	1.25	-42	39295	7891
S Fixed Earth	norm	1	-32.4	22103	5652

For cost purposes, use for bulkhead # 15, 10 (north), AND 11

FOR FEASIBILITY COST ESTIMATING PURPOSES ONLY

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'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.25 200# UNIFORM NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.25  1.25
WALL   5.9    1
SURFACE RIGHTSIDE   2    0    5.9
                  200    5.9
SURFACE LEFTSIDE   3    0   -9
                  43   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0        0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
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PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:31:04

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*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.25 200# UNIFORM NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.25
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.25

III.--WALL DATA
ELEVATION AT TOP OF WALL = 5.90 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	5.90
200.00	5.90

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-9.00
43.00	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAT. WGHT. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- SAFETY-> ACT.	<- FACTOR-> PASS.
115.00	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF	DEF
118.00	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF	DEF
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF	DEF
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF	DEF
121.00	121.00	23.00	0.00	0.00	0.00			DEF	

DEF

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. FACTOR-> WGHT. PASS. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- <- ACT. DEF
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
121.00	121.00	23.00	0.00	0.00	0.00			DEF

VI.--WATER DATA
UNIT WEIGHT = 62.50 (PCF)
RIGHTSIDE ELEVATION = 0.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS

VII.A.--VERTICAL LINE LOADS
NONE

VII.B.--VERTICAL UNIFORM LOADS

LEFTSIDE (PSF)	RIGHTSIDE (PSF)
0.00	200.00

VII.C.--VERTICAL STRIP LOADS
NONE

VII.D.--VERTICAL RAMP LOADS
NONE

VII.E.--VERTICAL TRIANGULAR LOADS
NONE

VII.F.--VERTICAL VARIABLE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:31:09

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*   SOIL PRESSURES FOR  *
*  ANCHORED WALL DESIGN *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.25 200# UNIFORM NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
5.9	0.0	0.0	0.0	102.7	102.7	389.6
4.9	0.0	0.0	0.0	161.7	161.7	613.6
3.9	0.0	0.0	0.0	220.8	220.8	837.6
2.9	0.0	0.0	0.0	279.8	279.8	1061.6
2.0	0.0	0.0	0.0	333.1	333.1	1263.7
1.9	0.0	0.0	0.0	339.0	339.0	1286.4
1.0	0.0	0.0	0.0	393.5	393.5	1493.1
0.9	0.0	0.0	0.0	399.6	399.6	1516.1
0.0	0.0	0.0	0.0	451.3	451.3	1712.2
-0.1	0.0	0.0	0.0	455.5	455.5	1728.5
-1.1	0.0	0.0	0.0	485.5	485.5	1842.0
-2.1	0.0	0.0	0.0	513.9	513.9	1949.9
-3.1	0.0	0.0	0.0	542.4	542.4	2058.0
-4.1	0.0	0.0	0.0	570.9	570.9	2166.1
-5.1	0.0	0.0	0.0	599.4	599.4	2274.2
-6.1	0.0	0.0	0.0	627.9	627.9	

2382.4					
-7.1	0.0	0.0	0.0	656.4	656.4
2490.5					
-8.1	0.0	0.0	0.0	684.9	684.9
2598.6					
-9.0	0.0	0.0	0.0	710.5	710.5
2695.9					
-9.1	0.0	8.5	2.6	704.9	713.4
2706.7					
-10.0	0.0	85.0	26.4	654.3	739.4
2805.3					
-10.1	0.0	93.6	29.1	648.9	742.4
2817.0					
-11.1	0.0	178.6	55.5	596.3	774.9
2940.0					
-12.1	0.0	263.6	81.9	543.8	807.5
3063.7					
-13.1	0.0	348.7	108.4	491.4	840.1
3187.4					
-14.1	0.0	433.7	134.8	438.9	872.7
3311.1					
-15.1	0.0	518.8	161.2	386.5	905.3
3434.8					
-16.1	0.0	603.8	187.7	334.0	937.9
3558.5					
-17.1	0.0	688.9	214.1	281.6	970.5
3682.2					
-18.1	0.0	773.9	240.5	229.2	1003.1
3805.9					
-19.1	0.0	859.0	267.0	176.7	1035.7
3929.6					
-20.1	0.0	944.0	293.4	124.3	1068.3
4053.2					
-21.1	0.0	1029.1	319.8	71.8	1100.9
4176.9					
-22.1	0.0	1114.1	346.3	19.4	1133.5
4300.6					
-22.5	0.0	1145.5	356.0	0.0	1145.5
4346.3					
-23.1	0.0	1199.1	372.7	-33.1	1166.1
4424.3					
-24.1	0.0	1284.2	399.1	-85.5	1198.7
4548.0					
-25.1	0.0	1369.2	425.6	-138.0	1231.3
4671.7					
-26.1	0.0	1454.3	452.0	-190.4	1263.9
4795.4					
-27.1	0.0	1539.3	478.4	-242.9	1296.5
4919.1					
-28.1	0.0	1624.4	504.9	-295.3	1329.1
5042.8					
-29.1	0.0	1709.4	531.3	-347.8	1361.7
5166.5					
-30.0	0.0	1785.4	555.0	-394.6	1390.9
5277.3					
-30.1	0.0	1793.6	557.5	-399.6	1394.0
5289.3					
-31.1	0.0	1873.1	582.5	-447.9	1425.2
5407.4					
-32.1	0.0	1952.3	607.4	-496.1	1456.2
5525.3					

-33.1	0.0	2031.5	632.3	-544.2	1487.3
5643.1					
-34.1	0.0	2110.7	657.2	-592.3	1518.3
5760.9					
-35.1	0.0	2189.9	682.1	-640.5	1549.4
5878.8					
-36.1	0.0	2269.1	706.9	-688.6	1580.5
5996.6					
-37.1	0.0	2348.3	731.8	-736.8	1611.5
6114.5					
-38.0	0.0	2419.2	754.2	-779.8	1639.4
6220.2					
-38.1	0.0	2426.9	756.6	-784.5	1642.4
6231.8					
-39.1	0.0	2502.4	780.5	-829.9	1672.5
6345.9					
-40.1	0.0	2577.7	804.4	-875.2	1702.5
6459.8					
-41.1	0.0	2653.0	828.2	-920.4	1732.6
6573.8					
-42.1	0.0	2728.3	852.1	-965.7	1762.6
6687.8					
-43.1	0.0	2803.6	876.0	-1011.0	1792.6
6801.7					
-44.1	0.0	2878.9	899.8	-1056.3	1822.7
6915.7					
-45.1	0.0	2954.2	923.7	-1101.5	1852.7
7029.6					
-46.1	0.0	3029.5	947.6	-1146.8	1882.7
7143.6					
-47.1	0.0	3104.9	971.4	-1192.1	1912.8
7257.5					
-48.1	0.0	3180.2	995.3	-1237.4	1942.8
7371.5					
-49.1	0.0	3255.5	1019.2	-1282.6	1972.8
7485.4					
-50.1	0.0	3330.8	1043.0	-1327.9	2002.9
7599.4					
-51.1	0.0	3406.1	1066.9	-1373.2	2032.9
7713.3					
-52.1	0.0	3481.0	1090.8	-1418.1	2062.9
7827.3					
-53.1	0.0	3558.1	1114.6	-1465.2	2093.0
7941.2					
-54.1	0.0	3648.5	1138.5	-1525.5	2123.0
8055.2					

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:31:10

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*  SUMMARY OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.25 200# UNIFORM NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-33.49	- 41.97
PENETRATION (FT)	:	24.49	32.97
MAXIMUM BENDING MOMENT (LB-FT)	:	-4.6294E+04	- 3.9295E+04
AT ELEVATION (FT)	:	-11.49	- 10.52
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	8.5338E+09	6.4023E+09
AT ELEVATION (FT)	:	-15.10	- 14.10
ANCHOR FORCE (LB)	:	8.4744E+03	7.8911E+03

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:31:10

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FREE EARTH METHOD   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.25 200# UNIFORM NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 8474. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
5.90	0.0000E+00	0.	-4.3157E+09	102.68
4.90	6.1178E+01	132.	-3.4363E+09	161.71
3.90	2.8407E+02	323.	-2.5568E+09	220.75
2.90	7.2771E+02	574.	-1.6767E+09	279.79
2.00	1.3645E+03	849.	-8.8359E+08	333.06
1.90	1.4512E+03	883.	-7.9536E+08	339.05
1.00	2.3906E+03	1213.	0.0000E+00	393.51
1.00	2.3906E+03	-7262.	0.0000E+00	393.51
0.90	1.6664E+03	-7222.	8.8552E+07	399.58
0.00	-4.6645E+03	-6839.	8.8534E+08	451.27
-0.10	-5.3462E+03	-6794.	9.7363E+08	455.55
-1.10	-1.1907E+04	-6323.	1.8495E+09	485.46
-2.10	-1.7983E+04	-5824.	2.7049E+09	513.92
-3.10	-2.3545E+04	-5295.	3.5293E+09	542.41
-4.10	-2.8564E+04	-4739.	4.3131E+09	570.90
-5.10	-3.3013E+04	-4154.	5.0476E+09	599.40
-6.10	-3.6862E+04	-3540.	5.7252E+09	627.89
-7.10	-4.0083E+04	-2898.	6.3391E+09	656.38
-8.10	-4.2648E+04	-2227.	6.8839E+09	684.87
-9.00	-4.4371E+04	-1599.	7.3114E+09	710.52
-9.10	-4.4528E+04	-1528.	7.3551E+09	704.86
-10.00	-4.5625E+04	-917.	7.7135E+09	654.32
-10.10	-4.5713E+04	-852.	7.7494E+09	648.90
-11.10	-4.6249E+04	-229.	8.0648E+09	596.27
-12.10	-4.6189E+04	341.	8.3004E+09	543.83

491.38	-13.10	-4.5585E+04	859.	8.4563E+09	
438.94	-14.10	-4.4489E+04	1324.	8.5335E+09	
386.49	-15.10	-4.2955E+04	1736.	8.5338E+09	
334.04	-16.10	-4.1034E+04	2097.	8.4600E+09	
281.60	-17.10	-3.8779E+04	2405.	8.3153E+09	
229.15	-18.10	-3.6242E+04	2660.	8.1037E+09	
176.71	-19.10	-3.3477E+04	2863.	7.8295E+09	
124.26	-20.10	-3.0534E+04	3013.	7.4974E+09	
71.81	-21.10	-2.7468E+04	3111.	7.1126E+09	
19.37	-22.10	-2.4329E+04	3157.	6.6803E+09	
0.00	-22.47	-2.3162E+04	3161.	6.5098E+09	
33.08	-23.10	-2.1171E+04	3150.	6.2060E+09	-
85.52	-24.10	-1.8046E+04	3091.	5.6951E+09	-
137.97	-25.10	-1.5007E+04	2979.	5.1531E+09	-
190.42	-26.10	-1.2106E+04	2815.	4.5850E+09	-
242.86	-27.10	-9.3950E+03	2598.	3.9960E+09	-
295.31	-28.10	-6.9270E+03	2329.	3.3908E+09	-
347.76	-29.10	-4.7543E+03	2008.	2.7735E+09	-
394.58	-30.00	-3.0946E+03	1674.	2.2108E+09	-
399.58	-30.10	-2.9292E+03	1634.	2.1480E+09	-
447.92	-31.10	-1.5033E+03	1210.	1.5173E+09	-
496.05	-32.10	-5.2518E+02	738.	8.8404E+08	-
544.20	-33.10	-4.3145E+01	218.	2.4975E+08	-
563.15	-33.49	0.0000E+00	0.	0.0000E+00	-

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
		<----LEFTSIDE----->		<---RIGHTSIDE--->	
ELEVATION (FT)	WATER PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
5.90	0.	0.	0.	103.	390.

4.90	0.	0.	0.	162.	614.
3.90	0.	0.	0.	221.	838.
2.90	0.	0.	0.	280.	1062.
2.00	0.	0.	0.	333.	1264.
1.90	0.	0.	0.	339.	1286.
1.00	0.	0.	0.	394.	1493.
0.90	0.	0.	0.	400.	1516.
0.00	0.	0.	0.	451.	1712.
-0.10	0.	0.	0.	456.	1728.
-1.10	0.	0.	0.	485.	1842.
-2.10	0.	0.	0.	514.	1950.
-3.10	0.	0.	0.	542.	2058.
-4.10	0.	0.	0.	571.	2166.
-5.10	0.	0.	0.	599.	2274.
-6.10	0.	0.	0.	628.	2382.
-7.10	0.	0.	0.	656.	2490.
-8.10	0.	0.	0.	685.	2599.
-9.00	0.	0.	0.	711.	2696.
-9.10	0.	9.	3.	713.	2707.
-10.00	0.	85.	26.	739.	2805.
-10.10	0.	94.	29.	742.	2817.
-11.10	0.	179.	56.	775.	2940.
-12.10	0.	264.	82.	807.	3064.
-13.10	0.	349.	108.	840.	3187.
-14.10	0.	434.	135.	873.	3311.
-15.10	0.	519.	161.	905.	3435.
-16.10	0.	604.	188.	938.	3558.
-17.10	0.	689.	214.	970.	3682.
-18.10	0.	774.	241.	1003.	3806.
-19.10	0.	859.	267.	1036.	3930.
-20.10	0.	944.	293.	1068.	4053.
-21.10	0.	1029.	320.	1101.	4177.
-22.10	0.	1114.	346.	1133.	4301.
-22.47	0.	1146.	356.	1146.	4346.
-23.10	0.	1199.	373.	1166.	4424.
-24.10	0.	1284.	399.	1199.	4548.
-25.10	0.	1369.	426.	1231.	4672.
-26.10	0.	1454.	452.	1264.	4795.
-27.10	0.	1539.	478.	1296.	4919.
-28.10	0.	1624.	505.	1329.	5043.
-29.10	0.	1709.	531.	1362.	5166.
-30.00	0.	1785.	555.	1391.	5277.
-30.10	0.	1794.	558.	1394.	5289.
-31.10	0.	1873.	582.	1425.	5407.
-32.10	0.	1952.	607.	1456.	5525.
-33.10	0.	2031.	632.	1487.	5643.
-34.10	0.	2111.	657.	1518.	5761.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:31:10

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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* BY FIXED EARTH METHOD *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.25 200# UNIFORM NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 7891. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
5.90	0.0000E+00	0.	-3.4365E+09	102.68
4.90	6.1178E+01	132.	-2.7365E+09	161.71
3.90	2.8407E+02	323.	-2.0364E+09	220.75
2.90	7.2771E+02	574.	-1.3358E+09	279.79
2.00	1.3645E+03	849.	-7.0415E+08	333.06
1.90	1.4512E+03	883.	-6.3387E+08	339.05
1.00	2.3906E+03	1213.	0.0000E+00	393.51
1.00	2.3906E+03	-6678.	0.0000E+00	393.51
0.90	1.7248E+03	-6639.	7.0609E+07	399.58
0.00	-4.0813E+03	-6256.	7.0607E+08	451.27
-0.10	-4.7046E+03	-6210.	7.7647E+08	455.55
-1.10	-1.0682E+04	-5740.	1.4743E+09	485.46
-2.10	-1.6175E+04	-5240.	2.1537E+09	513.92
-3.10	-2.1153E+04	-4712.	2.8052E+09	542.41
-4.10	-2.5589E+04	-4155.	3.4203E+09	570.90
-5.10	-2.9455E+04	-3570.	3.9912E+09	599.40
-6.10	-3.2721E+04	-2957.	4.5113E+09	627.89
-7.10	-3.5359E+04	-2315.	4.9750E+09	656.38
-8.10	-3.7340E+04	-1644.	5.3776E+09	684.87
-9.00	-3.8539E+04	-1016.	5.6850E+09	710.52
-9.10	-3.8637E+04	-945.	5.7158E+09	704.86
-10.00	-3.9209E+04	-334.	5.9633E+09	654.32
-10.10	-3.9239E+04	-268.	5.9874E+09	648.90
-11.10	-3.9192E+04	354.	6.1913E+09	

596.27	-12.10	-3.8548E+04	924.	6.3275E+09	
543.83	-13.10	-3.7361E+04	1442.	6.3972E+09	
491.38	-14.10	-3.5682E+04	1907.	6.4023E+09	
438.94	-15.10	-3.3564E+04	2320.	6.3459E+09	
386.49	-16.10	-3.1060E+04	2680.	6.2316E+09	
334.04	-17.10	-2.8222E+04	2988.	6.0636E+09	
281.60	-18.10	-2.5102E+04	3243.	5.8469E+09	
229.15	-19.10	-2.1753E+04	3446.	5.5869E+09	
176.71	-20.10	-1.8227E+04	3597.	5.2893E+09	
124.26	-21.10	-1.4577E+04	3695.	4.9602E+09	
71.81	-22.10	-1.0856E+04	3740.	4.6060E+09	
19.37	-22.47	-9.4736E+03	3744.	4.4700E+09	
0.00	-23.10	-7.1145E+03	3733.	4.2329E+09	-
33.08	-24.10	-3.4065E+03	3674.	3.8476E+09	-
85.52	-25.10	2.1604E+02	3562.	3.4564E+09	-
137.97	-26.10	3.7006E+03	3398.	3.0655E+09	-
190.42	-27.10	6.9948E+03	3181.	2.6810E+09	-
242.86	-28.10	1.0046E+04	2912.	2.3086E+09	-
295.31	-29.10	1.2802E+04	2591.	1.9535E+09	-
347.76	-30.00	1.4987E+04	2257.	1.6526E+09	-
394.58	-30.10	1.5210E+04	2217.	1.6204E+09	-
399.58	-31.10	1.7220E+04	1793.	1.3136E+09	-
447.92	-32.10	1.8781E+04	1321.	1.0365E+09	-
496.05	-33.10	1.9846E+04	801.	7.9171E+08	-
544.20	-34.10	2.0367E+04	233.	5.8117E+08	-
592.34	-35.10	2.0296E+04	-383.	4.0574E+08	-
640.48	-36.10	1.9584E+04	-1048.	2.6529E+08	-
688.62	-37.10	1.8184E+04	-1761.	1.5858E+08	-
736.77	-38.00	1.6295E+04	-2443.	8.9418E+07	-
779.84	-38.10	1.6047E+04	-2521.	8.3193E+07	-
784.50					

-39.10	1.3126E+04	-3329.	3.5418E+07	-
829.90				
-40.10	9.3746E+03	-4181.	1.0204E+07	-
875.17				
-41.10	4.7484E+03	-5079.	1.0637E+06	-
920.44				
-42.10	0.0000E+00	-5893.	0.0000E+00	-
959.65				

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
	WATER	<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
5.90	0.	0.	0.	103.	390.
4.90	0.	0.	0.	162.	614.
3.90	0.	0.	0.	221.	838.
2.90	0.	0.	0.	280.	1062.
2.00	0.	0.	0.	333.	1264.
1.90	0.	0.	0.	339.	1286.
1.00	0.	0.	0.	394.	1493.
0.90	0.	0.	0.	400.	1516.
0.00	0.	0.	0.	451.	1712.
-0.10	0.	0.	0.	456.	1728.
-1.10	0.	0.	0.	485.	1842.
-2.10	0.	0.	0.	514.	1950.
-3.10	0.	0.	0.	542.	2058.
-4.10	0.	0.	0.	571.	2166.
-5.10	0.	0.	0.	599.	2274.
-6.10	0.	0.	0.	628.	2382.
-7.10	0.	0.	0.	656.	2490.
-8.10	0.	0.	0.	685.	2599.
-9.00	0.	0.	0.	711.	2696.
-9.10	0.	9.	3.	713.	2707.
-10.00	0.	85.	26.	739.	2805.
-10.10	0.	94.	29.	742.	2817.
-11.10	0.	179.	56.	775.	2940.
-12.10	0.	264.	82.	807.	3064.
-13.10	0.	349.	108.	840.	3187.
-14.10	0.	434.	135.	873.	3311.
-15.10	0.	519.	161.	905.	3435.
-16.10	0.	604.	188.	938.	3558.
-17.10	0.	689.	214.	970.	3682.
-18.10	0.	774.	241.	1003.	3806.
-19.10	0.	859.	267.	1036.	3930.
-20.10	0.	944.	293.	1068.	4053.
-21.10	0.	1029.	320.	1101.	4177.
-22.10	0.	1114.	346.	1133.	4301.
-22.47	0.	1146.	356.	1146.	4346.
-23.10	0.	1199.	373.	1166.	4424.
-24.10	0.	1284.	399.	1199.	4548.
-25.10	0.	1369.	426.	1231.	4672.
-26.10	0.	1454.	452.	1264.	4795.
-27.10	0.	1539.	478.	1296.	4919.
-28.10	0.	1624.	505.	1329.	5043.

-29.10	0.	1709.	531.	1362.	5166.
-30.00	0.	1785.	555.	1391.	5277.
-30.10	0.	1794.	558.	1394.	5289.
-31.10	0.	1873.	582.	1425.	5407.
-32.10	0.	1952.	607.	1456.	5525.
-33.10	0.	2031.	632.	1487.	5643.
-34.10	0.	2111.	657.	1518.	5761.
-35.10	0.	2190.	682.	1549.	5879.
-36.10	0.	2269.	707.	1580.	5997.
-37.10	0.	2348.	732.	1612.	6114.
-38.00	0.	2419.	754.	1639.	6220.
-38.10	0.	2427.	757.	1642.	6232.
-39.10	0.	2502.	780.	1673.	6346.
-40.10	0.	2578.	804.	1703.	6460.
-41.10	0.	2653.	828.	1733.	6574.
-42.10	0.	2728.	852.	1763.	6688.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 12-MARCH-2004 TIME: 12:31:13

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* PRELIMINARY DESIGN DATA FOR *
*   FREE EARTH DESIGN IN SAND *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.25 200# UNIFORM NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.38
ANCHOR HEIGHT RATIO (BETA) = 0.12

SHEET PILE DATA:

SHEET PILE NAME	<SECTION PROPERTIES> (PER FOOT OF WALL) SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07
PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07

PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-3.77	1.0 (***)	2.62
PZ38	-3.53	1.0 (***)	2.02
PZ35	-3.64	1.0 (***)	2.10
PZ32	-3.42	1.0 (***)	1.65
PZ27	-3.35	1.0 (***)	1.30
PZ22	-3.01	1.0 (***)	0.78
PLZ25	-3.43	1.0 (***)	1.42
PLZ23	-3.39	1.0 (***)	1.30

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

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'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.5 200# UNIFORM NORMAL WATER
CONTROL  ANCHORED  DESIGN  1.50  1.50
WALL   5.9    1
SURFACE RIGHTSIDE   2    0    5.9
                  200    5.9
SURFACE LEFTSIDE   3    0   -9
                  43   -23
                  200   -23
SOIL RIGHTSIDE  STRENGTHS   5
   115    115    23    0    0    0    2   0
   118    118    23    0    0    0   -10   0
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
SOIL LEFTSIDE  STRENGTHS   3
   126    126    23    0    0    0   -30   0
   123    123    23    0    0    0   -38   0
   121    121    23    0    0    0       0
WATER ELEVATIONS   62.5    0    0
V U 200
FINISHED
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PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 15:54:11

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*  INPUT DATA  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.5 200# UNIFORM NORMAL WATER

II.--CONTROL
ANCHORED WALL DESIGN
FACTOR OF SAFETY FOR ACTIVE PRESSURES = 1.50
FACTOR OF SAFETY FOR PASSIVE PRESSURES = 1.50

III.--WALL DATA
ELEVATION AT TOP OF WALL = 5.90 FT.
ELEVATION AT ANCHOR = 1.00 FT.

IV.--SURFACE POINT DATA

IV.A.--RIGHTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	5.90
200.00	5.90

IV.B.--LEFTSIDE

DIST. FROM WALL (FT)	ELEVATION (FT)
0.00	-9.00
43.00	-23.00
200.00	-23.00

V.--SOIL LAYER DATA

V.A.--RIGHTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. FACTOR-> WGHT. PASS. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- <- ACT. DEF
115.00	115.00	23.00	0.00	0.00	0.00	2.00	0.00	DEF
118.00	118.00	23.00	0.00	0.00	0.00	-10.00	0.00	DEF
126.00	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
123.00	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
121.00	121.00	23.00	0.00	0.00	0.00			DEF

DEF

V.B.--LEFTSIDE
LEVEL 2 FACTOR OF SAFETY FOR ACTIVE PRESSURE = DEFAULT
LEVEL 2 FACTOR OF SAFETY FOR PASSIVE PRESSURE = DEFAULT

SAFETY-> SAT. FACTOR-> WGHT. PASS. (PCF)	MOIST WGHT. (PCF)	ANGLE OF INTERNAL FRICTION (DEG)	COH-ESION (PSF)	ANGLE OF WALL FRICTION (DEG)	ADH-ESION (PSF)	<--BOTTOM--> ELEV. (FT)	SLOPE (FT/FT)	<- <- ACT.
126.00 DEF	126.00	23.00	0.00	0.00	0.00	-30.00	0.00	DEF
123.00 DEF	123.00	23.00	0.00	0.00	0.00	-38.00	0.00	DEF
121.00 DEF	121.00	23.00	0.00	0.00	0.00			DEF

VI.--WATER DATA
UNIT WEIGHT = 62.50 (PCF)
RIGHTSIDE ELEVATION = 0.00 (FT)
LEFTSIDE ELEVATION = 0.00 (FT)
NO SEEPAGE

VII.--VERTICAL SURCHARGE LOADS

VII.A.--VERTICAL LINE LOADS
NONE

VII.B.--VERTICAL UNIFORM LOADS

LEFTSIDE (PSF)	RIGHTSIDE (PSF)
0.00	200.00

VII.C.--VERTICAL STRIP LOADS
NONE

VII.D.--VERTICAL RAMP LOADS
NONE

VII.E.--VERTICAL TRIANGULAR LOADS
NONE

VII.F.--VERTICAL VARIABLE LOADS
NONE

VIII.--HORIZONTAL LOADS
NONE

WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 15:54:15

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*   SOIL PRESSURES FOR   *
*  ANCHORED WALL DESIGN  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.5 200# UNIFORM NORMAL WATER

II.--SOIL PRESSURES

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

ELEV. (FT)	NET WATER (PSF)	<---LEFTSIDE---> PASSIVE (PSF)	ACTIVE (PSF)	<------NET------> (SOIL + WATER) ACTIVE (PSF)	<-- RIGHTSIDE---> ACTIVE (PSF)	PASSIVE (PSF)
5.9	0.0	0.0	0.0	114.4	114.4	349.7
4.9	0.0	0.0	0.0	180.2	180.2	550.7
3.9	0.0	0.0	0.0	245.9	245.9	751.8
2.9	0.0	0.0	0.0	311.7	311.7	952.8
2.0	0.0	0.0	0.0	371.1	371.1	1134.3
1.9	0.0	0.0	0.0	377.7	377.7	1154.6
1.0	0.0	0.0	0.0	438.4	438.4	1340.1
0.9	0.0	0.0	0.0	445.2	445.2	1360.8
0.0	0.0	0.0	0.0	502.8	502.8	1536.8
-0.1	0.0	0.0	0.0	507.5	507.5	1551.4
-1.1	0.0	0.0	0.0	540.9	540.9	1653.3
-2.1	0.0	0.0	0.0	572.6	572.6	1750.2
-3.1	0.0	0.0	0.0	604.3	604.3	1847.2
-4.1	0.0	0.0	0.0	636.1	636.1	1944.3
-5.1	0.0	0.0	0.0	667.8	667.8	2041.3
-6.1	0.0	0.0	0.0	699.5	699.5	

2138.3					
-7.1	0.0	0.0	0.0	731.3	731.3
2235.4					
-8.1	0.0	0.0	0.0	763.0	763.0
2332.4					
-9.0	0.0	0.0	0.0	791.6	791.6
2419.7					
-9.1	0.0	7.8	2.9	787.0	794.8
2429.4					
-10.0	0.0	77.6	29.1	746.1	823.7
2518.0					
-10.1	0.0	85.4	32.1	741.8	827.2
2528.5					
-11.1	0.0	163.0	61.2	700.3	863.3
2638.9					
-12.1	0.0	240.6	90.3	659.0	899.6
2749.9					
-13.1	0.0	318.2	119.5	617.7	935.9
2860.9					
-14.1	0.0	395.8	148.6	576.5	972.3
2971.9					
-15.1	0.0	473.4	177.8	535.2	1008.6
3083.0					
-16.1	0.0	551.0	206.9	493.9	1044.9
3194.0					
-17.1	0.0	628.6	236.1	452.6	1081.2
3305.0					
-18.1	0.0	706.2	265.2	411.3	1117.5
3416.0					
-19.1	0.0	783.9	294.4	370.0	1153.9
3527.0					
-20.1	0.0	861.5	323.5	328.7	1190.2
3638.1					
-21.1	0.0	939.1	352.6	287.4	1226.5
3749.1					
-22.1	0.0	1016.7	381.8	246.1	1262.8
3860.1					
-23.1	0.0	1094.3	410.9	204.8	1299.1
3971.1					
-24.1	0.0	1171.9	440.1	163.6	1335.5
4082.1					
-25.1	0.0	1249.5	469.2	122.3	1371.8
4193.2					
-26.1	0.0	1327.1	498.4	81.0	1408.1
4304.2					
-27.1	0.0	1404.7	527.5	39.7	1444.4
4415.2					
-28.1	0.0	1479.3	555.5	0.0	1479.3
4521.9					
-28.1	0.0	1482.3	556.6	-1.6	1480.7
4526.2					
-29.1	0.0	1560.0	585.8	-42.9	1517.1
4637.2					
-30.0	0.0	1629.3	611.9	-79.7	1549.6
4736.7					
-30.1	0.0	1636.8	614.7	-83.7	1553.1
4747.5					
-31.1	0.0	1709.4	642.2	-121.6	1587.8
4853.5					
-32.1	0.0	1781.8	669.6	-159.3	1622.4
4959.3					

-33.1	0.0	1854.1	697.0	-197.1	1657.0
5065.1					
-34.1	0.0	1926.5	724.5	-234.9	1691.6
5170.8					
-35.1	0.0	1998.9	751.9	-272.6	1726.2
5276.6					
-36.1	0.0	2071.2	779.3	-310.4	1760.8
5382.4					
-37.1	0.0	2143.6	806.8	-348.2	1795.4
5488.2					
-38.0	0.0	2208.4	831.3	-381.9	1826.5
5583.1					
-38.1	0.0	2215.4	834.0	-385.6	1829.9
5593.4					
-39.1	0.0	2284.5	860.4	-421.1	1863.4
5695.9					
-40.1	0.0	2353.3	886.6	-456.5	1896.8
5798.1					
-41.1	0.0	2422.2	912.9	-491.9	1930.3
5900.4					
-42.1	0.0	2491.1	939.2	-527.3	1963.8
6002.7					
-43.1	0.0	2559.9	965.5	-562.7	1997.2
6105.0					
-44.1	0.0	2628.8	991.8	-598.1	2030.7
6207.3					
-45.1	0.0	2697.7	1018.1	-633.5	2064.1
6309.5					
-46.1	0.0	2766.5	1044.3	-668.9	2097.6
6411.8					
-47.1	0.0	2835.4	1070.6	-704.3	2131.1
6514.1					
-48.1	0.0	2904.3	1096.9	-739.7	2164.5
6616.4					
-49.1	0.0	2973.1	1123.2	-775.2	2198.0
6718.6					
-50.1	0.0	3042.0	1149.5	-810.6	2231.4
6820.9					
-51.1	0.0	3110.9	1175.8	-846.0	2264.9
6923.2					
-52.1	0.0	3179.7	1202.0	-881.4	2298.4
7025.5					
-53.1	0.0	3248.6	1228.3	-916.8	2331.8
7127.8					
-54.1	0.0	3316.9	1254.6	-951.6	2365.3
7230.0					

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 15:54:17

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*  SUMMARY OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.5 200# UNIFORM NORMAL WATER

II.--SUMMARY

RIGHTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

LEFTSIDE SOIL PRESSURES DETERMINED BY FIXED SURFACE WEDGE METHOD.

METHOD	:	FREE EARTH	FIXED EARTH
WALL BOTTOM ELEVATION (FT)	:	-42.49	-53.39
PENETRATION (FT)	:	33.49	44.39
MAXIMUM BENDING MOMENT (LB-FT)	:	-7.5242E+04	-6.4598E+04
AT ELEVATION (FT)	:	-14.15	-12.93
MAXIMUM SCALED DEFLECTION (LB-IN^3)	:	2.1908E+10	1.6600E+10
AT ELEVATION (FT)	:	-18.10	-17.10
ANCHOR FORCE (LB)	:	1.1167E+04	1.0434E+04

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS
BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 15:54:17

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FREE EARTH METHOD   *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.5 200# UNIFORM NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 11167. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
5.90	0.0000E+00	0.	-8.9969E+09	114.39
4.90	6.8159E+01	147.	-7.1623E+09	180.17
3.90	3.1649E+02	360.	-5.3276E+09	245.95
2.90	8.1076E+02	639.	-3.4922E+09	311.72
2.00	1.5203E+03	946.	-1.8392E+09	371.07
1.90	1.6168E+03	984.	-1.6555E+09	377.74
1.00	2.6634E+03	1351.	0.0000E+00	438.42
1.00	2.6634E+03	-9816.	0.0000E+00	438.42
0.90	1.6841E+03	-9772.	1.8414E+08	445.18
0.00	-6.9223E+03	-9345.	1.8407E+09	502.77
-0.10	-7.8543E+03	-9294.	2.0244E+09	507.54
-1.10	-1.6889E+04	-8770.	3.8511E+09	540.87
-2.10	-2.5384E+04	-8214.	5.6488E+09	572.57
-3.10	-3.3306E+04	-7625.	7.4026E+09	604.31
-4.10	-4.0624E+04	-7005.	9.0990E+09	636.06
-5.10	-4.7305E+04	-6353.	1.0725E+10	667.80
-6.10	-5.3319E+04	-5669.	1.2270E+10	699.55
-7.10	-5.8633E+04	-4954.	1.3723E+10	731.29
-8.10	-6.3216E+04	-4207.	1.5074E+10	763.03
-9.00	-6.6690E+04	-3507.	1.6197E+10	791.60
-9.10	-6.7036E+04	-3428.	1.6316E+10	787.01
-10.00	-6.9808E+04	-2738.	1.7335E+10	746.14
-10.10	-7.0079E+04	-2664.	1.7443E+10	741.81
-11.10	-7.2379E+04	-1943.	1.8448E+10	700.31
-12.10	-7.3978E+04	-1263.	1.9329E+10	659.03

	-13.10	-7.4919E+04	-625.	2.0082E+10	
617.74					
	-14.10	-7.5241E+04	-28.	2.0705E+10	
576.45					
	-15.10	-7.4988E+04	528.	2.1199E+10	
535.16					
	-16.10	-7.4199E+04	1043.	2.1563E+10	
493.87					
	-17.10	-7.2916E+04	1516.	2.1799E+10	
452.58					
	-18.10	-7.1181E+04	1948.	2.1908E+10	
411.29					
	-19.10	-6.9035E+04	2338.	2.1895E+10	
370.00					
	-20.10	-6.6518E+04	2688.	2.1763E+10	
328.72					
	-21.10	-6.3673E+04	2996.	2.1516E+10	
287.43					
	-22.10	-6.0540E+04	3263.	2.1159E+10	
246.14					
	-23.10	-5.7161E+04	3488.	2.0697E+10	
204.85					
	-24.10	-5.3578E+04	3672.	2.0137E+10	
163.56					
	-25.10	-4.9830E+04	3815.	1.9484E+10	
122.27					
	-26.10	-4.5961E+04	3917.	1.8745E+10	
80.98					
	-27.10	-4.2010E+04	3977.	1.7926E+10	
39.69					
	-28.06	-3.8175E+04	3996.	1.7071E+10	
0.00					
	-28.10	-3.8020E+04	3996.	1.7035E+10	-
1.60					
	-29.10	-3.4032E+04	3974.	1.6078E+10	-
42.89					
	-30.00	-3.0477E+04	3919.	1.5167E+10	-
79.74					
	-30.10	-3.0086E+04	3911.	1.5063E+10	-
83.67					
	-31.10	-2.6223E+04	3808.	1.3995E+10	-
121.59					
	-32.10	-2.2482E+04	3668.	1.2882E+10	-
159.35					
	-33.10	-1.8901E+04	3489.	1.1731E+10	-
197.11					
	-34.10	-1.5516E+04	3273.	1.0546E+10	-
234.87					
	-35.10	-1.2367E+04	3020.	9.3347E+09	-
272.63					
	-36.10	-9.4897E+03	2728.	8.1020E+09	-
310.39					
	-37.10	-6.9231E+03	2399.	6.8528E+09	-
348.15					
	-38.00	-4.9097E+03	2070.	5.7182E+09	-
381.93					
	-38.10	-4.7046E+03	2032.	5.5916E+09	-
385.57					
	-39.10	-2.8714E+03	1629.	4.3222E+09	-
421.08					
	-40.10	-1.4593E+03	1190.	3.0478E+09	-

456.49					
	-41.10	-5.0365E+02	716.	1.7709E+09	-
491.90					
	-42.10	-3.9895E+01	206.	4.9292E+08	-
527.30					
	-42.49	0.0000E+00	0.	0.0000E+00	-
540.96					

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
	WATER	<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
5.90	0.	0.	0.	114.	350.
4.90	0.	0.	0.	180.	551.
3.90	0.	0.	0.	246.	752.
2.90	0.	0.	0.	312.	953.
2.00	0.	0.	0.	371.	1134.
1.90	0.	0.	0.	378.	1155.
1.00	0.	0.	0.	438.	1340.
0.90	0.	0.	0.	445.	1361.
0.00	0.	0.	0.	503.	1537.
-0.10	0.	0.	0.	508.	1551.
-1.10	0.	0.	0.	541.	1653.
-2.10	0.	0.	0.	573.	1750.
-3.10	0.	0.	0.	604.	1847.
-4.10	0.	0.	0.	636.	1944.
-5.10	0.	0.	0.	668.	2041.
-6.10	0.	0.	0.	700.	2138.
-7.10	0.	0.	0.	731.	2235.
-8.10	0.	0.	0.	763.	2332.
-9.00	0.	0.	0.	792.	2420.
-9.10	0.	8.	3.	795.	2429.
-10.00	0.	78.	29.	824.	2518.
-10.10	0.	85.	32.	827.	2528.
-11.10	0.	163.	61.	863.	2639.
-12.10	0.	241.	90.	900.	2750.
-13.10	0.	318.	119.	936.	2861.
-14.10	0.	396.	149.	972.	2972.
-15.10	0.	473.	178.	1009.	3083.
-16.10	0.	551.	207.	1045.	3194.
-17.10	0.	629.	236.	1081.	3305.
-18.10	0.	706.	265.	1118.	3416.
-19.10	0.	784.	294.	1154.	3527.
-20.10	0.	861.	323.	1190.	3638.
-21.10	0.	939.	353.	1226.	3749.
-22.10	0.	1017.	382.	1263.	3860.
-23.10	0.	1094.	411.	1299.	3971.
-24.10	0.	1172.	440.	1335.	4082.
-25.10	0.	1250.	469.	1372.	4193.
-26.10	0.	1327.	498.	1408.	4304.
-27.10	0.	1405.	528.	1444.	4415.
-28.06	0.	1479.	556.	1479.	4522.
-28.10	0.	1482.	557.	1481.	4526.
-29.10	0.	1560.	586.	1517.	4637.

