FINAL

ENVIRONMENTAL STATEMENT

NEW ORLEANS TO VENICE, LOUISIANA
HURRICANE PROTECTION

US ARMY ENGINEER DISTRICT

NEW ORLEANS, NEW ORLEANS, LOUISIANA

July 1974

NEW ORLEANS TO VENICE, LOUISIANA
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TABLE OF CONTENTS

TABLE OF CONTENTS (Cont'd)

NEW ORLEANS TO VENICE, LOUISIANA
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( ) Draft (X) Final Environmental Statement

Responsible Office: US Army Engineer District, New Orleans
New Orleans, Louisiana

1. Name of Action: (X) Administrative ( ) Legislative

2. Description of Action:

a. This project provides for enlargement of the back levees from City Price to Venice (approximately 36 miles) on the west bank of the Mississippi River, including a new floodgate at Empire and construction of a new levee from Phoenix to Bohemia (approximately 16 miles) on the east bank. In addition, a barrier levee from Bohemia to 10 miles above the Head of Passes on the east bank and from Fort Jackson to Venice on the west bank will be constructed to protect the project areas on the west bank of Plaquemines Parish against hurricane flooding from Breton Sound. Drainage capability and roadway access will be maintained within the project area.

b. This project work is necessary in order to provide protection from hurricanes that induce flooding in these areas. The inundation of the developed areas as a result of hurricane action creates hazards to life and well being, damages public and private property, disrupts community and business life, and requires extensive expenditures of private and public funds for evacuation and rehabilitation activities.

3. a. Environmental Impacts:

(1) The proposed construction will, for the most part, raise existing levees between developed areas and the marsh and river. There will be an encroachment upon the marsh area for the new or additional width required for the higher levees and ponding and borrow areas for construction.

(2) It is expected that the new degree of protection afforded will act as a deterrent to development outside of the protected area and will therefore constitute an advantage in that random encroachment by the community upon the marsh will be minimized.

b. Adverse Environmental Effects: There will be some temporary adverse effects during the construction period such as dusting, noise, minor damage to the immediate area such as is found at any construction site.

There will be approximately 8,500 acres of marshland used for temporary ponding. This will suffer immediate damage and will be converted for a period of several years to a more upland type of vegetation. In several years this will revert to marsh and will replenish the marsh which is gradually being destroyed. In addition to this, approximately 1,000 acres will be required for borrow material, approximately 780 acres of marsh for levee right-of-way on the west bank and approximately 220 on the east bank. Some 2,200 acres of upland will be used on the east bank for levee right-of-way and 400 on the west bank. There will also be some 1,200 acres of marsh used for temporary construction easement.

4. Alternatives: With respect to the levee systems around reaches A, B1, B2, and C, the only alternative is to provide no action and leave the existing levee systems as they are. This gives the people a misleading sense of security and so exposes them to possible injury or death. This alternative is, therefore, not realistic.

With respect to the East Bank Barrier levee plan, the alternative was to raise the west bank levees to an elevation which would preclude overtopping by hurricane surges from Breton Sound. This was not considered feasible because of the extensive disruption upon the populated area and environment occasioned by the need for levee setbacks and extensive foundation work for the higher levees.

The alternative of no action is not considered realistic because of the exposure of the people and their dwellings behind inadequate levees to the floods associated with hurricanes.

5. Comments Received:

Assistant Secretary - Program Policy, Department of the Interior

Environmental Protection Agency
US Department of Agriculture, Soil Conservation Service
US Department of Commerce, Deputy Assistant Secretary for Environmental Affairs
US Department of Transportation, Bureau of Public Roads
US Department of Health, Education, and Welfare
Louisiana Department of Public Works
Louisiana State Parks and Recreation Commission
Louisiana Highway Department
Louisiana Stream Control Commission
Advisory Council on Historic Preservation

6. Draft statement to CEQ 3 October 1972 .

Final statement to CEQ JAN 16 1973 .

NEW ORLEANS TO VENICE, LOUISIANA
HURRICANE PROTECTION

FINAL
ENVIRONMENTAL STATEMENT

1. PROJECT DESCRIPTION

a. Name and purpose. The New Orleans to Venice hurricane protection project, formerly entitled Mississippi River Delta at and below New Orleans, is an authorized project of the US Army Corps of Engineers. Public Law 874, 87th Congress, 2d Session, approved 23 October 1962, authorized the construction of this project substantially in accordance with the recommendations of the Chief of Engineers in House Document No. 550, 87th Congress, 2d Session. The general area of the project includes all of the present delta portion of the Mississippi River south of New Orleans.

(1) The project is intended to provide protection to the more highly developed areas along the Mississippi River below New Orleans by a modification and elevation of back levees, an enlargement of the Mississippi River levee from Fort Jackson to Venice, and construction of a new levee which may be considered an extension of the Mississippi River levee on the east bank from Bohemia to 10 miles above the Head of Passes. These levees would form a protective system which would require alterations in internal drainage facilities. Alterations of roads and pipeline crossings over levees will be required.

(2) There are three major areas which have proven needful of protection. Reach A of the authorized project extends for approximately 15 miles on the west bank of the Mississippi River from City Price to Tropical Bend. Reach B extends for approximately 21 miles, also on the west bank, from Tropical Bend to Venice but was subdivided into reach B1 from Tropical Bend to Fort Jackson and B2 from Fort Jackson to Venice at the request of the Plaquemines Parish Commission Council. Work in reach B1 will consist of raising the back levee system, installing a floodgate at Empire and floodwalls at two pumping stations. In B2 the back levee will be raised and a floodwall installed at the Venice pumping station. Reach C is located on the east bank of the Mississippi River and

extends approximately 16 miles from Phoenix to Bohemia. Work here consists of raising the back levee system. These levees will have an average base width of 350 feet with an average elevation of 15 feet mean sea level on the west bank and 17 feet mean sea level on the east bank.