-30.00	0.	1629.	612.	1550.	4737.
-30.10	0.	1637.	615.	1553.	4748.
-31.10	0.	1709.	642.	1588.	4854.
-32.10	0.	1782.	670.	1622.	4959.
-33.10	0.	1854.	697.	1657.	5065.
-34.10	0.	1926.	724.	1692.	5171.
-35.10	0.	1999.	752.	1726.	5277.
-36.10	0.	2071.	779.	1761.	5382.
-37.10	0.	2144.	807.	1795.	5488.
-38.00	0.	2208.	831.	1826.	5583.
-38.10	0.	2215.	834.	1830.	5593.
-39.10	0.	2284.	860.	1863.	5696.
-40.10	0.	2353.	887.	1897.	5798.
-41.10	0.	2422.	913.	1930.	5900.
-42.10	0.	2491.	939.	1964.	6003.
-43.10	0.	2560.	965.	1997.	6105.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHOREDOR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 15:54:17

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* COMPLETE OF RESULTS FOR  *
*   ANCHORED WALL DESIGN   *
*   BY FIXED EARTH METHOD  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.5 200# UNIFORM NORMAL WATER

II.--RESULTS (ANCHOR FORCE= 10434. (LB))

ELEVATION (FT)	BENDING MOMENT (LB-FT)	SHEAR (LB)	SCALED DEFLECTION (LB-IN^3)	NET PRESSURE (PSF)
5.90	0.0000E+00	0.	-7.2508E+09	114.39
4.90	6.8159E+01	147.	-5.7725E+09	180.17
3.90	3.1649E+02	360.	-4.2941E+09	245.95
2.90	8.1076E+02	639.	-2.8152E+09	311.72
2.00	1.5203E+03	946.	-1.4829E+09	371.07
1.90	1.6168E+03	984.	-1.3348E+09	377.74
1.00	2.6634E+03	1351.	0.0000E+00	438.42
1.00	2.6634E+03	-9083.	0.0000E+00	438.42
0.90	1.7573E+03	-9039.	1.4850E+08	

445.18	0.00	-6.1897E+03	-8612.	1.4846E+09
502.77	-0.10	-7.0484E+03	-8562.	1.6327E+09
507.54	-1.10	-1.5351E+04	-8038.	3.1047E+09
540.87	-2.10	-2.3113E+04	-7481.	4.5503E+09
572.57	-3.10	-3.0302E+04	-6893.	5.9561E+09
604.31	-4.10	-3.6887E+04	-6272.	7.3096E+09
636.06	-5.10	-4.2836E+04	-5620.	8.5994E+09
667.80	-6.10	-4.8118E+04	-4937.	9.8153E+09
699.55	-7.10	-5.2699E+04	-4221.	1.0948E+10
731.29	-8.10	-5.6550E+04	-3474.	1.1990E+10
763.03	-9.00	-5.9364E+04	-2775.	1.2844E+10
791.60	-9.10	-5.9637E+04	-2696.	1.2934E+10
787.01	-10.00	-6.1750E+04	-2006.	1.3696E+10
746.14	-10.10	-6.1947E+04	-1931.	1.3776E+10
741.81	-11.10	-6.3514E+04	-1210.	1.4510E+10
700.31	-12.10	-6.4381E+04	-531.	1.5135E+10
659.03	-13.10	-6.4589E+04	108.	1.5648E+10
617.74	-14.10	-6.4179E+04	705.	1.6051E+10
576.45	-15.10	-6.3193E+04	1261.	1.6342E+10
535.16	-16.10	-6.1672E+04	1775.	1.6524E+10
493.87	-17.10	-5.9656E+04	2248.	1.6600E+10
452.58	-18.10	-5.7189E+04	2680.	1.6572E+10
411.29	-19.10	-5.4309E+04	3071.	1.6446E+10
370.00	-20.10	-5.1060E+04	3420.	1.6226E+10
328.72	-21.10	-4.7482E+04	3728.	1.5918E+10
287.43	-22.10	-4.3617E+04	3995.	1.5528E+10
246.14	-23.10	-3.9506E+04	4221.	1.5062E+10
204.85	-24.10	-3.5189E+04	4405.	1.4529E+10
163.56	-25.10	-3.0710E+04	4548.	1.3934E+10
122.27	-26.10	-2.6108E+04	4649.	1.3287E+10
80.98				

	-27.10	-2.1424E+04	4710.	1.2594E+10	
39.69					
	-28.06	-1.6885E+04	4729.	1.1893E+10	
0.00					
	-28.10	-1.6702E+04	4729.	1.1865E+10	-
1.60					
	-29.10	-1.1980E+04	4707.	1.1106E+10	-
42.89					
	-30.00	-7.7669E+03	4651.	1.0405E+10	-
79.74					
	-30.10	-7.3022E+03	4643.	1.0327E+10	-
83.67					
	-31.10	-2.7071E+03	4541.	9.5350E+09	-
121.59					
	-32.10	1.7665E+03	4400.	8.7384E+09	-
159.35					
	-33.10	6.0806E+03	4222.	7.9449E+09	-
197.11					
	-34.10	1.0198E+04	4006.	7.1619E+09	-
234.87					
	-35.10	1.4080E+04	3752.	6.3964E+09	-
272.63					
	-36.10	1.7689E+04	3461.	5.6553E+09	-
310.39					
	-37.10	2.0989E+04	3131.	4.9447E+09	-
348.15					
	-38.00	2.3661E+04	2803.	4.3359E+09	-
381.93					
	-38.10	2.3940E+04	2764.	4.2702E+09	-
385.57					
	-39.10	2.6506E+04	2361.	3.6371E+09	-
421.08					
	-40.10	2.8650E+04	1922.	3.0498E+09	-
456.49					
	-41.10	3.0339E+04	1448.	2.5119E+09	-
491.90					
	-42.10	3.1535E+04	939.	2.0263E+09	-
527.30					
	-43.10	3.2204E+04	394.	1.5952E+09	-
562.71					
	-44.10	3.2310E+04	-187.	1.2196E+09	-
598.12					
	-45.10	3.1818E+04	-803.	8.9975E+08	-
633.53					
	-46.10	3.0693E+04	-1454.	6.3481E+08	-
668.93					
	-47.10	2.8899E+04	-2141.	4.2281E+08	-
704.34					
	-48.10	2.6400E+04	-2863.	2.6065E+08	-
739.75					
	-49.10	2.3162E+04	-3620.	1.4400E+08	-
775.16					
	-50.10	1.9149E+04	-4413.	6.7262E+07	-
810.56					
	-51.10	1.4324E+04	-5241.	2.3496E+07	-
845.97					
	-52.10	8.6544E+03	-6105.	4.3603E+06	-
881.38					
	-53.10	2.1030E+03	-7004.	5.3055E+04	-
916.78					
	-54.10	0.0000E+00	-7276.	0.0000E+00	-

NOTE: DIVIDE SCALED DEFLECTION MODULUS OF ELASTICITY IN PSI TIMES PILE MOMENT OF INERTIA IN IN^4 TO OBTAIN DEFLECTION IN INCHES.

III.--WATER AND SOIL PRESSURES

		<----------SOIL PRESSURES---------->			
	WATER	<----LEFTSIDE----->		<---RIGHTSIDE---->	
ELEVATION (FT)	PRESSURE (PSF)	PASSIVE (PSF)	ACTIVE (PSF)	ACTIVE (PSF)	PASSIVE (PSF)
5.90	0.	0.	0.	114.	350.
4.90	0.	0.	0.	180.	551.
3.90	0.	0.	0.	246.	752.
2.90	0.	0.	0.	312.	953.
2.00	0.	0.	0.	371.	1134.
1.90	0.	0.	0.	378.	1155.
1.00	0.	0.	0.	438.	1340.
0.90	0.	0.	0.	445.	1361.
0.00	0.	0.	0.	503.	1537.
-0.10	0.	0.	0.	508.	1551.
-1.10	0.	0.	0.	541.	1653.
-2.10	0.	0.	0.	573.	1750.
-3.10	0.	0.	0.	604.	1847.
-4.10	0.	0.	0.	636.	1944.
-5.10	0.	0.	0.	668.	2041.
-6.10	0.	0.	0.	700.	2138.
-7.10	0.	0.	0.	731.	2235.
-8.10	0.	0.	0.	763.	2332.
-9.00	0.	0.	0.	792.	2420.
-9.10	0.	8.	3.	795.	2429.
-10.00	0.	78.	29.	824.	2518.
-10.10	0.	85.	32.	827.	2528.
-11.10	0.	163.	61.	863.	2639.
-12.10	0.	241.	90.	900.	2750.
-13.10	0.	318.	119.	936.	2861.
-14.10	0.	396.	149.	972.	2972.
-15.10	0.	473.	178.	1009.	3083.
-16.10	0.	551.	207.	1045.	3194.
-17.10	0.	629.	236.	1081.	3305.
-18.10	0.	706.	265.	1118.	3416.
-19.10	0.	784.	294.	1154.	3527.
-20.10	0.	861.	323.	1190.	3638.
-21.10	0.	939.	353.	1226.	3749.
-22.10	0.	1017.	382.	1263.	3860.
-23.10	0.	1094.	411.	1299.	3971.
-24.10	0.	1172.	440.	1335.	4082.
-25.10	0.	1250.	469.	1372.	4193.
-26.10	0.	1327.	498.	1408.	4304.
-27.10	0.	1405.	528.	1444.	4415.
-28.06	0.	1479.	556.	1479.	4522.
-28.10	0.	1482.	557.	1481.	4526.
-29.10	0.	1560.	586.	1517.	4637.
-30.00	0.	1629.	612.	1550.	4737.
-30.10	0.	1637.	615.	1553.	4748.
-31.10	0.	1709.	642.	1588.	4854.
-32.10	0.	1782.	670.	1622.	4959.
-33.10	0.	1854.	697.	1657.	5065.
-34.10	0.	1926.	724.	1692.	5171.

-35.10	0.	1999.	752.	1726.	5277.
-36.10	0.	2071.	779.	1761.	5382.
-37.10	0.	2144.	807.	1795.	5488.
-38.00	0.	2208.	831.	1826.	5583.
-38.10	0.	2215.	834.	1830.	5593.
-39.10	0.	2284.	860.	1863.	5696.
-40.10	0.	2353.	887.	1897.	5798.
-41.10	0.	2422.	913.	1930.	5900.
-42.10	0.	2491.	939.	1964.	6003.
-43.10	0.	2560.	965.	1997.	6105.
-44.10	0.	2629.	992.	2031.	6207.
-45.10	0.	2698.	1018.	2064.	6310.
-46.10	0.	2767.	1044.	2098.	6412.
-47.10	0.	2835.	1071.	2131.	6514.
-48.10	0.	2904.	1097.	2165.	6616.
-49.10	0.	2973.	1123.	2198.	6719.
-50.10	0.	3042.	1149.	2231.	6821.
-51.10	0.	3111.	1176.	2265.	6923.
-52.10	0.	3180.	1202.	2298.	7025.
-53.10	0.	3249.	1228.	2332.	7128.
-54.10	0.	3317.	1255.	2365.	7230.

PROGRAM CWALSHT-DESIGN/ANALYSIS OF ANCHORED OR CANTILEVER SHEET PILE WALLS

BY CLASSICAL METHODS

DATE: 11-MARCH-2004 TIME: 15:54:19

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* PRELIMINARY DESIGN DATA FOR *
*  FREE EARTH DESIGN IN SAND  *
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I.--HEADING
'PORT OF IBERIA BULKHEAD REPLACEMENT
'PUBLIC DOCK #15
'SOILS REACH 1 - S-CASE 1.5 200# UNIFORM NORMAL WATER

II.--DESIGN PARAMETERS

WALL HEIGHT RATIO (ALPHA) = 0.31
ANCHOR HEIGHT RATIO (BETA) = 0.10

SHEET PILE DATA:

SHEET PILE NAME	<SECTION PROPERTIES> (PER FOOT OF WALL) SECTION MODULUS (IN^3)	MOMENT OF INERTIA (IN^4)	ALLOWABLE STRESS (PSI)	MODULUS OF ELASTICITY (PSI)
PZ40	60.70	490.80	2.40E+04	2.90E+07

PZ38	46.80	280.80	2.40E+04	2.90E+07
PZ35	48.50	361.20	2.40E+04	2.90E+07
PZ32	38.30	220.40	2.40E+04	2.90E+07
PZ27	30.20	184.20	2.40E+04	2.90E+07
PZ22	18.10	84.40	2.40E+04	2.90E+07
PLZ25	32.80	223.25	2.40E+04	2.90E+07
PLZ23	30.20	203.75	2.40E+04	2.90E+07

III.--PRELIMINARY DESIGN DATA

SHEET PILE NAME	LOG(H^4/EI)	ROWE'S MOMENT REDUCTION COEF.	RATIO OF ALLOWABLE MOMENT TO FREE EARTH MOMENT
PZ40	-3.41	1.0 (***)	1.61
PZ38	-3.17	1.0 (***)	1.24
PZ35	-3.28	1.0 (***)	1.29
PZ32	-3.07	1.0 (***)	1.02
PZ27	-2.99	1.0 (***)	0.80
PZ22	-2.65	1.0 (***)	0.48
PLZ25	-3.07	1.0 (***)	0.87
PLZ23	-3.03	1.0 (***)	0.80

*** REDUCTION NOT APPLICABLE DUE TO ALPHA LESS THAN 0.6.

ANNEX 4 – BULKHEAD DESIGN CRITERIA, SOIL BEARING CAPACITY, AND LOAD-OUT CAPBILITIES FOR THE PORT OF IBERIA

ANNEX 4

BULKHEAD DESIGN CRITERIA, SOIL BEARING CAPACITY AND LOAD-OUT CAPABILITIES FOR THE PORT OF IBERIA

1. Facilities Within Dredging Operation In Port And Their Requirements

- **Bayou Pipe Management Facility** – This is a 760-foot oilfield operation facility dealing exclusively with pipe. According to the owner/operator of this facility has been in operation for over 60 years. The pipe supplies are located on pipe rack sills approximately 25 feet from the bulkhead. The pipe is loaded onto barges utilizing a 225-ton crane located approximately 20 feet from the bulkhead. For heavy pipe load out there is a 50 foot reinforced bulkhead. At present the required water depth for their operation is (plus) +8 feet. However, when the deep-water channel is completed, it is the intent of Bayou Pipe Management to construct a wharf approximately 10 to 15 feet into the channel by 40-foot wide with appropriate capacities to load and off load ships. Therefore, the majority of the 760-foot existing bulkhead should have design surcharge load of 200 psf.
- **Coastal Fabricators** – At present Coastal Fabricators has a bulkhead of approximately 150 feet used primarily for oilfield and structural load out. The facility has a pile supported relieving platform. This facility will utilize the aforementioned surcharge design of 200 psf.
- **Dynamic** – This facility has two load out docks 601 feet and 202 feet, respectively. In both cases these facilities are utilized when a load out requiring the rollout method that is, when the structure cannot be handled by cranes. The crane load out is approximately 200 tons or less. In all cases the structure constructed 50 to 60 feet from the bulkhead usually on mats or skid rails distributing the load on the surface. During the load out, a minimal amount of pressure is exerted on the bulkhead both horizontally and vertically. This is usually accomplished either by bridging equipment 25 to 60 feet over the bulkhead

and/or constructing a pile supported relieving platform adequately designed to prevent any horizontal or vertical surcharge to be applied to the bulkhead. As indicated in the previously surcharge design bulkhead section the cost associated with these kind of facilities is borne by the fabrication project. At present the water depths along Dynamic load out bulkhead is approximately 18 feet with about 2 feet of soft silt. Therefore, the facility as it exists today will not require any additional water depth at the bulkhead. As an additional note, the tug used to transport the barge in and out of the port is a shallow draft vessel. Usually these vessels are 900 to 1200 HP and they are changed out to a 2500 to 3000 HP tug once they are in deep water and the barge is ballast to seagoing depth usually 20 to 30 feet. Dynamic Management personnel provided this information.

- **Franks Casing Crew** – The facility has a 300-foot bulkhead for a design depth of 16 feet. This facility provides oilfield supplies for drilling operations. This is a recently constructed facility (2003) with a steel sheet pile wall with tie-up systems and a tip elevation of (-)33.0. The design surcharge load is 200 psf.
- **Omega Natchiq** – This facility has a 72-foot load out bulkhead. It follows the same procedure as Dynamic with a design bulkhead of (-)20 feet at the bulkhead. We anticipate no impact at this facility. Therefore it will not require bulkhead replacement and/or modification. The Omega Management provided this information to us.
- **Stolt** – Stolt Canal and slip has approximately 235 feet and 327 foot of bulkhead respectively with water depths of (-)12 feet. This is an oilfield supply facility requiring a 200-psf load out design and no additional water depth for their operation.
- **NATCO North & South** – This facility has a 204 and 210 foot load out bulkhead respectively. As part of this project a new load out facility of approximately 100 feet will be provided since their north/south bulkhead facilities were left out of the dredging project. The design surcharge load will be 200 pounds psf.

- **Jamar Services** – An oilfield facility and pipeline bulkhead approximately 345 feet long. This facility will be adequately serviced by 200-psf surcharge load.
- **D & D Fuel Dock** – This facility has a 207-foot bulkhead, which will have a 200-psf surcharge.
- **L-Con Industries** – Pipeline crossing bulkhead approximately 51 feet. This cost is accounted for in the relocation cost.
- **Bayou Management Company** – This is a pipeline bulkhead approximately 59 feet in length. Its cost is included in the relocation cost.
- **P.O.I. Dock** – This facility has approximately 742 linear feet of bulkhead. This has a relieving concrete platform and its design surcharge load is 200 lbs. psf.
- **Pipeline bulkhead located on Commercial Canal** – Approximately 279 feet. This cost is included in the relocation cost.
- **Universal Fabricators (UNIFAB)** – This facility has two load out docks. This is similar to Dynamic and Omega, which has extremely heavy load outs. Their two load out docks are designed to a depth of 20 feet. However, as in the case of Omega and Dynamic each heavy load out is reviewed and analyzed for its particular needs. In most cases there bridging equipment 50 – 60 feet long pile supported is utilized to avoid any additional surcharge loads to the bulkhead. The water depth at their facility is 18 to 20 feet at the bulkheads. Therefore as in the case of Dynamic and Omega, their facilities will require no major modifications due to the project. Also as in the case of Dynamic and Omega, Unifab Management provided this information.
- **Sea Mar Management** – An oilfield supply company whose facility does not have an existing bulkhead.
- **Loadmaster Derrick & Equipment Company** – This firm has its own dock and also uses the public dock with the same bulkhead and surcharged design load. This facility will not be affected by channel deepening.
- **Mammoet USA** – Mammoet provides customer driving and tailor made solutions in heavy lifting and transport. Activities focus on the petrochemical industry, civil

projects, power plant facilities, offshore business and marine projects. This facility requires a minimal bulkhead load of less than 200 psf. This facility will not be affected by channel deepening.

- **Nabors Offshore Corporation** – An oilfield supply and drilling company with no essential load outs. Minimal bulkhead requirement with a 200-psf design load exchange. They operate out of slip C-4. This facility will not be affected by channel deepening.
- **Regional Fabricators** – This is a fabrication facility requiring a bulkhead design surcharge of 200 psf. Existing water depths adequate for their operation due to the imitation of a small vessel. This facility will not be affected by channel deepening.

2. Surcharge Design At Bulkheads

a. Bulkhead Design Surcharge: The bulkheads are very sensitive to the effects of surcharge with or without adjacent dredging. The level of surcharge to be adopted by the Port for the AGMAC Feasibility Study shall be a reasonable maximum recommended design surcharge on Port properties. For facilities that own their sites and docking facilities their operations shall comply with the Port's recommended design surcharge. This requirement corresponds to the policy of the Port's charter which authorizes the Port to set standards.

(1) As noted above, unrestricted bulkhead surcharge loads shall be limited to a reasonable maximum recommended design surcharge. A brief review of other specified surcharge loads shows the following acceptable surcharge pressures:

- American Association of State Highway and Transportation Officials (AASHTO) calls for a surcharge of 2 feet of additional fill weighing 125 pounds per cubic

foot for situations when HS20 trucks are located within half the exposed wall height, i.e., 250 psf.

- Pile Buck, Inc., an authority on sheet pile design, recommends a minimum surcharge load of approximately 200 psf in the Pile Buck Sheet Piling Design Manual and Pile Buck design software.
- The standard surcharge load used in design and given as the surcharge load restriction in lease agreements at Port Fourchon in Lafourche Parish, Louisiana is 200 psf.

Based on the above, the standard surcharge load to be used in the AGMAC Feasibility Study for analysis of the effects of dredging on bulkheads should be 200 psf.

(2) Note that material or equipment heavier than 200 psf should normally be unloaded from trucks or forklifts to the ground at locations sufficiently set back from bulkheads. The material or equipment can then be loaded by crane to vessel moored at bulkhead by swinging the loads from unloading location to vessel. For this type of operation a pile-supported relieving platform or crane pad designed for the crane loads is necessary near the bulkhead. This crane support structure is provided by the occupant/operator to meet the crane loads required for the proposed operations and thus not included in the cost portion of the AGMAC economical analysis.

(3) For forklift loading (pallets, etc.) directly to barges, a hinged ramp is necessary to span from a pile-supported abutment at the bank to the edge of the barge. This structure is provided by the occupant/operator to meet the forklift loads required for the proposed operations and thus not included in the cost portion of the AGMAC economical analysis.

(4) In summary, the design surcharge to be considered in the AGMAC Feasibility Study for estimation of the costs of bulkhead replacements from dredging impacts is 200 psf.

b. Load Out Surcharges: When necessary, design and construction of bulkhead relieving platforms and other load supporting improvements will accommodate the large surcharges associated with load-out of fabricated structures at slips within the Port. These items are designed for the appropriate slip draft and the specialized loadings occurring at all stages of the load-out processes. The costs associated with relieving platforms, etc. in most cases is included in the Port occupant's fabrication project budgets negotiated with their customer or borne by the fabricator. Due to the relieving platforms, the large surcharge loads from load outs are set back far enough away from bulkheads to avoid bulkhead overstress or global instability. Therefore, the AGMAC Feasibility Study economic analysis does not require direct inclusion of costs associated with relieving platforms, load out surcharges, etc.

3. **Soil Bearing Capacity and Load-Out Capabilities**.

a. Issues relevant to construction and load-out of large modules (7,000 to 9,000 tons) include in-situ soil bearing capacity and load-out capabilities. Discussions with the large fabricators in the Port of Iberia, namely Dynamic, Omega and Unifab, were held to determine their methods to load-out heavy structures; in addition, discussions with Mammoet USA, a local/international load-out firm for overland transport and loading issues, were also held.

b. In-situ Soil Bearing Capacity. The discussions mentioned in the previous paragraph revealed that every large job built at these fabrication yards would require some yard improvements that would be specific to the size, shape and weight dimensions of the topside. Approximately $100,000 to $200,000 is spent at the beginning of these jobs, which is included in the price of the bid. Both Omega and Dynamic have indicated that they have reinforced their yards to increase the bearing capacity to near 10,000 pounds per square foot (psf). Omega was consulted on recent upgrades (2003) to their facilities and their design was set-up for a 10,000-ton load-out capacity. Mammoet USA was also consulted because they have done heavy load-outs for all three major fabricators

at the Port of Iberia and for other major fabricators in Morgan City, Baton Rouge and Texas. Mammoet's experience is that the Omega and Dynamic yards are reinforced with limestone that provides sufficient strength for their multi-axle loading systems, and that both yards could handle the loads projected for 7,000 to 9,000 ton topsides. Unifab has already completed the engineering required to handle loads associated with an 8,000 ton, 8-leg load module. Their yard improvement plan consists of placing pile-supported pads in the load-out area behind the bulkhead. Each pad is designed to distribute 550 tons. A 15,000-ton module would involve additional pads and/or a redesign of the pile grouping to hold the additional weight up to 750 tons per set. The yard improvement plan includes a limestone pad over a geogrid reinforcing membrane. Similar limestone pads capable of 10,000 psf yard loading have already been constructed at Dynamic and Omega. As previously mentioned, yard improvement costs would be part of the specific topside project cost and not the cost to the Port of Iberia projects. The POI fabricators also state that if more than one of these large topsides would have to be built at the same time, then the yards would have to be reinforced. This could cost in the neighborhood of $250,000 to $500,000. The difference between the standard yard improvement costs and the reinforcement costs would probably be would be borne by the fabricator in his capital expenditure budget and spread out over a multi year plan.

c. Load-Out. Mammoet USA indicates that load-out for a 10,000-ton module could be accomplished utilizing a wheeled-loading system that distributes the weight using multiple axels each capable up supporting 36 tons. Mammoet added that load-out for a heavier module (15,000 ton range) would be accomplished using a system based upon the traditional skid track system. Multiple skid tracks would be used depending on the number of legs of the module, but for an eight-legged platform, either be 2 or 4 tracks would be utilized, depending on the loading orientation of the module. The module would be loaded standing up with each of its legs in a "shoe." This shoe is fabricated to accept the round tubular leg of the module and rest in the skid track that is a wide-channel beam. The shoe for a large load-out would be approximately 15 feet long. The

tracks would span between the pads. The load would be transferred to the pads, and a portion of the load would also be transferred to the ground between the pads using steel mats under the tracks. The shoe will be capable of evenly distributing the load and not be dependent on the tilt of the module. The large fabricators in the Port of Iberia have described their fabrication yards adjacent to the bulkhead as being reinforced with limestone to distribute a 10,000-psf load, which matches with Mammoet's description of the load-out area. The load-out is performed so that the load is not introduced at the bulkhead instead shared between the barge and the load-out pad behind the bulkhead. Costs for load-out planning, design and implementation would be part of the specific topside project cost and not the cost to the Port of Iberia projects.

Memo:

To Jake Terranova
From: Oneil Malbrough
Re: Load-Out of 15,000 ton and 12,000 ton modules at the Port of Iberia

March 14, 2006

Introduction

A numerical iterative calculation was utilized to determine if a 200 foot x 250 foot module consisting of a fabricated weight of 10,000 tons and a shipping weight of 15,000 tons could be loaded at the Port of Iberia. Likewise a module with a shipping weight of 12,000 tons was also analyzed using the same barge assumptions. This analysis also relies on the current bulkhead strengths and in-situ soil strengths that have been previously discussed.

The analysis includes the following assumptions, all of which are appropriately based upon previous load-outs at the Port of Iberia and how these experiences would apply to larger modules. Two figures are attached indicating how the module will be loaded and positioned on the barge.

Assumptions

1. Barge- The barge would have the dimensions of 400' x 100' x 25'.

2. Skid rail load-out. It was assumed that a skid rail load-out would be performed using skid shoes supporting the module that travel in the skid rails. Three skid shoes are assumed to be used for the load-out. The number of skid rails does not affect the ballasting calculations, but the overall length of each skid shoe does affect the ballasting calculation.

3. Barge draft and bulkhead elevation at load-out
   a) Bulkhead elevation – 5 feet above water surface
   b) Barge light load draft- 4 feet
   c) Channel Depth- 20 feet
   d) Load-out – 1250 Tons per foot of draft

4. To maintain a minimum of 1 foot of water under the keel, the bottom of the skid rail must be elevated 1 foot above the top of bulkhead elevation, and the barge ballasted to and total draft of 19 feet. If the bulkhead is above 6.0 elevation referencing the water, the skid rail would not have to be elevated.

Methodology and Calculation

Methodology

The modules would be loaded on the skid rails. The module itself is mounted on skid shoes which ride upon the skid rails from the fabrication point in the yard to skid rails that continue onto the barge. The skid shoes are used to evenly distribute the load of the module in the yard and to ensure that the barge is incrementally loaded at uniform rate to allow proper ballasting of the barge. The length of the shoes will be sized so that the load will not exceed 90,000 pounds (90 kips) per linear foot of the skid shoe.

The loading would be accomplished by facing the 200-foot side of the module to the 100-foot wide portion of the barge. Each side of the topside module would have an overhang over the barge which would then not exceed 50 feet. The use of three skid rails allows a skid rail to be placed directly above structural members of the barge. The module would then be pulled onto the barge on the rails.

The barge load-out calculations were then performed using the 90 kips per foot loading (900 kips for every 10 foot iteration.) The analysis for the 12,000 ton load-out was performed likewise with the skid shoes designed to also not to exceed 90 kips per foot as the module is skidded onto the barge.

Initial Ballasting

The calculation began by ballasting the barge to meet the 19 feet of total draft. This was accomplished by calculating the required ballast in each tank to provide an additional 15.5 feet of draft in order to level the barge with the skid rail. The moments were summed at each ballast tank to ensure even keel.

Ballasting during load-out

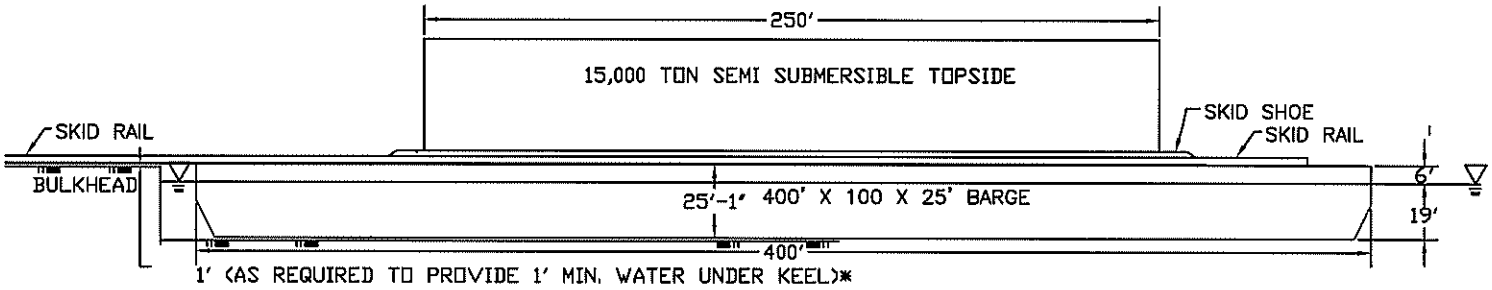
The ballasting calculation iterated the process by calculating a required change in ballast for each 10' movement of the module onto the barge. This was accomplished by both adding and subtracting ballast to the tanks to keep the barge at the constant 19 feet of draft and even keel by calculating the moments at each iteration.

Results

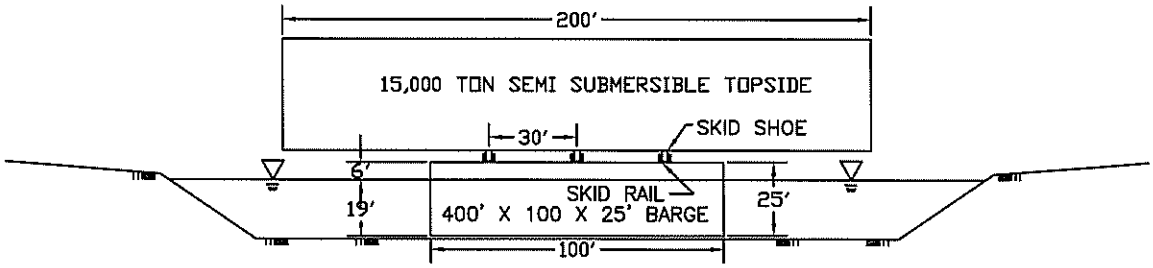
The calculations indicate that a 15,000 ton module with the approximate dimensions of 200' x 250' can be successfully loaded-out at the Port of Iberia using a 20 foot channel depth with 15,000 tons of load located on the deck and 3,750 tons of ballast below the deck to achieve an average draft of 19 feet. Likewise, the same method indicates that a 12,000 ton module can be successfully loaded-out at the Port of Iberia with 12,000 tons of load located on the deck and 6,750 tons of ballast below the deck to achieve an average draft of 19 feet.

LOAD-OUT DEPICTING 15,000 TON TOPSIDE

NTS



SECTION 1
SIDE VIEW



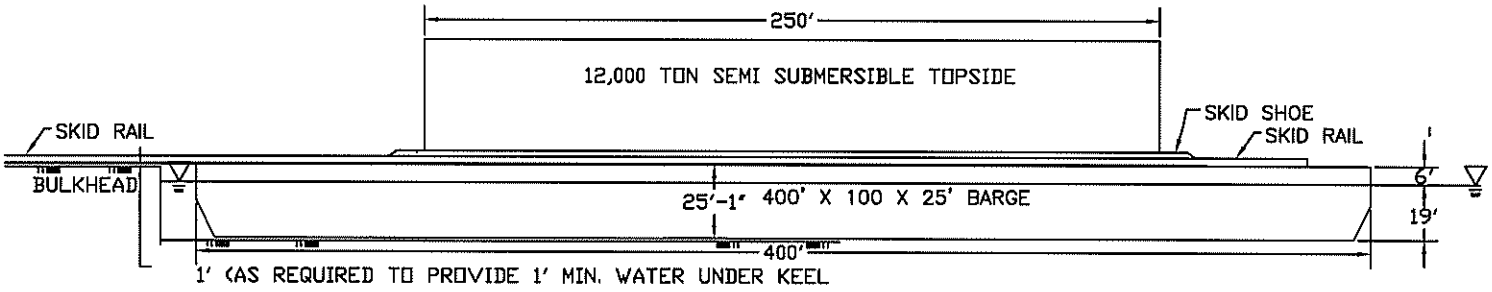
SECTION 2
FRONT VIEW

* VESSEL TRIM TO BE ACCOMPLISHED IN DEEPER WATER.

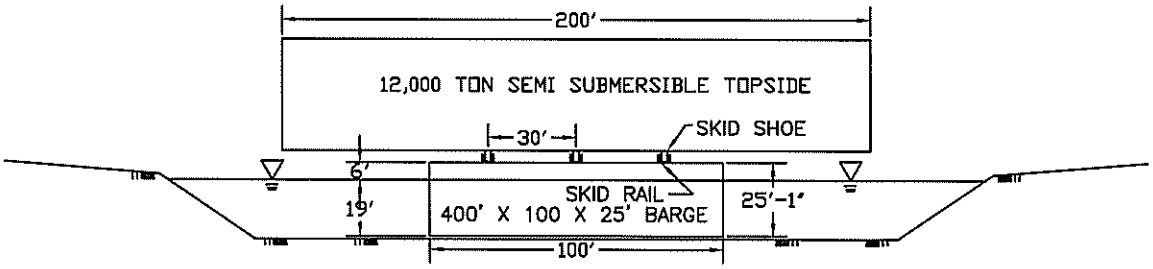
FIGURE 1: 15,000 TON LOAD-OUT CONFIGURATION

LOAD-OUT DEPICTING 12,000 TON TOPSIDE

NTS



SECTION 1
SIDE VIEW



SECTION 2
FRONT VIEW

FIGURE 2: 12,000 TON
LOAD-OUT CONFIGURATION

ANNEX 5 – RESERVED

ANNEX 6 – OMRR&R AND MAINTENANCE DREDGING COST ESTIMATES

(-)16.0 X 150-FOOT ALTERNATIVE MAINTENANCE COSTS SUMMARY											
Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (Two WY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$4,362,500	$0	$30,000	$0	$177,320	$75,000	$0	$4,644,820
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$2,607,743	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$3,095,063
6	$0	$0	$0	$4,362,500	$0	$119,000	$0	$177,320	$75,000	$0	$4,733,820
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$4,362,500	$0	$30,000	$0	$177,320	$75,000	$0	$4,644,820
10	$2,282,653	$5,637,808	$7,637,111	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$16,133,891
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$4,362,500	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$288,195
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$4,362,500	$0	$677,000	$0	$177,320	$75,000	$150,000	$5,441,820
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$4,362,500	$0	$119,000	$0	$177,320	$75,000	$0	$4,733,820
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$1,917,813	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	($1,951,493)
21	$0	$0	$0	$4,362,500	$0	$30,000	$0	$177,320	$75,000	$0	$4,644,820
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$4,362,500	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$288,195
25	$0	$5,637,808	$7,637,111	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$13,762,239
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$4,362,500	$0	$30,000	$0	$177,320	$75,000	$0	$4,644,820
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$4,362,500	$0	$766,000	$0	$177,320	$75,000	$150,000	$5,530,820
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)

33	$0	$0	$0	$4,362,500	$0	$30,000	$0	$177,320	$75,000	$0	$4,644,820
34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
35	$1,703,360	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$2,190,680
36	$0	$0	$0	$4,362,500	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$288,195
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$4,362,500	$0	$30,000	$0	$177,320	$75,000	$0	$4,644,820
40	$0	$5,637,808	$7,637,111	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$9,405,614
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$4,362,500	$0	$119,000	$0	$177,320	$75,000	$0	$4,733,820
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$4,362,500	$0	$677,000	$0	$177,320	$75,000	$150,000	$5,441,820
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$4,362,500	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$288,195
49	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
50	$1,703,360	$0	$0	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$2,279,680

(-)18.0 X 150-FOOT ALTERNATIVE
MAINTENANCE COSTS SUMMARY

Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$2,959,863	$0	$0	$0	$0	585,000	$0	$177,320	$75,000	$150,000	$3,447,183
6	$0	$0	$0	$4,850,000	$0	$119,000	$0	$177,320	$75,000	$0	$5,221,320
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
10	$2,427,475	$6,159,476	$7,637,111	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$16,800,382
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$4,850,000	$0	$677,000	$0	$177,320	$75,000	$150,000	$5,929,320
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$4,850,000	$0	$119,000	$0	$177,320	$75,000	$0	$5,221,320
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$2,107,288	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	($1,762,018)
21	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
25	$0	$6,159,476	$7,637,111	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$14,283,907
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$4,850,000	$0	$766,000	$0	$177,320	$75,000	$150,000	$6,018,320
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
33	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320

34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
35	$2,084,563	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$2,571,883
36	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
40	$0	$6,159,476	$7,637,111	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$9,927,282
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$4,850,000	$0	$119,000	$0	$177,320	$75,000	$0	$5,221,320
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$4,850,000	$0	$677,000	$0	$177,320	$75,000	$150,000	$5,929,320
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
49	$0	$0	$0	$0		$30,000	$0	$177,320	$75,000	$0	$282,320
50	$2,084,563	$0	$0	$0		$174,000	$0	$177,320	$75,000	$150,000	$2,660,883

(-)20.0 X 150-FOOT ALTERNATIVE MAINTENANCE COSTS SUMMARY											
Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Maintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$3,172,195	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$3,659,515
6	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
10	$3,172,195	$8,338,334	$8,859,673	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$20,946,522
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$2,798,675	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	($1,070,630)
21	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
25	$0	$8,338,334	$8,859,673	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$17,685,327
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$6,193,750	$0	$766,000	$0	$177,320	$75,000	$150,000	$7,362,070
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
33	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070

34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
35	$1,899,063	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$2,386,383
36	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
40	$0	$8,338,334	$8,859,673	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$13,328,702
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
49	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
50	$1,899,063	$0	$0	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$2,475,383

(-)18.0 X 135-FOOT ALTERNATIVE MAINTENANCE COSTS											
Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$2,959,863	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$3,447,183
6	$0	$0	$0	$4,850,000	$0	$119,000	$0	$177,320	$75,000	$0	$5,221,320
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
10	$2,427,475	$5,392,358	$7,427,761	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$15,823,914
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$4,850,000	$0	$677,000	$0	$177,320	$75,000	$150,000	$5,929,320
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$4,850,000	$0	$119,000	$0	$177,320	$75,000	$0	$5,221,320
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$2,107,288	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	($1,762,018)
21	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
25	$0	$5,392,358	$7,427,761	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$13,307,439
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$4,850,000	$0	$766,000	$0	$177,320	$75,000	$150,000	$6,018,320
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
33	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320

34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
35	$2,084,563	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$2,571,883
36	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
40	$0	$5,392,358	$7,427,761	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$8,950,814
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$4,850,000	$0	$119,000	$0	$177,320	$75,000	$0	$5,221,320
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$4,850,000	$0	$677,000	$0	$177,320	$75,000	$150,000	$5,929,320
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
49	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
50	$2,084,563	$0	$0	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$2,660,883

(-)20.0 X 135-FOOT ALTERNATIVE
MAINTENANCE COSTS SUMMARY

Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$3,172,195	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$3,659,515
6	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
10	$3,172,195	$7,240,021	$8,667,216	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$19,655,753
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$2,798,675	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	($1,070,630)
21	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
25	$0	$7,240,021	$8,667,216	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$16,394,558
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$6,193,750	$0	$766,000	$0	$177,320	$75,000	$150,000	$7,362,070
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
33	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070

34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
35	$1,899,063	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$2,386,383
36	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
40	$0	$7,240,021	$8,667,216	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$12,037,933
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
49	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
50	$1,899,063	$0	$0	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$2,475,383

(-)18.0 X 125-FOOT ALTERNATIVE
MAINTENANCE COSTS SUMMARY

Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$2,959,863	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$3,447,183
6	$0	$0	$0	$4,850,000	$0	$119,000	$0	$177,320	$75,000	$0	$5,221,320
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
10	$2,427,475	$5,289,176	$7,285,403	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$15,578,374
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$4,850,000	$0	$677,000	$0	$177,320	$75,000	$150,000	$5,929,320
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$4,850,000	$0	$119,000	$0	$177,320	$75,000	$0	$5,221,320
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$2,107,288	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	($1,762,018)
21	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
25	$0	$5,289,176	$7,285,403	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$13,061,899
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$4,850,000	$0	$766,000	$0	$177,320	$75,000	$150,000	$6,018,320
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
33	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320

34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
35	$2,084,563	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$2,571,883
36	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$4,850,000	$0	$30,000	$0	$177,320	$75,000	$0	$5,132,320
40	$0	$5,289,176	$7,285,403	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$8,705,274
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$4,850,000	$0	$119,000	$0	$177,320	$75,000	$0	$5,221,320
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$4,850,000	$0	$677,000	$0	$177,320	$75,000	$150,000	$5,929,320
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$4,850,000	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$775,695
49	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
50	$2,084,563	$0	$0	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$2,660,883

(-)20.0 X 125-FOOT ALTERNATIVE
MAINTENANCE COSTS SUMMARY

Year	Commercial Canal	G.I.W.W.	Freshwater Bayou - Interior	Freshwater Bayou Bar Channel	Exisitng Manintenance Dredging Freshwater Bayou Bar Channel (Deduction)	By-Pass Channel Concrete Barge Floodgate	Existing By-Pass Channel Floodgate Operation Costs (Deduction)	By-Pass Channel Floodgate Operators (TwoWY-08 Employees)	Environmental Monitoring - Infrared Photography	Environmental Monitoring Reports	TOTAL PER YEAR
1	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
2	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
3	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
4	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
5	$3,172,195	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$3,659,515
6	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
7	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
8	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
9	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
10	$3,172,195	$6,850,096	$8,536,346	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$19,134,957
11	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
12	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
13	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
14	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
15	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
16	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
17	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
18	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
19	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
20	$2,798,675	$0	$0	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	($1,070,630)
21	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
22	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
23	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
24	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
25	$0	$6,850,096	$8,536,346	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$15,873,762
26	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
27	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
28	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
29	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
30	$0	$0	$0	$6,193,750	$0	$766,000	$0	$177,320	$75,000	$150,000	$7,362,070
31	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
32	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
33	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070

34	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
35	$1,899,063	$0	$0	$0	$0	$85,000	$0	$177,320	$75,000	$150,000	$2,386,383
36	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
37	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
38	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
39	$0	$0	$0	$6,193,750	$0	$30,000	$0	$177,320	$75,000	$0	$6,476,070
40	$0	$6,850,096	$8,536,346	$0	($3,945,625)	$174,000	($500,000)	$177,320	$75,000	$150,000	$11,517,137
41	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
42	$0	$0	$0	$6,193,750	$0	$119,000	$0	$177,320	$75,000	$0	$6,565,070
43	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
44	$0	$0	$0	$0	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	($4,074,305)
45	$0	$0	$0	$6,193,750	$0	$677,000	$0	$177,320	$75,000	$150,000	$7,273,070
46	$0	$0	$0	$0	$0	$119,000	$0	$177,320	$75,000	$0	$371,320
47	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
48	$0	$0	$0	$6,193,750	($3,945,625)	$119,000	($500,000)	$177,320	$75,000	$0	$2,119,445
49	$0	$0	$0	$0	$0	$30,000	$0	$177,320	$75,000	$0	$282,320
50	$1,899,063	$0	$0	$0	$0	$174,000	$0	$177,320	$75,000	$150,000	$2,475,383

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR COMMERCIAL CANAL

COMMERCIAL CANAL, (-)16.0' X 150-FEET, PROJECTED MAINTENANCE DREDGING FOR PROPOSED PROJECT

ITEM	YEAR 5	YEAR 10	YEAR 20	YEAR 35	YEAR 50
Mobilization/Demobilization	$845,000	$845,000	$845,000	$845,000	$845,000
Dike Construction	$152,400	$128,700	$97,500	$79,800	$79,800
Dredging	$857,500	$650,000	$420,000	$290,000	$290,000
E&D	$111,294	$97,422	$81,750	$72,888	$72,888
S&A	$120,000	$105,000	$90,000	$75,000	$75,000
SUBTOTAL	**$2,086,194**	**$1,826,122**	**$1,534,250**	**$1,362,688**	**$1,362,688**
Contingency (25%)	$521,549	$456,531	$383,563	$340,672	$340,672
TOTAL	**$2,607,743**	**$2,282,653**	**$1,917,813**	**$1,703,360**	**$1,703,360**

COMMERCIAL CANAL, (-)18.0' X 125-FEET, (-)18.0' X 135-FEET, (-)18.0' X 150-FEET PROJECTED MAINTENANCE DREDGING FOR PPROPOSED PROJECT

ITEM	YEAR 5	YEAR 10	YEAR 20	YEAR 35	YEAR 50
Mobilization/Demobilization	$845,000	$845,000	$845,000	$845,000	$845,000
Dike Construction	$181,500	$138,000	$110,500	$97,500	$97,500
Dredging	$1,080,000	$750,000	$550,000	$560,000	$560,000
E&D	$126,390	$103,980	$90,330	$90,150	$90,150
S&A	$135,000	$105,000	$90,000	$75,000	$75,000
SUBTOTAL	**$2,367,890**	**$1,941,980**	**$1,685,830**	**$1,667,650**	**$1,667,650**
Contingency (25%)	$591,973	$485,495	$421,458	$416,913	$416,913
TOTAL	**$2,959,863**	**$2,427,475**	**$2,107,288**	**$2,084,563**	**$2,084,563**

COMMERCIAL CANAL, (-)20.0' X 125-FEET, (-)20.0' X 135-FEET, (-)20.0' X 150-FEET PROJECTED MAINTENANCE DREDGING FOR PROPOSED PROJECT

ITEM	YEAR 5	YEAR 10	YEAR 20	YEAR 35	YEAR 50
Mobilization/Demobilization	$845,000	$845,000	$845,000	$845,000	$845,000
Dike Construction	$207,600	$207,600	$174,000	$97,500	$97,500
Dredging	$1,200,000	$1,200,000	$980,000	$420,000	$420,000
E&D	$135,156	$135,156	$119,940	$81,750	$81,750
S&A	$150,000	$150,000	$120,000	$75,000	$75,000
SUBTOTAL	**$2,537,756**	**$2,537,756**	**$2,238,940**	**$1,519,250**	**$1,519,250**
Contingency (25%)	$634,439	$634,439	$559,735	$379,813	$379,813
TOTAL	**$3,172,195**	**$3,172,195**	**$2,798,675**	**$1,899,063**	**$1,899,063**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR G.I.W.W.

GIWW, (-)18.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$586,000	$586,000	$586,000
Dredging	$1,382,430	$1,382,430	$1,382,430
E&D	$118,106	$118,106	$118,106
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$2,236,536**	**$2,236,536**	**$2,236,536**
Contingency (25%)	$559,134	$559,134	$559,134
TOTAL	**$2,795,670**	**$2,795,670**	**$2,795,670**

GIWW, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$586,000	$586,000	$586,000
Mobilization/Demobilization - Rock Placement	$35,000	$35,000	$35,000
Dredging	$1,275,740	$1,275,740	$1,275,740
Rock Placement	$475,000	$475,000	$475,000
E&D	$142,304	$142,304	$142,304
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$2,664,044**	**$2,664,044**	**$2,664,044**
Contingency (25%)	$666,011	$666,011	$666,011
TOTAL	**$3,330,056**	**$3,330,056**	**$3,330,056**

GIWW, (-)18.0 X 135-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$586,000	$586,000	$586,000
Dredging	$1,522,500	$1,522,500	$1,522,500
E&D	$126,510	$126,510	$126,510
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$2,385,010**	**$2,385,010**	**$2,385,010**
Contingency (25%)	$596,253	$596,253	$596,253
TOTAL	**$2,981,263**	**$2,981,263**	**$2,981,263**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR G.I.W.W.

GIWW, (-)20.0 X 135-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$586,000	$586,000	$586,000
Mobilization/Demobilization - Rock Placement	$35,000	$35,000	$35,000
Dredging	$1,405,000	$1,405,000	$1,405,000
Rock Placement	$475,000	$475,000	$475,000
E&D	$150,060	$150,060	$150,060
S&A	$150,000	$150,000	$150,000
SUBTOTAL	$2,801,060	$2,801,060	$2,801,060
Contingency (25%)	$700,265	$700,265	$700,265
TOTAL	$3,501,325	$3,501,325	$3,501,325

GIWW, (-)16.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$586,000	$586,000	$586,000
Dredging	$1,674,750	$1,674,750	$1,674,750
E&D	$135,645	$135,645	$135,645
S&A	$150,000	$150,000	$150,000
SUBTOTAL	$2,546,395	$2,546,395	$2,546,395
Contingency (25%)	$636,599	$636,599	$636,599
TOTAL	$3,182,994	$3,182,994	$3,182,994

GIWW, (-)18.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$586,000	$586,000	$586,000
Dredging	$1,674,750	$1,674,750	$1,674,750
E&D	$135,645	$135,645	$135,645
S&A	$150,000	$150,000	$150,000
SUBTOTAL	$2,546,395	$2,546,395	$2,546,395
Contingency (25%)	$636,599	$636,599	$636,599
TOTAL	$3,182,994	$3,182,994	$3,182,994

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR G.I.W.W.

GIWW, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$586,000	$586,000	$586,000
Mobilization/Demobilization - Rock Placement	$35,000	$35,000	$35,000
Dredging	$1,545,500	$1,545,500	$1,545,500
Rock Placement	$475,000	$475,000	$475,000
E&D	$158,490	$158,490	$158,490
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$2,949,990**	**$2,949,990**	**$2,949,990**
Contingency (25%)	$737,498	$737,498	$737,498
TOTAL	**$3,687,488**	**$3,687,488**	**$3,687,488**

Project: **GIWW**
Feas. Study
Maintenance Dredging

Item No.	Description	Estimated Quantity	Unit	Composite Unit Price	Estimated Cost
	GIWW				
0001	Mobilization and Demobilization (for each Dredge Contract)	1	LS	$586,000.00	$586,000.00
0002	Dredging (18 x125)	454,000	CY	$3.05	$1,382,430.00
0003A	Dredging (20 x125)	454,000	CY	$2.81	$1,275,740.00
0003B	Mobilization and Demobilization for Rock	1	LS	$35,000.00	$35,000.00
0003C	Rock Maintenance (20 x 125)	20,000	TON	$23.75	$475,000.00
0004	Dredging (18 x 135)	500,000	CY	$3.05	$1,522,500.00
0005A	Dredging (20 x 135)	500,000	CY	$2.81	$1,405,000.00
0005B	Mobilization and Demobilization for Rock	1	LS	$35,000.00	$35,000.00
0005C	Rock Maintenance (20 x 135)	20,000	TON	$23.75	$475,000.00
0006	Dredging (16 x 150)	550,000	CY	$3.05	$1,674,750.00
0007	Dredging (18 x 150)	550,000	CY	$3.05	$1,674,750.00
0008A	Dredging (20 x 150)	550,000	CY	$2.81	$1,545,500.00
0008B	Mobilization and Demobilization for Rock	1	LS	$35,000.00	$35,000.00
0008C	Rock Maintenance (20 x 150)	20,000	TON	$23.75	$475,000.00

GIWW CONSTRUCTION DURATION: 150 days per Contract

PORT OF IBERIA FEASIBILITY STUDY

G.I.W.W., COST ESTIMATES FOR MAINTENANCE OF BANK STABILIZATION ROCK

GIWW, (-)18.0 X 125-FOOT CHANNEL			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$35,000	$35,000	$35,000
Rock Placement	$1,761,986	$1,761,986	$1,761,986
E&D	$107,819	$107,819	$107,819
S&A	$90,000	$90,000	$90,000
SUBTOTAL	**$1,994,805**	**$1,994,805**	**$1,994,805**
Contingency (25%)	$498,701	$498,701	$498,701
TOTAL	**$2,493,506**	**$2,493,506**	**$2,493,506**

GIWW, (-)20.0 X 125-FOOT CHANNEL			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$35,000	$35,000	$35,000
Rock Placement	$2,508,427	$2,508,427	$2,508,427
E&D	$152,606	$152,606	$152,606
S&A	$120,000	$120,000	$120,000
SUBTOTAL	**$2,816,033**	**$2,816,033**	**$2,816,033**
Contingency (25%)	$704,008	$704,008	$704,008
TOTAL	**$3,520,041**	**$3,520,041**	**$3,520,041**

GIWW, (-)18.0 X 135-FOOT CHANNEL			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$35,000	$35,000	$35,000
Rock Placement	$1,699,789	$1,699,789	$1,699,789
E&D	$104,087	$104,087	$104,087
S&A	$90,000	$90,000	$90,000
SUBTOTAL	**$1,928,876**	**$1,928,876**	**$1,928,876**
Contingency (25%)	$482,219	$482,219	$482,219
TOTAL	**$2,411,095**	**$2,411,095**	**$2,411,095**

PORT OF IBERIA FEASIBILITY STUDY

G.I.W.W., COST ESTIMATES FOR MAINTENANCE OF BANK STABILIZATION ROCK

GIWW, (-)20.0 X 135-FOOT CHANNEL			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$35,000	$35,000	$35,000
Rock Placement	$2,673,450	$2,673,450	$2,673,450
E&D	$162,507	$162,507	$162,507
S&A	$120,000	$120,000	$120,000
SUBTOTAL	**$2,990,957**	**$2,990,957**	**$2,990,957**
Contingency (25%)	$747,739	$747,739	$747,739
TOTAL	**$3,738,696**	**$3,738,696**	**$3,738,696**

GIWW, (-)16.0 X 150-FOOT CHANNEL			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$35,000	$35,000	$35,000
Rock Placement	$1,732,784	$1,732,784	$1,732,784
E&D	$106,067	$106,067	$106,067
S&A	$90,000	$90,000	$90,000
SUBTOTAL	**$1,963,851**	**$1,963,851**	**$1,963,851**
Contingency (25%)	$490,963	$490,963	$490,963
TOTAL	**$2,454,814**	**$2,454,814**	**$2,454,814**

GIWW, (-)18.0 X 150-FOOT CHANNEL			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$35,000	$35,000	$35,000
Rock Placement	$2,112,345	$2,112,345	$2,112,345
E&D	$128,841	$128,841	$128,841
S&A	$105,000	$105,000	$105,000
SUBTOTAL	**$2,381,186**	**$2,381,186**	**$2,381,186**
Contingency (25%)	$595,297	$595,297	$595,297
TOTAL	**$2,976,483**	**$2,976,483**	**$2,976,483**

PORT OF IBERIA FEASIBILITY STUDY

G.I.W.W., COST ESTIMATES FOR MAINTENANCE OF BANK STABILIZATION ROCK

GIWW, (-)20.0 X 150-FOOT CHANNEL			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$35,000	$35,000	$35,000
Rock Placement	$3,333,564	$3,333,564	$3,333,564
E&D	$202,114	$202,114	$202,114
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$3,720,677**	**$3,720,677**	**$3,720,677**
Contingency (25%)	$930,169	$930,169	$930,169
TOTAL	**$4,650,847**	**$4,650,847**	**$4,650,847**

REASONABLE CONTRACT ESTIMATE

Project: Port of Iberia, Feasibility Study
GIWW
ROCK MAINTENANCE ALONG THE BANKS

Item	Description	Estimated Quantity	Unit	Unit Price	Estimated Cost
0001	Mobilization and Demobilization (per contract)	1	LS	$35,000.00	$35,000.00
0002	Rock Maintenace (18x125) Contract Duration: 90 Calendar Days	77,111	TON	$22.85	$1,761,986.35
0003	Rock Maintenace (20x125) Contract Duration: 120 Calendar Days	109,778	TON	$22.85	$2,508,427.30
0004	Rock Maintenace (18x135) Contract Duration: 90 Calendar Days	74,389	TON	$22.85	$1,699,788.65
0005	Rock Maintenace (20x135) Contract Duration: 120 Calendar Days	117,000	TON	$22.85	$2,673,450.00
0006	Rock Maintenace (16x150) Contract Duration: 90 Calendar Days	75,833	TON	$22.85	$1,732,784.05
0017	Rock Maintenace (18x150) Contract Duration: 105 Calendar Days	92,444	TON	$22.85	$2,112,345.40
0018	Rock Maintenace (20x150) Contract Duration: 150 Calendar Days	145,889	TON	$22.85	$3,333,563.65

PORT OF IBERIA FEASIBILITY STUDY

MAINTENANCE DREDGING COST ESTIMATES FOR FRESHWATER BAYOU (INTERIOR)

FRESHWATER BAYOU INTERIOR, (-)18.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$890,000	$890,000	$890,000
Dredging	$1,251,360	$1,251,360	$1,251,360
E&D	$128,482	$128,482	$128,482
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$2,419,842**	**$2,419,842**	**$2,419,842**
Contingency (25%)	$604,960	$604,960	$604,960
TOTAL	**$3,024,802**	**$3,024,802**	**$3,024,802**

FRESHWATER BAYOU INTERIOR, (-)20.0 X 125-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$890,000	$890,000	$890,000
Mobilization/Demobilization - Rock Placement	$35,000	$35,000	$35,000
Dredging	$1,150,380	$1,150,380	$1,150,380
Rock Placement	$1,010,088	$1,010,088	$1,010,088
E&D	$185,128	$185,128	$185,128
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$3,420,596**	**$3,420,596**	**$3,420,596**
Contingency (25%)	$855,149	$855,149	$855,149
TOTAL	**$4,275,745**	**$4,275,745**	**$4,275,745**

FRESHWATER BAYOU INTERIOR, (-)18.0 X 135-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$890,000	$890,000	$890,000
Dredging	$1,358,800	$1,358,800	$1,358,800
E&D	$134,928	$134,928	$134,928
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$2,533,728**	**$2,533,728**	**$2,533,728**
Contingency (25%)	$633,432	$633,432	$633,432
TOTAL	**$3,167,160**	**$3,167,160**	**$3,167,160**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING COST ESTIMATES FOR FRESHWATER BAYOU (INTERIOR)

FRESHWATER BAYOU INTERIOR, (-)20.0 X 135-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$890,000	$890,000	$890,000
Mobilization/Demobilization - Rock Placement	$35,000	$35,000	$35,000
Dredging	$1,249,150	$1,249,150	$1,249,150
Rock Placement	$1,010,088	$1,010,088	$1,010,088
E&D	$191,054	$191,054	$191,054
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$3,525,292**	**$3,525,292**	**$3,525,292**
Contingency (25%)	$881,323	$881,323	$881,323
TOTAL	**$4,406,615**	**$4,406,615**	**$4,406,615**

FRESHWATER BAYOU INTERIOR, (-)16.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$890,000	$890,000	$890,000
Dredging	$1,516,800	$1,516,800	$1,516,800
E&D	$144,408	$144,408	$144,408
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$2,701,208**	**$2,701,208**	**$2,701,208**
Contingency (25%)	$675,302	$675,302	$675,302
TOTAL	**$3,376,510**	**$3,376,510**	**$3,376,510**

FRESHWATER BAYOU INTERIOR, (-)18.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization	$890,000	$890,000	$890,000
Dredging	$1,516,800	$1,516,800	$1,516,800
E&D	$144,408	$144,408	$144,408
S&A	$150,000	$150,000	$150,000
SUBTOTAL	**$2,701,208**	**$2,701,208**	**$2,701,208**
Contingency (25%)	$675,302	$675,302	$675,302
TOTAL	**$3,376,510**	**$3,376,510**	**$3,376,510**

PORT OF IBERIA FEASIBILITY STUDY

MAINTENANCE DREDGING COST ESTIMATES FOR FRESHWATER BAYOU (INTERIOR)

FRESHWATER BAYOU INTERIOR, (-)20.0 X 150-FOOT CHANNEL, MAINTENANCE DREDGING			
ITEM	YEAR 10	YEAR 25	YEAR 40
Mobilization/Demobilization - Dredging	$890,000	$890,000	$890,000
Mobilization/Demobilization - Rock Placement	$35,000	$35,000	$35,000
Dredging	$1,394,400	$1,394,400	$1,394,400
Rock Placement	$1,010,088	$1,010,088	$1,010,088
E&D	$199,769	$199,769	$199,769
S&A	$150,000	$150,000	$150,000
SUBTOTAL	$3,679,257	$3,679,257	$3,679,257
Contingency (25%)	$919,814	$919,814	$919,814
TOTAL	$4,599,072	$4,599,072	$4,599,072

Project: **FRESHWATER BAYOU**
Feas. Study
Maintenance Dredging

Item No.	Description	Estimated Quantity	Unit	Composite Unit Price	Estimated Cost
	FRESHWATER BAYOU				
0001	Mobilization and Demobilization (for each Dredge Contract)	1	LS	$890,000.00	$890,000.00
0002	Dredging (18 x125)	396,000	CY	$3.16	$1,251,360.00
0003A	Dredging (20 x125)	396,000	CY	$2.91	$1,150,380.00
0003B	Mobilization and Demobilization for Rock	1	LS	$35,000.00	$35,000.00
0003C	Rock Maintenance (20 x 125)	42,530	TON	$23.75	$1,010,087.50
0004	Dredging (18 x 135)	430,000	CY	$3.16	$1,358,800.00
0005A	Dredging (20 x 135)	430,000	CY	$2.91	$1,249,150.00
0005B	Mobilization and Demobilization for Rock	1	LS	$35,000.00	$35,000.00
0005C	Rock Maintenance (20 x 135)	42,530	TON	$23.75	$1,010,087.50
0006	Dredging (16 x 150)	480,000	CY	$3.16	$1,516,800.00
0007	Dredging (18 x 150)	480,000	CY	$3.16	$1,516,800.00
0008A	Dredging (20 x 150)	480,000	CY	$2.91	$1,394,400.00
0008B	Mobilization and Demobilization for Rock	1	LS	$35,000.00	$35,000.00
0008C	Rock Maintenance (20 x 150)	42,530	TON	$23.75	$1,010,087.50

FWB Contract Duration: 150 days per contract

PORT OF IBERIA FEASIBILITY STUDY
FRESHWATER BAYOU INTERIOR, COST ESTIMATES FOR MAINTENANCE OF BANK STABILIZATION ROCK

FRESHWATER BAYOU (INTERIOR), ALL ALTERNATIVES			
ITEM	**YEAR 10**	**YEAR 25**	**YEAR 40**
Mobilization/Demobilization	$35,000	$35,000	$35,000
Rock Placement	$3,053,190	$3,053,190	$3,053,190
E&D	$185,291	$185,291	$185,291
S&A	$135,000	$135,000	$135,000
SUBTOTAL	**$3,408,481**	**$3,408,481**	**$3,408,481**
Contingency (25%)	$852,120	$852,120	$852,120
TOTAL	**$4,260,601**	**$4,260,601**	**$4,260,601**

Project: PORT OF IBERIA
Freshwater Bayou
Maintenance Rock Along the Bank
Iberia Parish, Louisiana

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Cost
0001	Mobilization and Demobilization	1	LS	$35,000.00	$35,000.00
0002	Maintenance Rock Contract Duration: 135 Calendar Days	137,222	TON	$22.25	$3,053,189.50

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING FOR FREASHWATER BAYOU BAR CHANNEL
PROPOSED MAINTENANCE CYCLE EVERY THREE (3) YEARS

FRESHWATER BAYOU BAR CHANNEL (-)16.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$2,475,000
E&D	$125,000
S&A	$105,000
SUBTOTAL	**$3,490,000**
Contingency (25%)	$872,500
TOTAL	**$4,362,500**

FRESHWATER BAYOU BAR CHANNEL (-)18.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$2,850,000
E&D	$125,000
S&A	$120,000
SUBTOTAL	**$3,880,000**
Contingency (25%)	$970,000
TOTAL	**$4,850,000**

PORT OF IBERIA FEASIBILITY STUDY
MAINTENANCE DREDGING FOR FREASHWATER BAYOU BAR CHANNEL
PROPOSED MAINTENANCE CYCLE EVERY THREE (3) YEARS

FRESHWATER BAYOU BAR CHANNEL (-)20.0 FOOT CHANNEL MAINTENACE DREDGING	
ITEM	**ESTIMATED COST**
Mobilization/Demobilization	$785,000
Dredging	$3,910,000
E&D	$125,000
S&A	$135,000
SUBTOTAL	**$4,955,000**
Contingency (25%)	$1,238,750
TOTAL	**$6,193,750**

Port of Iberia Feasibility Study
Freshwater Bayou Bar Channel Maintenance Dredging

16-ft Channel					
Item	Description	Estimated Quantity	Unit	Unit Price	Estimated Cost
0001	Mobilization/Demobilization	1	LOT	$785,000.00	$785,000.00
0002	Dredging	1,500,000	CY	$1.65	$2,475,000.00
				TOTAL 16-ft Channel:	**$3,260,000.00**

18-ft Channel					
Item	Description	Estimated Quantity	Unit	Unit Price	Estimated Cost
0001	Mobilization/Demobilization	1	LOT	$785,000.00	$785,000.00
0002	Dredging	1,900,000	CY	$1.50	$2,850,000.00
				TOTAL 18-ft Channel:	**$3,635,000.00**

20-ft Channel					
Item	Description	Estimated Quantity	Unit	Unit Price	Estimated Cost
0001	Mobilization/Demobilization	1	LOT	$940,000.00	$940,000.00
0002	Dredging	2,300,000	CY	$1.70	$3,910,000.00
				TOTAL 20-ft Channel:	**$4,850,000.00**

Proposed maintenance cycle is every 3 years

Project: PORT OF IBERIA
12-FT Freshwater Bayou Bar Channel
Maintenance Dredging
Vermillion Parish, Louisiana

Item No.	Description	Estimated Quantity	Unit	Unit Price	Estimated Cost
0001	Mobilization and Demobilization	1	LS	$776,500.00	$776,500.00
0002	Dredging	1,000,000	CY	$2.15	$2,150,000.00
				TOTAL:	$2,926,500.00

OPERATION AND MAINTENANCE COST - CONCRETE SWING BARGE

Year	Description	Quantity	Unit	Unit Cost	Total	Annual Total	
1	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	5
2	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	6
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		7
3	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	8
4	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	9
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		10
5	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$85,000.00	11
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		12
6	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	13
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		14
7	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	15
8	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	16
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		17
9	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	18
10	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$174,000.00	19
	RESERVED	0	0	$0.00	$0.00		20
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		21
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		22
11	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	23
12	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	24
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		25
13	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	26
14	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	27
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		28

15	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$677,000.00	29
	Replacement of 6-Inch Submersible Compartment Transfer Pump	24	EA	$8,000.00	$192,000.00		30
	Pivot Accessories (Sand Blast, Paint) & Seal Replacement	2	EA	$200,000.00	$400,000.00		31
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		32
16	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	33
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		34
17	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	35
18	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	36
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		37
19	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	38
20	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$174,000.00	39
	RESERVED	0	0	$0.00	$0.00		40
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		41
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		42
21	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	43
22	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	44
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		45
23	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	46
24	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	47
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		48
25	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$85,000.00	49
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		50
26	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	51
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		52
27	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	53
28	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	54
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		55
29	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	56

30	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$766,000.00	57
	Replacement of 6-Inch Submersible Compartment Transfer Pump	24	EA	$8,000.00	$192,000.00		58
	Pivot Accessories (Sand Blast, Paint) & Seal Replacement	2	EA	$200,000.00	$400,000.00		59
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		60
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		61
31	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	62
32	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	63
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		64
33	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	65
34	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	66
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		67
35	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$85,000.00	68
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		69
36	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	70
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		71
37	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	72
38	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	73
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		74
39	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	75
40	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$174,000.00	76
	RESERVED	0	0	$0.00	$0.00		77
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		78
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		79
41	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	80
42	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	81
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		82
43	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	83
44	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	84
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		85

45	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$677,000.00	86
	Replacement of 6-Inch Submersible Compartment Transfer Pump	24	EA	$8,000.00	$192,000.00		87
	Pivot Accessories (Sand Blast, Paint) & Seal Replacement	2	EA	$200,000.00	$400,000.00		88
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		89
46	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	90
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		91
47	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	92
48	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$119,000.00	93
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		94
49	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$30,000.00	95
50	Monthly Operation and Routine Maintenance	12	MTH	$2,500.00	$30,000.00	$174,000.00	96
	RESERVED	0	0	$0.00	$0.00		97
	Replacement of Cables	2	EA	$44,500.00	$89,000.00		98
	Maintenance Dredging	20,000	CY	$2.75	$55,000.00		99

Heavy Construction cost indices (MCCI): MCCI is the median value of the last 50 years (1951-2001) of historical cost indices for the heavy construction industry.

ANNEX 7 – MCACES

Port of Iberia Feas Study 3/06

Designed By:
Estimated By:

Prepared By: Cost Engineering Branch
New Orleans District

Preparation Date: 03/17/06
Effective Date of Pricing: 06/01/04

Sales Tax: 7.00%

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Release 1.2

A. Port of Iberia

A 01. Lands and Damages	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A. Port of Iberia

A 01. Lands and Damages

Lands and Damages costs provided by Real Estate Division, NOD. Revised July 2005(based on 28 April 2004 spreadsheet).

A 0101. Lands and Damages

A 010101. Lands and Damages

A 010101 B. Acquisitions

A 010101 B 01. By Local sponsor (LS)

USR	by local sponsor				0.00	0.00	0.00	115300.00	115300.00	
		1.00	LS	0.00	0	0	0	115,300	115,300	115300.00
TOTAL	By Local sponsor				0	0	0	115,300	115,300	

A 010101 B 02. Review of LS

USR	review of LS				0.00	0.00	0.00	17500.00	17500.00	
		1.00	LS	0.00	0	0	0	17,500	17,500	17500.00
TOTAL	Review of LS				0	0	0	17,500	17,500	

A 010101 C. Condemnations

A 010101 C 01. By Local sponsor (LS)

USR	by local sponsor				0.00	0.00	0.00	20000.00	20000.00	
		1.00	LS	0.00	0	0	0	20,000	20,000	20000.00
TOTAL	By Local sponsor				0	0	0	20,000	20,000	

A 010101 C 02. Review of LS

USR	review of LS				0.00	0.00	0.00	7900.00	7900.00	
		1.00	LS	0.00	0	0	0	7,900	7,900	7900.00
TOTAL	Review of LS				0	0	0	7,900	7,900	

A 010101 E. Appraisal

A 010101 E 01. By Local sponsor (LS)

USR	by local sponsor				0.00	0.00	0.00	38000.00	38000.00	
		1.00	LS	0.00	0	0	0	38,000	38,000	38000.00

A. Port of Iberia

A 01. Lands and Damages	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL By Local sponsor					0	0	0	38,000	38,000	
A 010101 E 02. Review of LS										
USR review of LS					0.00	0.00	0.00	11200.00	11200.00	
	1.00	LS		0.00	0	0	0	11,200	11,200	11200.00
TOTAL Review of LS					0	0	0	11,200	11,200	
A 010101 G. Temporary Permit/Lics/RofE										
A 010101 G 01. By Local sponsor (LS)										
USR by local sponsor					0.00	0.00	0.00	9500.00	9500.00	
	1.00	LS		0.00	0	0	0	9,500	9,500	9500.00
TOTAL By Local sponsor					0	0	0	9,500	9,500	
A 010101 G 02. Review of LS										
USR review of LS					0.00	0.00	0.00	3150.00	3150.00	
	1.00	LS		0.00	0	0	0	3,150	3,150	3150.00
TOTAL Review of LS					0	0	0	3,150	3,150	
A 010101 R. Real Estate Payments - Land										
A 010101 R 01. By Local sponsor (LS)										
USR by local sponsor					0.00	0.00	0.00	1110000.00	1110000.00	
	1.00	LS		0.00	0	0	0	1,110,000	1,110,000	1110000
USR by local sponsor					0.00	0.00	0.00	9000.00	9000.00	
	1.00	LS		0.00	0	0	0	9,000	9,000	9000.00
TOTAL By Local sponsor					0	0	0	1,119,000	1,119,000	
A 010101 T. LERRD Crediting										
A 010101 T 01. Administrative costs										
USR administrative c					0.00	0.00	0.00	7600.00	7600.00	
osts	1.00	LS		0.00	0	0	0	7,600	7,600	7600.00

A. Port of Iberia

A 01. Lands and Damages	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL Administrative c					0	0	0	7,600	7,600	
TOTAL Lands and Damage					0	0	0	1,349,150	1,349,150	

A. Port of Iberia

A 01. Lands and Damages	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 010102. Relocations										
A 010102 1. Relocations										
A 010102 1 01. Final Compensability Report										
USR by government					0.00	0.00	0.00	3600.00	3600.00	
	1.00	LS		0.00	0	0	0	3,600	3,600	3600.00
TOTAL Final Compensabi					0	0	0	3,600	3,600	
A 010102 1 02. Cost reimbursement Agreement										
USR by government					0.00	0.00	0.00	4300.00	4300.00	
	1.00	LS		0.00	0	0	0	4,300	4,300	4300.00
TOTAL Cost reimburseme					0	0	0	4,300	4,300	
TOTAL Relocations					0	0	0	7,900	7,900	

A. Port of Iberia

A 01. Lands and Damages	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 010103. round off										
A 01010301. round off										
A 01010301 01. round off comtingency										
USR round off contin					0.00	0.00	0.00	0.01	0.01	
gency	1.00	LS		0.00	0	0	0	0	0	0.01
TOTAL round off comtin					0	0	0	0	0	
TOTAL round off					0	0	0	0	0	
TOTAL Lands and Damage	1.00	EA			0	0	0	1,357,050	1,357,050	1357050

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 09. Channels

A 0901. Channels

A 090115. dredging - channel

This item is for all labor, equipment, and materials required to dredge, both mechanical and hydraulic, the various channels to -20' x 150' plus 2' of advanced maintenance and place the material in designated disposal areas. All costs were developed based on NOD historical dredging data and dredging program. The costs include an approx. 24% distributed cost (G&A, profit, bond). Channel quantities do not reflect overdepth, however overdepth is included in the unit cost.

A 09011501. Commercial Canal

This item is for all, labor, equipment, and materials required to dredge Commercial Canal from existing 12' x 125' navigation channel to new 20' x 150'. The quantities include 2 ft. of advanced maintenance. Non-pay overdepth is NOT included in BID quantities, however it is included in unit cost. Disposal for dredge material will be in 2 areas: 1) upland confined along right bank of Commercial Canal and 2) in Weeks Bay. The Weeks Bay site disposal is limited to mechanical placement methods due to enviromental concerns.

A 09011501 01. Mob & Demob

This item is for all labor, equipment, and materials required to mobilize and demobilize the hydrualic pipeline dredge, all attendant plant, pipeline, tugs, etc. and the mechanical dredge and haul operation.

USR	Mob & Demob - hy				0.00	0.00	0.00	591500.00	591500.00	
	draulic	1.00	LS	0.00	0	0	0	591,500	591,500	591500.00
USR	Mob & Demob - bu				0.00	0.00	0.00	73000.00	73000.00	
	cket	1.00	LS	0.00	0	0	0	73,000	73,000	73000.00
TOTAL	Mob & Demob	1.00	EA		0	0	0	664,500	664,500	664500.00

A 09011501 02. containment dikes

This item is for all labor, equipment, and materials required to construct earthen dikes for containment of dredge material in the disposal areas. It is assumed this will be done with marsh equipment.

USR	7'earthen dike,				0.00	0.00	0.00	19.78	19.78	
	8'crwn, 20'berm	26000	LF	0.00	0	0	0	514,280	514,280	19.78
	constructed with marsh									
	equipment by dredge contractor									
TOTAL	containment dike	26000	LF		0	0	0	514,280	514,280	19.78

A. Port of Iberia

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 09011501 03. dredging										
This item is for all labor, equipment, and material required to preform the required channel dredging. There will be pipeline cutterhead dredging and mechanical/bucket dredging. Part of the material will be excavated by a dragline/excavator, placed in barges, hauled 6 to 7 miles to a nearby disposal area, and offloaded by excavator / dragline. The remaining material will be hydraulically dredged and pumped to a confined site.										
USR dredging - cutte rhead (gross) using 30" dredge, avg pipeline lengths = 8,000 lf to 18,000 lf, approx. 9.2' face-gross, no booster req'd	1627008	CY		0.00	0.00 0	0.00 0	0.00 0	3.03 4,929,834	3.03 4,929,834	3.03
USR dredging-bucket w/barging(gross) excavating with large dragline and loading on a barge at 250 cy/hr, haul average 6 - 7 miles, and unloading with large hydr. excavator in Weeks Bay DA. Working 2 - 10 hr shifts.	1238998	CY		0.00	0.00 0	0.00 0	0.00 0	2.78 3,444,414	2.78 3,444,414	2.78
USR roundoff, misc	1.00	LS		0.00	0.00 0	0.00 0	0.00 0	4371.00 4,371	4371.00 4,371	4371.00
TOTAL dredging	2594000	CY			0	0	0	8,378,620	8,378,620	3.23
A 09011502. G.I.W.W.										
This item is for all, labor, equipment, and materials required to dredge the G.I.W.W. from existing 12' x 125' navigation channel to new 20' x 150'. The quantities include 2 ft. of advanced maintenance. Non-pay overdepth is NOT included in the BID quantities, however it is included in the unit cost. Disposal for dredge material will be in 2 areas: 1) bucket dredging will be cast adjacent along the channel behind the stone dikes and 2) hydraulic dredging will be placed in designated confined open water marsh disposal areas. It has been assumed that there will be 3 contracts to complete the work - 1 hydraulic and 2 bucket. Each contract will include dredging and rock where applicable.										
A 09011502 01. Mob & Demob - dredge										
This item is for all labor, equipment, and materials required to mobilize and demobilize the hydrualic pipeline dredge, all attendant plant, pipeline, tugs, etc. and the mechanical dredge and haul operation.										
USR Mob & Demob - hy draulic (part 1)	1.00	LS		0.00	0.00 0	0.00 0	0.00 0	1060000.00 1,060,000	1060000.00 1,060,000	1060000

A. Port of Iberia

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR Mob & Demob - hy					0.00	0.00	0.00	6000.00	6000.00	
draulic (part 2)	1.00	LS		0.00	0	0	0	6,000	6,000	6000.00
USR Mob & Demob - bu					0.00	0.00	0.00	82000.00	82000.00	
cket	2.00	LS		0.00	0	0	0	164,000	164,000	82000.00
TOTAL Mob & Demob - dr	1.00	EA			0	0	0	1,230,000	1,230,000	1230000

A 09011502 02. Mob & Demob - rock

This item is for all labor, equipment, and materials required for Mob and Demob of the rock placement operations.
It is assumed the rock work will be done in 3 contracts.

USR PM mob & demob - ro					0.00	0.00	0.00	48000.00	48000.00	
ck - channel	2.00	EA		0.00	0	0	0	96,000	96,000	48000.00
USR PM mob & demob - ro					0.00	0.00	0.00	48000.00	48000.00	
ck - containment	1.00	EA		0.00	0	0	0	48,000	48,000	48000.00
TOTAL Mob & Demob - ro	3.00	EA			0	0	0	144,000	144,000	48000.00

A 09011502 03. dredging

This item is for all labor, equipment, and material required to preform the required channel dredging. There will be pipeline cutterhead dredging and mechanical/bucket dredging. Part of the material will be excavated by a dragline/excavator and cast adjacent behind the rock dike. The remaining material will be hydraulically dredged and pumped to confined sites.

USR dredging - cutte					0.00	0.00	0.00	5.27	5.27	
rhead (gross) using 30" dredge, pipeline length = 6,000 lf to 30,000 lf, approx. 4.2' face-gross, Sta. 0+00 to 100+00 remaining to GIWW #5, Sta 100+00 to 200+00 remaining to GIWW #6	468111	CY		0.00	0	0	0	2,466,945	2,466,945	5.27
USR dredging - bucke					0.00	0.00	0.00	1.41	1.41	
t (gross) excavating with large dragline on a barge at 220 cy/hr casting adjacent behind rock dike. Working 2 - 10 hr shifts.	4309223	CY		0.00	0	0	0	6,076,004	6,076,004	1.41

A. Port of Iberia

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR roundoff, misc					0.00	0.00	0.00	3500.60	3500.60	
	1.00	LS		0.00	0	0	0	3,501	3,501	3500.60
TOTAL dredging	4169000	CY			0	0	0	8,546,450	8,546,450	2.05

A 09011502 04. flotation access to DA 5 & 6

This item is for all labor, equipment, and materials required to dig flotation channel to place the rock for DA 5 & 6. The material will be cast adjacent to the channel in open water.

USR PM flotation channe					0.21	1.05	0.00	0.00	1.27	
l	115000	CY	RCKBM2	250.00	24,484	121,153	0	0	145,636	1.27
USR PM safety & misc					0.00	0.00	0.00	1564.00	1564.00	
	1.00	LS		0.00	0	0	0	1,564	1,564	1564.00
TOTAL flotation access					24,484	121,153	0	1,564	147,200	

A 09011502 05. DA dike GIWW#5

This item is for all labor, equipment, and materials required to construct rock cover on the dikes for containment of dredge material in select disposal areas.

USR PM rock with 4600 +					0.39	1.95	0.00	0.00	2.35	
0% LL	50500	TON	RCKBM2	135.00	19,912	98,520	0	0	118,433	2.35
composite production rate takes into account +10% time for weather delays and waiting on stone. (150 -> 135 T/hr)										
USR PM rock - materials					0.00	0.00	5.92	0.00	5.92	
(1000# max)	50500	TON		0.00	0	0	298,814	0	298,814	5.92
price $6.50 less 15% discount Pine Bluff 3/11/04										
USR PM rock - delivery					0.00	0.00	0.00	10.00	10.00	
Pine Bluff 3/11/0450500		TON		0.00	0	0	0	505,000	505,000	10.00
USR PM safety & misc					0.00	0.00	0.00	2913.85	2913.85	
	1.00	LS		0.00	0	0	0	2,914	2,914	2913.85
TOTAL DA dike GIWW#5	50500	TON			19,912	98,520	298,814	507,914	925,160	18.32

A. Port of Iberia

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 09011502 06. DA dike GIWW#6										
This item is for all labor, equipment, and materials required to construct rock cover on the dikes for containment of dredge material in select disposal areas.										
USR PM rock with 4600 +					0.39	1.95	0.00	0.00	2.35	
0% LL	58500	TON	RCKBM2	135.00	23,067	114,128	0	0	137,194	2.35
composite production rate takes into account time for weather delays and waiting on stone. (150 -> 135 T/hr)										
USR PM rock - materials					0.00	0.00	5.92	0.00	5.92	
(1000# max)	58500	TON		0.00	0	0	346,150	0	346,150	5.92
price $6.50/T less 15% discount Pine Bluff 3/11/04										
USR PM rock - delivery					0.00	0.00	0.00	10.00	10.00	
Pine Bluff 3/11/04	58500	TON		0.00	0	0	0	585,000	585,000	10.00
USR PM safety & misc					0.00	0.00	0.00	3375.45	3375.45	
	1.00	LS		0.00	0	0	0	3,375	3,375	3375.45
TOTAL DA dike GIWW#6	58500	TON			23,067	114,128	346,150	588,375	1,071,720	18.32

A 09011503. Freshwater Bayou

This item is for all, labor, equipment, and materials required to dredge Freshwater Bayou from existing 12' x 125' navigation channel to new 20' x 150'. The quantities include 2 ft. of advanced maintenance. Non-pay overdepth is NOT included in the BID quantities, however it is included in the unit cost. Disposal for dredge material will be in 2 areas: 1) bucket dredging will be cast adjacent along the channel behind the stone dikes and 2) hydraulic dredging will be placed in designated confined open water marsh disposal areas placed up and down both sides of the length of the channel. It has been assumed that there will be 5 contracts to complete the work - 1 hydraulic and 4 bucket. Each contract will include dredging and rock where applicable.

A 09011503 01. Mob & Demob - dredging

This item is for all labor, equipment, and materials required to mobilize and demobilize the hydrualic pipeline dredge, all attendant plant, pipeline, tugs, etc. and the mechanical dredge and haul operation.

USR Mob & Demob - hy					0.00	0.00	0.00	1480000.00	1480000.00	
draulic (part 1)	1.00	LS		0.00	0	0	0	1,480,000	1,480,000	1480000
USR Mob & Demob - hy					0.00	0.00	0.00	6000.00	6000.00	
draulic (part 2)	1.00	LS		0.00	0	0	0	6,000	6,000	6000.00

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR Mob & Demob - bu					0.00	0.00	0.00	66000.00	66000.00	
cket	4.00	LS		0.00	0	0	0	264,000	264,000	66000.00
TOTAL Mob & Demob - dr	1.00	EA			0	0	0	1,750,000	1,750,000	1750000

A 09011503 02. Mob & Demob - rock

This item is for all labor, equipment, and materials required for Mob and Demob of the rock placement operations. It is assumed the rock work along Freshwater Bayou bankline will be done in 4 contracts in conjunction with the bucket dredging. There will also be one additional contract in conjunction with the hydraulic dredging contract for containment cells.

USR PM mob & demob - ro					0.00	0.00	0.00	48000.00	48000.00	
ck - channel	4.00	EA		0.00	0	0	0	192,000	192,000	48000.00
USR PM mob & demob - ro					0.00	0.00	0.00	48000.00	48000.00	
ck - containment	1.00	EA		0.00	0	0	0	48,000	48,000	48000.00
TOTAL Mob & Demob - ro	5.00	EA			0	0	0	240,000	240,000	48000.00

A 09011503 03. dredging

This item is for all labor, equipment, and material required to preform the required channel dredging. There will be pipeline cutterhead dredging and mechanical/bucket dredging. Part of the material will be excavated by a dragline/excavator and placed adjacent behind the rock dike along the channel. The remaining material will be hydraulically dredged and pumped to various confined sites. The unit cost for hydraulic dredging includes the earthen dikes to El. +3.0 (approx 5' tall) around the DAs except those around FWB #1, 2, and 3 which are listed seperately.

USR dredging - cutte					0.00	0.00	0.00	5.38	5.38	
rhead (gross)	2541547	CY		0.00	0	0	0	13,673,523	13,673,523	5.38
using 30" dredge, avg pipeline length = 7,500 - 27,500 lf, Max = 34,500 lf. with an approx. 4.5' - 6' face-gross. 1 booster pump will be required on several reaches.										
USR dredging - bucke					0.00	0.00	0.00	1.24	1.24	
t (gross)	3617009	CY		0.00	0	0	0	4,485,091	4,485,091	1.24
excavating with large dragline on a barge at 250 cy/hr and casting adjacent. Working 2 - 10 hr shifts.										

A. Port of Iberia

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR roundoff, misc					0.00	0.00	0.00	41386.00	41386.00	
	1.00	LS		0.00	0	0	0	41,386	41,386	41386.00
TOTAL dredging	5600000	CY			0	0	0	18,200,000	18,200,000	3.25

A 09011503 05. DA dike FWB#1 - earthen core
This item is for all labor, equipment, and materials required to construct earthen cores with rock cover dikes for containment of dredge material in select disposal areas.

USR PM with 4600 - qt					0.22	1.10	0.00	0.00	1.32	
y + 50% factor	28050	CY	RCKBM2	240.00	6,221	30,782	0	0	37,004	1.32
USR PM safety & misc					0.00	0.00	0.00	396.44	396.44	
	1.00	LS		0.00	0	0	0	396	396	396.44
TOTAL DA dike FWB#1 -	18700	CY			6,221	30,782	0	396	37,400	2.00

A 09011503 06. DA dike FWB#1 - stone cover
This item is for all labor, equipment, and materials required to construct rock cover on the dikes for containment of dredge material in select disposal areas.