(3) On the eastern side of the river a barrier levee will be constructed from Bohemia to mile 10 Above the Head of Passes (AHP) in order to prevent overtopping of the river levee system on the western side by hurricane surges coming from the east. This levee was not in the original plan but was determined to be necessary in the design stage. The plan includes modification of approximately 10 miles of west bank levee from Fort Jackson to Venice. Louisiana Highway 23 will be relocated at Venice to pass over the modified levee system at the junction of the Mississippi River levee and the back levee.

b. Method of levee construction. The proposed project will make use of three types of levee construction: a sand core hydraulic clay covered levee, an all hydraulic clay levee, and a standard cast earth levee. The construction of a typical sand core levee will involve the excavation of a central levee core trench on the floodside of and generally parallel to the existing back levee. When practical, the excavated material will be used in the construction. When not practical, the trench will be hydraulically excavated and the material spoiled and retained in adjacent preconstructed ponding areas in the marsh. Hydraulic sand fill will be pumped from Mississippi River borrow areas to form the core for the levee. Water from this operation will flow into the ponding areas and then into the waterways of the area. Plates 3 through 6 show these areas for the project.

The construction of the hydraulic clay fill cover for the sand core levee and the all hydraulic clay fill levee will be accomplished in essentially the same manner insofar as environmental aspects are concerned. The hydraulic clay fill will be pumped into a levee hydraulic clay fill retaining area formed by floodside retaining dike and an opposite side retaining dike. The hydraulic clay fill will be obtained from a marsh borrow area generally located on the marsh side of the ponding areas within a few thousand feet of the existing back levee. The borrow areas will be hydraulically stripped of poor quality surface material which will be spoiled and retained in the adjacent preconstructed ponding areas to allow settlement

of the suspended material. The retention time in the ponding areas will be controlled to insure the clarity of the effluent meets specified environmental requirements. Material for the construction will then be pumped into the levee area. In both cases the material will have to be shaped by earth-moving equipment.

In the cast levee construction material will be trucked in and shaped to levee conformation. This will be done only in areas where a suitable supply of material is available.

c. Current status of project. The project is in the design and construction stages with most of the design memoranda essentially completed. Construction or reach B1 was initiated in August 1968. Approximately 6.5 miles of first lift levee embankment were completed. Reach C was constructed to an interim grade by local interests as part of their contribution. The scheduled completion dates for the final grade of the levees are as follows: reach C, September 1975; East Bank Barrier, March 1979; reach A, September 1982; reach B1, March 1985; and B2, March 1984.

d. Benefits from the project. Benefits from the project would be in the form of flood damage prevented, based on existing and future developments within the present levee system, which provides only very limited protection at the present time. The latest analysis of the benefits and costs as of March 1973 indicates a favorable ratio of 4.2 for this project.

2. ENVIRONMENTAL SETTING WITHOUT THE PROJECT

a. Topography. The main topographical feature in the project area is the Mississippi River which runs through the area from a generally northwest to southeast direction in this project area. The major land features of the area consist of natural levees with dry land adjacent to the river and various bayous, flanked by extensive low marshlands. These marshes vary from about 70 percent land near the river to 36 percent land near the gulf for an average of about 50 percent land areas.

(1) Streams. The Mississippi River is the major stream of the area. At the northern end of the project area the river is approximately 1/2 mile wide. No tributaries enter the river below New Orleans. A system of distributaries, however, discharges the river flow to the Gulf of Mexico. Of these outlets, only South and Southwest Passes are maintained

as navigable waterways and are used by seagoing commerce. The area is laced by bayous and waterways which carry rainwater and marsh floods from the land to the Gulf of Mexico.

(2) Natural levees. Along the river and several of the bayous, natural levee formations with elevations of 5 feet or more in the northern stream approach the gulf. These ridges range in width from a few feet at the gulfward extremities of the streams to several thousand feet in the northern part of the area. All have gentle slopes away from the streams toward the marshes.

(3) Estuarine zone

(a) The largest portion of the area consists of low marshlands containing numerous shallow bays and lakes. The general elevation of these marshes is approximately 0.5 to 1.5 feet above mean sea level (m.s.l.). The percentage of land varies from 70 percent near the Mississippi River to 36 percent near the gulf with the general average being about 50 percent. There are four basic types of marshes within the area which are best described by their vegetation in paragraph e(1). The shoreline facing the Gulf of Mexico has an extremely irregular appearance, being heavily indented with numerous bays and tidal inlets with only a few well developed sand beaches.

(b) Salinity and pollution. The area may be classified as an interdeltaic estuary basin which has direct exposure to the sea and only limited inflow of freshwater. For this reason it is essentially saline in nature with isohaline lines of constant salt concentration generally paralleling the shoreline and ranging in magnitude from 20 parts per thousand (p.p.t.) adjacent to the Gulf of Mexico to 10 p.p.t. in the water nearer the river. The pollution problem is relatively small in this area, being essentially the associated product in the oil and sulphur industries such as brine and heated water. These will be receiving secondary treatment or equivalent after December 1972.

(c) Water circulation. There are no published reports of studies pertaining to the circulation in this area. Because it is not a true estuary, there is no dynamic interplay between the salt and freshwater. The general circulation may be inferred from an examination of aerial photos and the projected tide tables. In general, the tide rises first near the southerly portion of the coastal area and later towards

the north. This indicates a littoral current proceeding from the southeast to the northwest, which is generally in agreement with the movement of material along the shores. The general pattern of circulation, however, is wind controlled and not tide controlled so that the influence of the wind is the major factor in movement of water into and throughout the internal bays and lakes. Although generally random in nature, the predominance of winds are from out of the southwest to out of the southeast and so the general wind induced flow reinforces the tidal flow.

(d) Sedimentation. There are no active streams carrying significant quantities of sediment into this marshland area. The Mississippi River transports considerable sediment but natural flow from the river into the marsh is unusual.

(e) Fish and wildlife productivity. Estuaries are among the world's most productive natural environments. Plants within the marsh areas provide organic detritus--the basis of the food chain--and protection for the larvae and juveniles of commercial and sport species. Species such as menhaden, white shrimp, croaker, catfish and bullheads, spotted seatrout, and blue crab are found in very low salinity water and, in general, rely heavily upon the marsh biological environment for their continued presence.