USR PM rock with 4600 +					0.41	2.03	0.00	0.00	2.44	
22% LL	37820	TON	RCKBM2	130.00	15,487	76,620	0	0	92,107	2.44
composite production rate takes into account +10% time for weather delays and waiting on stone. (150 -> 130 T/hr)										
USR PM rock - materials					0.00	0.00	5.92	0.00	5.92	
price $6.50/T less 15% discount Pine Bluff 3/11/04				0.00	0	0	183,430	0	183,430	5.92
USR PM rock - delivery					0.00	0.00	0.00	10.00	10.00	
Pine Bluff 3/11/04	31000	TON		0.00	0	0	0	310,000	310,000	10.00
USR PM safety & misc					0.00	0.00	0.00	3463.00	3463.00	
	1.00	LS		0.00	0	0	0	3,463	3,463	3463.00
TOTAL DA dike FWB#1 -	31000	TON			15,487	76,620	183,430	313,463	589,000	19.00

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 09011503 07. DA dike FWB#2 - earthen core										
This item is for all labor, equipment, and materials required to construct earthen cores with rock cover dikes for containment of dredge material in select disposal areas.										
USR PM earthen core					0.00	0.00	0.00	2.00	2.00	
constructed with marine/marsh equipment				0.00	0	0	0	37,400	37,400	2.00
reference previous similar item										
TOTAL DA dike FWB#2 -	18700	CY			0	0	0	37,400	37,400	2.00
A 09011503 08. DA dike FWB#2 - stone cover										
This item is for all labor, equipment, and materials required to construct rock cover on the dikes for containment of dredge material in select disposal areas.										
USR PM stone					0.00	0.00	0.00	19.00	19.00	
	31000	TON		0.00	0	0	0	589,000	589,000	19.00
reference previous similar item										
TOTAL DA dike FWB#2 -	31000	TON			0	0	0	589,000	589,000	19.00
A 09011503 09. DA dike FWB#3 - earthen core										
This item is for all labor, equipment, and materials required to construct earthen cores with rock cover dikes for containment of dredge material in select disposal areas.										
USR PM earthen core					0.00	0.00	0.00	2.00	2.00	
constructed with marine/marsh equipment				0.00	0	0	0	37,400	37,400	2.00
reference previous similar item										
TOTAL DA dike FWB#3 -	18700	CY			0	0	0	37,400	37,400	2.00
A 09011503 10. DA dike FWB#3 - stone cover										
This item is for all labor, equipment, and materials required to construct rock cover on the dikes for containment of dredge material in select disposal areas.										
USR PM stone					0.00	0.00	0.00	19.00	19.00	
	31000	TON		0.00	0	0	0	589,000	589,000	19.00
reference previous similar item										
TOTAL DA dike FWB#3 -	31000	TON			0	0	0	589,000	589,000	19.00

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 09011504. Freshwater Bayou By-Pass and Bar
This item is for all, labor, equipment, and materials required to dredge Freshwater Bayou By-Pass and Bar channels from existing 12' x 125' navigation channel to new 20' x 150'. The quantities include 2 ft. of advanced maintenance. Non-pay overdepth is NOT included in the BID quantities, however it is included in the unit cost. Disposal for dredge material will be in 2 areas: 1) for the Bar channel it will be pumped to the beach nourishment area and 2) for the By-Pass channel it will be pumped to the adjacent confined disposal area. It has been assumed that there will be 1 contract to complete the work - 1 hydraulic.

A 09011504 01. Mob & Demob - dredging
This item is for all labor, equipment, and materials required to mobilize and demobilize the hydrualic pipeline dredge, all attendant plant, pipeline, tugs, etc. It is assumed both the Bar Channel and the By-Pass channel will be done as 1 contract.

USR	Mob & Demob - hy				0.00	0.00	0.00	939000.00	939000.00	
	draulic (part 1)	1.00	LS	0.00	0	0	0	939,000	939,000	939000.00
TOTAL	Mob & Demob - dr	1.00	EA		0	0	0	939,000	939,000	939000.00

A 09011504 02. dredging - Bar channel
This item is for all labor, equipment, and material required to preform the required channel dredging. This will be pipeline cutterhead dredging. The material will be hydraulically dredged and pumped to the beach nourishment site.

USR	dredging - cutte				0.00	0.00	0.00	3.56	3.56	
	rhead (gross)	2690241	CY	0.00	0	0	0	9,577,258	9,577,258	3.56
	using 30" dredge, pipeline length = 3,000 - 30,000 lf, with an approx. 8.5-13.0 face-gross.									
USR	roundoff, misc				0.00	0.00	0.00	8720.49	8720.49	
		1.00	LS	0.00	0	0	0	8,720	8,720	8720.49
TOTAL	dredging - Bar c	2343760	CY		0	0	0	9,585,978	9,585,978	4.09

A 09011504 03. dredging - By-Pass Channel
This item is for all labor, equipment, and material required to preform the required channel dredging. This will be pipeline cutterhead dredging. The material will be hydraulically dredged and pumped to the adjacent confined disposal area.

USR	dredging - cutte				0.00	0.00	0.00	2.19	2.19	
	rhead (gross)	595889	CY	0.00	0	0	0	1,304,997	1,304,997	2.19
	using 30" dredge, pipeline									

A. Port of Iberia

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
length = 1,500 - 7,000 lf, with an approx. 13.0'face-gross. The cost of the dike work is included in the dredging unit cost.										
USR roundoff, misc					0.00	0.00	0.00	3953.00	3953.00	
	1.00	LS		0.00	0	0	0	3,953	3,953	3953.00
TOTAL dredging - By-Pa	557000	CY			0	0	0	1,308,950	1,308,950	2.35
TOTAL dredging - chann	1.00	EA			89,171	441,202	828,394	54,166,291	55,525,058	55525058

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 090130. bank stabilization - revetment										
A 09013001. G.I.W.W.										
A 09013001 01. Channel Revetment 28" This item is for all labor, equipment, and materials requires to furnish and place stone revetment along the channel.										
USR PM rock - materials					0.00	0.00	5.92	0.00	5.92	
(1000# max)	628000	TON		0.00	0	0	3,715,939	0	3,715,939	5.92
Pine Bluff 3/11/04										
USR PM rock - delivery					0.00	0.00	0.00	10.00	10.00	
Pine Bluff 3/11/04	628000	TON		0.00	0	0	0	6,280,000	6,280,000	10.00
USR PM safety & misc					0.00	0.00	0.00	11115.60	11115.60	
	1.00	LS		0.00	0	0	0	11,116	11,116	11115.60
USR PM rock with 4600 +					0.39	1.95	0.00	0.00	2.35	
0% LL	628000	TON	RCKBM2	135.00	247,620	1,225,165	0	0	1,472,786	2.35
composite production rate takes into account time for weather delays and waiting on stone. (150 -> 136 T/hr)										
TOTAL Channel Revetmen	628000	TON			247,620	1,225,165	3,715,939	6,291,116	11,479,840	18.28
A 09013001 02. geotextile This item is for all labor, equipment, and materials required to furnish and install geotextile fabric prior to placement of the rock protection. This work will be done by marine plant.										
USR PM geotextile					0.42	0.48	1.07	0.00	1.97	
	733000	SY	FABMM	250.00	307,420	348,835	784,310	0	1,440,565	1.97
USR PM safety & misc					0.00	0.00	0.00	25435.00	25435.00	
	1.00	LS		0.00	0	0	0	25,435	25,435	25435.00
TOTAL geotextile	733000	SY			307,420	348,835	784,310	25,435	1,466,000	2.00
A 09013002. Freshwater Bayou										
A 09013002 01. Channel Revetment 36" This item is for all labor, equipment, and materials requires to furnish and place stone revetment along the channel.										
USR PM rock with 4600 +					0.39	1.95	0.00	0.00	2.35	
0% LL	1500000	TON	RCKBM2	135.00	591,450	2,926,350	0	0	3,517,800	2.35
composite production rate										

A 09. Channels	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
takes into account time for weather delays and waiting on stone. (150 -> 136 T/hr)										
USR PM rock - materials					0.00	0.00	5.24	0.00	5.24	
(2200# max)	1500000	TON		0.00	0	0	7,864,500	0	7,864,500	5.24
Luhr Bros 3/12/04										
USR PM rock - delivery					0.00	0.00	0.00	10.20	10.20	
Luhr Bros. 3/12/04	500000	TON		0.00	0	0	0	15,300,000	15,300,000	10.20
USR PM safety & misc					0.00	0.00	0.00	17700.00	17700.00	
	1.00	LS		0.00	0	0	0	17,700	17,700	17700.00
TOTAL Channel Revetmen	1500000	TON			591,450	2,926,350	7,864,500	15,317,700	26,700,000	17.80

A 09013002 02. geotextile

This item is for all labor, equipment, and materials required to furnish and install geotextile fabric prior to placement of the rock protection. This work will be done by marine plant.

USR PM geotextile					0.42	0.48	1.07	0.00	1.97	
	1133000	SY	FABMM	250.00	475,180	539,195	1,212,310	0	2,226,685	1.97
USR PM safety & misc					0.00	0.00	0.00	39315.00	39315.00	
	1.00	LS		0.00	0	0	0	39,315	39,315	39315.00
TOTAL geotextile	1133000	SY			475,180	539,195	1,212,310	39,315	2,266,000	2.00
TOTAL bank stabilizati					1,621,671	5,039,545	13,577,059	21,673,566	41,911,840	
TOTAL Channels	1.00	EA			1,710,842	5,480,747	14,405,453	75,839,856	97,436,898	97436898

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 15. Fldwy Control and Div Structures

A 1500. Concrete Swing Barge Floodgate

This item is for all labor, equipment, and materials required to construct a concrete swing barge floodgate in the by-pass channel adjacent to the existing Freshwater Bayou Control Structure.
There are 3 main parts to this: 1) concrete swing barges (2 ea.), 2) the concrete receiving structures, and 3) removal of existing structures.

All costs furnished by local sponsor A/E - Shaw Coastal, Inc., Houma , LA.
Revised July 2005.

A 150001. Concrete Swing Barge

The total quantities shown are for 2 swing gates.

A 15000101. normal weight concrete

A 15000101 01. Swing Gate bottom (1st Lift)

USR	NW concrete				0.00	0.00	0.00	350.00	350.00	
		308.00	CY	0.00	0	0	0	107,800	107,800	350.00
USR	roundoff				0.00	0.00	0.00	-48.00	-48.00	
		1.00	LS	0.00	0	0	0	-48	-48	-48.00
TOTAL	Swing Gate botto	308.00	CY		0	0	0	107,752	107,752	349.84

A 15000102. light weight concrete

A 15000102 01. Swing gate bottom (2nd lift)

USR	LW concrete				0.00	0.00	0.00	800.00	800.00	
		286.00	CY	0.00	0	0	0	228,800	228,800	800.00
TOTAL	Swing gate botto	286.00	CY		0	0	0	228,800	228,800	800.00

A 15000102 02. Swing gate Deck

USR	LW concrete				0.00	0.00	0.00	800.00	800.00	
		346.00	CY	0.00	0	0	0	276,800	276,800	800.00
TOTAL	Swing gate Deck	346.00	CY		0	0	0	276,800	276,800	800.00

A 15000102 03. Columns

USR	LW concrete				0.00	0.00	0.00	800.00	800.00	
		450.00	CY	0.00	0	0	0	360,000	360,000	800.00
TOTAL	Columns	450.00	CY		0	0	0	360,000	360,000	800.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000102 04. precast prestressed Deck panels										
USR LW concrete					0.00	0.00	0.00	800.00	800.00	
	244.00	CY		0.00	0	0	0	195,200	195,200	800.00
TOTAL precast prestres	244.00	CY			0	0	0	195,200	195,200	800.00
A 15000102 05. precast prestressed wall panels										
USR LW concrete					0.00	0.00	0.00	800.00	800.00	
	2230.00	CY		0.00	0	0	0	1,784,000	1,784,000	800.00
TOTAL precast prestres	2230.00	CY			0	0	0	1,784,000	1,784,000	800.00
A 15000102 06. Locking Socket										
USR LW concrete					0.00	0.00	0.00	800.00	800.00	
	60.00	CY		0.00	0	0	0	48,000	48,000	800.00
TOTAL Locking Socket	60.00	CY			0	0	0	48,000	48,000	800.00
A 15000102 07. Seal Support										
USR LW concrete					0.00	0.00	0.00	800.00	800.00	
	13.20	CY		0.00	0	0	0	10,560	10,560	800.00
TOTAL Seal Support	13.20	CY			0	0	0	10,560	10,560	800.00
A 15000103. Steel / Aluminum										
A 15000103 01. Pivot Arm Steel										
USR Pivot Arm Steel					0.00	0.00	0.00	2.00	2.00	
	80400	LBS		0.00	0	0	0	160,800	160,800	2.00
TOTAL Pivot Arm Steel	80400	LB			0	0	0	160,800	160,800	2.00
A 15000103 02. cattle ramp walkway plate										
USR Pivot Arm Steel					0.00	0.00	0.00	2.00	2.00	
	11200	LBS		0.00	0	0	0	22,400	22,400	2.00
TOTAL cattle ramp walk	11200	LB			0	0	0	22,400	22,400	2.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000104. Fender System										
A 15000104 01. Composite Marine Timber										
USR Composite Marine					0.00	0.00	0.00	110.00	110.00	
Timber	2000.00	LF		0.00	0	0	0	220,000	220,000	110.00
TOTAL Composite Marine	2000.00	LF			0	0	0	220,000	220,000	110.00
A 15000105. Seal System										
A 15000105 01. Seal with UHMW Plastic Anchor										
USR seal with UHMW p					0.00	0.00	0.00	55.00	55.00	
lastic anchor	540.00	LF		0.00	0	0	0	29,700	29,700	55.00
TOTAL Seal with UHMW P	540.00	LF			0	0	0	29,700	29,700	55.00
A 15000106. Control Houses										
A 15000106 01. Winch Control Houses										
USR winch control ho					0.00	0.00	0.00	12000.00	12000.00	
uses	2.00	LS		0.00	0	0	0	24,000	24,000	12000.00
TOTAL Winch Control Ho					0	0	0	24,000	24,000	
A 15000106 02. Pumps Awning										
USR pumps awning					0.00	0.00	0.00	8000.00	8000.00	
	2.00	LS		0.00	0	0	0	16,000	16,000	8000.00
TOTAL Pumps Awning					0	0	0	16,000	16,000	
A 15000108. Miscellaneous										
A 15000108 02. delivery of swing gates										
USR delivery of barg					0.00	0.00	0.00	100000.00	100000.00	
es	2.00	EA		0.00	0	0	0	200,000	200,000	100000.00
TOTAL delivery of swin	2.00	EA			0	0	0	200,000	200,000	100000.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000108 03. Misc (steel,Hwd, accessories)										
USR Misc (steel,hwd,					0.00	0.00	0.00	110000.00	110000.00	
accessories)	2.00	EA		0.00	0	0	0	220,000	220,000	110000.00
TOTAL Misc (steel,Hwd,	2.00	EA			0	0	0	220,000	220,000	110000.00
A 15000109. Post Tensioning										
A 15000109 01. Post tensioning										
USR post tensioning					0.00	0.00	0.00	4.00	4.00	
	140000	LF		0.00	0	0	0	560,000	560,000	4.00
TOTAL Post tensioning	140000	LF			0	0	0	560,000	560,000	4.00
A 15000110. Graving site for swing gates										
A 15000110 01. Graving site for swing gates										
USR graving site for					0.00	0.00	0.00	750000.00	750000.00	
swing gates	1.00	LS		0.00	0	0	0	750,000	750,000	750000.00
TOTAL Graving site for					0	0	0	750,000	750,000	
TOTAL Concrete Swing B	2.00	EA			0	0	0	5,214,012	5,214,012	2607006

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 150002. Concrete Receiving Structures										
A 15000201. Mob & Demob										
A 15000201 01. Mob & Demob										
USR mob & demob					0.00	0.00	0.00	500000.00	500000.00	
	1.00	LS		0.00	0	0	0	500,000	500,000	500000.00
TOTAL Mob & Demob					0	0	0	500,000	500,000	
A 15000202. Reinforced Concrete										
A 15000202 01. T-walls										
USR T-walls					0.00	0.00	0.00	350.00	350.00	
	5063.00	CY		0.00	0	0	0	1,772,050	1,772,050	350.00
TOTAL T-walls	5063.00	CY			0	0	0	1,772,050	1,772,050	350.00
A 15000202 02. I-walls										
USR I-walls					0.00	0.00	0.00	350.00	350.00	
	104.00	CY		0.00	0	0	0	36,400	36,400	350.00
TOTAL I-walls	104.00	CY			0	0	0	36,400	36,400	350.00
A 15000202 03. Walkways and Boat Dock										
USR Walkways and Boa					0.00	0.00	0.00	350.00	350.00	
t Dock	486.00	CY		0.00	0	0	0	170,100	170,100	350.00
TOTAL Walkways and Boa	486.00	CY			0	0	0	170,100	170,100	350.00
A 15000202 04. Monolith										
USR monolith					0.00	0.00	0.00	350.00	350.00	
	3708.00	CY		0.00	0	0	0	1,297,800	1,297,800	350.00
TOTAL Monolith	3708.00	CY			0	0	0	1,297,800	1,297,800	350.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000202 05. Corbel and Pintle										
USR corbel and pintl					0.00	0.00	0.00	350.00	350.00	
e	16.00	CY		0.00	0	0	0	5,600	5,600	350.00
TOTAL Corbel and Pintl	16.00	CY			0	0	0	5,600	5,600	350.00
A 15000203. Pre-cast, Pre-stressed, beams										
A 15000203 01. boat dock 16"x16"x20'										
USR boat dock					0.00	0.00	0.00	800.00	800.00	
	11.00	CY		0.00	0	0	0	8,800	8,800	800.00
TOTAL boat dock 16"x16	11.00	CY			0	0	0	8,800	8,800	800.00
A 15000203 02. Cattle walkways 28"x24"x15'										
USR cattle walkways					0.00	0.00	0.00	800.00	800.00	
	115.00	CY		0.00	0	0	0	92,000	92,000	800.00
TOTAL Cattle walkways	115.00	CY			0	0	0	92,000	92,000	800.00
A 15000203 03. pedestrian walkway 12"x12"x60'										
USR pedestrian walkw					0.00	0.00	0.00	800.00	800.00	
ay	14.00	CY		0.00	0	0	0	11,200	11,200	800.00
TOTAL pedestrian walkw	14.00	CY			0	0	0	11,200	11,200	800.00
A 15000203 04. grade beams 3'6"x4'x20'6"										
USR grade beams					0.00	0.00	0.00	790.00	790.00	
	428.00	CY		0.00	0	0	0	338,120	338,120	790.00
TOTAL grade beams 3'6"	428.00	CY			0	0	0	338,120	338,120	790.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000205. Pre-cast, Pre-stressed, piles										
A 15000205 01. setting piles 24"x24"x85'										
USR 24"x24" concrete					0.00	0.00	0.00	50.00	50.00	
piles	6800.00	LF		0.00	0	0	0	340,000	340,000	50.00
TOTAL setting piles 24	6800.00	LF			0	0	0	340,000	340,000	50.00
A 15000205 02. T-walls 16"x16'x90'										
USR 16"x16" concrete					0.00	0.00	0.00	28.00	28.00	
piles	13860	LF		0.00	0	0	0	388,080	388,080	28.00
TOTAL T-walls 16"x16'x	13860	LF			0	0	0	388,080	388,080	28.00
A 15000205 03. cattle walkways 12"x12"x80'										
USR concrete piles 1					0.00	0.00	0.00	26.00	26.00	
2"x12"	7040.00	LF		0.00	0	0	0	183,040	183,040	26.00
TOTAL cattle walkways	7040.00	LF			0	0	0	183,040	183,040	26.00
A 15000205 04. Pedestrian walkways 12"x12"x60'										
USR concrete piles 1					0.00	0.00	0.00	26.00	26.00	
2"x12"	4080.00	LF		0.00	0	0	0	106,080	106,080	26.00
TOTAL Pedestrian walkw	4080.00	LF			0	0	0	106,080	106,080	26.00
A 15000205 05. boat dock 12"x12"x70'										
USR concrete piles 1					0.00	0.00	0.00	26.00	26.00	
2"x12"	1120.00	LF		0.00	0	0	0	29,120	29,120	26.00
TOTAL boat dock 12"x12	1120.00	LF			0	0	0	29,120	29,120	26.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000208. sheetpiles										
A 15000208 01. monolith A-572										
USR sheetpile					0.00	0.00	0.00	30.00	30.00	
	5184.00	SF		0.00	0	0	0	155,520	155,520	30.00
TOTAL monolith A-572	5184.00	SF			0	0	0	155,520	155,520	30.00
A 15000208 02. T-wall A-572										
USR sheetpile					0.00	0.00	0.00	30.00	30.00	
	4260.00	SF		0.00	0	0	0	127,800	127,800	30.00
TOTAL T-wall A-572	4260.00	SF			0	0	0	127,800	127,800	30.00
A 15000208 03. I-wall A-572										
USR sheetpile					0.00	0.00	0.00	30.00	30.00	
	8820.00	SF		0.00	0	0	0	264,600	264,600	30.00
TOTAL I-wall A-572	8820.00	SF			0	0	0	264,600	264,600	30.00
A 15000208 04. Cut-off wall A-572										
USR sheetpile					0.00	0.00	0.00	30.00	30.00	
	5120.00	SF		0.00	0	0	0	153,600	153,600	30.00
TOTAL Cut-off wall A-5	5120.00	SF			0	0	0	153,600	153,600	30.00
A 15000209. Temp Retaining Structure TRS										
A 15000209 01. 36" dia pipe w/ AZ-26 x 80'										
USR 36" dia pipe w/					0.00	0.00	0.00	30.00	30.00	
AZ-26 x 80'	4000.00	SF		0.00	0	0	0	120,000	120,000	30.00
TOTAL 36" dia pipe w/	4000.00	SF			0	0	0	120,000	120,000	30.00
A 15000209 02. AZ-48 w/ 2 ea W14x109x80'										
USR AZ-48 w/ 2 ea W1					0.00	0.00	0.00	32.65	32.65	
4x109x80'	31920	SF		0.00	0	0	0	1,042,188	1,042,188	32.65

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL AZ-48 w/ 2 ea W1	31920	SF			0	0	0	1,042,188	1,042,188	32.65
A 15000209 03. AZ-36 x 68'										
USR AZ-36 x 68'					0.00	0.00	0.00	20.00	20.00	
	21964	SF		0.00	0	0	0	439,280	439,280	20.00
TOTAL AZ-36 x 68'	21964	SF			0	0	0	439,280	439,280	20.00
A 15000209 04. installation of remaining 3 strs										
USR installation of					0.00	0.00	0.00	100.00	100.00	
remining 3 str	1825.00	LF		0.00	0	0	0	182,500	182,500	100.00
TOTAL installation of	1825.00	LF			0	0	0	182,500	182,500	100.00
A 15000210. steel										
A 15000210 01. handrails										
USR handrails					0.00	0.00	0.00	52.60	52.60	
	1908.00	LF		0.00	0	0	0	100,361	100,361	52.60
TOTAL handrails	1908.00	LF			0	0	0	100,361	100,361	52.60
A 15000210 02. Chain Link										
USR chain link					0.00	0.00	0.00	2.50	2.50	
	7760.00	SF		0.00	0	0	0	19,400	19,400	2.50
TOTAL Chain Link	7760.00	SF			0	0	0	19,400	19,400	2.50
A 15000210 03. C-Channel (cutoff wall)										
USR c-channel					0.00	0.00	0.00	60.00	60.00	
	320.00	LF		0.00	0	0	0	19,200	19,200	60.00
TOTAL C-Channel (cutof	320.00	LF			0	0	0	19,200	19,200	60.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000210 04. SS seal plate										
USR SS seal plate					0.00	0.00	0.00	36.00	36.00	
	230.00	LF		0.00	0	0	0	8,280	8,280	36.00
TOTAL SS seal plate	230.00	LF			0	0	0	8,280	8,280	36.00
A 15000210 05. Waler TRS										
USR waler TRS					0.00	0.00	0.00	5.00	5.00	
	353176	LB		0.00	0	0	0	1,765,880	1,765,880	5.00
TOTAL Waler TRS	353176	LB			0	0	0	1,765,880	1,765,880	5.00
A 15000210 06. Davit Crane to pull sump pumps										
USR davit crane					0.00	0.00	0.00	3000.00	3000.00	
	2.00	LS		0.00	0	0	0	6,000	6,000	3000.00
TOTAL Davit Crane to p					0	0	0	6,000	6,000	
A 15000210 07. crane hoist										
USR crane hoist					0.00	0.00	0.00	4000.00	4000.00	
	2.00	LS		0.00	0	0	0	8,000	8,000	4000.00
TOTAL crane hoist					0	0	0	8,000	8,000	
A 15000211. Aluminum										
A 15000211 01. handrails										
USR handrails					0.00	0.00	0.00	57.20	57.20	
	3000.00	LF		0.00	0	0	0	171,600	171,600	57.20
TOTAL handrails	3000.00	LF			0	0	0	171,600	171,600	57.20
A 15000212. Dredging										
A 15000212 01. mechanical dredging										
USR mechanical dredg					0.00	0.00	0.00	2.10	2.10	
ing	230362	CY		0.00	0	0	0	483,760	483,760	2.10

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
USR misc					0.00	0.00	0.00	0.80	0.80	
	1.00	LS		0.00	0	0	0	1	1	0.80
TOTAL mechanical dredg	230362	CY			0	0	0	483,761	483,761	2.10

A 15000213. Miscellaneous

A 15000213 01. Dolphins - 3 pile cluster

USR dolphin - 3 pile cluster					0.00	0.00	0.00	136340.00	136340.00	
	8.00	EA		0.00	0	0	0	1,090,720	1,090,720	136340.00
TOTAL Dolphins - 3 pil	8.00	EA			0	0	0	1,090,720	1,090,720	136340.00

A 15000213 02. mooring dolphins (6)

USR 12" x 70' timber piles 12" x 70' creosote class B timber piles					0.00	0.00	0.00	15.00	15.00	
	2100.00	LF		0.00	0	0	0	31,500	31,500	15.00
TOTAL mooring dolphins	2100.00	LF			0	0	0	31,500	31,500	15.00

A 15000213 03. Hazard/Obstruction signs

USR signs					0.00	0.00	0.00	1000.00	1000.00	
	4.00	EA		0.00	0	0	0	4,000	4,000	1000.00
TOTAL Hazard/Obstructi	4.00	EA			0	0	0	4,000	4,000	1000.00

A 15000213 04. rip-rap (bank stabilization)

USR rip-rap					0.00	0.00	0.00	30.00	30.00	
	31045	TON		0.00	0	0	0	931,350	931,350	30.00
TOTAL rip-rap (bank st	31045	TON			0	0	0	931,350	931,350	30.00

A 15000213 05. geotextile

USR geotextile					0.00	0.00	0.00	2.00	2.00	
	41400	SY		0.00	0	0	0	82,800	82,800	2.00
TOTAL geotextile	41400	SY			0	0	0	82,800	82,800	2.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000213 06. Misc (steel,hwd, Acces)										
USR misc (steel, hwd					0.00	0.00	0.00	100000.00	100000.00	
, accessories)	1.00	LS		0.00	0	0	0	100,000	100,000	100000.00
TOTAL Misc (steel,hwd,					0	0	0	100,000	100,000	
TOTAL Concrete Receivi	2.00	EA			0	0	0	12,586,730	12,586,730	6293365

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 150003. Removal of Existing Structures										
A 15000303. Removal of Existing Structures										
A 15000303 01. Removal of Existing gates										
USR removal of exist					0.00	0.00	0.00	50000.00	50000.00	
ing barge	2.00	EA		0.00	0	0	0	100,000	100,000	50000.00
existing gates become property of the contractor										
TOTAL Removal of Exist	2.00	EA			0	0	0	100,000	100,000	50000.00
A 15000303 02. removal of existing sheetpile										
USR removal of exist					0.00	0.00	0.00	240.00	240.00	
ing sheetpile	800.00	LF		0.00	0	0	0	192,000	192,000	240.00
retaining walls										
TOTAL removal of exist	800.00	LF			0	0	0	192,000	192,000	240.00
A 15000303 03. remove and disposal of pipe pile										
USR removal & dispos					0.00	0.00	0.00	4000.00	4000.00	
al of 18" Sch 40	4.00	EA		0.00	0	0	0	16,000	16,000	4000.00
steel pipe pile filled with concrete - 50' length										
TOTAL remove and dispo	4.00	EA			0	0	0	16,000	16,000	4000.00
A 15000303 04. removal of existing ramp, etc.										
USR remove existing					0.00	0.00	0.00	12000.00	12000.00	
timber decking,	1.00	LS		0.00	0	0	0	12,000	12,000	12000.00
approach ramps, fencing, handrails, misc.										
TOTAL removal of exist					0	0	0	12,000	12,000	
TOTAL Removal of Exist					0	0	0	320,000	320,000	

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 150005. Mechanical										
A 15000501. pumps										
A 15000501 01. 12" elec pump w/subm mtr 5000GPM This item is for 8 - 12" electric pumps with submersible motors, 5,000 GPM @ 19' TDH										
USR 12" elec pump 5,000 GPM (8 ea)	1.00	LS		0.00	0.00 0	0.00 0	0.00 0	202288.00 202,288	202288.00 202,288	202288.00
TOTAL 12" elec pump w/					0	0	0	202,288	202,288	
A 15000501 02. 8" subm compart transfer 2000GPM This item is for 24 - 8" submersible compartment transfer pumps, 2,000 GPM @ 13 TDH										
USR 8" submersible 2000GPM (24 ea)	1.00	LS		0.00	0.00 0	0.00 0	0.00 0	375456.00 375,456	375456.00 375,456	375456.00
TOTAL 8" subm compart					0	0	0	375,456	375,456	
A 15000502. winches/cable/accessories										
A 15000502 01. Hydraulic winches, 50 ton This item is for 4 - 50 Ton hydraulic winches, 50 ft/min, 1100 ft cable each, includes 2 control stations and 2 - 125 hp electric power units.										
USR hydraulic winch 50T (4 ea+misc)	1.00	LS		0.00	0.00 0	0.00 0	0.00 0	599300.00 599,300	599300.00 599,300	599300.00
TOTAL Hydraulic winche					0	0	0	599,300	599,300	
A 15000502 02. levelwinds										
USR levelwinds	4.00	EA		0.00	0.00 0	0.00 0	0.00 0	53125.00 212,500	53125.00 212,500	53125.00
TOTAL levelwinds	4.00	EA			0	0	0	212,500	212,500	53125.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000502 03. electric motor starters										
USR electric motor s					0.00	0.00	0.00	5350.00	5350.00	
tarter	4.00	EA		0.00	0	0	0	21,400	21,400	5350.00
TOTAL electric motor s	4.00	EA			0	0	0	21,400	21,400	5350.00
A 15000503. piping										
A 15000503 01. piping										
USR piping					0.00	0.00	0.00	164000.00	164000.00	
	1.00	LS		0.00	0	0	0	164,000	164,000	164000.00
TOTAL piping					0	0	0	164,000	164,000	
A 15000503 02. gate valves (motor operated)										
USR gate valves (mot					0.00	0.00	0.00	600.00	600.00	
or operated)	20.00	EA		0.00	0	0	0	12,000	12,000	600.00
TOTAL gate valves (mot	20.00	EA			0	0	0	12,000	12,000	600.00
A 15000504. misc										
A 15000504 01. ultrasonic water level indicatos										
USR ultrasonic water					0.00	0.00	0.00	500.00	500.00	
level indicator	22.00	EA		0.00	0	0	0	11,000	11,000	500.00
TOTAL ultrasonic water	22.00	EA			0	0	0	11,000	11,000	500.00
TOTAL Mechanical					0	0	0	1,597,944	1,597,944	

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 150006. Electrical										
A 15000601. Lighting (for 2 swing gates)										
A 15000601 01. Type 1 Navigation Light-clear										
USR type 1 navigatio					0.00	0.00	0.00	935.00	935.00	
n light	4.00	EA		0.00	0	0	0	3,740	3,740	935.00
TOTAL Type 1 Navigatio	4.00	EA			0	0	0	3,740	3,740	935.00
A 15000601 02. Type 1 Navigation Light-red										
USR type 1 navigatio					0.00	0.00	0.00	935.00	935.00	
n light	2.00	EA		0.00	0	0	0	1,870	1,870	935.00
TOTAL Type 1 Navigatio	2.00	EA			0	0	0	1,870	1,870	935.00
A 15000601 03. pole mount for red navig light										
USR pole mount for n					0.00	0.00	0.00	1000.00	1000.00	
avigation light	2.00	LOT		0.00	0	0	0	2,000	2,000	1000.00
TOTAL pole mount for r	2.00	LOT			0	0	0	2,000	2,000	1000.00
A 15000601 04. type 6 navigation light										
This item includes Type 6 navigation light, battery, solar panel, and fixture.										
USR type 6 navigatio					0.00	0.00	0.00	2500.00	2500.00	
n light	8.00	EA		0.00	0	0	0	20,000	20,000	2500.00
TOTAL type 6 navigatio	8.00	EA			0	0	0	20,000	20,000	2500.00
A 15000601 05. floodlight, 250W HPS marine svc										
USR floodlight, 250W					0.00	0.00	0.00	600.00	600.00	
HPS marine svc	40.00	EA		0.00	0	0	0	24,000	24,000	600.00
TOTAL floodlight, 250W	40.00	EA			0	0	0	24,000	24,000	600.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000601 06. floodlight,400W HPS, pole mnt										
USR floodlight, 400W					0.00	0.00	0.00	400.00	400.00	
HPS marine svc	16.00	EA		0.00	0	0	0	6,400	6,400	400.00
pole mount										
TOTAL floodlight,400W	16.00	EA			0	0	0	6,400	6,400	400.00
A 15000601 07. floodlight,400W HPS										
USR floodlight, 400W					0.00	0.00	0.00	400.00	400.00	
HPS marine svc	32.00	EA		0.00	0	0	0	12,800	12,800	400.00
pole mount										
TOTAL floodlight,400W	32.00	EA			0	0	0	12,800	12,800	400.00
A 15000601 08. Class 2 wood pole for fixture mt										
USR class 2 wood pol					0.00	0.00	0.00	750.00	750.00	
e	10.00	EA		0.00	0	0	0	7,500	7,500	750.00
pole mount										
TOTAL Class 2 wood pol	10.00	EA			0	0	0	7,500	7,500	750.00
A 15000601 09. 3/4" rigid al conduit										
USR 3/4" rigid Al co					0.00	0.00	0.00	7.13	7.13	
nduit	1601.12	LF		0.00	0	0	0	11,416	11,416	7.13
TOTAL 3/4" rigid al co	1601.12	LF			0	0	0	11,416	11,416	7.13
A 15000601 10. #12 AWG THWN wire										
USR #12 AWG THWN wir					0.00	0.00	0.00	0.49	0.49	
e	8049.00	LF		0.00	0	0	0	3,944	3,944	0.49
TOTAL #12 AWG THWN wir	8049.00	LF			0	0	0	3,944	3,944	0.49
A 15000601 11. battery charger & battery(gate)										
USR battery charger					0.00	0.00	0.00	2000.00	2000.00	
& battery (gate)	2.00	EA		0.00	0	0	0	4,000	4,000	2000.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL battery charger	2.00	EA			0	0	0	4,000	4,000	2000.00
A 15000601 12. solar panel (for gate fixtures)										
USR solar panel (for gate fixtures) pole mount	2.00	EA		0.00	0.00 0	0.00 0	0.00 0	1000.00 2,000	1000.00 2,000	1000.00
TOTAL solar panel (for	2.00	EA			0	0	0	2,000	2,000	1000.00
A 15000601 13. receptacles, NEMA 3R, C-H type										
USR receptacles, NEMA 3R, C-H type pole mount	16.00	EA		0.00	0.00 0	0.00 0	0.00 0	58.00 928	58.00 928	58.00
TOTAL receptacles, NEM	16.00	EA			0	0	0	928	928	58.00
A 15000601 14. panelboard, 240/120V, 12 ckt										
USR panelboard, 240/120V, 12 ckt pole mount	2.00	EA		0.00	0.00 0	0.00 0	0.00 0	800.00 1,600	800.00 1,600	800.00
TOTAL panelboard, 240/	2.00	EA			0	0	0	1,600	1,600	800.00
A 15000602. Shore Power (for 2 swing gates)										
A 15000602 01. class 2 wood pole, penta treated										
USR class 2 wood pole, penta treated	4.00	EA		0.00	0.00 0	0.00 0	0.00 0	750.00 3,000	750.00 3,000	750.00
TOTAL class 2 wood pol	4.00	EA			0	0	0	3,000	3,000	750.00
A 15000602 02. cross arms w/insulator & hardwae										
USR cross arms w/insulator & hwd	12.00	EA		0.00	0.00 0	0.00 0	0.00 0	400.00 4,800	400.00 4,800	400.00
TOTAL cross arms w/ins	12.00	EA			0	0	0	4,800	4,800	400.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000602 03. arrester, distribution class										
USR arrester, distri					0.00	0.00	0.00	1115.00	1115.00	
bution class	2.00	LOT		0.00	0	0	0	2,230	2,230	1115.00
TOTAL arrester, distri	2.00	LOT			0	0	0	2,230	2,230	1115.00
A 15000602 04. fuse cutout										
USR fuse cutout					0.00	0.00	0.00	100.00	100.00	
	6.00	EA		0.00	0	0	0	600	600	100.00
TOTAL fuse cutout	6.00	EA			0	0	0	600	600	100.00
A 15000602 05. rigid Al conduit										
USR rigid Al conduit					0.00	0.00	0.00	10000.00	10000.00	
	2.00	LOT		0.00	0	0	0	20,000	20,000	10000.00
TOTAL rigid Al conduit	2.00	LOT			0	0	0	20,000	20,000	10000.00
A 15000602 06. wire, THWN										
USR wire, THWN					0.00	0.00	0.00	10000.00	10000.00	
	2.00	LOT		0.00	0	0	0	20,000	20,000	10000.00
TOTAL wire, THWN	2.00	LOT			0	0	0	20,000	20,000	10000.00
A 15000602 07. 24.9 kV to 240/120 Vac, 10 kVA										
USR 24.9 kV to 240/1					0.00	0.00	0.00	560.00	560.00	
20 Vac, 10 kVA	2.00	EA		0.00	0	0	0	1,120	1,120	560.00
TOTAL 24.9 kV to 240/1	2.00	EA			0	0	0	1,120	1,120	560.00
A 15000603. Unit Substation (for 2 gates)										
A 15000603 01. secondary unit substation										
USR secondary unit s					0.00	0.00	0.00	42275.00	42275.00	
ubstation	2.00	EA		0.00	0	0	0	84,550	84,550	42275.00
w/ WLI switch and Bus duct										

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL secondary unit s	2.00	EA			0	0	0	84,550	84,550	42275.00
A 15000603 02. PDC for equipment										
USR PDC for equipmen					0.00	0.00	0.00	22000.00	22000.00	
t (23'x15')	2.00	EA		0.00	0	0	0	44,000	44,000	22000.00
TOTAL PDC for equipmen	2.00	LOT			0	0	0	44,000	44,000	22000.00
A 15000603 03. piers for PDC skid unit										
USR piers for PDC sk					0.00	0.00	0.00	5000.00	5000.00	
id unit	2.00	LOT		0.00	0	0	0	10,000	10,000	5000.00
TOTAL piers for PDC sk	2.00	LOT			0	0	0	10,000	10,000	5000.00
A 15000603 04. LV Distr Equipment										
USR LV Distr Equipme					0.00	0.00	0.00	15000.00	15000.00	
nt	2.00	EA		0.00	0	0	0	30,000	30,000	15000.00
TOTAL LV Distr Equipme	2.00	EA			0	0	0	30,000	30,000	15000.00
A 15000603 05. cable tray ladder, 24" w, FRP										
USR cable tray ladde					0.00	0.00	0.00	46.00	46.00	
r, 24" w, FRP	400.00	LF		0.00	0	0	0	18,400	18,400	46.00
TOTAL cable tray ladde	400.00	LF			0	0	0	18,400	18,400	46.00
A 15000603 06. revenue metering equipment										
USR revenue metering					0.00	0.00	0.00	2500.00	2500.00	
equipment	2.00	EA		0.00	0	0	0	5,000	5,000	2500.00
TOTAL revenue metering	2.00	EA			0	0	0	5,000	5,000	2500.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000603 07. operator control panel										
USR operator control panel	2.00	EA		0.00	0.00 0	0.00 0	0.00 0	5000.00 10,000	5000.00 10,000	5000.00
TOTAL operator control	2.00	EA			0	0	0	10,000	10,000	5000.00
A 15000603 08. cable, 1 STP, #16 AWG, THWN										
USR cable, 1 STP, #16 AWG, THWN	2000.00	LF		0.00	0.00 0	0.00 0	0.00 0	0.80 1,600	0.80 1,600	0.80
TOTAL cable, 1 STP, #1	2000.00	LF			0	0	0	1,600	1,600	0.80
A 15000603 09. 3/4" PVC coated conduit										
USR 3/4" PVC coated conduit	1440.00	LF		0.00	0.00 0	0.00 0	0.00 0	7.55 10,872	7.55 10,872	7.55
TOTAL 3/4" PVC coated	1440.00	LF			0	0	0	10,872	10,872	7.55
A 15000603 10. 2" PVC coated conduit										
USR 2" PVC coated conduit	2372.00	LF		0.00	0.00 0	0.00 0	0.00 0	17.00 40,324	17.00 40,324	17.00
TOTAL 2" PVC coated co	2372.00	LF			0	0	0	40,324	40,324	17.00
A 15000603 11. wire, #14 AWG, THWN										
USR wire, #14 AWG, THWN	36572	LF		0.00	0.00 0	0.00 0	0.00 0	0.43 15,726	0.43 15,726	0.43
TOTAL wire, #14 AWG, T	36572	LF			0	0	0	15,726	15,726	0.43
A 15000603 12. wire, 250 kcmil, THWN										
USR wire, 250 kcmil, THWN	7116.00	LF		0.00	0.00 0	0.00 0	0.00 0	3.50 24,906	3.50 24,906	3.50