(f) Historical changes. The general marsh area adjacent to the project is undergoing considerable change. Because the depositional mechanism of the Mississippi River does not deposit new sediment in this area, it is experiencing a general loss of area. This loss is due to the combined effect or erosion, subsidence, and general relative rise in sea level. Studies by the Coastal Studies Institute of Louisiana State University indicate that there is a net loss of approximately 16.5 square miles per year of marshland. The general land loss in the marsh project area is in the order of 100 acres per year per 41,623 acres as determined by studies using 7 1/2 minute quadrangle as base maps. The gulf shoreline is experiencing a general erosion all along the front but with local areas of deposition being present as the littoral material is collected at certain places.

(4) Floodways. The Pointe-a-la-Hache relief outlet is a portion of the land on the east bank which has been unleveed as a floodway from the river to the gulf. The natural levees prevent flow under normal conditions and it is only when stages are above approximately 7.0 feet that flow occurs. In the period

1951 to 1972 this occurred only 3.5 percent of the time and from 1961 to 1972 only 1.8 percent of the time. The proposed levee in this area must be considered to be a fuse plug levee which can be quickly degraded to allow the floodway to perform its function during a significant flood.

b. Geology. Generally, the subsurface consists of Holocene deposits varying in thickness from between 80 feet at New Orleans to 260 feet at Venice. The Holocene deposits consist of deltaic deposits of natural levee, marsh, interdistributary, intradelta, prodelta, abandoned distributary, and point bar. These deposits are predominately clays with lenses, layers, and areas of silt and sand. An exception to this is the abandoned distributary and point bar deposits which consist generally of granular silts, silty sands, and sands. Underlying the Holocene sediments are Pleistocene sediments of clays and silts with local concentrations of sands.

c. Tides and surges

(1) Normal tides. Tide gage readings are available from six coastal locations. Regular gages at nine locations along the Mississippi River at and below New Orleans reflect headwater flow as well as tidal fluctuations. Thirteen of the locations have recording type gages from which hourly readings may be obtained. The period of record for these 13 locations ranges from 3 to 88 years. During 1956 and 1957, high water gages were installed at several points to record the maximum tide reaches during tropical storms. Water surface elevations for regular locations are available in "Stages and Discharges of the Mississippi River and its Outlets and Tributaries," published annually by the Mississippi River Commission; and in "Stages and Discharges of the Mississippi River and Tributaries and Other Streams and Waterways in the New Orleans District," published annually by the US Army Engineer District, New Orleans. The tide along the coast is diurnal and has a range of approximately 1 foot under normal conditions. During low water periods on the Mississippi River, generally September through November, the tide is noticeable for approximately 200 miles upstream from the Gulf of Mexico.

(2) Storm driven surges. Tropical storms and hurricanes cause severe flooding in the general area of the project because of the characteristic flatness of the land. Since 1900, 49 storms have affected this area to some degree ranging

from minor flooding to up to 15 feet of floodwater near the river levee system. Exact damage assessment is difficult because of a lack of detailed data on the flooding from these storms but the 13 or more major storms in this period have caused extensive property damage and destruction of wildlife. Stages from such major storms often exceed 5 feet above sea level and flooding may last from several days up to a few weeks in interior areas. The presence of levees within the area causes higher local stages than if they were not present but since extensive damage is done to the marshland at low stages there is no significant incremental damage to the marshes at the higher stages.

d. Climatology

(1) Climate. The climate of the project area is influenced by its subtropical latitude and proximity to the Gulf of Mexico, giving characteristics of a marine climate, especially in summer when southerly winds prevail. These southerly winds produce a condition favorable for afternoon summer thundershowers. In the colder seasons the area is subjected to frontal movements which produce squalls and sudden temperature drops. Because the river water temperature is somewhat colder than the air temperature in winter and spring, river fogs are prevalent. Normally, the flood season of the river occurs from December to early June and the hurricane season from June to October. A coincident flood and storm is possible but would be of such low frequency as to be considered unlikely. Climatological data for this area are contained in monthly and annual publications by the US Department of Commerce, Weather Bureau, titled "Climatological Data for Louisiana," and "Local Climatological Data, New Orleans, Louisiana."

(2) Temperature. The average annual temperature is 70° Fahrenheit with monthly means ranging from 57° in January to 83° in July and August. The maximum temperature of 102° was recorded at Belle Chasse on 7 August 1935, at New Orleans on 30 June 1954 and earlier dates and at Port Sulphur on 31 August 1951. Minimum temperatures of 6° were recorded at Diamond on 12 February 1899 and 7° at New Orleans on 13 February 1899. Normal temperatures by months, determined by averaging Weather Service normals for a 56-year record at Burrwood and a 99-year record at New Orleans, are as follows:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
56.8	58.2	62.2	68.8	76.0	81.7	83.1	83.2	80.4	73.5	63.6	58.4

(3) Rainfall. Precipitation generally is heavy in two fairly definite rainy periods. Summer showers occur from about mid-June to mid-September and winter rains from mid-December to mid-March. Precipitation is greatest in the warmer months due to summer thundershowers and February has a greater average than other winter months. The average annual rainfall is 60.8 inches. At New Orleans a maximum annual rainfall accumulation of 85.73 inches was recorded in 1875 and a minimum of 31.04 inches fell in 1899. Normal monthly rainfall ranges from 7.3 inches in July to 3.3 inches in October. Monthly normals based on averaging records for Burrwood and New Orleans are as follows:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
4.25	4.50	5.22	4.71	4.60	4.87	7.31	6.93	6.83	3.31	3.94	4.34

The maximum monthly rainfall was 29.0 inches, recorded at Belle Chasse in October 1937. Several stations have experienced periods in which no rainfall was recorded in a calendar month. Snow occurs infrequently in the area. New Orleans had an 8.2-inch snowfall on 14-15 February 1895. The last appreciable snowfalls in the project area occurred on 12 February 1958 when stations reported from 1.3 inches to 4.0 inches and on 1 January 1964 when 2.0 inches was reported at one station.

e. Botany

(1) Marshes. There are four basic types of marshes represented within or proximate to the project area. These are delineated on Plate 2 which shows the general vegetative types of coastal marshes. Near the southern end is a freshwater marsh with the characteristic vegetation being maiden cane (Panicum hemitomon), pennywort (Hydrocotyle sp.), water hyacinth (Eichhornia crassipes), pickerelweed (Pontederia cordata), alligatorweed (Alternanthera philoxeroides), and bulltongue (Sagittaria sp.). Above this, beginning near Venice and extending northward towards Fort Jackson, the marsh is of the intermediate type with a low salinity containing wiregrass (Spartina sp.), deer pea (Vigna repens), bulltongue, wild millet (Echinochloa walteri), bullwhip (Scirpus californicus), and sawgrass (Cladium jamaicense). Above this is a brackish marsh of moderate salinity extending all along the river to the northern limit of the project. This marsh contains wiregrass (Spartina patens), threecornered grass (Scirpus olneyi), coco (Scirpus robustus), and widgeongrass (Ruppia martima). On the gulf side of this

brackish marsh is a saline marsh extending to the gulf. The typical vegetation in this marsh is oystergrass (Spartina alterniflora), glasswort (Salicornia sp.), black rush (Juncus roemerianus), saltwort (Batis maritima), black mangrove (Avicennia nitida), and saltgrass (Distichlis spicata). These are shown in general.

(2) Value of marsh. Marshes and estuaries are among the most productive natural ecosystems in the world. There are three primary production units, the oystergrass, the benthic algae, and the phytoplankton. These occupy different zones which allow nutrients and light to be used effectively. The marsh has an abundant supply of nutrients which are turned over rapidly. Moderate temperatures allow primary producers to make organic matter all through the year. The tide carries nutrients and detritus (mostly decomposed oystergrass) in and out of the marsh so they can be utilized by other organisms in the marsh and in the adjacent open waters. The marsh is a valuable nursery area for brown shrimp, white shrimp, blue crabs, oysters, and menhaden. The livelihood of many residents in the coastal area is dependent on the first four species.

(3) Lower plants. Several species of benthic algae are found in the marsh; Enteromorpha, Ectocarpus, and Vaucheria are common along the banks of waterways while Ulva lactuca is occasionally found there. Ulvella, Ulothrix, Cladophora, and Rhizoclonium are found in quiet marsh pools. Blue green algae such as Lyngbya, Oscellatoria princeps, and Spirulina are also found in mats in the marsh. Other species of algae are epiphytic on oystergrass stems such as Bostrychia, Polysiphonia, Chaetomorpha, and the diatoms Amphora, Cocconeis, Melosira, Nitzchia, and Denticula. Common generae of phytoplankton include Ceratium, Merismopedia, Actinophychus, Biddulphia, Chaetoceros, Coscinodiscus, and Dinophysis. Fungi found in the brackish marsh include Fusarium, Phoma, and Nigrospora. Pichia and Kluveromyces are two species of yeast found in the marsh. Bacteria found in marsh sediment include Bacillus and Clostridium. Micrococcus and Bacillus are found on oystergrass stems and Vibrio, Pseudomonas, and Achromobacterium are found in the water.

(4) Trees. Several species of trees are found along the natural levee flank but for the most part large stands are not found except in commercial orchards of citrus fruit trees. Among the natural levee flank, trees are the dwarf palmetto (Sabal minor), live oak (Quercus phellos), red maple (Acer drummondii),

black willow (Salix nigra), wax myrtle (Myrica cerifera), hackberry (Celtis laevigata), and sweet gum (Liquidambar styraciflua. In the fringe areas will be found bald cypress (Taxodium distichum), swamp elder (Baccharis halimifolia), and possum haw (Ilex decidua).

f. Zoological elements

(1) Invertebrates

(a) Invertebrates of the marsh. The brackish to intermediate marshes support a large population of invertebrates. The most common animals in the submerged sediments are nematodes; harpacticoid copepods, and amphipods are also very common. Other benthis invertebrates are foraminifera, ostracods, bloodworm larvae, and polychaetes. The most common organisms in the marsh soil are nematodes, polychaetes, and oligochaetes; ribbed mussels, ciliate protozoans, and foraminifera are also found. There are many organisms living among or on the marsh grasses such as fiddler crabs, square-backed crabs, marsh periwinkles, smooth periwinkles, and Melampus snails.

(b) Zooplankton. The most common zooplankters in the brackish waters of the project area are copepods (Acartia tonsa, Labidocera aestiva, Tremora tremora), chaetognath larvae, and ctenophores. Cladocera, ostracods, other copepods, amphipods, urochordates, and cumaceans are also found. Zooplankton found in the fresher waters of the area include protozoans, cladocera, copepods, ostracods, amphipods, and rotifers.

(c) Macroscopic invertebrates. Macroscopic invertebrates found in brackish waters in the project area include blue crabs, mantis shrimp, brown shrimp, white shrimp, barnacles, and dragonfly larvae. The fresher waters have river shrimp, grass shrimp, crayfish, water scorpions, giant waterbugs, predaceous diving beetles, ramshorn snails, stonefly larvae, water boatmen, bloodworms, dragonfly larvae, damselfly larvae, mayfly larvae, oligochaetes, flatworms, leeches, bryozoans, caddis fly larvae, and mosquito larvae.

(d) Flying invertebrates. Flying invertebrates in the project area include grasshoppers, dragonflies, damselflies, stoneflies, mayflies, caddis flies, and mosquitoes, bees, gnats, and midges.

(e) Soil invertebrates. Invertebrates found in the soil include nematodes, sow bugs, earthworms, and numerous others.

(2) Amphibians. Some salamanders and toads in the project area are partly terrestrial, living near water but spending most of their time on land: the spotted salamander, small-mouthed salamander, marbled salamander, mole salamander, eastern spadefoot toad, East Texas toad, and Gulf Coast toad. Three salamanders in the area are usually found in or near canals or bayous: Gulf Coast water dog, western lesser siren, and central dusky salamander. Amphibians found mainly in marshes are the central newt, dwarf salamander, eastern narrow-mouth toad, upland chorus frog, bronze frog, and southern leopard frog. Some are found in all types of wet areas: the three-toed amphiuma, northern cricket frog, bullfrog, and pig frog. Some frogs are arboreal such as the spring peeper, green treefrog, eastern gray treefrog, and squirrel treefrog.

(3) Reptiles. Most turtles in the project area are associated with water except the Gulf Coast box turtle (Terrapene carolina major), which is mainly terrestrial. Turtles inhabiting lakes and marshes include the common snapping turtle (Chelydra serpentina), stinkpot (Sternothaerus odoratus), Mississippi map turtle (Graptemys kohni), western chicken turtle (Deirochelys ceticularia miaria), and Mississippi diamondback terrapin (Malaclemys terrapin).