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL wire, 250 kcmil,	7116.00	LF			0	0	0	24,906	24,906	3.50
A 15000604. 25kV Service Feeder										
A 15000604 01. class 2 wood pole, penta treated										
USR class 2 wood pol					0.00	0.00	0.00	750.00	750.00	
e, penta treated	3.00	EA		0.00	0	0	0	2,250	2,250	750.00
w/ WLI switch and Bus duct										
TOTAL class 2 wood pol	3.00	EA			0	0	0	2,250	2,250	750.00
A 15000604 02. #1/0, 25kV, Cu, XLPE, shld cbl										
USR #1/0, 25kV, Cu,					0.00	0.00	0.00	6.50	6.50	
XLPE shld cbl	18600	LF		0.00	0	0	0	120,900	120,900	6.50
TOTAL #1/0, 25kV, Cu,	18600	LF			0	0	0	120,900	120,900	6.50
A 15000604 03. trenching & backfill buried cabl										
USR trenching & back					0.00	0.00	0.00	4.10	4.10	
fill buried cabl	6200.00	LF		0.00	0	0	0	25,420	25,420	4.10
TOTAL trenching & back	6200.00	LF			0	0	0	25,420	25,420	4.10
A 15000604 04. manhole										
USR manhole					0.00	0.00	0.00	3500.00	3500.00	
	2.00	EA		0.00	0	0	0	7,000	7,000	3500.00
TOTAL manhole	2.00	EA			0	0	0	7,000	7,000	3500.00
A 15000604 05. modular Tee splice										
USR modular tee spli					0.00	0.00	0.00	488.00	488.00	
ce	3.00	EA		0.00	0	0	0	1,464	1,464	488.00
TOTAL modular Tee spli	3.00	EA			0	0	0	1,464	1,464	488.00

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000604 06. directional bore below FWB										
USR directional bore					0.00	0.00	0.00	56000.00	56000.00	
below FWB	1.00	LOT		0.00	0	0	0	56,000	56,000	56000.00
TOTAL directional bore	1.00	LOT			0	0	0	56,000	56,000	56000.00
A 15000604 07. 4" al conduit below FWB										
USR 4" al conduit be					0.00	0.00	0.00	16.35	16.35	
low FWB	600.00	LF		0.00	0	0	0	9,810	9,810	16.35
TOTAL 4" al conduit be	600.00	LF			0	0	0	9,810	9,810	16.35
A 15000604 08. 4" al conduit below channel										
USR 4" al conduit be					0.00	0.00	0.00	16.35	16.35	
low channel	1100.00	LF		0.00	0	0	0	17,985	17,985	16.35
TOTAL 4" al conduit be	1100.00	LF			0	0	0	17,985	17,985	16.35
A 15000604 09. capacitor bank										
USR capacitor bank					0.00	0.00	0.00	850.00	850.00	
	2.00	EA		0.00	0	0	0	1,700	1,700	850.00
TOTAL capacitor bank	2.00	EA			0	0	0	1,700	1,700	850.00
A 15000604 10. cable terminations, 25kV										
USR cable terminatio					0.00	0.00	0.00	285.00	285.00	
n, heat shrink	9.00	EA		0.00	0	0	0	2,565	2,565	285.00
TOTAL cable terminatio	9.00	EA			0	0	0	2,565	2,565	285.00
A 15000604 11. arrester, distribution class										
USR arrester, distri					0.00	0.00	0.00	1115.00	1115.00	
bution class	1.00	LOT		0.00	0	0	0	1,115	1,115	1115.00

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL arrester, distri	1.00	LOT			0	0	0	1,115	1,115	1115.00
TOTAL Electrical					0	0	0	695,535	695,535	

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 150007. Pivot Structure										
A 15000701. Reinforced Concrete										
A 15000701 01. Reinf Conc - pivot structure										
USR reinforced concr					0.00	0.00	0.00	350.00	350.00	
ete	180.00	CY		0.00	0	0	0	63,000	63,000	350.00
TOTAL Reinf Conc - piv	180.00	CY			0	0	0	63,000	63,000	350.00
A 15000702. Pre-cast, Pre-stressed conc pile										
A 15000702 01. 16"x16"x 100' PPC pile										
USR 16" x 16" x 100'					0.00	0.00	0.00	40.00	40.00	
PPC pile	3200.00	LF		0.00	0	0	0	128,000	128,000	40.00
TOTAL 16"x16"x 100' PP	3200.00	LF			0	0	0	128,000	128,000	40.00
A 15000703. Stainless Steel										
A 15000703 01. Pivot Pin, Pin ring, collar										
USR stainless steel					0.00	0.00	0.00	2.00	2.00	
	7700.00	LB		0.00	0	0	0	15,400	15,400	2.00
TOTAL Pivot Pin, Pin r	7700.00	LB			0	0	0	15,400	15,400	2.00
TOTAL Pivot Structure					0	0	0	206,400	206,400	

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 150008. Anchor Structure										
A 15000801. Reinforced Conc-pull pile struc										
A 15000801 01. Reinf Conc - cable anchor struc										
USR reinforced concr					0.00	0.00	0.00	350.00	350.00	
ete	210.00	CY		0.00	0	0	0	73,500	73,500	350.00
TOTAL Reinf Conc - cab	210.00	CY			0	0	0	73,500	73,500	350.00
A 15000802. Pre-cast, Pre-stressed conc pile										
A 15000802 01. 16"x16"x 85' PPC pile										
USR 16" x 16" x 85'					0.00	0.00	0.00	28.00	28.00	
PPC pile	5440.00	LF		0.00	0	0	0	152,320	152,320	28.00
TOTAL 16"x16"x 85' PPC	5440.00	LF			0	0	0	152,320	152,320	28.00
A 15000803. Steel										
A 15000803 01. Chain, snatch block, anchor blt										
USR misc steel					0.00	0.00	0.00	150000.00	150000.00	
	1.00	LS		0.00	0	0	0	150,000	150,000	150000.00
TOTAL Chain, snatch bl					0	0	0	150,000	150,000	
TOTAL Anchor Structure					0	0	0	375,820	375,820	

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 150009. Pile tests										
A 15000901. install & test 16"x16" PPC piles										
A 15000901 01. furnish and install										
USR furnish and inst					0.00	0.00	0.00	72000.00	72000.00	
all	4.00	LS		0.00	0	0	0	288,000	288,000	72000.00
TOTAL furnish and inst					0	0	0	288,000	288,000	
A 15000901 02. tension test										
USR tension test					0.00	0.00	0.00	6000.00	6000.00	
	2.00	LS		0.00	0	0	0	12,000	12,000	6000.00
TOTAL tension test					0	0	0	12,000	12,000	
A 15000901 03. compression test										
USR compression test					0.00	0.00	0.00	6000.00	6000.00	
	2.00	LS		0.00	0	0	0	12,000	12,000	6000.00
TOTAL compression test					0	0	0	12,000	12,000	
A 15000902. install & test 24"x24" PPC piles										
A 15000902 01. furnish and install										
USR furnish and inst					0.00	0.00	0.00	160000.00	160000.00	
all	4.00	LS		0.00	0	0	0	640,000	640,000	160000.00
TOTAL furnish and inst					0	0	0	640,000	640,000	
A 15000902 02. tension test										
USR tension test					0.00	0.00	0.00	9000.00	9000.00	
	2.00	LS		0.00	0	0	0	18,000	18,000	9000.00
TOTAL tension test					0	0	0	18,000	18,000	
TOTAL Pile tests					0	0	0	970,000	970,000	

A. Port of Iberia

A 15. Fldwy Control and D	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 150010. Dewatering System										
A 15001001. Dewatering System										
A 15001001 01. Dewatering System										
USR dewatering syste					0.00	0.00	0.00	1000000.00	1000000.00	
m	1.00	LS		0.00	0	0	0	1,000,000	1,000,000	1000000
system during receiving structure, t-walls,pivot structure, and any construction in TRS										
TOTAL Dewatering Syste					0	0	0	1,000,000	1,000,000	
TOTAL Dewatering Syste					0	0	0	1,000,000	1,000,000	
TOTAL Fldwy Control an	1.00	EA			0	0	0	22,966,441	22,966,441	22966441

A 30. Engineering & Desig	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST

A 30. Engineering & Design
A 3001. E & D
A 300101. E & D

A 30010101. E & D

A 30010101 01. Commercial Canal - dredging

USR	E & D per contra				125000.00	0.00	0.00	0.00	125000.00	
	ct	1.00	EA	0.00	125,000	0	0	0	125,000	125000.00
TOTAL	Commercial Canal	1.00	EA		125,000	0	0	0	125,000	125000.00

A 30010101 02. GIWW - dredging/rock

USR	E & D per contra				125000.00	0.00	0.00	0.00	125000.00	
	ct	3.00	EA	0.00	375,000	0	0	0	375,000	125000.00
TOTAL	GIWW - dredging/	3.00	EA		375,000	0	0	0	375,000	125000.00

A 30010101 03. Freshwater Int - dredging/rock

USR	E & D per contra				125000.00	0.00	0.00	0.00	125000.00	
	ct	5.00	EA	0.00	625,000	0	0	0	625,000	125000.00
TOTAL	Freshwater Int -	5.00	EA		625,000	0	0	0	625,000	125000.00

A 30010101 04. Freshwater Bar - dredging

USR	E & D per contra				125000.00	0.00	0.00	0.00	125000.00	
	ct	1.00	EA	0.00	125,000	0	0	0	125,000	125000.00
TOTAL	Freshwater Bar -	1.00	EA		125,000	0	0	0	125,000	125000.00

A 30010101 05. Borings - Frshwtr, GIWW, Commerc

USR	borings - C\L Fr				0.00	0.00	0.00	280000.00	280000.00	
	sh, GIWW, Comm	1.00	LS	0.00	0	0	0	280,000	280,000	280000.00
TOTAL	Borings - Frshwt				0	0	0	280,000	280,000	

A. Port of Iberia

A 30. Engineering & Desig	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 30010101 06. Surveys										
USR surveys					0.00	0.00	0.00	240000.00	240000.00	
	1.00	LS		0.00	0	0	0	240,000	240,000	240000.00
TOTAL Surveys					0	0	0	240,000	240,000	
A 30010101 07. By-pass Channel Floodgate										
Cost provided by Local sponsor A/E - Shaw Coastal 07/05										
USR E&D 8%					1830000.00	0.00	0.00	7306.00	1837306.00	
	1.00	LS		0.00	1,830,000	0	0	7,306	1,837,306	1837306
TOTAL By-pass Channel					1,830,000	0	0	7,306	1,837,306	
TOTAL E & D					3,080,000	0	0	527,306	3,607,306	
TOTAL Engineering & De	1.00	EA			3,080,000	0	0	527,306	3,607,306	3607306

A 31. Construction Manage	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 31. Construction Management - S & A										
A 31 1. S & A										
A 31 1 1. S & A										
A 31 1 101. S & A										
A 31 1 101 01. Commercial Canal - dredging										
USR S & A					1000.00	0.00	0.00	0.00	1000.00	
	260.00	DAY		0.00	260,000	0	0	0	260,000	1000.00
TOTAL Commercial Canal	1.00	EA			260,000	0	0	0	260,000	260000.00
A 31 1 101 02. GIWW - dredging/rock										
USR S & A					1000.00	0.00	0.00	0.00	1000.00	
	620.00	DAY		0.00	620,000	0	0	0	620,000	1000.00
TOTAL GIWW - dredging/	1.00	EA			620,000	0	0	0	620,000	620000.00
A 31 1 101 03. Freshwater Int - dredging/rock										
USR S & A					1000.00	0.00	0.00	0.00	1000.00	
	600.00	DAY		0.00	600,000	0	0	0	600,000	1000.00
TOTAL Freshwater Int -	1.00	EA			600,000	0	0	0	600,000	600000.00
A 31 1 101 04. Freshwater Bar - dredging										
USR S & A					1000.00	0.00	0.00	0.00	1000.00	
	210.00	DAY		0.00	210,000	0	0	0	210,000	1000.00
TOTAL Freshwater Bar -	1.00	EA			210,000	0	0	0	210,000	210000.00
A 31 1 101 07. By-pass Channel Floodgate										
Cost provided by Local Sponsor A/E - Shaw Coastal 07/05										
USR S&A 8%					1830000.00	0.00	0.00	7306.00	1837306.00	
	1.00	LS		0.00	1,830,000	0	0	7,306	1,837,306	1837306
TOTAL By-pass Channel					1,830,000	0	0	7,306	1,837,306	
TOTAL S & A					3,520,000	0	0	7,306	3,527,306	
TOTAL Construction Man	1.00	EA			3,520,000	0	0	7,306	3,527,306	3527306

A. Port of Iberia

A 31. Construction Manage	QUANTY	UOM	CREW ID	OUTPUT	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL Port of Iberia	1.00	EA			8,310,842	5,480,747	14,405,453	100,697,959	128,895,001	128895001
TOTAL Port of Iberia F	1.00	EA			8,310,842	5,480,747	14,405,453	100,697,959	128,895,001	128895001

** PROJECT OWNER SUMMARY - Feature **

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A Port of Iberia								
A 01 Lands and Damages	1.00	EA	1,357,050	337,950	0	0	1,695,000	1695000
A 09 Channels	1.00	EA	109,016,678	16,352,502	0	0	125,369,180	125369180
A 15 Fldwy Control and Div Structures	1.00	EA	22,966,441	3,444,989	0	0	26,411,430	26411430
A 30 Engineering & Design	1.00	EA	3,607,306	593,095	0	0	4,200,401	4200401
A 31 Construction Management - S & A	1.00	EA	3,527,306	529,095	0	0	4,056,401	4056401
TOTAL Port of Iberia	1.00	EA	140,474,781	21,257,631	0	0	161,732,412	161732412
TOTAL Port of Iberia Feas Study 3/06	1.00	EA	140,474,781	21,257,631	0	0	161,732,412	161732412

** PROJECT OWNER SUMMARY - bid-item **

	QUANTITY UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A Port of Iberia							
A 01 Lands and Damages							
A 0101 Lands and Damages							
A 010101 Lands and Damages							
A 010101 B Acquisitions							
A 010101 B 01 By Local sponsor (LS)		115,300	28,830	0	0	144,130	
A 010101 B 02 Review of LS		17,500	4,380	0	0	21,880	
TOTAL Acquisitions		132,800	33,210	0	0	166,010	
A 010101 C Condemnations							
A 010101 C 01 By Local sponsor (LS)		20,000	5,000	0	0	25,000	
A 010101 C 02 Review of LS		7,900	1,980	0	0	9,880	
TOTAL Condemnations		27,900	6,980	0	0	34,880	
A 010101 E Appraisal							
A 010101 E 01 By Local sponsor (LS)		38,000	9,500	0	0	47,500	
A 010101 E 02 Review of LS		11,200	2,800	0	0	14,000	
TOTAL Appraisal		49,200	12,300	0	0	61,500	
A 010101 G Temporary Permit/Lics/RofE							
A 010101 G 01 By Local sponsor (LS)		9,500	2,380	0	0	11,880	
A 010101 G 02 Review of LS		3,150	790	0	0	3,940	
TOTAL Temporary Permit/Lics/Rof		12,650	3,170	0	0	15,820	
A 010101 R Real Estate Payments - Land							
A 010101 R 01 By Local sponsor (LS)		1,119,000	280,000	0	0	1,399,000	
TOTAL Real Estate Payments - La		1,119,000	280,000	0	0	1,399,000	
A 010101 T LERRD Crediting							

** PROJECT OWNER SUMMARY - bid-item **

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 010101 T 01 Administrative costs			7,600	0	0	0	7,600	
TOTAL LERRD Crediting			7,600	0	0	0	7,600	
TOTAL Lands and Damages			1,349,150	335,660	0	0	1,684,810	
A 010102 Relocations								
A 010102 1 Relocations								
A 010102 1 01 Final Compensability Repo			3,600	900	0	0	4,500	
A 010102 1 02 Cost reimbursement Agreem			4,300	1,080	0	0	5,380	
TOTAL Relocations			7,900	1,980	0	0	9,880	
TOTAL Relocations			7,900	1,980	0	0	9,880	
A 010103 round off								
A 01010301 round off								
A 01010301 01 round off comtingency			0	310	0	0	310	
TOTAL round off			0	310	0	0	310	
TOTAL round off			0	310	0	0	310	
TOTAL Lands and Damages	1.00	EA	1,357,050	337,950	0	0	1,695,000	1695000
TOTAL Lands and Damages	1.00	EA	1,357,050	337,950	0	0	1,695,000	1695000
A 09 Channels								
A 0901 Channels								
A 090115 dredging - channel								
A 09011501 Commercial Canal								
A 09011501 01 Mob & Demob	1.00	EA	664,500	99,675	0	0	764,175	764175.00
A 09011501 02 containment dikes	26000.00	LF	514,280	77,142	0	0	591,422	22.75
A 09011501 03 dredging	2594000	CY	8,378,620	1,256,793	0	0	9,635,413	3.71
TOTAL Commercial Canal	1.00	EA	9,557,400	1,433,610	0	0	10,991,010	10991010
A 09011502 G.I.W.W.								

** PROJECT OWNER SUMMARY - bid-item **

		QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 09011502 01	Mob & Demob - dredge	1.00	EA	1,230,000	184,500	0	0	1,414,500	1414500
A 09011502 02	Mob & Demob - rock	3.00	EA	180,000	27,000	0	0	207,000	69000.00
A 09011502 03	dredging	4169000	CY	8,546,450	1,281,968	0	0	9,828,417	2.36
A 09011502 04	flotation access to DA 5			184,000	27,600	0	0	211,600	
A 09011502 05	DA dike GIWW#5	50500.00	TON	1,156,450	173,468	0	0	1,329,918	26.34
A 09011502 06	DA dike GIWW#6	58500.00	TON	1,339,650	200,948	0	0	1,540,598	26.34
TOTAL G.I.W.W.		1.00	EA	12,636,550	1,895,483	0	0	14,532,033	14532033
A 09011503	Freshwater Bayou								
A 09011503 01	Mob & Demob - dredging	1.00	EA	1,750,000	262,500	0	0	2,012,500	2012500
A 09011503 02	Mob & Demob - rock	5.00	EA	300,000	45,000	0	0	345,000	69000.00
A 09011503 03	dredging	5600000	CY	18,200,000	2,730,000	0	0	20,930,000	3.74
A 09011503 05	DA dike FWB#1 - earthen c	18700.00	CY	46,750	7,013	0	0	53,763	2.88
A 09011503 06	DA dike FWB#1 - stone cov	31000.00	TON	736,250	110,437	0	0	846,687	27.31
A 09011503 07	DA dike FWB#2 - earthen c	18700.00	CY	46,750	7,013	0	0	53,763	2.88
A 09011503 08	DA dike FWB#2 - stone cov	31000.00	TON	736,250	110,438	0	0	846,688	27.31
A 09011503 09	DA dike FWB#3 - earthen c	18700.00	CY	46,750	7,013	0	0	53,763	2.88
A 09011503 10	DA dike FWB#3 - stone cov	31000.00	TON	736,250	110,438	0	0	846,688	27.31
TOTAL Freshwater Bayou		1.00	EA	22,599,000	3,389,850	0	0	25,988,850	25988850
A 09011504	Freshwater Bayou By-Pass and								
A 09011504 01	Mob & Demob - dredging	1.00	EA	939,000	140,850	0	0	1,079,850	1079850
A 09011504 02	dredging - Bar channel	2343760	CY	9,585,978	1,437,897	0	0	11,023,875	4.70
A 09011504 03	dredging - By-Pass Channe	557000.00	CY	1,308,950	196,342	0	0	1,505,292	2.70
TOTAL Freshwater Bayou By-Pass		1.00	EA	11,833,928	1,775,089	0	0	13,609,018	13609018
TOTAL dredging - channel		1.00	EA	56,626,878	8,494,032	0	0	65,120,910	65120910
A 090130	bank stabilization - revetment								
A 09013001	G.I.W.W.								
A 09013001 01	Channel Revetment 28"	628000.00	TON	14,349,800	2,152,470	0	0	16,502,270	26.28
A 09013001 02	geotextile	733000.00	SY	1,832,500	274,875	0	0	2,107,375	2.87
TOTAL G.I.W.W.				16,182,300	2,427,345	0	0	18,609,645	
A 09013002	Freshwater Bayou								
A 09013002 01	Channel Revetment 36"	1500000	TON	33,375,000	5,006,250	0	0	38,381,250	25.59
A 09013002 02	geotextile	1133000	SY	2,832,500	424,875	0	0	3,257,375	2.87

** PROJECT OWNER SUMMARY - bid-item **

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
TOTAL Freshwater Bayou			36,207,500	5,431,125	0	0	41,638,625	
TOTAL bank stabilization - reve			52,389,800	7,858,470	0	0	60,248,270	
TOTAL Channels	1.00	EA	109,016,678	16,352,502	0	0	125,369,180	125369180
TOTAL Channels	1.00	EA	109,016,678	16,352,502	0	0	125,369,180	125369180
A 15 Fldwy Control and Div Structures								
A 1500 Concrete Swing Barge Floodgate								
A 150001 Concrete Swing Barge								
A 15000101 normal weight concrete								
A 15000101 01 Swing Gate bottom (1st Li	308.00	CY	107,752	16,164	0	0	123,916	402.32
TOTAL normal weight concrete			107,752	16,164	0	0	123,916	
A 15000102 light weight concrete								
A 15000102 01 Swing gate bottom (2nd li	286.00	CY	228,800	34,320	0	0	263,120	920.00
A 15000102 02 Swing gate Deck	346.00	CY	276,800	41,520	0	0	318,320	920.00
A 15000102 03 Columns	450.00	CY	360,000	54,000	0	0	414,000	920.00
A 15000102 04 precast prestressed Deck	244.00	CY	195,200	29,280	0	0	224,480	920.00
A 15000102 05 precast prestressed wall	2230.00	CY	1,784,000	267,600	0	0	2,051,600	920.00
A 15000102 06 Locking Socket	60.00	CY	48,000	7,200	0	0	55,200	920.00
A 15000102 07 Seal Support	13.20	CY	10,560	1,584	0	0	12,144	920.00
TOTAL light weight concrete			2,903,360	435,504	0	0	3,338,864	
A 15000103 Steel / Aluminum								
A 15000103 01 Pivot Arm Steel	80400.00	LB	160,800	24,120	0	0	184,920	2.30
A 15000103 02 cattle ramp walkway plate	11200.00	LB	22,400	3,360	0	0	25,760	2.30
TOTAL Steel / Aluminum			183,200	27,480	0	0	210,680	
A 15000104 Fender System								
A 15000104 01 Composite Marine Timber	2000.00	LF	220,000	33,000	0	0	253,000	126.50
TOTAL Fender System			220,000	33,000	0	0	253,000	
A 15000105 Seal System								

** PROJECT OWNER SUMMARY - bid-item **

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 15000105 01 Seal with UHMW Plastic An	540.00	LF	29,700	4,456	0	0	34,156	63.25
TOTAL Seal System			29,700	4,456	0	0	34,156	
A 15000106 Control Houses								
A 15000106 01 Winch Control Houses			24,000	3,600	0	0	27,600	
A 15000106 02 Pumps Awning			16,000	2,400	0	0	18,400	
TOTAL Control Houses			40,000	6,000	0	0	46,000	
A 15000108 Miscellaneous								
A 15000108 02 delivery of swing gates	2.00	EA	200,000	30,000	0	0	230,000	115000.00
A 15000108 03 Misc (steel,Hwd, accessor	2.00	EA	220,000	33,000	0	0	253,000	126500.00
TOTAL Miscellaneous			420,000	63,000	0	0	483,000	
A 15000109 Post Tensioning								
A 15000109 01 Post tensioning	140000.00	LF	560,000	84,000	0	0	644,000	4.60
TOTAL Post Tensioning			560,000	84,000	0	0	644,000	
A 15000110 Graving site for swing gates								
A 15000110 01 Graving site for swing ga			750,000	112,500	0	0	862,500	
TOTAL Graving site for swing ga			750,000	112,500	0	0	862,500	
TOTAL Concrete Swing Barge	2.00	EA	5,214,012	782,104	0	0	5,996,116	2998058
A 150002 Concrete Receiving Structures								
A 15000201 Mob & Demob								
A 15000201 01 Mob & Demob			500,000	75,000	0	0	575,000	
TOTAL Mob & Demob			500,000	75,000	0	0	575,000	
A 15000202 Reinforced Concrete								
A 15000202 01 T-walls	5063.00	CY	1,772,050	265,808	0	0	2,037,858	402.50
A 15000202 02 I-walls	104.00	CY	36,400	5,460	0	0	41,860	402.50
A 15000202 03 Walkways and Boat Dock	486.00	CY	170,100	25,515	0	0	195,615	402.50

** PROJECT OWNER SUMMARY - bid-item **

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 15000202 04 Monolith	3708.00	CY	1,297,800	194,670	0	0	1,492,470	402.50
A 15000202 05 Corbel and Pintle	16.00	CY	5,600	840	0	0	6,440	402.50
TOTAL Reinforced Concrete			3,281,950	492,293	0	0	3,774,243	
A 15000203 Pre-cast, Pre-stressed, beam								
A 15000203 01 boat dock 16"x16"x20'	11.00	CY	8,800	1,320	0	0	10,120	920.00
A 15000203 02 Cattle walkways 28"x24"x1	115.00	CY	92,000	13,800	0	0	105,800	920.00
A 15000203 03 pedestrian walkway 12"x12	14.00	CY	11,200	1,680	0	0	12,880	920.00
A 15000203 04 grade beams 3'6"x4'x20'6"	428.00	CY	338,120	50,718	0	0	388,838	908.50
TOTAL Pre-cast, Pre-stressed, b			450,120	67,518	0	0	517,638	
A 15000205 Pre-cast, Pre-stressed, pile								
A 15000205 01 setting piles 24"x24"x85'	6800.00	LF	340,000	51,000	0	0	391,000	57.50
A 15000205 02 T-walls 16"x16'x90'	13860.00	LF	388,080	58,212	0	0	446,292	32.20
A 15000205 03 cattle walkways 12"x12"x8	7040.00	LF	183,040	27,456	0	0	210,496	29.90
A 15000205 04 Pedestrian walkways 12"x1	4080.00	LF	106,080	15,912	0	0	121,992	29.90
A 15000205 05 boat dock 12"x12"x70'	1120.00	LF	29,120	4,368	0	0	33,488	29.90
TOTAL Pre-cast, Pre-stressed, p			1,046,320	156,948	0	0	1,203,268	
A 15000208 sheetpiles								
A 15000208 01 monolith A-572	5184.00	SF	155,520	23,328	0	0	178,848	34.50
A 15000208 02 T-wall A-572	4260.00	SF	127,800	19,170	0	0	146,970	34.50
A 15000208 03 I-wall A-572	8820.00	SF	264,600	39,690	0	0	304,290	34.50
A 15000208 04 Cut-off wall A-572	5120.00	SF	153,600	23,040	0	0	176,640	34.50
TOTAL sheetpiles			701,520	105,228	0	0	806,748	
A 15000209 Temp Retaining Structure TRS								
A 15000209 01 36" dia pipe w/ AZ-26 x 8	4000.00	SF	120,000	18,000	0	0	138,000	34.50
A 15000209 02 AZ-48 w/ 2 ea W14x109x80'	31920.00	SF	1,042,188	156,329	0	0	1,198,517	37.55
A 15000209 03 AZ-36 x 68'	21964.00	SF	439,280	65,892	0	0	505,172	23.00
A 15000209 04 installation of remaining	1825.00	LF	182,500	27,375	0	0	209,875	115.00
TOTAL Temp Retaining Structure			1,783,968	267,596	0	0	2,051,564	
A 15000210 steel								
A 15000210 01 handrails	1908.00	LF	100,361	15,055	0	0	115,416	60.49
A 15000210 02 Chain Link	7760.00	SF	19,400	2,910	0	0	22,310	2.88

** PROJECT OWNER SUMMARY - bid-item **

		QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 15000210 03	C-Channel (cutoff wall)	320.00	LF	19,200	2,880	0	0	22,080	69.00
A 15000210 04	SS seal plate	230.00	LF	8,280	1,242	0	0	9,522	41.40
A 15000210 05	Waler TRS	353176.00	LB	1,765,880	264,882	0	0	2,030,762	5.75
A 15000210 06	Davit Crane to pull sump			6,000	900	0	0	6,900	
A 15000210 07	crane hoist			8,000	1,200	0	0	9,200	
TOTAL	steel			1,927,121	289,069	0	0	2,216,190	
A 15000211	Aluminum								
A 15000211 01	handrails	3000.00	LF	171,600	25,740	0	0	197,340	65.78
TOTAL	Aluminum			171,600	25,740	0	0	197,340	
A 15000212	Dredging								
A 15000212 01	mechanical dredging	230362.00	CY	483,761	72,565	0	0	556,326	2.42
TOTAL	Dredging			483,761	72,565	0	0	556,326	
A 15000213	Miscellaneous								
A 15000213 01	Dolphins - 3 pile cluster	8.00	EA	1,090,720	163,608	0	0	1,254,328	156791.00
A 15000213 02	mooring dolphins (6)	2100.00	LF	31,500	4,725	0	0	36,225	17.25
A 15000213 03	Hazard/Obstruction signs	4.00	EA	4,000	600	0	0	4,600	1150.00
A 15000213 04	rip-rap (bank stabilizati	31045.00	TON	931,350	139,703	0	0	1,071,053	34.50
A 15000213 05	geotextile	41400.00	SY	82,800	12,420	0	0	95,220	2.30
A 15000213 06	Misc (steel,hwd, Acces)			100,000	15,000	0	0	115,000	
TOTAL	Miscellaneous			2,240,370	336,056	0	0	2,576,426	
TOTAL	Concrete Receiving Struct	2.00	EA	12,586,730	1,888,013	0	0	14,474,743	7237371
A 150003	Removal of Existing Structures								
A 15000303	Removal of Existing Structur								
A 15000303 01	Removal of Existing gates	2.00	EA	100,000	15,000	0	0	115,000	57500.00
A 15000303 02	removal of existing sheet	800.00	LF	192,000	28,800	0	0	220,800	276.00
A 15000303 03	remove and disposal of pi	4.00	EA	16,000	2,400	0	0	18,400	4600.00
A 15000303 04	removal of existing ramp,			12,000	1,800	0	0	13,800	
TOTAL	Removal of Existing Struc			320,000	48,000	0	0	368,000	
TOTAL	Removal of Existing Struc			320,000	48,000	0	0	368,000	

** PROJECT OWNER SUMMARY - bid-item **

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 150005 Mechanical								
A 15000501 pumps								
A 15000501 01 12" elec pump w/subm mtr			202,288	30,344	0	0	232,632	
A 15000501 02 8" subm compart transfer			375,456	56,319	0	0	431,775	
TOTAL pumps			577,744	86,663	0	0	664,407	
A 15000502 winches/cable/accessories								
A 15000502 01 Hydraulic winches, 50 ton			599,300	89,895	0	0	689,195	
A 15000502 02 levelwinds	4.00	EA	212,500	31,875	0	0	244,375	61093.75
A 15000502 03 electric motor starters	4.00	EA	21,400	3,210	0	0	24,610	6152.50
TOTAL winches/cable/accessories			833,200	124,980	0	0	958,180	
A 15000503 piping								
A 15000503 01 piping			164,000	24,600	0	0	188,600	
A 15000503 02 gate valves (motor operat	20.00	EA	12,000	1,800	0	0	13,800	690.00
TOTAL piping			176,000	26,400	0	0	202,400	
A 15000504 misc								
A 15000504 01 ultrasonic water level in	22.00	EA	11,000	1,650	0	0	12,650	575.00
TOTAL misc			11,000	1,650	0	0	12,650	
TOTAL Mechanical			1,597,944	239,693	0	0	1,837,637	
A 150006 Electrical								
A 15000601 Lighting (for 2 swing gates)								
A 15000601 01 Type 1 Navigation Light-c	4.00	EA	3,740	562	0	0	4,302	1075.50
A 15000601 02 Type 1 Navigation Light-r	2.00	EA	1,870	282	0	0	2,152	1076.00
A 15000601 03 pole mount for red navig	2.00	LOT	2,000	300	0	0	2,300	1150.00
A 15000601 04 type 6 navigation light	8.00	EA	20,000	3,000	0	0	23,000	2875.00
A 15000601 05 floodlight, 250W HPS mari	40.00	EA	24,000	3,600	0	0	27,600	690.00
A 15000601 06 floodlight,400W HPS, pole	16.00	EA	6,400	960	0	0	7,360	460.00
A 15000601 07 floodlight,400W HPS	32.00	EA	12,800	1,920	0	0	14,720	460.00
A 15000601 08 Class 2 wood pole for fix	10.00	EA	7,500	1,126	0	0	8,626	862.60
A 15000601 09 3/4" rigid al conduit	1601.12	LF	11,416	1,714	0	0	13,130	8.20
A 15000601 10 #12 AWG THWN wire	8049.00	LF	3,944	592	0	0	4,536	0.56
A 15000601 11 battery charger & battery	2.00	EA	4,000	600	0	0	4,600	2300.00

** PROJECT OWNER SUMMARY - bid-item **

		QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 15000601 12	solar panel (for gate fix	2.00	EA	2,000	300	0	0	2,300	1150.00
A 15000601 13	receptacles, NEMA 3R, C-H	16.00	EA	928	140	0	0	1,068	66.75
A 15000601 14	panelboard, 240/120V, 12	2.00	EA	1,600	240	0	0	1,840	920.00
TOTAL	Lighting (for 2 swing gat			102,198	15,336	0	0	117,534	
A 15000602	Shore Power (for 2 swing ga								
A 15000602 01	class 2 wood pole, penta	4.00	EA	3,000	450	0	0	3,450	862.50
A 15000602 02	cross arms w/insulator &	12.00	EA	4,800	720	0	0	5,520	460.00
A 15000602 03	arrester, distribution cl	2.00	LOT	2,230	336	0	0	2,566	1283.00
A 15000602 04	fuse cutout	6.00	EA	600	90	0	0	690	115.00
A 15000602 05	rigid Al conduit	2.00	LOT	20,000	3,000	0	0	23,000	11500.00
A 15000602 06	wire, THWN	2.00	LOT	20,000	3,000	0	0	23,000	11500.00
A 15000602 07	24.9 kV to 240/120 Vac, 1	2.00	EA	1,120	168	0	0	1,288	644.00
TOTAL	Shore Power (for 2 swing			51,750	7,764	0	0	59,514	
A 15000603	Unit Substation (for 2 gate								
A 15000603 01	secondary unit substation	2.00	EA	84,550	12,684	0	0	97,234	48617.00
A 15000603 02	PDC for equipment	2.00	LOT	44,000	6,600	0	0	50,600	25300.00
A 15000603 03	piers for PDC skid unit	2.00	LOT	10,000	1,500	0	0	11,500	5750.00
A 15000603 04	LV Distr Equipment	2.00	EA	30,000	4,500	0	0	34,500	17250.00
A 15000603 05	cable tray ladder, 24" w,	400.00	LF	18,400	2,760	0	0	21,160	52.90
A 15000603 06	revenue metering equipmen	2.00	EA	5,000	750	0	0	5,750	2875.00
A 15000603 07	operator control panel	2.00	EA	10,000	1,500	0	0	11,500	5750.00
A 15000603 08	cable, 1 STP, #16 AWG, TH	2000.00	LF	1,600	240	0	0	1,840	0.92
A 15000603 09	3/4" PVC coated conduit	1440.00	LF	10,872	1,632	0	0	12,504	8.68
A 15000603 10	2" PVC coated conduit	2372.00	LF	40,324	6,050	0	0	46,374	19.55
A 15000603 11	wire, #14 AWG, THWN	36572.10	LF	15,726	2,360	0	0	18,086	0.49
A 15000603 12	wire, 250 kcmil, THWN	7116.00	LF	24,906	3,736	0	0	28,642	4.03
TOTAL	Unit Substation (for 2 g			295,378	44,312	0	0	339,690	
A 15000604	25kV Service Feeder								
A 15000604 01	class 2 wood pole, penta	3.00	EA	2,250	338	0	0	2,588	862.67
A 15000604 02	#1/0, 25kV, Cu, XLPE, shl	18600.00	LF	120,900	18,135	0	0	139,035	7.48
A 15000604 03	trenching & backfill buri	6200.00	LF	25,420	3,813	0	0	29,233	4.71
A 15000604 04	manhole	2.00	EA	7,000	1,050	0	0	8,050	4025.00
A 15000604 05	modular Tee splice	3.00	EA	1,464	220	0	0	1,684	561.33
A 15000604 06	directional bore below FW	1.00	LOT	56,000	8,400	0	0	64,400	64400.00
A 15000604 07	4" al conduit below FWB	600.00	LF	9,810	1,472	0	0	11,282	18.80
A 15000604 08	4" al conduit below chann	1100.00	LF	17,985	2,698	0	0	20,683	18.80
A 15000604 09	capacitor bank	2.00	EA	1,700	255	0	0	1,955	977.50
A 15000604 10	cable terminations, 25kV	9.00	EA	2,565	385	0	0	2,950	327.78

** PROJECT OWNER SUMMARY - bid-item **

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 15000604 11 arrester, distribution cl	1.00	LOT	1,115	168	0	0	1,283	1283.00
TOTAL 25kV Service Feeder			246,209	36,934	0	0	283,143	
TOTAL Electrical			695,535	104,346	0	0	799,881	
A 150007 Pivot Structure								
A 15000701 Reinforced Concrete								
A 15000701 01 Reinf Conc - pivot struct	180.00	CY	63,000	9,450	0	0	72,450	402.50
TOTAL Reinforced Concrete			63,000	9,450	0	0	72,450	
A 15000702 Pre-cast, Pre-stressed conc								
A 15000702 01 16"x16"x 100' PPC pile	3200.00	LF	128,000	19,200	0	0	147,200	46.00
TOTAL Pre-cast, Pre-stressed co			128,000	19,200	0	0	147,200	
A 15000703 Stainless Steel								
A 15000703 01 Pivot Pin, Pin ring, coll	7700.00	LB	15,400	2,310	0	0	17,710	2.30
TOTAL Stainless Steel			15,400	2,310	0	0	17,710	
TOTAL Pivot Structure			206,400	30,960	0	0	237,360	
A 150008 Anchor Structure								
A 15000801 Reinforced Conc-pull pile st								
A 15000801 01 Reinf Conc - cable anchor	210.00	CY	73,500	11,025	0	0	84,525	402.50
TOTAL Reinforced Conc-pull pile			73,500	11,025	0	0	84,525	
A 15000802 Pre-cast, Pre-stressed conc								
A 15000802 01 16"x16"x 85' PPC pile	5440.00	LF	152,320	22,848	0	0	175,168	32.20
TOTAL Pre-cast, Pre-stressed co			152,320	22,848	0	0	175,168	
A 15000803 Steel								

** PROJECT OWNER SUMMARY - bid-item **

	QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 15000803 01 Chain, snatch block, anch			150,000	22,500	0	0	172,500	
TOTAL Steel			150,000	22,500	0	0	172,500	
TOTAL Anchor Structure			375,820	56,373	0	0	432,193	
A 150009 Pile tests								
A 15000901 install & test 16"x16" PPC p								
A 15000901 01 furnish and install			288,000	43,200	0	0	331,200	
A 15000901 02 tension test			12,000	1,800	0	0	13,800	
A 15000901 03 compression test			12,000	1,800	0	0	13,800	
TOTAL install & test 16"x16" PP			312,000	46,800	0	0	358,800	
A 15000902 install & test 24"x24" PPC p								
A 15000902 01 furnish and install			640,000	96,000	0	0	736,000	
A 15000902 02 tension test			18,000	2,700	0	0	20,700	
TOTAL install & test 24"x24" PP			658,000	98,700	0	0	756,700	
TOTAL Pile tests			970,000	145,500	0	0	1,115,500	
A 150010 Dewatering System								
A 15001001 Dewatering System								
A 15001001 01 Dewatering System			1,000,000	150,000	0	0	1,150,000	
TOTAL Dewatering System			1,000,000	150,000	0	0	1,150,000	
TOTAL Dewatering System			1,000,000	150,000	0	0	1,150,000	
TOTAL Concrete Swing Barge Floo			22,966,441	3,444,989	0	0	26,411,430	
TOTAL Fldwy Control and Div Str	1.00	EA	22,966,441	3,444,989	0	0	26,411,430	26411430
A 30 Engineering & Design								
A 3001 E & D								
A 300101 E & D								
A 30010101 E & D								

** PROJECT OWNER SUMMARY - bid-item **

		QUANTITY	UOM	CONTRACT	CONTINGN	ESCALATN	OTHER	TOTAL COST	UNIT COST
A 30010101 01	Commercial Canal - dredgi	1.00	EA	125,000	18,750	0	0	143,750	143750.00
A 30010101 02	GIWW - dredging/rock	3.00	EA	375,000	56,250	0	0	431,250	143750.00
A 30010101 03	Freshwater Int - dredging	5.00	EA	625,000	93,750	0	0	718,750	143750.00
A 30010101 04	Freshwater Bar - dredging	1.00	EA	125,000	18,750	0	0	143,750	143750.00
A 30010101 05	Borings - Frshwtr, GIWW,			280,000	70,000	0	0	350,000	
A 30010101 06	Surveys			240,000	60,000	0	0	300,000	
A 30010101 07	By-pass Channel Floodgate			1,837,306	275,595	0	0	2,112,901	
	TOTAL E & D			3,607,306	593,095	0	0	4,200,401	
	TOTAL E & D			3,607,306	593,095	0	0	4,200,401	
	TOTAL E & D			3,607,306	593,095	0	0	4,200,401	
	TOTAL Engineering & Design	1.00	EA	3,607,306	593,095	0	0	4,200,401	4200401

A 31 Construction Management - S & A

A 31 1 S & A

A 31 1 1 S & A

A 31 1 101 S & A

A 31 1 101 01	Commercial Canal - dredgi	1.00	EA	260,000	39,000	0	0	299,000	299000.00
A 31 1 101 02	GIWW - dredging/rock	1.00	EA	620,000	93,000	0	0	713,000	713000.00
A 31 1 101 03	Freshwater Int - dredging	1.00	EA	600,000	90,000	0	0	690,000	690000.00
A 31 1 101 04	Freshwater Bar - dredging	1.00	EA	210,000	31,500	0	0	241,500	241500.00
A 31 1 101 07	By-pass Channel Floodgate			1,837,306	275,595	0	0	2,112,901	
	TOTAL S & A			3,527,306	529,095	0	0	4,056,401	
	TOTAL S & A			3,527,306	529,095	0	0	4,056,401	
	TOTAL S & A	1.00	EA	3,527,306	529,095	0	0	4,056,401	4056401
	TOTAL Construction Management -	1.00	EA	3,527,306	529,095	0	0	4,056,401	4056401
	TOTAL Port of Iberia	1.00	EA	140,474,781	21,257,631	0	0	161,732,412	161732412
	TOTAL Port of Iberia Feas Study	1.00	EA	140,474,781	21,257,631	0	0	161,732,412	161732412

** PROJECT INDIRECT SUMMARY - Feature **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A Port of Iberia										
A 01 Lands and Damages	1.00	EA	1,357,050	0	0	0	0	0	1,357,050	1357050
A 09 Channels	1.00	EA	97,436,898	11579780	0	0	0	0	109,016,678	109016678
A 15 Fldwy Control and Div	1.00	EA	22,966,441	0	0	0	0	0	22,966,441	22966441
A 30 Engineering & Design	1.00	EA	3,607,306	0	0	0	0	0	3,607,306	3607306
A 31 Construction Managemen	1.00	EA	3,527,306	0	0	0	0	0	3,527,306	3527306
TOTAL Port of Iberia	1.00	EA	128,895,001	11579780	0	0	0	0	140,474,781	140474781
TOTAL Port of Iberia Feas St	1.00	EA	128,895,001	11579780	0	0	0	0	140,474,781	140474781
Contingency									21,257,631	
TOTAL INCL OWNER COSTS									161,732,412	

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A Port of Iberia									
A 01 Lands and Damages									
A 0101 Lands and Damages									
A 010101 Lands and Damages									
A 010101 B Acquisitions									
A 010101 B 01 By Local spon		115,300	0	0	0	0	0	115,300	
A 010101 B 02 Review of LS		17,500	0	0	0	0	0	17,500	
TOTAL Acquisitions		132,800	0	0	0	0	0	132,800	
A 010101 C Condemnations									
A 010101 C 01 By Local spon		20,000	0	0	0	0	0	20,000	
A 010101 C 02 Review of LS		7,900	0	0	0	0	0	7,900	
TOTAL Condemnations		27,900	0	0	0	0	0	27,900	
A 010101 E Appraisal									
A 010101 E 01 By Local spon		38,000	0	0	0	0	0	38,000	
A 010101 E 02 Review of LS		11,200	0	0	0	0	0	11,200	
TOTAL Appraisal		49,200	0	0	0	0	0	49,200	
A 010101 G Temporary Permit									
A 010101 G 01 By Local spon		9,500	0	0	0	0	0	9,500	
A 010101 G 02 Review of LS		3,150	0	0	0	0	0	3,150	
TOTAL Temporary Per		12,650	0	0	0	0	0	12,650	
A 010101 R Real Estate Paym									
A 010101 R 01 By Local spon		1,119,000	0	0	0	0	0	1,119,000	
TOTAL Real Estate P		1,119,000	0	0	0	0	0	1,119,000	
A 010101 T LERRD Crediting									

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 010101 T 01 Administrativ			7,600	0	0	0	0	0	7,600	
TOTAL LERRD Crediti			7,600	0	0	0	0	0	7,600	
TOTAL Lands and Dam			1,349,150	0	0	0	0	0	1,349,150	
A 010102 Relocations										
A 010102 1 Relocations										
A 010102 1 01 Final Compens			3,600	0	0	0	0	0	3,600	
A 010102 1 02 Cost reimburs			4,300	0	0	0	0	0	4,300	
TOTAL Relocations			7,900	0	0	0	0	0	7,900	
TOTAL Relocations			7,900	0	0	0	0	0	7,900	
A 010103 round off										
A 01010301 round off										
A 01010301 01 round off com			0	0	0	0	0	0	0	
TOTAL round off			0	0	0	0	0	0	0	
TOTAL round off			0	0	0	0	0	0	0	
TOTAL Lands and Dam	1.00	EA	1,357,050	0	0	0	0	0	1,357,050	1357050
TOTAL Lands and Dam	1.00	EA	1,357,050	0	0	0	0	0	1,357,050	1357050
A 09 Channels										
A 0901 Channels										
A 090115 dredging - channel										
A 09011501 Commercial Canal										
A 09011501 01 Mob & Demob	1.00	EA	664,500	0	0	0	0	0	664,500	664500.00
A 09011501 02 containment d	26000.00	LF	514,280	0	0	0	0	0	514,280	19.78
A 09011501 03 dredging	2594000	CY	8,378,620	0	0	0	0	0	8,378,620	3.23
TOTAL Commercial Ca	1.00	EA	9,557,400	0	0	0	0	0	9,557,400	9557400
A 09011502 G.I.W.W.										