Snakes, bullfrogs (Rana catesbeiana), leopard frogs (Rana pipiens), and turtles inhabit the area. Common snakes are the water snakes (Natrix spp.) and the water moccasin (Agkistradon piscivorus). Alligators (Alligator mississipiens) frequent the fresh to intermediate marshes. Although on the endangered species list, the alligator is present in adequate quantities in Louisiana and state authorities have requested its removal from the list.

(4) Fishes. The marshes of the area provide nursery grounds for shrimp, oysters, blue crabs, and some species of fish such as menhaden. Freshwater species of fish common to the area include spotted gar (Lepisosteus oculatus), shortnose gar (Lepisosteus platostomus), alligator gar (Lepisosteus spatula), bowfin (Amia calva), buffalo, blue catfish (Ictalurus furcatus), channel catfish (Ictaluras punctatus), white bass (Morone chrysops), yellow bass (Morone mississippiensis),

sailfin molly (Poecilia latipinna), gambusia (Gambusia, sp.), black (Pomoxis nigromaculatus) and white (Pomoxis annularis) crappie, largemouth bass (Micropterus salmoides), numerous sunfish, fresh water drum (Aplodinotus grunniens), and carp (Cyprinus carpio).

Common saltwater species include mullet (Mugil sp.), ladyfish (Elops saurus), bay anchovy (Anchoa mitchilli), gafftopsail catfish (Bagre marinus) sea catfish (Arius felis), weakfish, red (Sciaenops ocellata) and black (Pogonias cromis) drum, spot (Leiostomus xanthurus), sheepshead (Archosargus probatocephalus), pinfish (Lagodon rhomboides), and fringed (Etropus crossotus) and southern (Paralichthys lethostigma) flounder, and croakers.

(5) Birds and waterfowl. Wintering migratory waterfowl, of particular interest due to quality as gamebird, using the marshes include blue (Chen caerulescens), snow (Chen hyperborea) and white-front geese (Anser albifrons), gadwalls (Anas strepera), pintails (Anas acuta), mallards (Anas platyrhynchos), blue-winged teal (Anas discors), green-winged teal (Anas carolinensis), shovelers (Spatula clypeata), coots (Fulica americana), redheads (Aythya americana), greater scaup (Aythya marila), lesser scaup (Aythya affinis), mergansers, widgeons (Mareca sp.), canvasbacks (Aytha valisineria), buffleheads (Bucephala albeola), common goldeneyes (Bucephela clangula), and some black ducks (Anas rubripes). The mottled duck (Anas fulvigula is the only resident species of waterfowl nesting and wintering in the area; grebes and loons are nongame migratory waterfowl wintering in the area, and the common snipe (Capella gallinago) is the only game species of shorebird wintering in the area. The Southern bald eagle, which is on the endangered species list (Haliaeetus leucocephalus leucocephalus) has been sighted in this area.

(6) Mammals. The mammalian fauna of this project area is typical of a coastal marsh community and includes whitetail deer (Odocoileus virginianus), cottontail (Sylvilagus floridanus) and swamp rabbits (Sylvilagus aquaticus), raccoons, numerous rats and mice, nutria (Myocastor coypus), muskrat (Ondatria zibethicus), and domestic animals such as hogs and cattle.

g. Man's past. Prior to the arrival of the European settlers in this area, there was native Indian activity along the banks of the Mississippi River. This is generally thought to be of a transitory, perhaps seasonal nature. When Iberville

arrived at Mardi Gras Bayou, approximately 24 miles up from the mouth of the Mississippi River and nominally near the present remains of Fort St. Phillip across the river from Fort Jackson, he indicated that Indians were present in this area. In 1730, some 40 Indians were slaughtered by slaves at the direction of plants in the Choachas settlement near the English Turn concession. Probably the earliest culture in this area was the Tchefuncta, remnants of which were found near the Scarsdale Canal across the river from Belle Chasse. Other culture were from the Cole Creek, Marksville, Troysville, Plaquemine, and Pontchartrain periods. The actual area used by such natives would have been inundated by repeated floods from the Mississippi River and in all probability any area utilized by them would have been in the natural levee portion of the river which is presently utilized by modern man. There are no reported middens within the project limits. It appears somewhat doubtful that any other ancient sites remain and the probability that any have been covered by the present levees is relatively low.

(1) The most significant historical events since the arrival of white settlers are concerned with Fort Jackson and Fort St. Phillip. Both of these are outside of the protected areas, Fort St. Phillip is just on the edge of the east bank levee and care must be exercised during construction so as not to disturb it. These are the only historic places mentioned in the most recent National Register of Historic Places which are proximate to the project. The coordination required under Section 106 of the National Historic Act of 1966 as detailed in the Federal Register of March 15, 1972 has been accomplished in the Fort St. Phillip site and a Memorandum of Agreement concerning the construction at this site has been executed with the Advisory Council on Historic Preservation and the Louisiana Preservation Office. Another site, Fort de la Boulage, is located near Phoenix, approximately 1 mile from the river but is not precisely located and is well outside of the project area.

(2) Memorabilia pertaining to early sulphur production, power generation, and pumping equipment are present within the project area and hence will be protected by the project, but are not in the path of construction. All items having any apparent historical or archeological interest which are discovered in the course of any construction activities, however, shall be carefully preserved. The Contractor shall leave the archeological finds undisturbed and shall immediately report the find to the Contracting Officer so that the proper authorities may be notified.

h. Man's present

(1) Population

(a) The 1970 population of Plaquemines Parish was approximately 25,200. In the years 1960, 1950, and 1940, respectively, the population was about 22,500, 14,200, and 12,300. Within the project area resided some 17,500 people in 1970 which was about 70 percent of the total population of the parish.

(b) Indications are that the population in the protected areas along the banks of the river will nearly triple during the next 50 years. Local interests recently have constructed water purification plants and distribution systems to essentially all of the developed areas along the west bank. Moderate increases in the population are indicated for areas along the east bank of the river. The population more than doubled in the area from Port Sulphur to Venice during the last 20 years. Trends in the rate of development of offshore petroleum resources will largely govern the rate of growth in these areas.

(2) Commercial activity

(a) Industries within the general area include sulphur mining and processing, menhaden fish processing plants, seafood canneries, furniture manufacture, ice manufacture, boat works, machine shops, a winery, petroleum storage terminal, and the servicing facilities of the oil companies. A sulphur processing plant, ship and railroad loading facilities, and an ice plant are located within the area protected by the reach A levee. Two menhaden plants, two ice plants, two boat yards, a seafood canning plant, a winery, and petroleum storage facilities are located within the reach B area. An oilfield servicing facility, a seafood cannery, and a furniture factory are located within the reach C area. There are extensive oilfield servicing facilities near the Venice Oil Field, about 4 miles southwest of Venice.

(b) There are numerous oil and gasfields in the marshlands, shallow bays, and contiguous offshore areas of the Gulf of Mexico. Sulphur is mined at Grand Ecaille and at Garden Island Bay. Extensive areas of marshlands on both sides of the river contain innumerable shallow bays, lakes, and ponds

with interconnecting bayous and canals, which contribute to an extensive seafood industry and support an important fur trapping program.

(c) The principal crops are citrus fruit, truck crops, and pasture for the production of beef cattle. Essentially all citrus crops produced in Louisiana are grown on the lower Mississippi River Delta and about 86 percent is grown on the west bank between Port Sulphur and Venice. Truck crops are grown principally from Violet to Verret along the Bayou La Loutre ridge and down the east bank of the river to the vicinity of Belair, with small acreages at scattered locations throughout the area. The greater part of the pasture is located between Bertrandville and Bohemia.

(3) Transportation

(a) Louisiana Highway No. 23 (two-lane, paved) extends from Gretna to Venice along the west bank of the Mississippi River and then follows a westerly direction for about 4 miles to the Venice Oil Field. Louisiana Highway No. 325 extends from Fort Jackson to Venice along the Mississippi River levee. Louisiana Highway No. 39 (two-lane and four-lane, paved) extends from New Orleans to Bohemia on the east bank. Free ferries over the Mississippi River are operated at Belle Chasse and Pointe-a-la-Hache. The Missouri Pacific Railroad operates a branch line from Gretna to Buras.

(b) In addition to the Mississippi River project (40-foot depth) and the Gulf Intracoastal Waterway (12-foot depth), the area is served by numerous improved waterways and natural streams navigable by shallow draft vessels throughout the area. Some of the more important waterways include the waterway from Empire to the Gulf of Mexico which connects to the Mississippi River through a state-owned lock; the Freeport Sulphur Company Canal used for barge transport of sulphur from the Grand Ecaille Mine to Port Sulphur.

(4) Recreation. Recreational opportunities in the area attract large numbers of fishermen and hunters. Empire, Buras, Pointe-a-la-Hache, and other small communities are centers of recreational activities. A public hunting area for waterfowl is maintained by the state at the Pass a Loutre Waterfowl Management Area. Waterfowl hunting is available throughout much of the marsh. On the eastern side of the

Mississippi River between Baptiste Collette Bayou and Pass a Loutre is the Delta National Wildlife Refuge. These areas are not readily accessible to the general public, but provide a fertile field for the photographer or bird watcher willing to undertake a difficult trip. The reach C project levee includes approximately 18 ramps across the levee which will provide access to commercial and industrial facilities, and fish, wildlife, and recreational resources.

i. Related Federal projects. The major Federal projects in the area of this project are those associated with the Mississippi River. The navigation project "Mississippi River, Baton Rouge to the Gulf of Mexico, Louisiana," provides for maintaining channels of specified dimensions in the Mississippi River from Baton Rouge, Louisiana, to deep water in the Gulf of Mexico. There is no effect of this hurricane project upon the navigation project. The effect of the navigation project upon this hurricane project is to provide a source of water which can be directed against the levees during a storm.

The Flood Control Project, Mississippi River and Tributaries, which includes the entire lower river, has most of its significant features outside of this project area but does provide for revetment works at several locations. These do not interact with this project because they are in the river below high water. In addition, it includes the Mississippi-Delta Region (Salinity Control Structure), Louisiana, feature which provides for diverting freshwater from the Mississippi to the bays and marshes below New Orleans. This is an environmental management feature dedicated to improving the situation which is still in the planning stage. Any interaction between this feature and the hurricane project will come only as a result of construction activities but there is insufficient information at this time to present or comment upon such interaction.

Another lesser project is the navigation project, Waterway Empire to the Gulf of Mexico, Louisiana. This is a channel maintenance project which extends from the gulf side of Empire southerly toward the gulf. Again there should be no significant interaction between these projects from an environmental standpoint. Outside of this project area is the authorized Mississippi River Outlets at Venice, Louisiana, which is a navigation project to provide channels from the river to the gulf by an enlargement of Baptiste Collette Bayou and Grand Tiger Pass. This project is just below the hurricane project area and is in the design phase at the present time.

3. ENVIRONMENTAL IMPACTS OF THE PROPOSED ACTION

a. Nature of impacts. There will be both temporary and permanent impacts of this project upon the environment. With respect to levee construction the temporary impacts will occur as a result of the construction activities and the permanent ones due to a change in the character of land and loss of land to levee construction.

Impacts from the construction of the various floodgates and culverts will be similar in nature to those at any structure construction site such as dust, noise, temporary inconvenience to traffic and the like.

In general, the benefits will be associated with public protection and more efficient use of land resources for development.

b. Beneficial impacts

(1) The major beneficial impact will be upon the people of the community by providing them a protected area from storm induced flooding, which is the purpose of the project. The protected area will offer a high degree of protection from hurricane flood damage whereas the area outside of the protection can suffer a high degree of damage from storms. The incentive therefore has been established which will limit human habitat and most commercial development to the protected area. This will produce a benefit in a somewhat reverse fashion in that the random development of an area would produce a more adverse impact than the confined orderly development. It is possible that protecting this area will stimulate growth but because the growth is controlled primarily by the housing requirements of the mineral extraction industries, it is felt that the protection features alone will not create a growth potential. If, however, one does occur, then it is felt that adequate safeguards exist against secondary impacts and will limit any damages.