** PROJECT INDIRECT SUMMARY - bid-item **

		QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 09011502 01	Mob & Demob -	1.00	EA	1,230,000	0	0	0	0	0	1,230,000	1230000
A 09011502 02	Mob & Demob -	3.00	EA	144,000	36,000	0	0	0	0	180,000	60000.00
A 09011502 03	dredging	4169000	CY	8,546,450	0	0	0	0	0	8,546,450	2.05
A 09011502 04	flotation acc			147,200	36,800	0	0	0	0	184,000	
A 09011502 05	DA dike GIWW#	50500.00	TON	925,160	231,290	0	0	0	0	1,156,450	22.90
A 09011502 06	DA dike GIWW#	58500.00	TON	1,071,720	267,930	0	0	0	0	1,339,650	22.90
TOTAL G.I.W.W.		1.00	EA	12,064,530	572,020	0	0	0	0	12,636,550	12636550
A 09011503	Freshwater Bayou										
A 09011503 01	Mob & Demob -	1.00	EA	1,750,000	0	0	0	0	0	1,750,000	1750000
A 09011503 02	Mob & Demob -	5.00	EA	240,000	60,000	0	0	0	0	300,000	60000.00
A 09011503 03	dredging	5600000	CY	18,200,000	0	0	0	0	0	18,200,000	3.25
A 09011503 05	DA dike FWB#1	18700.00	CY	37,400	9,350	0	0	0	0	46,750	2.50
A 09011503 06	DA dike FWB#1	31000.00	TON	589,000	147,250	0	0	0	0	736,250	23.75
A 09011503 07	DA dike FWB#2	18700.00	CY	37,400	9,350	0	0	0	0	46,750	2.50
A 09011503 08	DA dike FWB#2	31000.00	TON	589,000	147,250	0	0	0	0	736,250	23.75
A 09011503 09	DA dike FWB#3	18700.00	CY	37,400	9,350	0	0	0	0	46,750	2.50
A 09011503 10	DA dike FWB#3	31000.00	TON	589,000	147,250	0	0	0	0	736,250	23.75
TOTAL Freshwater Ba		1.00	EA	22,069,200	529,800	0	0	0	0	22,599,000	22599000
A 09011504	Freshwater Bayou										
A 09011504 01	Mob & Demob -	1.00	EA	939,000	0	0	0	0	0	939,000	939000.00
A 09011504 02	dredging - Ba	2343760	CY	9,585,978	0	0	0	0	0	9,585,978	4.09
A 09011504 03	dredging - By	557000.00	CY	1,308,950	0	0	0	0	0	1,308,950	2.35
TOTAL Freshwater Ba		1.00	EA	11,833,928	0	0	0	0	0	11,833,928	11833928
TOTAL dredging - ch		1.00	EA	55,525,058	1,101,820	0	0	0	0	56,626,878	56626878
A 090130	bank stabilization										
A 09013001	G.I.W.W.										
A 09013001 01	Channel Revet	628000.00	TON	11,479,840	2,869,960	0	0	0	0	14,349,800	22.85
A 09013001 02	geotextile	733000.00	SY	1,466,000	366,500	0	0	0	0	1,832,500	2.50
TOTAL G.I.W.W.				12,945,840	3,236,460	0	0	0	0	16,182,300	
A 09013002	Freshwater Bayou										
A 09013002 01	Channel Revet	1500000	TON	26,700,000	6,675,000	0	0	0	0	33,375,000	22.25
A 09013002 02	geotextile	1133000	SY	2,266,000	566,500	0	0	0	0	2,832,500	2.50

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
TOTAL Freshwater Ba			28,966,000	7,241,500	0	0	0	0	36,207,500	
TOTAL bank stabiliz			41,911,840	10477960	0	0	0	0	52,389,800	
TOTAL Channels	1.00	EA	97,436,898	11579780	0	0	0	0	109,016,678	109016678
TOTAL Channels	1.00	EA	97,436,898	11579780	0	0	0	0	109,016,678	109016678
A 15 Fldwy Control and Div										
A 1500 Concrete Swing Barge										
A 150001 Concrete Swing Bar										
A 15000101 normal weight co										
A 15000101 01 Swing Gate bo	308.00	CY	107,752	0	0	0	0	0	107,752	349.84
TOTAL normal weight			107,752	0	0	0	0	0	107,752	
A 15000102 light weight con										
A 15000102 01 Swing gate bo	286.00	CY	228,800	0	0	0	0	0	228,800	800.00
A 15000102 02 Swing gate De	346.00	CY	276,800	0	0	0	0	0	276,800	800.00
A 15000102 03 Columns	450.00	CY	360,000	0	0	0	0	0	360,000	800.00
A 15000102 04 precast prest	244.00	CY	195,200	0	0	0	0	0	195,200	800.00
A 15000102 05 precast prest	2230.00	CY	1,784,000	0	0	0	0	0	1,784,000	800.00
A 15000102 06 Locking Socke	60.00	CY	48,000	0	0	0	0	0	48,000	800.00
A 15000102 07 Seal Support	13.20	CY	10,560	0	0	0	0	0	10,560	800.00
TOTAL light weight			2,903,360	0	0	0	0	0	2,903,360	
A 15000103 Steel / Aluminum										
A 15000103 01 Pivot Arm Ste	80400.00	LB	160,800	0	0	0	0	0	160,800	2.00
A 15000103 02 cattle ramp w	11200.00	LB	22,400	0	0	0	0	0	22,400	2.00
TOTAL Steel / Alumi			183,200	0	0	0	0	0	183,200	
A 15000104 Fender System										
A 15000104 01 Composite Mar	2000.00	LF	220,000	0	0	0	0	0	220,000	110.00
TOTAL Fender System			220,000	0	0	0	0	0	220,000	
A 15000105 Seal System										

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 15000105 01 Seal with UHM	540.00	LF	29,700	0	0	0	0	0	29,700	55.00
TOTAL Seal System			29,700	0	0	0	0	0	29,700	
A 15000106 Control Houses										
A 15000106 01 Winch Control			24,000	0	0	0	0	0	24,000	
A 15000106 02 Pumps Awning			16,000	0	0	0	0	0	16,000	
TOTAL Control House			40,000	0	0	0	0	0	40,000	
A 15000108 Miscellaneous										
A 15000108 02 delivery of s	2.00	EA	200,000	0	0	0	0	0	200,000	100000.00
A 15000108 03 Misc (steel,H	2.00	EA	220,000	0	0	0	0	0	220,000	110000.00
TOTAL Miscellaneous			420,000	0	0	0	0	0	420,000	
A 15000109 Post Tensioning										
A 15000109 01 Post tensioni	140000.00	LF	560,000	0	0	0	0	0	560,000	4.00
TOTAL Post Tensioni			560,000	0	0	0	0	0	560,000	
A 15000110 Graving site for										
A 15000110 01 Graving site			750,000	0	0	0	0	0	750,000	
TOTAL Graving site			750,000	0	0	0	0	0	750,000	
TOTAL Concrete Swin	2.00	EA	5,214,012	0	0	0	0	0	5,214,012	2607006
A 150002 Concrete Receiving										
A 15000201 Mob & Demob										
A 15000201 01 Mob & Demob			500,000	0	0	0	0	0	500,000	
TOTAL Mob & Demob			500,000	0	0	0	0	0	500,000	
A 15000202 Reinforced Concr										
A 15000202 01 T-walls	5063.00	CY	1,772,050	0	0	0	0	0	1,772,050	350.00
A 15000202 02 I-walls	104.00	CY	36,400	0	0	0	0	0	36,400	350.00
A 15000202 03 Walkways and	486.00	CY	170,100	0	0	0	0	0	170,100	350.00

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 15000202 04 Monolith	3708.00	CY	1,297,800	0	0	0	0	0	1,297,800	350.00
A 15000202 05 Corbel and Pi	16.00	CY	5,600	0	0	0	0	0	5,600	350.00
TOTAL Reinforced Co			3,281,950	0	0	0	0	0	3,281,950	
A 15000203 Pre-cast, Pre-st										
A 15000203 01 boat dock 16"	11.00	CY	8,800	0	0	0	0	0	8,800	800.00
A 15000203 02 Cattle walkwa	115.00	CY	92,000	0	0	0	0	0	92,000	800.00
A 15000203 03 pedestrian wa	14.00	CY	11,200	0	0	0	0	0	11,200	800.00
A 15000203 04 grade beams 3	428.00	CY	338,120	0	0	0	0	0	338,120	790.00
TOTAL Pre-cast, Pre			450,120	0	0	0	0	0	450,120	
A 15000205 Pre-cast, Pre-st										
A 15000205 01 setting piles	6800.00	LF	340,000	0	0	0	0	0	340,000	50.00
A 15000205 02 T-walls 16"x1	13860.00	LF	388,080	0	0	0	0	0	388,080	28.00
A 15000205 03 cattle walkwa	7040.00	LF	183,040	0	0	0	0	0	183,040	26.00
A 15000205 04 Pedestrian wa	4080.00	LF	106,080	0	0	0	0	0	106,080	26.00
A 15000205 05 boat dock 12"	1120.00	LF	29,120	0	0	0	0	0	29,120	26.00
TOTAL Pre-cast, Pre			1,046,320	0	0	0	0	0	1,046,320	
A 15000208 sheetpiles										
A 15000208 01 monolith A-57	5184.00	SF	155,520	0	0	0	0	0	155,520	30.00
A 15000208 02 T-wall A-572	4260.00	SF	127,800	0	0	0	0	0	127,800	30.00
A 15000208 03 I-wall A-572	8820.00	SF	264,600	0	0	0	0	0	264,600	30.00
A 15000208 04 Cut-off wall	5120.00	SF	153,600	0	0	0	0	0	153,600	30.00
TOTAL sheetpiles			701,520	0	0	0	0	0	701,520	
A 15000209 Temp Retaining S										
A 15000209 01 36" dia pipe	4000.00	SF	120,000	0	0	0	0	0	120,000	30.00
A 15000209 02 AZ-48 w/ 2 ea	31920.00	SF	1,042,188	0	0	0	0	0	1,042,188	32.65
A 15000209 03 AZ-36 x 68'	21964.00	SF	439,280	0	0	0	0	0	439,280	20.00
A 15000209 04 installation	1825.00	LF	182,500	0	0	0	0	0	182,500	100.00
TOTAL Temp Retainin			1,783,968	0	0	0	0	0	1,783,968	
A 15000210 steel										
A 15000210 01 handrails	1908.00	LF	100,361	0	0	0	0	0	100,361	52.60
A 15000210 02 Chain Link	7760.00	SF	19,400	0	0	0	0	0	19,400	2.50

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 15000210 03 C-Channel (cu	320.00	LF	19,200	0	0	0	0	0	19,200	60.00
A 15000210 04 SS seal plate	230.00	LF	8,280	0	0	0	0	0	8,280	36.00
A 15000210 05 Waler TRS	353176.00	LB	1,765,880	0	0	0	0	0	1,765,880	5.00
A 15000210 06 Davit Crane t			6,000	0	0	0	0	0	6,000	
A 15000210 07 crane hoist			8,000	0	0	0	0	0	8,000	
TOTAL steel			1,927,121	0	0	0	0	0	1,927,121	
A 15000211 Aluminum										
A 15000211 01 handrails	3000.00	LF	171,600	0	0	0	0	0	171,600	57.20
TOTAL Aluminum			171,600	0	0	0	0	0	171,600	
A 15000212 Dredging										
A 15000212 01 mechanical dr	230362.00	CY	483,761	0	0	0	0	0	483,761	2.10
TOTAL Dredging			483,761	0	0	0	0	0	483,761	
A 15000213 Miscellaneous										
A 15000213 01 Dolphins - 3	8.00	EA	1,090,720	0	0	0	0	0	1,090,720	136340.00
A 15000213 02 mooring dolph	2100.00	LF	31,500	0	0	0	0	0	31,500	15.00
A 15000213 03 Hazard/Obstru	4.00	EA	4,000	0	0	0	0	0	4,000	1000.00
A 15000213 04 rip-rap (bank	31045.00	TON	931,350	0	0	0	0	0	931,350	30.00
A 15000213 05 geotextile	41400.00	SY	82,800	0	0	0	0	0	82,800	2.00
A 15000213 06 Misc (steel,h			100,000	0	0	0	0	0	100,000	
TOTAL Miscellaneous			2,240,370	0	0	0	0	0	2,240,370	
TOTAL Concrete Rece	2.00	EA	12,586,730	0	0	0	0	0	12,586,730	6293365
A 150003 Removal of Existin										
A 15000303 Removal of Exist										
A 15000303 01 Removal of Ex	2.00	EA	100,000	0	0	0	0	0	100,000	50000.00
A 15000303 02 removal of ex	800.00	LF	192,000	0	0	0	0	0	192,000	240.00
A 15000303 03 remove and di	4.00	EA	16,000	0	0	0	0	0	16,000	4000.00
A 15000303 04 removal of ex			12,000	0	0	0	0	0	12,000	
TOTAL Removal of Ex			320,000	0	0	0	0	0	320,000	
TOTAL Removal of Ex			320,000	0	0	0	0	0	320,000	

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 150005 Mechanical										
A 15000501 pumps										
A 15000501 01 12" elec pump			202,288	0	0	0	0	0	202,288	
A 15000501 02 8" subm compa			375,456	0	0	0	0	0	375,456	
TOTAL pumps			577,744	0	0	0	0	0	577,744	
A 15000502 winches/cable/ac										
A 15000502 01 Hydraulic win			599,300	0	0	0	0	0	599,300	
A 15000502 02 levelwinds	4.00	EA	212,500	0	0	0	0	0	212,500	53125.00
A 15000502 03 electric moto	4.00	EA	21,400	0	0	0	0	0	21,400	5350.00
TOTAL winches/cable			833,200	0	0	0	0	0	833,200	
A 15000503 piping										
A 15000503 01 piping			164,000	0	0	0	0	0	164,000	
A 15000503 02 gate valves (	20.00	EA	12,000	0	0	0	0	0	12,000	600.00
TOTAL piping			176,000	0	0	0	0	0	176,000	
A 15000504 misc										
A 15000504 01 ultrasonic wa	22.00	EA	11,000	0	0	0	0	0	11,000	500.00
TOTAL misc			11,000	0	0	0	0	0	11,000	
TOTAL Mechanical			1,597,944	0	0	0	0	0	1,597,944	
A 150006 Electrical										
A 15000601 Lighting (for 2										
A 15000601 01 Type 1 Naviga	4.00	EA	3,740	0	0	0	0	0	3,740	935.00
A 15000601 02 Type 1 Naviga	2.00	EA	1,870	0	0	0	0	0	1,870	935.00
A 15000601 03 pole mount fo	2.00	LOT	2,000	0	0	0	0	0	2,000	1000.00
A 15000601 04 type 6 naviga	8.00	EA	20,000	0	0	0	0	0	20,000	2500.00
A 15000601 05 floodlight, 2	40.00	EA	24,000	0	0	0	0	0	24,000	600.00
A 15000601 06 floodlight,40	16.00	EA	6,400	0	0	0	0	0	6,400	400.00
A 15000601 07 floodlight,40	32.00	EA	12,800	0	0	0	0	0	12,800	400.00
A 15000601 08 Class 2 wood	10.00	EA	7,500	0	0	0	0	0	7,500	750.00
A 15000601 09 3/4" rigid al	1601.12	LF	11,416	0	0	0	0	0	11,416	7.13
A 15000601 10 #12 AWG THWN	8049.00	LF	3,944	0	0	0	0	0	3,944	0.49
A 15000601 11 battery charg	2.00	EA	4,000	0	0	0	0	0	4,000	2000.00

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 15000601 12 solar panel (	2.00	EA	2,000	0	0	0	0	0	2,000	1000.00
A 15000601 13 receptacles,	16.00	EA	928	0	0	0	0	0	928	58.00
A 15000601 14 panelboard, 2	2.00	EA	1,600	0	0	0	0	0	1,600	800.00
TOTAL Lighting (for			102,198	0	0	0	0	0	102,198	
A 15000602 Shore Power (fo										
A 15000602 01 class 2 wood	4.00	EA	3,000	0	0	0	0	0	3,000	750.00
A 15000602 02 cross arms w/	12.00	EA	4,800	0	0	0	0	0	4,800	400.00
A 15000602 03 arrester, dis	2.00	LOT	2,230	0	0	0	0	0	2,230	1115.00
A 15000602 04 fuse cutout	6.00	EA	600	0	0	0	0	0	600	100.00
A 15000602 05 rigid Al cond	2.00	LOT	20,000	0	0	0	0	0	20,000	10000.00
A 15000602 06 wire, THWN	2.00	LOT	20,000	0	0	0	0	0	20,000	10000.00
A 15000602 07 24.9 kV to 24	2.00	EA	1,120	0	0	0	0	0	1,120	560.00
TOTAL Shore Power			51,750	0	0	0	0	0	51,750	
A 15000603 Unit Substation										
A 15000603 01 secondary uni	2.00	EA	84,550	0	0	0	0	0	84,550	42275.00
A 15000603 02 PDC for equip	2.00	LOT	44,000	0	0	0	0	0	44,000	22000.00
A 15000603 03 piers for PDC	2.00	LOT	10,000	0	0	0	0	0	10,000	5000.00
A 15000603 04 LV Distr Equi	2.00	EA	30,000	0	0	0	0	0	30,000	15000.00
A 15000603 05 cable tray la	400.00	LF	18,400	0	0	0	0	0	18,400	46.00
A 15000603 06 revenue meter	2.00	EA	5,000	0	0	0	0	0	5,000	2500.00
A 15000603 07 operator cont	2.00	EA	10,000	0	0	0	0	0	10,000	5000.00
A 15000603 08 cable, 1 STP,	2000.00	LF	1,600	0	0	0	0	0	1,600	0.80
A 15000603 09 3/4" PVC coat	1440.00	LF	10,872	0	0	0	0	0	10,872	7.55
A 15000603 10 2" PVC coated	2372.00	LF	40,324	0	0	0	0	0	40,324	17.00
A 15000603 11 wire, #14 AWG	36572.10	LF	15,726	0	0	0	0	0	15,726	0.43
A 15000603 12 wire, 250 kcm	7116.00	LF	24,906	0	0	0	0	0	24,906	3.50
TOTAL Unit Substati			295,378	0	0	0	0	0	295,378	
A 15000604 25kV Service Fee										
A 15000604 01 class 2 wood	3.00	EA	2,250	0	0	0	0	0	2,250	750.00
A 15000604 02 #1/0, 25kV, C	18600.00	LF	120,900	0	0	0	0	0	120,900	6.50
A 15000604 03 trenching & b	6200.00	LF	25,420	0	0	0	0	0	25,420	4.10
A 15000604 04 manhole	2.00	EA	7,000	0	0	0	0	0	7,000	3500.00
A 15000604 05 modular Tee s	3.00	EA	1,464	0	0	0	0	0	1,464	488.00
A 15000604 06 directional b	1.00	LOT	56,000	0	0	0	0	0	56,000	56000.00
A 15000604 07 4" al conduit	600.00	LF	9,810	0	0	0	0	0	9,810	16.35
A 15000604 08 4" al conduit	1100.00	LF	17,985	0	0	0	0	0	17,985	16.35
A 15000604 09 capacitor ban	2.00	EA	1,700	0	0	0	0	0	1,700	850.00
A 15000604 10 cable termina	9.00	EA	2,565	0	0	0	0	0	2,565	285.00

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 15000604 11 arrester, dis	1.00 LOT	1,115	0	0	0	0	0	1,115	1115.00
TOTAL 25kV Service		246,209	0	0	0	0	0	246,209	
TOTAL Electrical		695,535	0	0	0	0	0	695,535	
A 150007 Pivot Structure									
A 15000701 Reinforced Concr									
A 15000701 01 Reinf Conc -	180.00 CY	63,000	0	0	0	0	0	63,000	350.00
TOTAL Reinforced Co		63,000	0	0	0	0	0	63,000	
A 15000702 Pre-cast, Pre-st									
A 15000702 01 16"x16"x 100'	3200.00 LF	128,000	0	0	0	0	0	128,000	40.00
TOTAL Pre-cast, Pre		128,000	0	0	0	0	0	128,000	
A 15000703 Stainless Steel									
A 15000703 01 Pivot Pin, Pi	7700.00 LB	15,400	0	0	0	0	0	15,400	2.00
TOTAL Stainless Ste		15,400	0	0	0	0	0	15,400	
TOTAL Pivot Structu		206,400	0	0	0	0	0	206,400	
A 150008 Anchor Structure									
A 15000801 Reinforced Conc-									
A 15000801 01 Reinf Conc -	210.00 CY	73,500	0	0	0	0	0	73,500	350.00
TOTAL Reinforced Co		73,500	0	0	0	0	0	73,500	
A 15000802 Pre-cast, Pre-st									
A 15000802 01 16"x16"x 85'	5440.00 LF	152,320	0	0	0	0	0	152,320	28.00
TOTAL Pre-cast, Pre		152,320	0	0	0	0	0	152,320	
A 15000803 Steel									

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 15000803 01 Chain, snatch		150,000	0	0	0	0	0	150,000	
TOTAL Steel		150,000	0	0	0	0	0	150,000	
TOTAL Anchor Struct		375,820	0	0	0	0	0	375,820	
A 150009 Pile tests									
A 15000901 install & test 1									
A 15000901 01 furnish and i		288,000	0	0	0	0	0	288,000	
A 15000901 02 tension test		12,000	0	0	0	0	0	12,000	
A 15000901 03 compression t		12,000	0	0	0	0	0	12,000	
TOTAL install & tes		312,000	0	0	0	0	0	312,000	
A 15000902 install & test 2									
A 15000902 01 furnish and i		640,000	0	0	0	0	0	640,000	
A 15000902 02 tension test		18,000	0	0	0	0	0	18,000	
TOTAL install & tes		658,000	0	0	0	0	0	658,000	
TOTAL Pile tests		970,000	0	0	0	0	0	970,000	
A 150010 Dewatering System									
A 15001001 Dewatering Syste									
A 15001001 01 Dewatering Sy		1,000,000	0	0	0	0	0	1,000,000	
TOTAL Dewatering Sy		1,000,000	0	0	0	0	0	1,000,000	
TOTAL Dewatering Sy		1,000,000	0	0	0	0	0	1,000,000	
TOTAL Concrete Swin		22,966,441	0	0	0	0	0	22,966,441	
TOTAL Fldwy Control	1.00 EA	22,966,441	0	0	0	0	0	22,966,441	22966441
A 30 Engineering & Design									
A 3001 E & D									
A 300101 E & D									
A 30010101 E & D									

** PROJECT INDIRECT SUMMARY - bid-item **

	QUANTITY	UOM	DIRECT	DISTRIBU	OVERHEAD	HOME OFC	PROFIT	BOND	TOTAL COST	UNIT COST
A 30010101 01 Commercial Ca	1.00	EA	125,000	0	0	0	0	0	125,000	125000.00
A 30010101 02 GIWW - dredgi	3.00	EA	375,000	0	0	0	0	0	375,000	125000.00
A 30010101 03 Freshwater In	5.00	EA	625,000	0	0	0	0	0	625,000	125000.00
A 30010101 04 Freshwater Ba	1.00	EA	125,000	0	0	0	0	0	125,000	125000.00
A 30010101 05 Borings - Frs			280,000	0	0	0	0	0	280,000	
A 30010101 06 Surveys			240,000	0	0	0	0	0	240,000	
A 30010101 07 By-pass Chann			1,837,306	0	0	0	0	0	1,837,306	
TOTAL E & D			3,607,306	0	0	0	0	0	3,607,306	
TOTAL E & D			3,607,306	0	0	0	0	0	3,607,306	
TOTAL E & D			3,607,306	0	0	0	0	0	3,607,306	
TOTAL Engineering &	1.00	EA	3,607,306	0	0	0	0	0	3,607,306	3607306
A 31 Construction Managemen										
A 31 1 S & A										
A 31 1 1 S & A										
A 31 1 101 S & A										
A 31 1 101 01 Commercial Ca	1.00	EA	260,000	0	0	0	0	0	260,000	260000.00
A 31 1 101 02 GIWW - dredgi	1.00	EA	620,000	0	0	0	0	0	620,000	620000.00
A 31 1 101 03 Freshwater In	1.00	EA	600,000	0	0	0	0	0	600,000	600000.00
A 31 1 101 04 Freshwater Ba	1.00	EA	210,000	0	0	0	0	0	210,000	210000.00
A 31 1 101 07 By-pass Chann			1,837,306	0	0	0	0	0	1,837,306	
TOTAL S & A			3,527,306	0	0	0	0	0	3,527,306	
TOTAL S & A			3,527,306	0	0	0	0	0	3,527,306	
TOTAL S & A	1.00	EA	3,527,306	0	0	0	0	0	3,527,306	3527306
TOTAL Construction	1.00	EA	3,527,306	0	0	0	0	0	3,527,306	3527306
TOTAL Port of Iberi	1.00	EA	128,895,001	11579780	0	0	0	0	140,474,781	140474781
TOTAL Port of Iberi	1.00	EA	128,895,001	11579780	0	0	0	0	140,474,781	140474781
Contingency									21,257,631	
TOTAL INCL OWNER COSTS									161,732,412	

** PROJECT DIRECT SUMMARY - Feature **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A Port of Iberia								
A 01 Lands and Damages	1.00	EA	0	0	0	1,357,050	1,357,050	1357050
A 09 Channels	1.00	EA	1,710,842	5,480,747	14,405,453	75,839,856	97,436,898	97436898
A 15 Fldwy Control and Div Structures	1.00	EA	0	0	0	22,966,441	22,966,441	22966441
A 30 Engineering & Design	1.00	EA	3,080,000	0	0	527,306	3,607,306	3607306
A 31 Construction Management - S & A	1.00	EA	3,520,000	0	0	7,306	3,527,306	3527306
TOTAL Port of Iberia	1.00	EA	8,310,842	5,480,747	14,405,453	100,697,959	128,895,001	128895001
TOTAL Port of Iberia Feas Study 3/06	1.00	EA	8,310,842	5,480,747	14,405,453	100,697,959	128,895,001	128895001
Distribution							11,579,780	
TOTAL INCL INDIRECTS							140,474,781	
Contingency							21,257,631	
TOTAL INCL OWNER COSTS							161,732,412	

** PROJECT DIRECT SUMMARY - bid-item **

	QUANTITY UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A Port of Iberia							
A 01 Lands and Damages							
A 0101 Lands and Damages							
A 010101 Lands and Damages							
A 010101 B Acquisitions							
A 010101 B 01 By Local sponsor (LS)		0	0	0	115,300	115,300	
A 010101 B 02 Review of LS		0	0	0	17,500	17,500	
TOTAL Acquisitions		0	0	0	132,800	132,800	
A 010101 C Condemnations							
A 010101 C 01 By Local sponsor (LS)		0	0	0	20,000	20,000	
A 010101 C 02 Review of LS		0	0	0	7,900	7,900	
TOTAL Condemnations		0	0	0	27,900	27,900	
A 010101 E Appraisal							
A 010101 E 01 By Local sponsor (LS)		0	0	0	38,000	38,000	
A 010101 E 02 Review of LS		0	0	0	11,200	11,200	
TOTAL Appraisal		0	0	0	49,200	49,200	
A 010101 G Temporary Permit/Lics/RofE							
A 010101 G 01 By Local sponsor (LS)		0	0	0	9,500	9,500	
A 010101 G 02 Review of LS		0	0	0	3,150	3,150	
TOTAL Temporary Permit/Lics/RofE		0	0	0	12,650	12,650	
A 010101 R Real Estate Payments - Land							
A 010101 R 01 By Local sponsor (LS)		0	0	0	1,119,000	1,119,000	
TOTAL Real Estate Payments - Land		0	0	0	1,119,000	1,119,000	
A 010101 T LERRD Crediting							

** PROJECT DIRECT SUMMARY - bid-item **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 010101 T 01 Administrative costs			0	0	0	7,600	7,600	
TOTAL LERRD Crediting			0	0	0	7,600	7,600	
TOTAL Lands and Damages			0	0	0	1,349,150	1,349,150	
A 010102 Relocations								
A 010102 1 Relocations								
A 010102 1 01 Final Compensability Report			0	0	0	3,600	3,600	
A 010102 1 02 Cost reimbursement Agreemen			0	0	0	4,300	4,300	
TOTAL Relocations			0	0	0	7,900	7,900	
TOTAL Relocations			0	0	0	7,900	7,900	
A 010103 round off								
A 01010301 round off								
A 01010301 01 round off comtingency			0	0	0	0	0	
TOTAL round off			0	0	0	0	0	
TOTAL round off			0	0	0	0	0	
TOTAL Lands and Damages	1.00	EA	0	0	0	1,357,050	1,357,050	1357050
TOTAL Lands and Damages	1.00	EA	0	0	0	1,357,050	1,357,050	1357050
A 09 Channels								
A 0901 Channels								
A 090115 dredging - channel								
A 09011501 Commercial Canal								
A 09011501 01 Mob & Demob	1.00	EA	0	0	0	664,500	664,500	664500.00
A 09011501 02 containment dikes	26000.00	LF	0	0	0	514,280	514,280	19.78
A 09011501 03 dredging	2594000	CY	0	0	0	8,378,620	8,378,620	3.23
TOTAL Commercial Canal	1.00	EA	0	0	0	9,557,400	9,557,400	9557400
A 09011502 G.I.W.W.								

** PROJECT DIRECT SUMMARY - bid-item **

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 09011502 01	Mob & Demob - dredge	1.00	EA	0	0	0	1,230,000	1,230,000	1230000
A 09011502 02	Mob & Demob - rock	3.00	EA	0	0	0	144,000	144,000	48000.00
A 09011502 03	dredging	4169000	CY	0	0	0	8,546,450	8,546,450	2.05
A 09011502 04	flotation access to DA 5 &			24,484	121,153	0	1,564	147,200	
A 09011502 05	DA dike GIWW#5	50500.00	TON	19,912	98,520	298,814	507,914	925,160	18.32
A 09011502 06	DA dike GIWW#6	58500.00	TON	23,067	114,128	346,150	588,375	1,071,720	18.32
TOTAL	G.I.W.W.	1.00	EA	67,462	333,801	644,964	11,018,303	12,064,530	12064530
A 09011503	Freshwater Bayou								
A 09011503 01	Mob & Demob - dredging	1.00	EA	0	0	0	1,750,000	1,750,000	1750000
A 09011503 02	Mob & Demob - rock	5.00	EA	0	0	0	240,000	240,000	48000.00
A 09011503 03	dredging	5600000	CY	0	0	0	18,200,000	18,200,000	3.25
A 09011503 05	DA dike FWB#1 - earthen cor	18700.00	CY	6,221	30,782	0	396	37,400	2.00
A 09011503 06	DA dike FWB#1 - stone cover	31000.00	TON	15,487	76,620	183,430	313,463	589,000	19.00
A 09011503 07	DA dike FWB#2 - earthen cor	18700.00	CY	0	0	0	37,400	37,400	2.00
A 09011503 08	DA dike FWB#2 - stone cover	31000.00	TON	0	0	0	589,000	589,000	19.00
A 09011503 09	DA dike FWB#3 - earthen cor	18700.00	CY	0	0	0	37,400	37,400	2.00
A 09011503 10	DA dike FWB#3 - stone cover	31000.00	TON	0	0	0	589,000	589,000	19.00
TOTAL	Freshwater Bayou	1.00	EA	21,709	107,402	183,430	21,756,659	22,069,200	22069200
A 09011504	Freshwater Bayou By-Pass and B								
A 09011504 01	Mob & Demob - dredging	1.00	EA	0	0	0	939,000	939,000	939000.00
A 09011504 02	dredging - Bar channel	2343760	CY	0	0	0	9,585,978	9,585,978	4.09
A 09011504 03	dredging - By-Pass Channel	557000.00	CY	0	0	0	1,308,950	1,308,950	2.35
TOTAL	Freshwater Bayou By-Pass an	1.00	EA	0	0	0	11,833,928	11,833,928	11833928
TOTAL	dredging - channel	1.00	EA	89,171	441,202	828,394	54,166,291	55,525,058	55525058
A 090130	bank stabilization - revetment								
A 09013001	G.I.W.W.								
A 09013001 01	Channel Revetment 28"	628000.00	TON	247,620	1,225,165	3,715,939	6,291,116	11,479,840	18.28
A 09013001 02	geotextile	733000.00	SY	307,420	348,835	784,310	25,435	1,466,000	2.00
TOTAL	G.I.W.W.			555,041	1,574,000	4,500,249	6,316,551	12,945,840	
A 09013002	Freshwater Bayou								
A 09013002 01	Channel Revetment 36"	1500000	TON	591,450	2,926,350	7,864,500	15,317,700	26,700,000	17.80
A 09013002 02	geotextile	1133000	SY	475,180	539,195	1,212,310	39,315	2,266,000	2.00

** PROJECT DIRECT SUMMARY - bid-item **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
TOTAL Freshwater Bayou			1,066,630	3,465,545	9,076,810	15,357,015	28,966,000	
TOTAL bank stabilization - revetm			1,621,671	5,039,545	13,577,059	21,673,566	41,911,840	
TOTAL Channels	1.00	EA	1,710,842	5,480,747	14,405,453	75,839,856	97,436,898	97436898
TOTAL Channels	1.00	EA	1,710,842	5,480,747	14,405,453	75,839,856	97,436,898	97436898

A 15 Fldwy Control and Div Structures

A 1500 Concrete Swing Barge Floodgate

A 150001 Concrete Swing Barge

A 15000101 normal weight concrete

A 15000101 01 Swing Gate bottom (1st Lift	308.00	CY	0	0	0	107,752	107,752	349.84
TOTAL normal weight concrete			0	0	0	107,752	107,752	

A 15000102 light weight concrete

A 15000102 01 Swing gate bottom (2nd lift	286.00	CY	0	0	0	228,800	228,800	800.00
A 15000102 02 Swing gate Deck	346.00	CY	0	0	0	276,800	276,800	800.00
A 15000102 03 Columns	450.00	CY	0	0	0	360,000	360,000	800.00
A 15000102 04 precast prestressed Deck pa	244.00	CY	0	0	0	195,200	195,200	800.00
A 15000102 05 precast prestressed wall pa	2230.00	CY	0	0	0	1,784,000	1,784,000	800.00
A 15000102 06 Locking Socket	60.00	CY	0	0	0	48,000	48,000	800.00
A 15000102 07 Seal Support	13.20	CY	0	0	0	10,560	10,560	800.00
TOTAL light weight concrete			0	0	0	2,903,360	2,903,360	

A 15000103 Steel / Aluminum

A 15000103 01 Pivot Arm Steel	80400.00	LB	0	0	0	160,800	160,800	2.00
A 15000103 02 cattle ramp walkway plate	11200.00	LB	0	0	0	22,400	22,400	2.00
TOTAL Steel / Aluminum			0	0	0	183,200	183,200	

A 15000104 Fender System

A 15000104 01 Composite Marine Timber	2000.00	LF	0	0	0	220,000	220,000	110.00
TOTAL Fender System			0	0	0	220,000	220,000	

A 15000105 Seal System

** PROJECT DIRECT SUMMARY - bid-item **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000105 01 Seal with UHMW Plastic Anch	540.00	LF	0	0	0	29,700	29,700	55.00
TOTAL Seal System			0	0	0	29,700	29,700	
A 15000106 Control Houses								
A 15000106 01 Winch Control Houses			0	0	0	24,000	24,000	
A 15000106 02 Pumps Awning			0	0	0	16,000	16,000	
TOTAL Control Houses			0	0	0	40,000	40,000	
A 15000108 Miscellaneous								
A 15000108 02 delivery of swing gates	2.00	EA	0	0	0	200,000	200,000	100000.00
A 15000108 03 Misc (steel,Hwd, accessorie	2.00	EA	0	0	0	220,000	220,000	110000.00
TOTAL Miscellaneous			0	0	0	420,000	420,000	
A 15000109 Post Tensioning								
A 15000109 01 Post tensioning	140000.00	LF	0	0	0	560,000	560,000	4.00
TOTAL Post Tensioning			0	0	0	560,000	560,000	
A 15000110 Graving site for swing gates								
A 15000110 01 Graving site for swing gate			0	0	0	750,000	750,000	
TOTAL Graving site for swing gate			0	0	0	750,000	750,000	
TOTAL Concrete Swing Barge	2.00	EA	0	0	0	5,214,012	5,214,012	2607006
A 150002 Concrete Receiving Structures								
A 15000201 Mob & Demob								
A 15000201 01 Mob & Demob			0	0	0	500,000	500,000	
TOTAL Mob & Demob			0	0	0	500,000	500,000	
A 15000202 Reinforced Concrete								
A 15000202 01 T-walls	5063.00	CY	0	0	0	1,772,050	1,772,050	350.00
A 15000202 02 I-walls	104.00	CY	0	0	0	36,400	36,400	350.00
A 15000202 03 Walkways and Boat Dock	486.00	CY	0	0	0	170,100	170,100	350.00

** PROJECT DIRECT SUMMARY - bid-item **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000202 04 Monolith	3708.00	CY	0	0	0	1,297,800	1,297,800	350.00
A 15000202 05 Corbel and Pintle	16.00	CY	0	0	0	5,600	5,600	350.00
TOTAL Reinforced Concrete			0	0	0	3,281,950	3,281,950	
A 15000203 Pre-cast, Pre-stressed, beams								
A 15000203 01 boat dock 16"x16"x20'	11.00	CY	0	0	0	8,800	8,800	800.00
A 15000203 02 Cattle walkways 28"x24"x15'	115.00	CY	0	0	0	92,000	92,000	800.00
A 15000203 03 pedestrian walkway 12"x12"x	14.00	CY	0	0	0	11,200	11,200	800.00
A 15000203 04 grade beams 3'6"x4'x20'6"	428.00	CY	0	0	0	338,120	338,120	790.00
TOTAL Pre-cast, Pre-stressed, bea			0	0	0	450,120	450,120	
A 15000205 Pre-cast, Pre-stressed, piles								
A 15000205 01 setting piles 24"x24"x85'	6800.00	LF	0	0	0	340,000	340,000	50.00
A 15000205 02 T-walls 16"x16'x90'	13860.00	LF	0	0	0	388,080	388,080	28.00
A 15000205 03 cattle walkways 12"x12"x80'	7040.00	LF	0	0	0	183,040	183,040	26.00
A 15000205 04 Pedestrian walkways 12"x12"	4080.00	LF	0	0	0	106,080	106,080	26.00
A 15000205 05 boat dock 12"x12"x70'	1120.00	LF	0	0	0	29,120	29,120	26.00
TOTAL Pre-cast, Pre-stressed, pil			0	0	0	1,046,320	1,046,320	
A 15000208 sheetpiles								
A 15000208 01 monolith A-572	5184.00	SF	0	0	0	155,520	155,520	30.00
A 15000208 02 T-wall A-572	4260.00	SF	0	0	0	127,800	127,800	30.00
A 15000208 03 I-wall A-572	8820.00	SF	0	0	0	264,600	264,600	30.00
A 15000208 04 Cut-off wall A-572	5120.00	SF	0	0	0	153,600	153,600	30.00
TOTAL sheetpiles			0	0	0	701,520	701,520	
A 15000209 Temp Retaining Structure TRS								
A 15000209 01 36" dia pipe w/ AZ-26 x 80'	4000.00	SF	0	0	0	120,000	120,000	30.00
A 15000209 02 AZ-48 w/ 2 ea W14x109x80'	31920.00	SF	0	0	0	1,042,188	1,042,188	32.65
A 15000209 03 AZ-36 x 68'	21964.00	SF	0	0	0	439,280	439,280	20.00
A 15000209 04 installation of remaining 3	1825.00	LF	0	0	0	182,500	182,500	100.00
TOTAL Temp Retaining Structure TR			0	0	0	1,783,968	1,783,968	
A 15000210 steel								
A 15000210 01 handrails	1908.00	LF	0	0	0	100,361	100,361	52.60
A 15000210 02 Chain Link	7760.00	SF	0	0	0	19,400	19,400	2.50

** PROJECT DIRECT SUMMARY - bid-item **

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000210 03	C-Channel (cutoff wall)	320.00	LF	0	0	0	19,200	19,200	60.00
A 15000210 04	SS seal plate	230.00	LF	0	0	0	8,280	8,280	36.00
A 15000210 05	Waler TRS	353176.00	LB	0	0	0	1,765,880	1,765,880	5.00
A 15000210 06	Davit Crane to pull sump pu			0	0	0	6,000	6,000	
A 15000210 07	crane hoist			0	0	0	8,000	8,000	
TOTAL	steel			0	0	0	1,927,121	1,927,121	
A 15000211	Aluminum								
A 15000211 01	handrails	3000.00	LF	0	0	0	171,600	171,600	57.20
TOTAL	Aluminum			0	0	0	171,600	171,600	
A 15000212	Dredging								
A 15000212 01	mechanical dredging	230362.00	CY	0	0	0	483,761	483,761	2.10
TOTAL	Dredging			0	0	0	483,761	483,761	
A 15000213	Miscellaneous								
A 15000213 01	Dolphins - 3 pile cluster	8.00	EA	0	0	0	1,090,720	1,090,720	136340.00
A 15000213 02	mooring dolphins (6)	2100.00	LF	0	0	0	31,500	31,500	15.00
A 15000213 03	Hazard/Obstruction signs	4.00	EA	0	0	0	4,000	4,000	1000.00
A 15000213 04	rip-rap (bank stabilization	31045.00	TON	0	0	0	931,350	931,350	30.00
A 15000213 05	geotextile	41400.00	SY	0	0	0	82,800	82,800	2.00
A 15000213 06	Misc (steel,hwd, Acces)			0	0	0	100,000	100,000	
TOTAL	Miscellaneous			0	0	0	2,240,370	2,240,370	
TOTAL	Concrete Receiving Structur	2.00	EA	0	0	0	12,586,730	12,586,730	6293365
A 150003	Removal of Existing Structures								
A 15000303	Removal of Existing Structures								
A 15000303 01	Removal of Existing gates	2.00	EA	0	0	0	100,000	100,000	50000.00
A 15000303 02	removal of existing sheetpi	800.00	LF	0	0	0	192,000	192,000	240.00
A 15000303 03	remove and disposal of pipe	4.00	EA	0	0	0	16,000	16,000	4000.00
A 15000303 04	removal of existing ramp, e			0	0	0	12,000	12,000	
TOTAL	Removal of Existing Structu			0	0	0	320,000	320,000	
TOTAL	Removal of Existing Structu			0	0	0	320,000	320,000	

** PROJECT DIRECT SUMMARY - bid-item **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 150005 Mechanical								
A 15000501 pumps								
A 15000501 01 12" elec pump w/subm mtr 50			0	0	0	202,288	202,288	
A 15000501 02 8" subm compart transfer 20			0	0	0	375,456	375,456	
TOTAL pumps			0	0	0	577,744	577,744	
A 15000502 winches/cable/accessories								
A 15000502 01 Hydraulic winches, 50 ton			0	0	0	599,300	599,300	
A 15000502 02 levelwinds	4.00	EA	0	0	0	212,500	212,500	53125.00
A 15000502 03 electric motor starters	4.00	EA	0	0	0	21,400	21,400	5350.00
TOTAL winches/cable/accessories			0	0	0	833,200	833,200	
A 15000503 piping								
A 15000503 01 piping			0	0	0	164,000	164,000	
A 15000503 02 gate valves (motor operated	20.00	EA	0	0	0	12,000	12,000	600.00
TOTAL piping			0	0	0	176,000	176,000	
A 15000504 misc								
A 15000504 01 ultrasonic water level indi	22.00	EA	0	0	0	11,000	11,000	500.00
TOTAL misc			0	0	0	11,000	11,000	
TOTAL Mechanical			0	0	0	1,597,944	1,597,944	
A 150006 Electrical								
A 15000601 Lighting (for 2 swing gates)								
A 15000601 01 Type 1 Navigation Light-cle	4.00	EA	0	0	0	3,740	3,740	935.00
A 15000601 02 Type 1 Navigation Light-red	2.00	EA	0	0	0	1,870	1,870	935.00
A 15000601 03 pole mount for red navig li	2.00	LOT	0	0	0	2,000	2,000	1000.00
A 15000601 04 type 6 navigation light	8.00	EA	0	0	0	20,000	20,000	2500.00
A 15000601 05 floodlight, 250W HPS marine	40.00	EA	0	0	0	24,000	24,000	600.00
A 15000601 06 floodlight,400W HPS, pole m	16.00	EA	0	0	0	6,400	6,400	400.00
A 15000601 07 floodlight,400W HPS	32.00	EA	0	0	0	12,800	12,800	400.00
A 15000601 08 Class 2 wood pole for fixtu	10.00	EA	0	0	0	7,500	7,500	750.00
A 15000601 09 3/4" rigid al conduit	1601.12	LF	0	0	0	11,416	11,416	7.13
A 15000601 10 #12 AWG THWN wire	8049.00	LF	0	0	0	3,944	3,944	0.49
A 15000601 11 battery charger & battery(g	2.00	EA	0	0	0	4,000	4,000	2000.00

** PROJECT DIRECT SUMMARY - bid-item **

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000601 12	solar panel (for gate fixtu	2.00	EA	0	0	0	2,000	2,000	1000.00
A 15000601 13	receptacles, NEMA 3R, C-H t	16.00	EA	0	0	0	928	928	58.00
A 15000601 14	panelboard, 240/120V, 12 ck	2.00	EA	0	0	0	1,600	1,600	800.00
TOTAL	Lighting (for 2 swing gates			0	0	0	102,198	102,198	
A 15000602	Shore Power (for 2 swing gate								
A 15000602 01	class 2 wood pole, penta tr	4.00	EA	0	0	0	3,000	3,000	750.00
A 15000602 02	cross arms w/insulator & ha	12.00	EA	0	0	0	4,800	4,800	400.00
A 15000602 03	arrester, distribution clas	2.00	LOT	0	0	0	2,230	2,230	1115.00
A 15000602 04	fuse cutout	6.00	EA	0	0	0	600	600	100.00
A 15000602 05	rigid Al conduit	2.00	LOT	0	0	0	20,000	20,000	10000.00
A 15000602 06	wire, THWN	2.00	LOT	0	0	0	20,000	20,000	10000.00
A 15000602 07	24.9 kV to 240/120 Vac, 10	2.00	EA	0	0	0	1,120	1,120	560.00
TOTAL	Shore Power (for 2 swing g			0	0	0	51,750	51,750	
A 15000603	Unit Substation (for 2 gates)								
A 15000603 01	secondary unit substation	2.00	EA	0	0	0	84,550	84,550	42275.00
A 15000603 02	PDC for equipment	2.00	LOT	0	0	0	44,000	44,000	22000.00
A 15000603 03	piers for PDC skid unit	2.00	LOT	0	0	0	10,000	10,000	5000.00
A 15000603 04	LV Distr Equipment	2.00	EA	0	0	0	30,000	30,000	15000.00
A 15000603 05	cable tray ladder, 24" w, F	400.00	LF	0	0	0	18,400	18,400	46.00
A 15000603 06	revenue metering equipment	2.00	EA	0	0	0	5,000	5,000	2500.00
A 15000603 07	operator control panel	2.00	EA	0	0	0	10,000	10,000	5000.00
A 15000603 08	cable, 1 STP, #16 AWG, THWN	2000.00	LF	0	0	0	1,600	1,600	0.80
A 15000603 09	3/4" PVC coated conduit	1440.00	LF	0	0	0	10,872	10,872	7.55
A 15000603 10	2" PVC coated conduit	2372.00	LF	0	0	0	40,324	40,324	17.00
A 15000603 11	wire, #14 AWG, THWN	36572.10	LF	0	0	0	15,726	15,726	0.43
A 15000603 12	wire, 250 kcmil, THWN	7116.00	LF	0	0	0	24,906	24,906	3.50
TOTAL	Unit Substation (for 2 gat			0	0	0	295,378	295,378	
A 15000604	25kV Service Feeder								
A 15000604 01	class 2 wood pole, penta tr	3.00	EA	0	0	0	2,250	2,250	750.00
A 15000604 02	#1/0, 25kV, Cu, XLPE, shld	18600.00	LF	0	0	0	120,900	120,900	6.50
A 15000604 03	trenching & backfill buried	6200.00	LF	0	0	0	25,420	25,420	4.10
A 15000604 04	manhole	2.00	EA	0	0	0	7,000	7,000	3500.00
A 15000604 05	modular Tee splice	3.00	EA	0	0	0	1,464	1,464	488.00
A 15000604 06	directional bore below FWB	1.00	LOT	0	0	0	56,000	56,000	56000.00
A 15000604 07	4" al conduit below FWB	600.00	LF	0	0	0	9,810	9,810	16.35
A 15000604 08	4" al conduit below channel	1100.00	LF	0	0	0	17,985	17,985	16.35
A 15000604 09	capacitor bank	2.00	EA	0	0	0	1,700	1,700	850.00
A 15000604 10	cable terminations, 25kV	9.00	EA	0	0	0	2,565	2,565	285.00

** PROJECT DIRECT SUMMARY - bid-item **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000604 11 arrester, distribution clas	1.00	LOT	0	0	0	1,115	1,115	1115.00
TOTAL 25kV Service Feeder			0	0	0	246,209	246,209	
TOTAL Electrical			0	0	0	695,535	695,535	
A 150007 Pivot Structure								
A 15000701 Reinforced Concrete								
A 15000701 01 Reinf Conc - pivot structur	180.00	CY	0	0	0	63,000	63,000	350.00
TOTAL Reinforced Concrete			0	0	0	63,000	63,000	
A 15000702 Pre-cast, Pre-stressed conc pi								
A 15000702 01 16"x16"x 100' PPC pile	3200.00	LF	0	0	0	128,000	128,000	40.00
TOTAL Pre-cast, Pre-stressed conc			0	0	0	128,000	128,000	
A 15000703 Stainless Steel								
A 15000703 01 Pivot Pin, Pin ring, collar	7700.00	LB	0	0	0	15,400	15,400	2.00
TOTAL Stainless Steel			0	0	0	15,400	15,400	
TOTAL Pivot Structure			0	0	0	206,400	206,400	
A 150008 Anchor Structure								
A 15000801 Reinforced Conc-pull pile stru								
A 15000801 01 Reinf Conc - cable anchor s	210.00	CY	0	0	0	73,500	73,500	350.00
TOTAL Reinforced Conc-pull pile s			0	0	0	73,500	73,500	
A 15000802 Pre-cast, Pre-stressed conc pi								
A 15000802 01 16"x16"x 85' PPC pile	5440.00	LF	0	0	0	152,320	152,320	28.00
TOTAL Pre-cast, Pre-stressed conc			0	0	0	152,320	152,320	
A 15000803 Steel								

** PROJECT DIRECT SUMMARY - bid-item **

	QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 15000803 01 Chain, snatch block, anchor			0	0	0	150,000	150,000	
TOTAL Steel			0	0	0	150,000	150,000	
TOTAL Anchor Structure			0	0	0	375,820	375,820	
A 150009 Pile tests								
A 15000901 install & test 16"x16" PPC pil								
A 15000901 01 furnish and install			0	0	0	288,000	288,000	
A 15000901 02 tension test			0	0	0	12,000	12,000	
A 15000901 03 compression test			0	0	0	12,000	12,000	
TOTAL install & test 16"x16" PPC			0	0	0	312,000	312,000	
A 15000902 install & test 24"x24" PPC pil								
A 15000902 01 furnish and install			0	0	0	640,000	640,000	
A 15000902 02 tension test			0	0	0	18,000	18,000	
TOTAL install & test 24"x24" PPC			0	0	0	658,000	658,000	
TOTAL Pile tests			0	0	0	970,000	970,000	
A 150010 Dewatering System								
A 15001001 Dewatering System								
A 15001001 01 Dewatering System			0	0	0	1,000,000	1,000,000	
TOTAL Dewatering System			0	0	0	1,000,000	1,000,000	
TOTAL Dewatering System			0	0	0	1,000,000	1,000,000	
TOTAL Concrete Swing Barge Floodg			0	0	0	22,966,441	22,966,441	
TOTAL Fldwy Control and Div Struc	1.00	EA	0	0	0	22,966,441	22,966,441	22966441
A 30 Engineering & Design								
A 3001 E & D								
A 300101 E & D								
A 30010101 E & D								

** PROJECT DIRECT SUMMARY - bid-item **

		QUANTITY	UOM	LABOR	EQUIPMNT	MATERIAL	SUPPLIES	TOTAL COST	UNIT COST
A 30010101 01	Commercial Canal - dredging	1.00	EA	125,000	0	0	0	125,000	125000.00
A 30010101 02	GIWW - dredging/rock	3.00	EA	375,000	0	0	0	375,000	125000.00
A 30010101 03	Freshwater Int - dredging/r	5.00	EA	625,000	0	0	0	625,000	125000.00
A 30010101 04	Freshwater Bar - dredging	1.00	EA	125,000	0	0	0	125,000	125000.00
A 30010101 05	Borings - Frshwtr, GIWW, Co			0	0	0	280,000	280,000	
A 30010101 06	Surveys			0	0	0	240,000	240,000	
A 30010101 07	By-pass Channel Floodgate			1,830,000	0	0	7,306	1,837,306	
	TOTAL E & D			3,080,000	0	0	527,306	3,607,306	
	TOTAL E & D			3,080,000	0	0	527,306	3,607,306	
	TOTAL E & D			3,080,000	0	0	527,306	3,607,306	
	TOTAL Engineering & Design	1.00	EA	3,080,000	0	0	527,306	3,607,306	3607306

A 31 Construction Management - S & A

A 31 1 S & A

A 31 1 1 S & A

A 31 1 101 S & A

A 31 1 101 01	Commercial Canal - dredging	1.00	EA	260,000	0	0	0	260,000	260000.00
A 31 1 101 02	GIWW - dredging/rock	1.00	EA	620,000	0	0	0	620,000	620000.00
A 31 1 101 03	Freshwater Int - dredging/r	1.00	EA	600,000	0	0	0	600,000	600000.00
A 31 1 101 04	Freshwater Bar - dredging	1.00	EA	210,000	0	0	0	210,000	210000.00
A 31 1 101 07	By-pass Channel Floodgate			1,830,000	0	0	7,306	1,837,306	
	TOTAL S & A			3,520,000	0	0	7,306	3,527,306	
	TOTAL S & A			3,520,000	0	0	7,306	3,527,306	
	TOTAL S & A	1.00	EA	3,520,000	0	0	7,306	3,527,306	3527306
	TOTAL Construction Management - S	1.00	EA	3,520,000	0	0	7,306	3,527,306	3527306
	TOTAL Port of Iberia	1.00	EA	8,310,842	5,480,747	14,405,453	100,697,959	128,895,001	128895001
	TOTAL Port of Iberia Feas Study 3	1.00	EA	8,310,842	5,480,747	14,405,453	100,697,959	128,895,001	128895001

Distribution	11,579,780
TOTAL INCL INDIRECTS	140,474,781
Contingency	21,257,631
TOTAL INCL OWNER COSTS	161,732,412

** CREW BACKUP - bid-item **

ITEM ID	DESCRIPTION			
A 010101 B 01.	By Local sponsor (LS)			
A 010101 B 02.	Review of LS			
A 010101 C 01.	By Local sponsor (LS)			
A 010101 C 02.	Review of LS			
A 010101 E 01.	By Local sponsor (LS)			
A 010101 E 02.	Review of LS			
A 010101 G 01.	By Local sponsor (LS)			
A 010101 G 02.	Review of LS			
A 010101 R 01.	By Local sponsor (LS)			
A 010101 T 01.	Administrative costs			
A 010102 1 01.	Final Compensability Report			
A 010102 1 02.	Cost reimbursement Agreement			
A 01010301 01.	round off comtingency			
A 09011501 01.	Mob & Demob			
A 09011501 02.	containment dikes			
A 09011501 03.	dredging			
A 09011502 01.	Mob & Demob - dredge			
A 09011502 02.	Mob & Demob - rock			
A 09011502 03.	dredging			
A 09011502 04.	flotation access to DA 5 & 6			
RCKBM2	ROCK PLACEMNT,LARGE,MARINE,w/ 4600	PROD =	100%	CREW HOURS = 460
A 09011502 05.	DA dike GIWW#5			
RCKBM2	ROCK PLACEMNT,LARGE,MARINE,w/ 4600	PROD =	100%	CREW HOURS = 374
A 09011502 06.	DA dike GIWW#6			
RCKBM2	ROCK PLACEMNT,LARGE,MARINE,w/ 4600	PROD =	100%	CREW HOURS = 433
A 09011503 01.	Mob & Demob - dredging			
A 09011503 02.	Mob & Demob - rock			
A 09011503 03.	dredging			
A 09011503 05.	DA dike FWB#1 - earthen core			
RCKBM2	ROCK PLACEMNT,LARGE,MARINE,w/ 4600	PROD =	100%	CREW HOURS = 117
A 09011503 06.	DA dike FWB#1 - stone cover			
RCKBM2	ROCK PLACEMNT,LARGE,MARINE,w/ 4600	PROD =	100%	CREW HOURS = 291
A 09011503 07.	DA dike FWB#2 - earthen core			
A 09011503 08.	DA dike FWB#2 - stone cover			
A 09011503 09.	DA dike FWB#3 - earthen core			
A 09011503 10.	DA dike FWB#3 - stone cover			
A 09011504 01.	Mob & Demob - dredging			
A 09011504 02.	dredging - Bar channel			
A 09011504 03.	dredging - By-Pass Channel			
A 09013001 01.	Channel Revetment 28"			
RCKBM2	ROCK PLACEMNT,LARGE,MARINE,w/ 4600	PROD =	100%	CREW HOURS = 4652
A 09013001 02.	geotextile			
FABMM	FILTER FABRIC - MARINE - METRO	PROD =	100%	CREW HOURS = 2932
A 09013002 01.	Channel Revetment 36"			

** CREW BACKUP - bid-item **

ITEM ID	DESCRIPTION		
RCKBM2	ROCK PLACEMNT,LARGE,MARINE,w/ 4600	PROD = 100%	CREW HOURS = 11111
A 09013002 02. geotextile			
FABMM	FILTER FABRIC - MARINE - METRO	PROD = 100%	CREW HOURS = 4532
A 15000101 01. Swing Gate bottom (1st Lift)			
A 15000102 01. Swing gate bottom (2nd lift)			
A 15000102 02. Swing gate Deck			
A 15000102 03. Columns			
A 15000102 04. precast prestressed Deck panels			
A 15000102 05. precast prestressed wall panels			
A 15000102 06. Locking Socket			
A 15000102 07. Seal Support			
A 15000103 01. Pivot Arm Steel			
A 15000103 02. cattle ramp walkway plate			
A 15000104 01. Composite Marine Timber			
A 15000105 01. Seal with UHMW Plastic Anchor			
A 15000106 01. Winch Control Houses			
A 15000106 02. Pumps Awning			
A 15000108 02. delivery of swing gates			
A 15000108 03. Misc (steel,Hwd, accessories)			
A 15000109 01. Post tensioning			
A 15000110 01. Graving site for swing gates			
A 15000201 01. Mob & Demob			
A 15000202 01. T-walls			
A 15000202 02. I-walls			
A 15000202 03. Walkways and Boat Dock			
A 15000202 04. Monolith			
A 15000202 05. Corbel and Pintle			
A 15000203 01. boat dock 16"x16"x20'			
A 15000203 02. Cattle walkways 28"x24"x15'			
A 15000203 03. pedestrian walkway 12"x12"x60'			
A 15000203 04. grade beams 3'6"x4'x20'6"			
A 15000205 01. setting piles 24"x24"x85'			
A 15000205 02. T-walls 16"x16'x90'			
A 15000205 03. cattle walkways 12"x12"x80'			
A 15000205 04. Pedestrian walkways 12"x12"x60'			
A 15000205 05. boat dock 12"x12"x70'			
A 15000208 01. monolith A-572			
A 15000208 02. T-wall A-572			
A 15000208 03. I-wall A-572			
A 15000208 04. Cut-off wall A-572			
A 15000209 01. 36" dia pipe w/ AZ-26 x 80'			
A 15000209 02. AZ-48 w/ 2 ea W14x109x80'			
A 15000209 03. AZ-36 x 68'			
A 15000209 04. installation of remaining 3 strs			
A 15000210 01. handrails			
A 15000210 02. Chain Link			
A 15000210 03. C-Channel (cutoff wall)			
A 15000210 04. SS seal plate			
A 15000210 05. Waler TRS			

** CREW BACKUP - bid-item **

ITEM ID	DESCRIPTION
A 15000210 06.	Davit Crane to pull sump pumps
A 15000210 07.	crane hoist
A 15000211 01.	handrails
A 15000212 01.	mechanical dredging
A 15000213 01.	Dolphins - 3 pile cluster
A 15000213 02.	mooring dolphins (6)
A 15000213 03.	Hazard/Obstruction signs
A 15000213 04.	rip-rap (bank stabilization)
A 15000213 05.	geotextile
A 15000213 06.	Misc (steel,hwd, Acces)
A 15000303 01.	Removal of Existing gates
A 15000303 02.	removal of existing sheetpile
A 15000303 03.	remove and disposal of pipe pile
A 15000303 04.	removal of existing ramp, etc.
A 15000501 01.	12" elec pump w/subm mtr 5000GPM
A 15000501 02.	8" subm compart transfer 2000GPM
A 15000502 01.	Hydraulic winches, 50 ton
A 15000502 02.	levelwinds
A 15000502 03.	electric motor starters
A 15000503 01.	piping
A 15000503 02.	gate valves (motor operated)
A 15000504 01.	ultrasonic water level indicatos
A 15000601 01.	Type 1 Navigation Light-clear
A 15000601 02.	Type 1 Navigation Light-red
A 15000601 03.	pole mount for red navig light
A 15000601 04.	type 6 navigation light
A 15000601 05.	floodlight, 250W HPS marine svc
A 15000601 06.	floodlight,400W HPS, pole mnt
A 15000601 07.	floodlight,400W HPS
A 15000601 08.	Class 2 wood pole for fixture mt
A 15000601 09.	3/4" rigid al conduit
A 15000601 10.	#12 AWG THWN wire
A 15000601 11.	battery charger & battery(gate)
A 15000601 12.	solar panel (for gate fixtures)
A 15000601 13.	receptacles, NEMA 3R, C-H type
A 15000601 14.	panelboard, 240/120V, 12 ckt
A 15000602 01.	class 2 wood pole, penta treated
A 15000602 02.	cross arms w/insulator & hardwae
A 15000602 03.	arrester, distribution class
A 15000602 04.	fuse cutout
A 15000602 05.	rigid Al conduit
A 15000602 06.	wire, THWN
A 15000602 07.	24.9 kV to 240/120 Vac, 10 kVA
A 15000603 01.	secondary unit substation
A 15000603 02.	PDC for equipment
A 15000603 03.	piers for PDC skid unit
A 15000603 04.	LV Distr Equipment
A 15000603 05.	cable tray ladder, 24" w, FRP
A 15000603 06.	revenue metering equipment
A 15000603 07.	operator control panel
A 15000603 08.	cable, 1 STP, #16 AWG, THWN

** CREW BACKUP - bid-item **

ITEM ID	DESCRIPTION
A 15000603 09.	3/4" PVC coated conduit
A 15000603 10.	2" PVC coated conduit
A 15000603 11.	wire, #14 AWG, THWN
A 15000603 12.	wire, 250 kcmil, THWN
A 15000604 01.	class 2 wood pole, penta treated
A 15000604 02.	#1/0, 25kV, Cu, XLPE, shld cbl
A 15000604 03.	trenching & backfill buried cabl
A 15000604 04.	manhole
A 15000604 05.	modular Tee splice
A 15000604 06.	directional bore below FWB
A 15000604 07.	4" al conduit below FWB
A 15000604 08.	4" al conduit below channel
A 15000604 09.	capacitor bank
A 15000604 10.	cable terminations, 25kV
A 15000604 11.	arrester, distribution class
A 15000701 01.	Reinf Conc - pivot structure
A 15000702 01.	16"x16"x 100' PPC pile
A 15000703 01.	Pivot Pin, Pin ring, collar
A 15000801 01.	Reinf Conc - cable anchor struc
A 15000802 01.	16"x16"x 85' PPC pile
A 15000803 01.	Chain, snatch block, anchor blt
A 15000901 01.	furnish and install
A 15000901 02.	tension test
A 15000901 03.	compression test
A 15000902 01.	furnish and install
A 15000902 02.	tension test
A 15001001 01.	Dewatering System
A 30010101 01.	Commercial Canal - dredging
A 30010101 02.	GIWW - dredging/rock
A 30010101 03.	Freshwater Int - dredging/rock
A 30010101 04.	Freshwater Bar - dredging
A 30010101 05.	Borings - Frshwtr, GIWW, Commerc
A 30010101 06.	Surveys
A 30010101 07.	By-pass Channel Floodgate
A 31 1 101 01.	Commercial Canal - dredging
A 31 1 101 02.	GIWW - dredging/rock
A 31 1 101 03.	Freshwater Int - dredging/rock
A 31 1 101 04.	Freshwater Bar - dredging
A 31 1 101 07.	By-pass Channel Floodgate

** LABOR BACKUP - bid-item **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	010101 B 01.	By Local sponsor (LS)										
A	010101 B 02.	Review of LS										
A	010101 C 01.	By Local sponsor (LS)										
A	010101 C 02.	Review of LS										
A	010101 E 01.	By Local sponsor (LS)										
A	010101 E 02.	Review of LS										
A	010101 G 01.	By Local sponsor (LS)										
A	010101 G 02.	Review of LS										
A	010101 R 01.	By Local sponsor (LS)										
A	010101 T 01.	Administrative costs										
A	010102 1 01.	Final Compensability Report										
A	010102 1 02.	Cost reimbursement Agreement										
A	01010301 01.	round off comtingency										
A	09011501 01.	Mob & Demob										
A	09011501 02.	containment dikes										
A	09011501 03.	dredging										
A	09011502 01.	Mob & Demob - dredge										
A	09011502 02.	Mob & Demob - rock										
A	09011502 03.	dredging										
A	09011502 04.	flotation access to DA 5 & 6										
USR	DOPM	PEO DRAGLINE	16.41	16.7%	45.0%	2.63	0.00	30.39	HR	04/17/02	0.00	460
USR	LABM2	LABORER 2	8.00	16.7%	45.0%	0.00	0.00	13.53	HR	04/17/02	0.00	460
USR	OILM	OILER	11.00	16.7%	45.0%	0.00	0.00	18.61	HR	04/17/02	0.00	230
A	09011502 05.	DA dike GIWW#5										
USR	DOPM	PEO DRAGLINE	16.41	16.7%	45.0%	2.63	0.00	30.39	HR	04/17/02	0.00	374
USR	LABM2	LABORER 2	8.00	16.7%	45.0%	0.00	0.00	13.53	HR	04/17/02	0.00	374
USR	OILM	OILER	11.00	16.7%	45.0%	0.00	0.00	18.61	HR	04/17/02	0.00	187
A	09011502 06.	DA dike GIWW#6										
USR	DOPM	PEO DRAGLINE	16.41	16.7%	45.0%	2.63	0.00	30.39	HR	04/17/02	0.00	433
USR	LABM2	LABORER 2	8.00	16.7%	45.0%	0.00	0.00	13.53	HR	04/17/02	0.00	433
USR	OILM	OILER	11.00	16.7%	45.0%	0.00	0.00	18.61	HR	04/17/02	0.00	217
A	09011503 01.	Mob & Demob - dredging										
A	09011503 02.	Mob & Demob - rock										
A	09011503 03.	dredging										
A	09011503 05.	DA dike FWB#1 - earthen core										
USR	DOPM	PEO DRAGLINE	16.41	16.7%	45.0%	2.63	0.00	30.39	HR	04/17/02	0.00	117
USR	LABM2	LABORER 2	8.00	16.7%	45.0%	0.00	0.00	13.53	HR	04/17/02	0.00	117
USR	OILM	OILER	11.00	16.7%	45.0%	0.00	0.00	18.61	HR	04/17/02	0.00	58
A	09011503 06.	DA dike FWB#1 - stone cover										
USR	DOPM	PEO DRAGLINE	16.41	16.7%	45.0%	2.63	0.00	30.39	HR	04/17/02	0.00	291
USR	LABM2	LABORER 2	8.00	16.7%	45.0%	0.00	0.00	13.53	HR	04/17/02	0.00	291
USR	OILM	OILER	11.00	16.7%	45.0%	0.00	0.00	18.61	HR	04/17/02	0.00	145
A	09011503 07.	DA dike FWB#2 - earthen core										
A	09011503 08.	DA dike FWB#2 - stone cover										
A	09011503 09.	DA dike FWB#3 - earthen core										
A	09011503 10.	DA dike FWB#3 - stone cover										

** LABOR BACKUP - bid-item **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	09011504 01.	Mob & Demob - dredging										
A	09011504 02.	dredging - Bar channel										
A	09011504 03.	dredging - By-Pass Channel										
A	09013001 01.	Channel Revetment 28"										
USR	DOPM	PEO DRAGLINE	16.41	16.7%	45.0%	2.63	0.00	30.39	HR	04/17/02	0.00	4652
USR	LABM2	LABORER 2	8.00	16.7%	45.0%	0.00	0.00	13.53	HR	04/17/02	0.00	4652
USR	OILM	OILER	11.00	16.7%	45.0%	0.00	0.00	18.61	HR	04/17/02	0.00	2326
A	09013001 02.	geotextile										
USR	DOPM	PEO DRAGLINE	16.41	16.7%	45.0%	2.63	0.00	30.39	HR	04/17/02	0.00	2932
USR	LABM	LABORER	11.00	16.7%	45.0%	0.00	0.00	18.62	HR	04/17/02	0.00	11728
A	09013002 01.	Channel Revetment 36"										
USR	DOPM	PEO DRAGLINE	16.41	16.7%	45.0%	2.63	0.00	30.39	HR	04/17/02	0.00	11111
USR	LABM2	LABORER 2	8.00	16.7%	45.0%	0.00	0.00	13.53	HR	04/17/02	0.00	11111
USR	OILM	OILER	11.00	16.7%	45.0%	0.00	0.00	18.61	HR	04/17/02	0.00	5556
A	09013002 02.	geotextile										
USR	DOPM	PEO DRAGLINE	16.41	16.7%	45.0%	2.63	0.00	30.39	HR	04/17/02	0.00	4532
USR	LABM	LABORER	11.00	16.7%	45.0%	0.00	0.00	18.62	HR	04/17/02	0.00	18128
A	15000101 01.	Swing Gate bottom (1st Lift)										
A	15000102 01.	Swing gate bottom (2nd lift)										
A	15000102 02.	Swing gate Deck										
A	15000102 03.	Columns										
A	15000102 04.	precast prestressed Deck panels										
A	15000102 05.	precast prestressed wall panels										
A	15000102 06.	Locking Socket										
A	15000102 07.	Seal Support										
A	15000103 01.	Pivot Arm Steel										
A	15000103 02.	cattle ramp walkway plate										
A	15000104 01.	Composite Marine Timber										
A	15000105 01.	Seal with UHMW Plastic Anchor										
A	15000106 01.	Winch Control Houses										
A	15000106 02.	Pumps Awning										
A	15000108 02.	delivery of swing gates										
A	15000108 03.	Misc (steel,Hwd, accessories)										
A	15000109 01.	Post tensioning										
A	15000110 01.	Graving site for swing gates										
A	15000201 01.	Mob & Demob										
A	15000202 01.	T-walls										
A	15000202 02.	I-walls										
A	15000202 03.	Walkways and Boat Dock										
A	15000202 04.	Monolith										
A	15000202 05.	Corbel and Pintle										
A	15000203 01.	boat dock 16"x16"x20'										
A	15000203 02.	Cattle walkways 28"x24"x15'										
A	15000203 03.	pedestrian walkway 12"x12"x60'										
A	15000203 04.	grade beams 3'6"x4'x20'6"										
A	15000205 01.	setting piles 24"x24"x85'										
A	15000205 02.	T-walls 16"x16'x90'										

** LABOR BACKUP - bid-item **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	15000205 03.	cattle walkways 12"x12"x80'										
A	15000205 04.	Pedestrian walkways 12"x12"x60'										
A	15000205 05.	boat dock 12"x12"x70'										
A	15000208 01.	monolith A-572										
A	15000208 02.	T-wall A-572										
A	15000208 03.	I-wall A-572										
A	15000208 04.	Cut-off wall A-572										
A	15000209 01.	36" dia pipe w/ AZ-26 x 80'										
A	15000209 02.	AZ-48 w/ 2 ea W14x109x80'										
A	15000209 03.	AZ-36 x 68'										
A	15000209 04.	installation of remaining 3 strs										
A	15000210 01.	handrails										
A	15000210 02.	Chain Link										
A	15000210 03.	C-Channel (cutoff wall)										
A	15000210 04.	SS seal plate										
A	15000210 05.	Waler TRS										
A	15000210 06.	Davit Crane to pull sump pumps										
A	15000210 07.	crane hoist										
A	15000211 01.	handrails										
A	15000212 01.	mechanical dredging										
A	15000213 01.	Dolphins - 3 pile cluster										
A	15000213 02.	mooring dolphins (6)										
A	15000213 03.	Hazard/Obstruction signs										
A	15000213 04.	rip-rap (bank stabilization)										
A	15000213 05.	geotextile										
A	15000213 06.	Misc (steel,hwd, Acces)										
A	15000303 01.	Removal of Existing gates										
A	15000303 02.	removal of existing sheetpile										
A	15000303 03.	remove and disposal of pipe pile										
A	15000303 04.	removal of existing ramp, etc.										
A	15000501 01.	12" elec pump w/subm mtr 5000GPM										
A	15000501 02.	8" subm compart transfer 2000GPM										
A	15000502 01.	Hydraulic winches, 50 ton										
A	15000502 02.	levelwinds										
A	15000502 03.	electric motor starters										
A	15000503 01.	piping										
A	15000503 02.	gate valves (motor operated)										
A	15000504 01.	ultrasonic water level indicatos										
A	15000601 01.	Type 1 Navigation Light-clear										
A	15000601 02.	Type 1 Navigation Light-red										
A	15000601 03.	pole mount for red navig light										
A	15000601 04.	type 6 navigation light										
A	15000601 05.	floodlight, 250W HPS marine svc										
A	15000601 06.	floodlight,400W HPS, pole mnt										
A	15000601 07.	floodlight,400W HPS										
A	15000601 08.	Class 2 wood pole for fixture mt										
A	15000601 09.	3/4" rigid al conduit										
A	15000601 10.	#12 AWG THWN wire										
A	15000601 11.	battery charger & battery(gate)										
A	15000601 12.	solar panel (for gate fixtures)										
A	15000601 13.	receptacles, NEMA 3R, C-H type										

** LABOR BACKUP - bid-item **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	15000601	14. panelboard, 240/120V, 12 ckt										
A	15000602	01. class 2 wood pole, penta treated										
A	15000602	02. cross arms w/insulator & hardwae										
A	15000602	03. arrester, distribution class										
A	15000602	04. fuse cutout										
A	15000602	05. rigid Al conduit										
A	15000602	06. wire, THWN										
A	15000602	07. 24.9 kV to 240/120 Vac, 10 kVA										
A	15000603	01. secondary unit substation										
A	15000603	02. PDC for equipment										
A	15000603	03. piers for PDC skid unit										
A	15000603	04. LV Distr Equipment										
A	15000603	05. cable tray ladder, 24" w, FRP										
A	15000603	06. revenue metering equipment										
A	15000603	07. operator control panel										
A	15000603	08. cable, 1 STP, #16 AWG, THWN										
A	15000603	09. 3/4" PVC coated conduit										
A	15000603	10. 2" PVC coated conduit										
A	15000603	11. wire, #14 AWG, THWN										
A	15000603	12. wire, 250 kcmil, THWN										
A	15000604	01. class 2 wood pole, penta treated										
A	15000604	02. #1/0, 25kV, Cu, XLPE, shld cbl										
A	15000604	03. trenching & backfill buried cabl										
A	15000604	04. manhole										
A	15000604	05. modular Tee splice										
A	15000604	06. directional bore below FWB										
A	15000604	07. 4" al conduit below FWB										
A	15000604	08. 4" al conduit below channel										
A	15000604	09. capacitor bank										
A	15000604	10. cable terminations, 25kV										
A	15000604	11. arrester, distribution class										
A	15000701	01. Reinf Conc - pivot structure										
A	15000702	01. 16"x16"x 100' PPC pile										
A	15000703	01. Pivot Pin, Pin ring, collar										
A	15000801	01. Reinf Conc - cable anchor struc										
A	15000802	01. 16"x16"x 85' PPC pile										
A	15000803	01. Chain, snatch block, anchor blt										
A	15000901	01. furnish and install										
A	15000901	02. tension test										
A	15000901	03. compression test										
A	15000902	01. furnish and install										
A	15000902	02. tension test										
A	15001001	01. Dewatering System										
A	30010101	01. Commercial Canal - dredging										
A	30010101	02. GIWW - dredging/rock										
A	30010101	03. Freshwater Int - dredging/rock										
A	30010101	04. Freshwater Bar - dredging										
A	30010101	05. Borings - Frshwtr, GIWW, Commerc										
A	30010101	06. Surveys										
A	30010101	07. By-pass Channel Floodgate										
A	31 1 101	01. Commercial Canal - dredging										

** LABOR BACKUP - bid-item **

SRC	LABOR ID	DESCRIPTION	BASE	OVERTM	TXS/INS	FRNG	TRVL	RATE	UOM	UPDATE	**** TOTAL **** DEFAULT	HOURS
A	31 1 101 02.	GIWW - dredging/rock										
A	31 1 101 03.	Freshwater Int - dredging/rock										
A	31 1 101 04.	Freshwater Bar - dredging										
A	31 1 101 07.	By-pass Channel Floodgate										

** EQUIPMENT BACKUP - bid-item **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	TOTAL HOURS
A	010101 B 01.	By Local sponsor (LS)									
A	010101 B 02.	Review of LS									
A	010101 C 01.	By Local sponsor (LS)									
A	010101 C 02.	Review of LS									
A	010101 E 01.	By Local sponsor (LS)									
A	010101 E 02.	Review of LS									
A	010101 G 01.	By Local sponsor (LS)									
A	010101 G 02.	Review of LS									
A	010101 R 01.	By Local sponsor (LS)									
A	010101 T 01.	Administrative costs									
A	010102 1 01.	Final Compensability Report									
A	010102 1 02.	Cost reimbursement Agreement									
A	01010301 01.	round off comtingency									
A	09011501 01.	Mob & Demob									
A	09011501 02.	containment dikes									
A	09011501 03.	dredging									
A	09011502 01.	Mob & Demob - dredge									
A	09011502 02.	Mob & Demob - rock									
A	09011502 03.	dredging									
A	09011502 04.	flotation access to DA 5 & 6									
USR	BKTG	DRAGLINE BUCKET 7.0 CY	4.82	0.74					3.08	8.64 HR	460
USR	DGLE	DRAGLINE MANIT 4600 7.0 CY	71.57	25.09	25.51				64.06	186.23 HR	460
USR	MRNA2	tug 600 hp, 12hr not full throtl	102.00							102.00 HR	230
USR	MRNB	SPUD BARGE	17.50							17.50 HR	460
A	09011502 05.	DA dike GIWW#5									
USR	BKTG	DRAGLINE BUCKET 7.0 CY	4.82	0.74					3.08	8.64 HR	374
USR	DGLE	DRAGLINE MANIT 4600 7.0 CY	71.57	25.09	25.51				64.06	186.23 HR	374
USR	MRNA2	tug 600 hp, 12hr not full throtl	102.00							102.00 HR	187
USR	MRNB	SPUD BARGE	17.50							17.50 HR	374
A	09011502 06.	DA dike GIWW#6									
USR	BKTG	DRAGLINE BUCKET 7.0 CY	4.82	0.74					3.08	8.64 HR	433
USR	DGLE	DRAGLINE MANIT 4600 7.0 CY	71.57	25.09	25.51				64.06	186.23 HR	433
USR	MRNA2	tug 600 hp, 12hr not full throtl	102.00							102.00 HR	217
USR	MRNB	SPUD BARGE	17.50							17.50 HR	433
A	09011503 01.	Mob & Demob - dredging									
A	09011503 02.	Mob & Demob - rock									
A	09011503 03.	dredging									
A	09011503 05.	DA dike FWB#1 - earthen core									
USR	BKTG	DRAGLINE BUCKET 7.0 CY	4.82	0.74					3.08	8.64 HR	117
USR	DGLE	DRAGLINE MANIT 4600 7.0 CY	71.57	25.09	25.51				64.06	186.23 HR	117
USR	MRNA2	tug 600 hp, 12hr not full throtl	102.00							102.00 HR	58
USR	MRNB	SPUD BARGE	17.50							17.50 HR	117
A	09011503 06.	DA dike FWB#1 - stone cover									
USR	BKTG	DRAGLINE BUCKET 7.0 CY	4.82	0.74					3.08	8.64 HR	291
USR	DGLE	DRAGLINE MANIT 4600 7.0 CY	71.57	25.09	25.51				64.06	186.23 HR	291
USR	MRNA2	tug 600 hp, 12hr not full throtl	102.00							102.00 HR	145
USR	MRNB	SPUD BARGE	17.50							17.50 HR	291