(2) Materials placed in the marsh ponding areas during construction will have a long-range beneficial effect as well as a short-range adverse effect to be discussed later. These marshes, formed by former deltaic sedimentation, are now being destroyed by natural processes as well as man-made works. The addition of new material will prolong the life of this marsh. Material placed on these ponding areas from the area

itself will likewise prolong the life of that area where deposition takes place.

Material placed in the ponding area will cover much of the existing vegetation but will not be of sufficient depth to totally destroy it. Within a year or so, similar species will begin to emerge or reappear. In approximately 5 years, depending upon rates of compaction and storm activity in this area, this land will have subsided to the point where tidal action will become evident and aquatic species will appear throughout the area.

There will be approximately 8,500 acres of the marsh used for such ponding purposes which will have an extended useful life after a short period of disfunction.

c. Adverse impacts

(1) The major adverse impact will be that associated with levee preparation and construction. There will be a permanent change in usage of approximately 1,000 acres for actual levee construction and a temporary impact on 8,500 acres of marsh used for ponding for effluent control during hydraulic fill operations attendant to the construction. The land used for levee construction will become upland and will be covered with grass. Because this will be kept mowed, it will be only minimally useful for small animal habitat.

(2) Marsh used for temporary ponding will suffer an immediate damage in that water with a different chemical composition will be introduced and sediment will cover a large portion of the area. This land will therefore not function as marsh for a period of several years, during which time there will be a loss in productivity. Within a year or so the local species will begin to emerge and repopulate the area. In the higher drier portions there will be an introduction of plant species of a more upland type from the nearby communities and roadsides. Within a few years, depending upon subsidence rates and storm activity, the area will again be subject to tidal action and aquatic species will again dominate. The land will then revert to a marsh type environment but with a longer life expectancy as mentioned in the beneficial impact section. In similar situations this period of restoration is in the order of 5 years but, of course, will depend upon many factors such as actual depth of coverage during construction, rain, storms, settlement, and so forth.

(3) Water from the hydraulic fill operations will flow into the marsh area from the ponding area. Early testing indicates that this water contains a negligible quantity of suspended material and occasions only a slight increase in turbidity, generally no more severe than that experienced due to normal wind and wave agitation.

(4) One significant permanent adverse impact will come from the use of approximately 1,000 acres of marshland for borrow purposes. These acres will be permanently lost as marsh. In their place will be deep bodies of water, sometimes as deep as 70 feet. Since these will not be connected to open bodies of water there will be no general flushing although there will be some interchange between them and open waterways during periods of high water. Such areas may ultimately find use as fishing areas.

(5) The construction of the cast earth levee will contribute a very small amount of wind-blown and water-caused erosion sedimentation onto adjacent land and into local waters. This will have a negligible, temporary adverse effect on the environment. Because the levees will be seeded so as to produce a grass cover there will be no continuing effect after construction is completed.

(6) Approximately 2,200 acres of uplands will be used on the east bank for levee right-of-way and 400 on the west bank. Breeding areas for small animals contiguous to the levee in the transition zone between land and levee will be affected to approximately the same effect as they are by the present levee system. There will be increased land utilized for levee stability but this will be of minimal value for wildlife because it will be maintained as closely cut grass areas.

(7) There will be some dislocation of people in that the relocation of Louisiana Highway 23 will require a ramp that will need land presently used by a few structures.

(8) Fort St. Philip will have a levee built between it and the river. Although this will alter the view from a historical basis, it is the least objectionable location for the levee from an overall environmental standpoint.

(9) There is no land under the jurisdiction of the Federal Government which either is or has the potential of becoming National Register properties. All items having any apparent historical or archeological interest which are discovered in the course of any construction activities shall be carefully preserved. The Contractor shall leave the archeological finds undisturbed and shall immediately report the find to the Contracting Officer so that the proper authorities may be notified.

(10) A temporary adverse impact on the environment will result from construction activities involving the handling of large volumes of earth excavation and earth and shell fill. The construction of the Empire floodgate and numerous other culverts and gates will cause the typical noise, dust, and inconvenience found at all construction sites. Because of the existing regulations, which are enforced and controls exerted over such construction by the construction division, these impacts should be of a minimal nature.

(11) No significant adverse impacts are expected to result from the discharge of water into the marshland during the hydraulic fill operations. The water, in the order of 70 acre-feet per day during construction, will be of a different chemical makeup from that in the marsh but this rate of discharge and runoff from the ponding areas should not greatly affect the surrounding waters. The freshening effect of water from the Mississippi River is not expected to be of such duration or effect as to cause changes in the plant community.

(12) Closure of the Pointe-a-la-Hache relief outlet will prevent the transfer of water from the Mississippi River to Breton Sound upon infrequent occasions. Concomitantly, there will be a minor loss of nutrient which is considered insignificant in this area.

4. ANY ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED SHOULD THE PROPOSAL BE IMPLEMENTED

The adverse environmental effects which cannot be avoided should the proposal be implemented are essentially the same as the adverse impacts in the previous section:

a. The most significant effects are those attendant to the loss or conversion of land in the construction of the levees. Most of the 8,500 acres used for temporary ponding

will convert after a short period of time to a more upland nature. Although this will provide some variety to the area and food for a different type of wildlife, it will be lost for a period of time to marsh production. In the very near future, however, this land will again revert to marsh as it subsides and succumbs to the effects of natural marine attack, ultimately to be completely destroyed as is now happening. Other portions of the ponded areas will revert, after a temporary disturbance, back to marsh. This marsh, which is rapidly being destroyed, will benefit by the addition of new material which will tend to extend its useful life, although it will suffer short-time adverse effects.

b. That land committed to borrow area or to levee construction will be lost. The borrow areas will be water masses which will eventually find some usefulness as recreational or fishing places, but being in area where fishing already abounds will not be too advantageous. These borrow pits will not be connected to the gulf so it is not anticipated that there will be any saltwater intrusion into these areas.

c. The temporary construction effects such as dust, noise, and traffic disruption are considered to be minimal. The contracts for such works contain environmental protection clauses and it is felt that such controls and other existing regulations are well supervised and enforced.

d. The dislocation of a few structures by a ramp for Louisiana Highway 23 over the levee cannot be considered a disruption to the community because only a few, relatively isolated, structures are affected.