** EQUIPMENT BACKUP - bid-item **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	** TOTAL ** HOURS
A	09011503 07.	DA dike FWB#2 - earthen core									
A	09011503 08.	DA dike FWB#2 - stone cover									
A	09011503 09.	DA dike FWB#3 - earthen core									
A	09011503 10.	DA dike FWB#3 - stone cover									
A	09011504 01.	Mob & Demob - dredging									
A	09011504 02.	dredging - Bar channel									
A	09011504 03.	dredging - By-Pass Channel									
A	09013001 01.	Channel Revetment 28"									
USR	BKTG	DRAGLINE BUCKET 7.0 CY	4.82	0.74					3.08	8.64 HR	4652
USR	DGLE	DRAGLINE MANIT 4600 7.0 CY	71.57	25.09	25.51				64.06	186.23 HR	4652
USR	MRNA2	tug 600 hp, 12hr not full throtl	102.00							102.00 HR	2326
USR	MRNB	SPUD BARGE	17.50							17.50 HR	4652
A	09013001 02.	geotextile									
USR	DGLC	DRAGLINE MANIT 3900 3.5 CY	42.08	13.34	12.57				33.49	101.48 HR	2932
USR	MRNB	SPUD BARGE	17.50							17.50 HR	2932
A	09013002 01.	Channel Revetment 36"									
USR	BKTG	DRAGLINE BUCKET 7.0 CY	4.82	0.74					3.08	8.64 HR	11111
USR	DGLE	DRAGLINE MANIT 4600 7.0 CY	71.57	25.09	25.51				64.06	186.23 HR	11111
USR	MRNA2	tug 600 hp, 12hr not full throtl	102.00							102.00 HR	5556
USR	MRNB	SPUD BARGE	17.50							17.50 HR	11111
A	09013002 02.	geotextile									
USR	DGLC	DRAGLINE MANIT 3900 3.5 CY	42.08	13.34	12.57				33.49	101.48 HR	4532
USR	MRNB	SPUD BARGE	17.50							17.50 HR	4532
A	15000101 01.	Swing Gate bottom (1st Lift)									
A	15000102 01.	Swing gate bottom (2nd lift)									
A	15000102 02.	Swing gate Deck									
A	15000102 03.	Columns									
A	15000102 04.	precast prestressed Deck panels									
A	15000102 05.	precast prestressed wall panels									
A	15000102 06.	Locking Socket									
A	15000102 07.	Seal Support									
A	15000103 01.	Pivot Arm Steel									
A	15000103 02.	cattle ramp walkway plate									
A	15000104 01.	Composite Marine Timber									
A	15000105 01.	Seal with UHMW Plastic Anchor									
A	15000106 01.	Winch Control Houses									
A	15000106 02.	Pumps Awning									
A	15000108 02.	delivery of swing gates									
A	15000108 03.	Misc (steel,Hwd, accessories)									
A	15000109 01.	Post tensioning									
A	15000110 01.	Graving site for swing gates									
A	15000201 01.	Mob & Demob									
A	15000202 01.	T-walls									
A	15000202 02.	I-walls									
A	15000202 03.	Walkways and Boat Dock									
A	15000202 04.	Monolith									

** EQUIPMENT BACKUP - bid-item **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	** TOTAL ** HOURS
A	15000202 05.	Corbel and Pintle									
A	15000203 01.	boat dock 16"x16"x20'									
A	15000203 02.	Cattle walkways 28"x24"x15'									
A	15000203 03.	pedestrian walkway 12"x12"x60'									
A	15000203 04.	grade beams 3'6"x4'x20'6"									
A	15000205 01.	setting piles 24"x24"x85'									
A	15000205 02.	T-walls 16"x16'x90'									
A	15000205 03.	cattle walkways 12"x12"x80'									
A	15000205 04.	Pedestrian walkways 12"x12"x60'									
A	15000205 05.	boat dock 12"x12"x70'									
A	15000208 01.	monolith A-572									
A	15000208 02.	T-wall A-572									
A	15000208 03.	I-wall A-572									
A	15000208 04.	Cut-off wall A-572									
A	15000209 01.	36" dia pipe w/ AZ-26 x 80'									
A	15000209 02.	AZ-48 w/ 2 ea W14x109x80'									
A	15000209 03.	AZ-36 x 68'									
A	15000209 04.	installation of remaining 3 strs									
A	15000210 01.	handrails									
A	15000210 02.	Chain Link									
A	15000210 03.	C-Channel (cutoff wall)									
A	15000210 04.	SS seal plate									
A	15000210 05.	Waler TRS									
A	15000210 06.	Davit Crane to pull sump pumps									
A	15000210 07.	crane hoist									
A	15000211 01.	handrails									
A	15000212 01.	mechanical dredging									
A	15000213 01.	Dolphins - 3 pile cluster									
A	15000213 02.	mooring dolphins (6)									
A	15000213 03.	Hazard/Obstruction signs									
A	15000213 04.	rip-rap (bank stabilization)									
A	15000213 05.	geotextile									
A	15000213 06.	Misc (steel,hwd, Acces)									
A	15000303 01.	Removal of Existing gates									
A	15000303 02.	removal of existing sheetpile									
A	15000303 03.	remove and disposal of pipe pile									
A	15000303 04.	removal of existing ramp, etc.									
A	15000501 01.	12" elec pump w/subm mtr 5000GPM									
A	15000501 02.	8" subm compart transfer 2000GPM									
A	15000502 01.	Hydraulic winches, 50 ton									
A	15000502 02.	levelwinds									
A	15000502 03.	electric motor starters									
A	15000503 01.	piping									
A	15000503 02.	gate valves (motor operated)									
A	15000504 01.	ultrasonic water level indicatos									
A	15000601 01.	Type 1 Navigation Light-clear									
A	15000601 02.	Type 1 Navigation Light-red									
A	15000601 03.	pole mount for red navig light									
A	15000601 04.	type 6 navigation light									
A	15000601 05.	floodlight, 250W HPS marine svc									
A	15000601 06.	floodlight,400W HPS, pole mnt									

** EQUIPMENT BACKUP - bid-item **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	** TOTAL ** HOURS
A	15000601 07.	floodlight,400W HPS									
A	15000601 08.	Class 2 wood pole for fixture mt									
A	15000601 09.	3/4" rigid al conduit									
A	15000601 10.	#12 AWG THWN wire									
A	15000601 11.	battery charger & battery(gate)									
A	15000601 12.	solar panel (for gate fixtures)									
A	15000601 13.	receptacles, NEMA 3R, C-H type									
A	15000601 14.	panelboard, 240/120V, 12 ckt									
A	15000602 01.	class 2 wood pole, penta treated									
A	15000602 02.	cross arms w/insulator & hardwae									
A	15000602 03.	arrester, distribution class									
A	15000602 04.	fuse cutout									
A	15000602 05.	rigid Al conduit									
A	15000602 06.	wire, THWN									
A	15000602 07.	24.9 kV to 240/120 Vac, 10 kVA									
A	15000603 01.	secondary unit substation									
A	15000603 02.	PDC for equipment									
A	15000603 03.	piers for PDC skid unit									
A	15000603 04.	LV Distr Equipment									
A	15000603 05.	cable tray ladder, 24" w, FRP									
A	15000603 06.	revenue metering equipment									
A	15000603 07.	operator control panel									
A	15000603 08.	cable, 1 STP, #16 AWG, THWN									
A	15000603 09.	3/4" PVC coated conduit									
A	15000603 10.	2" PVC coated conduit									
A	15000603 11.	wire, #14 AWG, THWN									
A	15000603 12.	wire, 250 kcmil, THWN									
A	15000604 01.	class 2 wood pole, penta treated									
A	15000604 02.	#1/0, 25kV, Cu, XLPE, shld cbl									
A	15000604 03.	trenching & backfill buried cabl									
A	15000604 04.	manhole									
A	15000604 05.	modular Tee splice									
A	15000604 06.	directional bore below FWB									
A	15000604 07.	4" al conduit below FWB									
A	15000604 08.	4" al conduit below channel									
A	15000604 09.	capacitor bank									
A	15000604 10.	cable terminations, 25kV									
A	15000604 11.	arrester, distribution class									
A	15000701 01.	Reinf Conc - pivot structure									
A	15000702 01.	16"x16"x 100' PPC pile									
A	15000703 01.	Pivot Pin, Pin ring, collar									
A	15000801 01.	Reinf Conc - cable anchor struc									
A	15000802 01.	16"x16"x 85' PPC pile									
A	15000803 01.	Chain, snatch block, anchor blt									
A	15000901 01.	furnish and install									
A	15000901 02.	tension test									
A	15000901 03.	compression test									
A	15000902 01.	furnish and install									
A	15000902 02.	tension test									
A	15001001 01.	Dewatering System									
A	30010101 01.	Commercial Canal - dredging									

** EQUIPMENT BACKUP - bid-item **

SRC	ID.NO.	EQUIPMENT DESCRIPTION	DEPR	FCCM	FUEL	FOG	TR WR	TR REP	EQ REP	TOTAL RATE	** TOTAL ** HOURS
A	30010101 02.	GIWW - dredging/rock									
A	30010101 03.	Freshwater Int - dredging/rock									
A	30010101 04.	Freshwater Bar - dredging									
A	30010101 05.	Borings - Frshwtr, GIWW, Commerc									
A	30010101 06.	Surveys									
A	30010101 07.	By-pass Channel Floodgate									
A	31 1 101 01.	Commercial Canal - dredging									
A	31 1 101 02.	GIWW - dredging/rock									
A	31 1 101 03.	Freshwater Int - dredging/rock									
A	31 1 101 04.	Freshwater Bar - dredging									
A	31 1 101 07.	By-pass Channel Floodgate									

No errors detected...

* * * END OF ERROR REPORT * * *

SUMMARY REPORTS SUMMARY PAGE

PROJECT OWNER SUMMARY - Feature.....1
PROJECT OWNER SUMMARY - bid-item.....2
PROJECT INDIRECT SUMMARY - Feature.....14
PROJECT INDIRECT SUMMARY - bid-item.....15
PROJECT DIRECT SUMMARY - Feature.....27
PROJECT DIRECT SUMMARY - bid-item.....28

DETAILED ESTIMATE DETAIL PAGE

A. Port of Iberia
01. Lands and Damages
01. Lands and Damages
01. Lands and Damages
B. Acquisitions
01. By Local sponsor (LS).....1
02. Review of LS.....1
C. Condemnations
01. By Local sponsor (LS).....1
02. Review of LS.....1
E. Appraisal
01. By Local sponsor (LS).....1
02. Review of LS.....2
G. Temporary Permit/Lics/RofE
01. By Local sponsor (LS).....2
02. Review of LS.....2
R. Real Estate Payments - Land
01. By Local sponsor (LS).....2
T. LERRD Crediting
01. Administrative costs.....2
02. Relocations
1. Relocations
01. Final Compensability Report.....4
02. Cost reimbursement Agreement.....4
03. round off
01. round off
01. round off comtingency.....5
09. Channels
01. Channels
15. dredging - channel
01. Commercial Canal
01. Mob & Demob.....6
02. containment dikes.....6
03. dredging.....7
02. G.I.W.W.
01. Mob & Demob - dredge.....7
02. Mob & Demob - rock.....8
03. dredging.....8
04. flotation access to DA 5 & 6.....9
05. DA dike GIWW#5.....9
06. DA dike GIWW#6.....10

DETAILED ESTIMATE DETAIL PAGE

03. Freshwater Bayou
01. Mob & Demob - dredging.....10
02. Mob & Demob - rock.....11
03. dredging.....11
05. DA dike FWB#1 - earthen core.....12
06. DA dike FWB#1 - stone cover.....12
07. DA dike FWB#2 - earthen core.....13
08. DA dike FWB#2 - stone cover.....13
09. DA dike FWB#3 - earthen core.....13
10. DA dike FWB#3 - stone cover.....13
04. Freshwater Bayou By-Pass and Bar
01. Mob & Demob - dredging.....14
02. dredging - Bar channel.....14
03. dredging - By-Pass Channel.....14
30. bank stabilization - revetment
01. G.I.W.W.
01. Channel Revetment 28".....16
02. geotextile.....16
02. Freshwater Bayou
01. Channel Revetment 36".....16
02. geotextile.....17
15. Fldwy Control and Div Structures
00. Concrete Swing Barge Floodgate
01. Concrete Swing Barge
01. normal weight concrete
01. Swing Gate bottom (1st Lift).....18
02. light weight concrete
01. Swing gate bottom (2nd lift).....18
02. Swing gate Deck.....18
03. Columns.....18
04. precast prestressed Deck panels.....19
05. precast prestressed wall panels.....19
06. Locking Socket.....19
07. Seal Support.....19
03. Steel / Aluminum
01. Pivot Arm Steel.....19
02. cattle ramp walkway plate.....19
04. Fender System
01. Composite Marine Timber.....20
05. Seal System
01. Seal with UHMW Plastic Anchor.....20
06. Control Houses
01. Winch Control Houses.....20
02. Pumps Awning.....20
08. Miscellaneous
02. delivery of swing gates.....20
03. Misc (steel,Hwd, accessories).....21
09. Post Tensioning
01. Post tensioning.....21
10. Graving site for swing gates
01. Graving site for swing gates.....21

DETAILED ESTIMATE DETAIL PAGE

02. Concrete Receiving Structures
01. Mob & Demob
01. Mob & Demob.....22
02. Reinforced Concrete
01. T-walls.....22
02. I-walls.....22
03. Walkways and Boat Dock.....22
04. Monolith.....22
05. Corbel and Pintle.....23
03. Pre-cast, Pre-stressed, beams
01. boat dock 16"x16"x20'.....23
02. Cattle walkways 28"x24"x15'.....23
03. pedestrian walkway 12"x12"x60'.....23
04. grade beams 3'6"x4'x20'6".....23
05. Pre-cast, Pre-stressed, piles
01. setting piles 24"x24"x85'.....24
02. T-walls 16"x16'x90'.....24
03. cattle walkways 12"x12"x80'.....24
04. Pedestrian walkways 12"x12"x60'.....24
05. boat dock 12"x12"x70'.....24
08. sheetpiles
01. monolith A-572.....25
02. T-wall A-572.....25
03. I-wall A-572.....25
04. Cut-off wall A-572.....25
09. Temp Retaining Structure TRS
01. 36" dia pipe w/ AZ-26 x 80'.....25
02. AZ-48 w/ 2 ea W14x109x80'.....25
03. AZ-36 x 68'.....26
04. installation of remaining 3 strs.....26
10. steel
01. handrails.....26
02. Chain Link.....26
03. C-Channel (cutoff wall).....26
04. SS seal plate.....27
05. Waler TRS.....27
06. Davit Crane to pull sump pumps.....27
07. crane hoist.....27
11. Aluminum
01. handrails.....27
12. Dredging
01. mechanical dredging.....27
13. Miscellaneous
01. Dolphins - 3 pile cluster.....28
02. mooring dolphins (6).....28
03. Hazard/Obstruction signs.....28
04. rip-rap (bank stabilization).....28
05. geotextile.....28
06. Misc (steel,hwd, Acces).....29
03. Removal of Existing Structures
03. Removal of Existing Structures

DETAILED ESTIMATE DETAIL PAGE

01. Removal of Existing gates.....30
02. removal of existing sheetpile.....30
03. remove and disposal of pipe pile.....30
04. removal of existing ramp, etc.....30
05. Mechanical
01. pumps
01. 12" elec pump w/subm mtr 5000GPM.....31
02. 8" subm compart transfer 2000GPM.....31
02. winches/cable/accessories
01. Hydraulic winches, 50 ton.....31
02. levelwinds.....31
03. electric motor starters.....32
03. piping
01. piping.....32
02. gate valves (motor operated).....32
04. misc
01. ultrasonic water level indicatos.....32
06. Electrical
01. Lighting (for 2 swing gates)
01. Type 1 Navigation Light-clear.....33
02. Type 1 Navigation Light-red.....33
03. pole mount for red navig light.....33
04. type 6 navigation light.....33
05. floodlight, 250W HPS marine svc.....33
06. floodlight,400W HPS, pole mnt.....34
07. floodlight,400W HPS.....34
08. Class 2 wood pole for fixture mt.....34
09. 3/4" rigid al conduit.....34
10. #12 AWG THWN wire.....34
11. battery charger & battery(gate).....34
12. solar panel (for gate fixtures).....35
13. receptacles, NEMA 3R, C-H type.....35
14. panelboard, 240/120V, 12 ckt.....35
02. Shore Power (for 2 swing gates)
01. class 2 wood pole, penta treated.....35
02. cross arms w/insulator & hardwae.....35
03. arrester, distribution class.....36
04. fuse cutout.....36
05. rigid Al conduit.....36
06. wire, THWN.....36
07. 24.9 kV to 240/120 Vac, 10 kVA.....36
03. Unit Substation (for 2 gates)
01. secondary unit substation.....36
02. PDC for equipment.....37
03. piers for PDC skid unit.....37
04. LV Distr Equipment.....37
05. cable tray ladder, 24" w, FRP.....37
06. revenue metering equipment.....37
07. operator control panel.....38
08. cable, 1 STP, #16 AWG, THWN.....38
09. 3/4" PVC coated conduit.....38

DETAILED ESTIMATE DETAIL PAGE

10. 2" PVC coated conduit.....38
11. wire, #14 AWG, THWN.....38
12. wire, 250 kcmil, THWN.....38
04. 25kV Service Feeder
01. class 2 wood pole, penta treated.....39
02. #1/0, 25kV, Cu, XLPE, shld cbl.....39
03. trenching & backfill buried cabl.....39
04. manhole.....39
05. modular Tee splice.....39
06. directional bore below FWB.....40
07. 4" al conduit below FWB.....40
08. 4" al conduit below channel.....40
09. capacitor bank.....40
10. cable terminations, 25kV.....40
11. arrester, distribution class.....40
07. Pivot Structure
01. Reinforced Concrete
01. Reinf Conc - pivot structure.....42
02. Pre-cast, Pre-stressed conc pile
01. 16"x16"x 100' PPC pile.....42
03. Stainless Steel
01. Pivot Pin, Pin ring, collar.....42
08. Anchor Structure
01. Reinforced Conc-pull pile struc
01. Reinf Conc - cable anchor struc.....43
02. Pre-cast, Pre-stressed conc pile
01. 16"x16"x 85' PPC pile.....43
03. Steel
01. Chain, snatch block, anchor blt.....43
09. Pile tests
01. install & test 16"x16" PPC piles
01. furnish and install.....44
02. tension test.....44
03. compression test.....44
02. install & test 24"x24" PPC piles
01. furnish and install.....44
02. tension test.....44
10. Dewatering System
01. Dewatering System
01. Dewatering System.....45
30. Engineering & Design
01. E & D
01. E & D
01. E & D
01. Commercial Canal - dredging.....46
02. GIWW - dredging/rock.....46
03. Freshwater Int - dredging/rock.....46
04. Freshwater Bar - dredging.....46
05. Borings - Frshwtr, GIWW, Commerc.....46
06. Surveys.....47
07. By-pass Channel Floodgate.....47

DETAILED ESTIMATE DETAIL PAGE

31. Construction Management - S & A
1. S & A
1. S & A
01. S & A
01. Commercial Canal - dredging.....48
02. GIWW - dredging/rock.....48
03. Freshwater Int - dredging/rock.....48
04. Freshwater Bar - dredging.....48
07. By-pass Channel Floodgate.....48

BACKUP REPORTS BACKUP PAGE

CREW BACKUP - bid-item.....1
LABOR BACKUP - bid-item.....5
EQUIPMENT BACKUP - bid-item.....10

* * * END TABLE OF CONTENTS * * *

ANNEX 8 – ITR COMMENT REPORTS FROM DR. CHECKS

(REFER TO VOLUME 6, APPENDIX F)

ANNEX 9 – DOCUMENTATION FOR TOW SIMULATION MODEL WAIVER

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
441 G STREET NW
WASHINGTON, D.C. 20314-1000

FEB 9 2006

CECW-CE

MEMORANDUM FOR Commander, Mississippi Valley Division, Corps of Engineers, ATTN: CEMVD-PD-N

SUBJECT: Port of Iberia, Louisiana, Draft Feasibility Report

1. Reference the memorandum from CEMVN-PM-E, dated 2 November 2005, subject as above.

2. My staff has reviewed the tow simulation model waiver request in the referenced memorandum and the assessment report prepared by CEERD-HN-ND in January 2006. The request of a waiver from the simulation model requirements outlined in ER 1110-2-1403 is granted.

3. My point of contact for this action is Mr. Jerry Webb, CECW-CE, 202-761-5543.

FOR THE COMMANDER:

DONALD L. BASHAM, P.E.
Chief, Engineering and Construction
Directorate of Civil Works

CF: CECW-MVD

DEPARTMENT OF THE ARMY
ENGINEER RESEARCH AND DEVELOPMENT CENTER, CORPS OF ENGINEERS
COASTAL AND HYDRAULICS LABORATORY
WATERWAYS EXPERIMENT STATION, 3909 HALLS FERRY ROAD
VICKSBURG, MISSISSIPPI 39180-6199

CEERD-HN-ND 27 Jan 06

MEMORANDUM FOR Commander, US Army Engineer District, New Orleans, CEMVN-ED-SP (Mr. Jake Terranova), PO Box 60267, New Orleans, LA 70160-0267

SUBJECT: Ship Simulation Navigation Study Waiver Recommendation, Port of Iberia, New Iberia, LA

1. In November 2005 the US Army Engineer Research and Development Center (ERDC) received a request for a waiver recommendation from your District for the Acadiana Gulf of Mexico Access Channel Project (AGMAC) for the Port of Iberia (figure 1).

2. The waiver recommendation is in reference to the requirement for a ship/tow navigation simulation study as described in ER 1110-2-1403, "Studies by Coastal, Hydraulic and Hydrologic Facilities and Others" that states that a vessel simulation model must be conducted for channel design.

3. The AGMAC Project recommends a 60-mile channel with a 20-ft depth and 150-ft bottom width. It would extend from the Port of Iberia, down the Commercial Canal, West along the Gulf Intra-Coastal Waterway (GIWW), bypass the Freshwater Bayou Lock and continue south to the 20 ft contour of the Gulf of Mexico. The GIWW is presently 125-ft wide and approximately 12 ft deep. The Freshwater Bayou Lock is 84 ft wide, 600 ft long, with a -16ft sill.

4. In November of 2005 Mr. Gary Lynch, ERDC representative, met with the following people at the Port of Iberia for discussions about the proposed project, what was to be gained from it, more in-depth knowledge of the processes involved, and a tour of the area:

Timothy Ruppert, P.E. Projects Engineering, New Orleans District
Roy Pontiff, Executive Director, The Port of Iberia
Oscar Pena P.E., Senior Vice President Shaw Coastal, Inc.
O'Neil Malbrough MS, REM, President Shaw Coastal, Inc.
Joey Zagar, EVP of Business Development, ASRC Energy Services Omega Natchiq, Inc.
Chad Ransonet, Premiere Towing

5. After meeting and email correspondence with those listed above, the following understanding of the outbound transit of the delivery barge has been reached. "Loadout", movement of the structure onto the delivery barge, is generally preplanned by an engineering firm well in advance of the actual transfer. Loadout and transport generally occur during the summer months during daylight hours. The towboat company is consulted to determine when the tows will be available and the procedure for moving the delivery barge. The company obtains an oversize tow permit

from the US Coast Guard as well as a total blockage permit for deliveries with overhang. After these permits are obtained, the Coast Guard notifies traffic in the area of the date and time of the outbound transit. During the transit, the channel is closed to all other traffic as deemed necessary by the Coast Guard. The delivery barge is transported by five towboats as shown in figure 2.

6. Two of the towboats are tied up in front, two in back, and one tow, called the "picket" or "lead", that travels in front of the barge and other tows to signal any traffic that might have gotten on the channel or assists where needed. Weather is closely monitored at all times during the voyage. If it is determined that the barge cannot be safely delivered to its offshore destination before inclement weather will affect it, then the barge is returned to port until the next window of opportunity. The transit from the Port of Iberia to the 20-ft contour of the Gulf of Mexico takes about 12 – 14 hours. Speeds inside the Commercial Canal are approximately 1.5 to 2.0 knots; speeds on the GIWW are 2 to 3 knots. The Freshwater Bayou Lock must be bypassed, figure 3, at an expense of $500K per trip. Once the delivery barge is beyond the lock and has made it to the 20-ft contour in the Gulf, deep draft tugs replace the inland towboats and tow the delivery barge the remainder of the transit. The barge in tow is shown in figure 4.

7. These larger tugs cannot be used earlier during the transit because of the existing channel depth. The tugs bring the barge to the offshore site where its contents are offloaded, generally by crane, and assembled as part of the oil rig, figure 5.

8. The steps of these transits are laid out in the above paragraphs 5, 6, and 7 simply to show the reader who may be familiar with normal river traffic that this is not a "normal" transit. In fact, after final discussions, it was determined that once the delivery barge is on site at the offshore location, the tugs must maintain control to within a couple of feet for the crane operator to complete the operation. After reviewing the transit process, the movement down the Commercial Canal and GIWW is more similar to a ship maneuvering inside a harbor with azipods. That being the case, maneuverability did not seem to be the main issue, and the first concern addressed in meetings was the effect of the wind on the barge stability. With the increased draft of the delivery barge after the deepening of the channel would come an increase in the height of the module being delivered and its wind area. Shaw Coastal was able to explain that if the wind will be over 20 knots, the delivery barge will not begin the journey. However, even during the transit, the weather is constantly monitored. If the weather begins to worsen to the point where wind will be a problem, the barge will return to port. Given ERDC's experience with the new larger class containerships that move about in harbors with less than four tugs and winds of that magnitude or more, this seems a conservative safety factor. Added to this safety factor is the fact that, with the deeper channel in place, the deep draft, larger horsepower tugs could be brought in and utilized as pushers inside the Commercial Canal and the GIWW if necessary.

9. Changes to the existing channel traffic will be limited due to the fact that the sill on the Freshwater Bayou Lock remains at a -16 ft going towards the Gulf, and the GIWW itself would remain -12 ft for traffic going east of the Commercial Canal /GIWW intersection. The most notable change to the existing traffic would be the crew boat mentioned in the memorandum in Appendix A, pages 2 and 3. This vessel will still be limited somewhat unless it uses the Lock Bypass; but could be serviced by a narrower channel than is required for the delivery barge, and should cause no navigable concern. Although no speed was mentioned in the memorandum, the type vessel mentioned, "Crew/Service Boat" can be of two different types. The displacement type vessel of this sort does not get "up on plane" and therefore travels anywhere from 10-12 knots top speed. The other is a faster, planning vessel that can reach speeds of up to 25 knots. Both of these vessels are currently on the order of 200 to 250 ft long instead of the 325 ft mentioned. Neither of these vessels goes further inland than Intracoastal City, LA, and in the areas that are frequented by them now, rock protection has been placed in strategic points to protect the bank.

10. With the understanding of:

a. How the delivery barge is transported.
b. How much caution and oversight are used during the transport.
c. The number of tows used.
d. The speeds attained during the transit.

The ERDC concurs that vessel simulation is not required for the navigational aspect of the design vessel for this project, the deepening of the Commercial Canal, GIWW (from the Commercial Canal intersection to Freshwater Bayou), and Freshwater Bayou (from the GIWW intersection to the 20 ft contour of the Gulf of Mexico (utilizing the Freshwater Bayou Lock Bypass) from -12 ft to -20 ft as described by the memorandum in Appendix A.

11. If you have any questions, please contact Mr. Gary Lynch at (601) 634-4160 or Mr. Dennis Webb at (601) 634-2455.

William D. Martin, PhD, PE for
THOMAS W. RICHARDSON
Director

Figure 1. Project Location

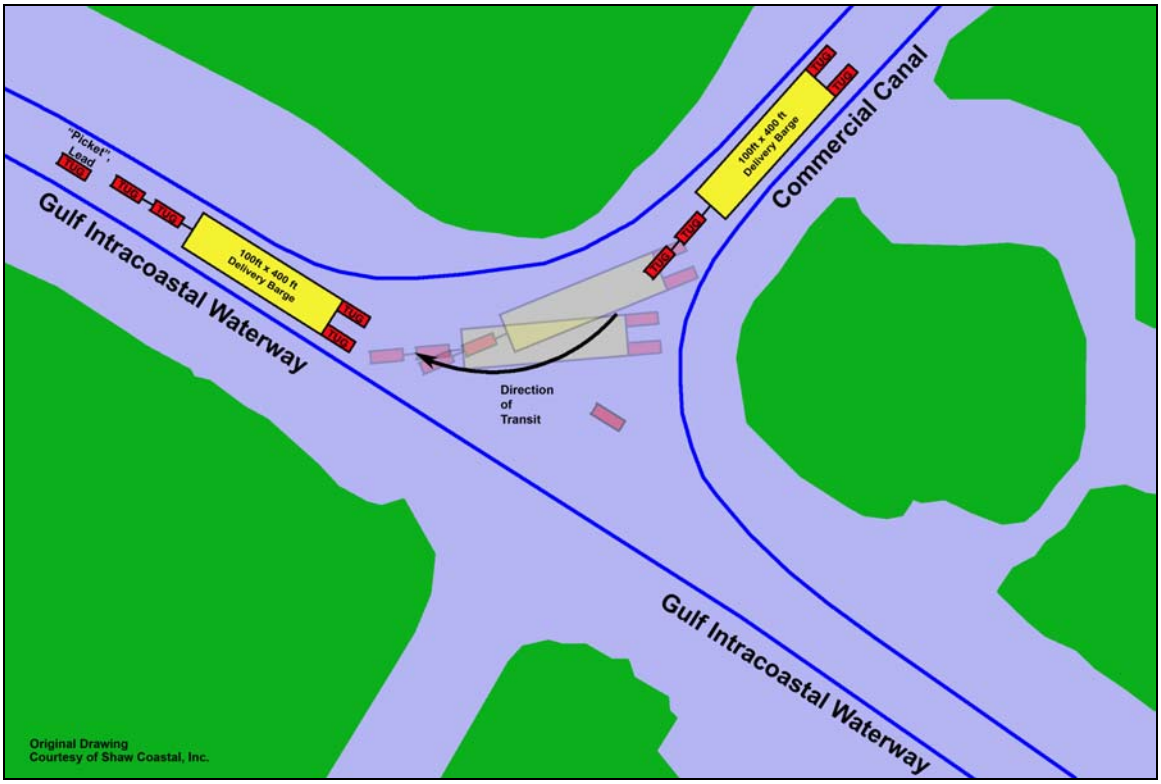

Figure 2. Outbound Transit of Delivery Barge.

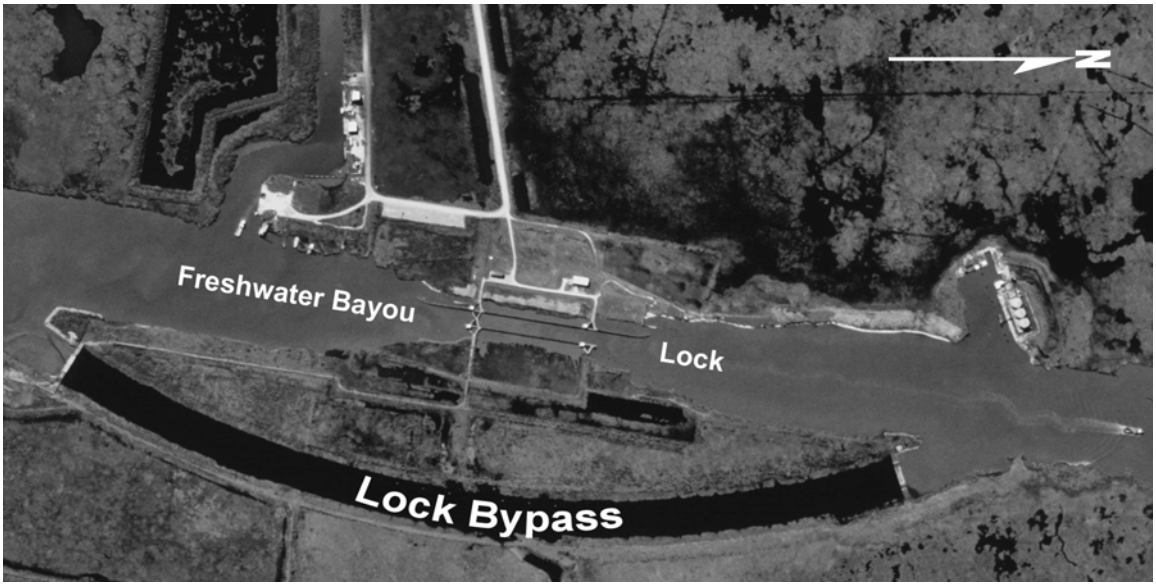

Figure 3. Freshwater Bayou Lock and Bypass.

Figure 4. Delivery Barge being towed by deep draft Tugs (tugs not shown).

Figure 5. Offshore Oil Rig Bullwinkle

APPENDIX A

STAFF SUMMARY

I. FROM: CEMVD-PD-SP **SUBJECT:** Memo to DCW Requesting Exemption from Conducting a Tow Simulation Model for Port of Iberia Feasibility Study

II. TO: CEMVD-DE CLASSIFICATION: U SUSPENSE: 20 Dec 05 DATE: 15 Dec 05

III. Summary of Action Requiring Coordination:

1. **ISSUE**. The Independent Technical Review for Port of Iberia Feasibility Study revealed that in accordance with ER 1110-2-1403 a tow simulation model was required to be performed unless waived by HQUSACE.

2. **DISCUSSION**: The recommended plan in the Port of Iberia Feasibility report is a 60-mile channel with 20-foot depth and a 150 foot width. Based on EM 110-2-1613, the minimum width for safe navigation is 200 feet. Supplemental information has been provided that documents that for the types of movements that will occur with the Port of Iberia project, channel design wider than 150 feet is not necessary for the safe conduct of navigation for the identified design vessel. The Engineer and Research Design Center is currently completing a desk review that supports this conclusion.

3. RESOURCE IMPACT: None.

4. **RECOMMENDATION: Please Initial Memo.**

IV. Action Officer: Greg Ruff, CEMVD-PD-SP BGR

TELEPHONE NUMBER: 634-5928 **DIRECTORATE/OFFICE CHIEF:**

V. Coordination				VI. Command Section Staffing		
Office	Concur	Non-Concur*	Date	Recommend:	Approval	Disapproval
PD-N	BGR		12/15/05	EX	LV	
PD-W	JEB		12/16/05	DD	12/20	
PD	MM		12/15/05	FOR DE	12/20	
				Command Section Remarks		

*Non-concurrences require comment

DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

CEMVN-PM-E

2 November 2005

MEMORANDUM THRU FOR BG Robert Crear, Commander, Mississippi Valley Division COL DEP CDR

FOR MG Don T. Riley, Director of Civil Works, HQUSACE

SUBJECT: Port of Iberia, Louisiana, Draft Feasibility Report (August, 2005)

1. Please reference Port of Iberia, Louisiana, Draft Feasibility Report (August, 2005). We request an exception to the requirement for a tow simulation model as described in ER 1110-2-1403, "Studies by Coastal, Hydraulic and Hydrologic Facilities and Others". For designs where the recommended width of a proposed navigation channel is smaller than the minimum dimensions derived from criteria established in EM 1110-2-1613, "Hydraulic Design Guidance for Deep-Draft Navigation Projects", states that a tow simulation model must be prepared for the design of the channel. A waiver may be granted when sufficient evidence is provided that indicates that a narrower channel is practicable.

2. The recommended plan in the subject report is a 60-mile channel with 20-foot depth and a 150-foot width. The design vessel for this channel is a special offshore petroleum industry barge that is 100-feet wide, 400-feet long, and 25-feet deep (21-foot maximum draft). Based on EM 1110-2-1613, paragraph 8.6 ("Width Criteria"), the minimum width for safe navigation is 200 feet based on a minimum multiplier of 2.0. Current channel dimensions are (-)12 by 125 feet. The design vessel currently operates at the port and uses restrictive channels with an acceptable safety from an operator perspective. Movements for this design vessel are constrained to 2 to 3 times per year at approximately 2 mph under with-project conditions. More than 80% of the project's benefits are derived from these few movements. Therefore, as described in the attached write-up and confirmed by offshore petroleum industry experts, we conclude that a channel design wider than 150 feet is not necessary for the safe conduct of navigation for the identified design vessel.

For RICHARD P. WAGENAAR, LTC, EN
Colonel, EN
Commanding
Deputy Commander

Rationale for waiver from EM 1110-2-1613

Our report compares the typical vessels commonly using the channel with the proposed design dimensions. See tables 1 and 2 below.

TABLE 1
Typical Vessels

Vessel Type	Description	Maximum Dimensions		
		Length	Beam	Draft
Dry Cargo	Crew/Service Boat	325'	55'	18'*
Tanker	Small Oil Tanker	N/A	N/A	12'
Tow Boat	Tow Boats w/o Barges	250'	90'	12'
Dry Cargo	Barges w/Tow Boats	400'	100'	20'
Tanker	Barges w/Tow Boats	250'	75'	13'

18* is the design draft for this vessel. It is light loaded to a 13' draft currently, due to depth limitations in the existing channels.
N/A = not available

TABLE 2
Maximum Vessel Dimensions Accommodated Safely*

Proposed Channel Dimensions Depth below MLLW x Width (feet)	Maximum Vessel Dimensions Draft x Beam (feet)
20 x 150	18 x 70
20 x 135	18 x 55
20 x 125	18 x 45
18 x 150	16 x 70
18 x 135	16 x 55
18 x 125	16 x 45
16 x 150	14 x 70

*Advanced maintenance and overdepth of 3 feet not shown

Since the existing channel is shallow, -12', it is obvious that many vessels are light loaded to maneuver through the waterway. The existing authorized bottom width of the channel is 125'. These dimension are all smaller in width, depth or both than required by EM1110-2-1611 for the typical vessels.

Using EM 1110-2-1611 applied to the large dry cargo barge, 400' x 100' x 20', the design channel dimensions computed are 22' x 180'; the actual channel would be 25' deep including advanced maintenance and overdepth of 3'. Therefore the design depth of 22' (is actually 25') provides the 5 feet of under keel clearance sufficient to meet to 75%

available depth criteria required in the EM. For one-way traffic in straight channels the EM dictates that 40 feet must be added to each side of the vessel width for adequate bank clearance; i.e. the channel width must be 180'. None of proposed channel sizes meet the design criteria in the EM for the large cargo vessel. To pass this large vessel through a 20-foot deep channel, the vessel can be light loaded, as it is now, although not as much. This vessel does not maneuver under its own power, but rather is pushed very slowly downstream by several tugboats. Because the barge moves so slowly, we believe that the width dimension can be encroached upon somewhat without much surrendered for safety or bank damage. Additionally, trips along the channel for this vessel are infrequent and limited to ideal weather conditions. However, we believe that a smaller channel will have to be monitored for any detrimental effects associated with any design inadequacy.

The vessel that must be accommodated in our selected channel is the crew boat. With dimensions of 325' x 55' x 18', the crew boat currently accounts for the most trips through the channel and the fastest speed. In additional, a typical crew boat is now running this channel light loaded, because of the disparity between its design draft and the available depth of the navigation channel. To better accommodate the typical crew boat and provide for its more efficient use, the channel size should be 20' x 135'.

While there are many variables, but that the design vessel is using the channel now with an acceptable level of safety from an operator perspective and that one can infer from this and operator interviews that it would have an acceptable level of safety with the deeper channel.

Several of the remaining vessels will comfortably fit into any of the proposed depths of 15 ' or more, but will require channel widths in excess of 150' according to the referenced EM. The 75'-wide and 90'-wide vessels require channels widths of 155' and 170', respectively. Because the largest channel dimensions under consideration is 20' x 150', we recommend that this channel dimension be selected for design and that all others are dropped from consideration. The 150' width is the closest to the design criteria for most of the typical vessels in the current fleet. It would provide the safest passage for most vessels, and limit damage to an already eroding bank.

REVISED RATIONAL FOR WAIVER FROM EM 1110-2-1613 – MARCH 2006
(Replaces previous rationale included in proceding 2 Nov 2005 waiver request)

The design vessel for this channel is a special offshore petroleum industry barge that is 100-feet wide by 400-feet long, and has a draft of 20 feet. Movements for this design vessel are constrained to 2 to 3 times per year at approximately 2 miles per hour under with-project conditions. More than 80% of the project's benefits are derived from these few movements.

Channel widths and depths are designed to provide for the safe and efficient movement of vessels along the channel. Standard design criteria for determining bottom width and channel depth of shallow and deep draft channels are outlined in EM 1110-2-1611 and EM 1110-2-1613, respectively. In both EMs, the minimum width of a channel is based on a number of factors, including vessel maneuverability, climatic conditions, and channel shape and alignment. The minimum depth of a channel is also based on a number of factors, including vessel squat, sinkage in fresh water, effects of trim and wave action, and safety and efficiency clearance.

The existing channel is shallow (El. -12.0), and the existing authorized bottom width of the channel is 125 feet. These dimensions are smaller than required by the EMs for the typical vessels in both shallow-draft and deep-draft channels. The channel sizes investigated and proposed in this report also do not meet the design criteria in the EMs for the large cargo vessel. However, to pass this large vessel through a 20-foot deep channel, special accomodations can be made, as is done currently to allow usage of restrictive channels with no safety issues. This vessel does not maneuver under its own power, but rather is pushed and pulled very slowly downstream by several tugboats. Because the barge moves so slowly, the width dimension can be encroached upon somewhat without much surrendered for safety or bank damage. Additionally, trips along the channel for this vessel are infrequent and limited to ideal weather conditions. Therefore, it is concluded that the channel dimensions proposed (150 feet wide by 20 feet deep) will be sufficient for the safe conduct of navigation for the identified design vessel. To ensure safe passage, special accomodations as previously described must be maintained.

For designs where the recommended width of a proposed navigation channel is smaller than the minimum dimensions derived from criteria established in EMs, the EMs prescribe that a tow simulation model be conducted. Engineering Regulation 1110-2-1403, "Studies by Coastal, Hydraulic and Hydrologic Facilities and Others", states that hydraulic design studies associated with the planning, design, construction, operation, and maintenance of navigation channels will include a ship-simulation investigation unless omission of such an investigation is approved by HQUSACE. This request for waiver complies with the EM guidance for such an omission