e. The alteration of the view from Fort St. Philip is considered to be only a minor impact because the existing levee, which will be enlarged in section and height, has already changed it considerably. The fort is not generally available to the public and is not maintained as a historic exhibit. The higher levee should afford the casual visitor a better view of the area from the levee.

f. The discharge of water into the marsh during fill handling operations will change the chemistry of the marsh water to a minor degree and may possibly introduce some contaminants or pollutants into the area. Because the rate of flow is not large and the use of retention dikes allows most

suspended material to drop out, it is believed that this water will not be particularly damaging, although of a different chemical composition than the natural water.

g. The closure of the Pointe-a-la-Hache relief outlet will deprive Breton Sound of some occasional nutrients because of the loss of Mississippi River water which flows into this sound on infrequent occasions. At the same time the contaminants and pollutants which are in the river water will be denied access to the sound. In view of the fact that the amount of introduced nutrients is small compared to that from the surrounding marshes, this loss is of minor consequence and overall the impact will be only a nominal one.

5. ALTERNATIVES CONSIDERED TO THE PROPOSED ACTION

a. The proposed closed system is essentially an enlargement of existing levees to provide additional protection against severe storms. The only other protection possible would be to elevate all residential and office buildings above the flood line. This is being done for new construction of homes in certain portions of the area. However, this would allow damages to other structures such as bridges, transformer stations, garages, and so forth, to continue. Clearly, this would be impracticable on a community scale, although an individual could benefit greatly by such a measure.

b. If the protection of the populace from death or injury were the only consideration, a total evacuation plan would be feasible, but again a community cannot exist with its people intact but its physical facilities destroyed. The improvements of building codes and restrictions of construction will increase protection from winds and some forms of flood damage, but the levees are still necessary. There are, therefore, no practicable alternatives to the closed levee system if structural protection from storm flooding is considered to be the primary purpose of the project plan.

c. One major alternative to the construction of the barrier on the eastern side of the river would be to raise the main stem levee on the western side of the river to an elevation which would preclude surges from the east from overtopping the western levee. Investigations have shown that to reach this desired elevation, the levee would have to be set back, and in so doing, a sizable portion of the land on the west side which

is now protected (from river stages) and highly developed would be consumed by the setback. Therefore, the alternate becomes essentially no alternate when the envisioned protection project destroys the improvements that the project is intended to protect.

d. Because of the fact that all but a minor portion of this project on the east bank is based upon the improvement of an existing levee system and a significant amount of levee raising or modification has already occurred, it is difficult to evaluate an alternative of no action. In this particular case the no-action alternative would continue to allow the exposure of the human element of the environment to the dangers of medium to severe storms. In this situation man must be considered a part of the ecosystem and should be afforded an adequate degree of protection. Delay of this project will allow continued exposure of the area to the possibility of extensive hurricane damage and the exposure of the population to death or injury.

e. Although damages are computed on an annual basis, it must be realized that they all occur on a specific incident which has the possibility of occurring any time and if one such incident occurs before the project is completed, the benefits from years will be destroyed.

6. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

In order to provide hurricane protection for this area it is necessary to lose biological production from some 1,000 acres of marsh on a permanent basis for levee construction and some 8,500 acres on a temporary basis of a few years for ponding areas. The productivity of this area will decrease in time as this marsh is destroyed by natural causes and other man-made works in the area. The areas being used for ponding will, as they become marsh, extend the life of the area somewhat.

If the protection were not afforded to man, he might leave the area. Existing protective workings would not be maintained and the area might revert to a more natural state. On a long-range basis it would be conceivable that overflow from the river would, in the absence of protective works, help replenish the marshland.

7. ANY IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES WHICH WOULD BE INVOLVED IN THE PROPOSED ACTION SHOULD IT BE IMPLEMENTED

The major irreversible and irretrievable commitment of resources which would be involved in the proposed action should it be implemented, lies in the area of land commitment. The land used for levee construction (3,600 acres total combined marsh and upland type) and borrow material (approximately 1,000 acres) will be lost with respect to productivity. The approximately 8,500 acres of marsh which will be used for ponding areas will be temporarily removed from production. After several years there will be a reversion to marsh. It's possible that a portion of these areas may be lost in this process but there is no way to estimate the quantity other than to surmise that the loss will be small.

The commitments in fuel and supplies for construction and maintenance must be considered as irretrievable.

8. COORDINATION

a. Public meetings. Three public meetings were held to obtain information on the problems caused by hurricane flooding and the views of local interests relative to their solution. The meetings were held at New Orleans, Morgan City, and Lake Charles, Louisiana, on 13, 15, and 20 March 1956, respectively. The meetings were attended by a total of about 50 representatives of business, transportation, and industrial interests, civic organizations, and Federal, state, and local agencies. The State of Louisiana, Department of Public Works, and local interests requested that maximum consideration be given to protective works required to safeguard lives and property from hurricane damages and the development of an adequate warning system and indicated that they would actively support the studies as they progressed. Specific suggestions as to type of protection desired were not proposed.

b. Government agencies and citizen groups. Comments have been received from the following agencies and groups. Copies of the letters are attached to this statement.

(1) ENVIRONMENTAL PROTECTION AGENCY

Comment: 1. Project description. The inclusion and discussion of the following items should strengthen this section:

a. Levee width, height, and land area.

b. Location of borrow area.

c. Method of transporting construction material.

d. Time schedules for getting levees to grade.

e. Type of levee construction - if built by hydraulic fill, will ring levees be used to control water runoff?

f. Location of the levee in relation to the subsiding area along the shoreline of Breton Sound.

Response: These items have been added to the project description in section 1 and incorporated into the discussion elsewhere. In addition, plates 2 through 6 have been added which should show the project and its relation to other features in greater detail.

Comment: 2. Environmental impact of the proposed project. Implementation of the proposed action should trigger additional industrial and residential growth in the area. This growth could produce numerous secondary effects, such as increased volume of solid waste, increased municipal and industrial waste, home and business development resulting in increased surface runoff and additional loss of existing vegetation, and numerous other impacts - both beneficial and adverse - to the environment. We believe a detailed discussion of the secondary effects of the proposed action on the area's environment would strengthen the statement.

Response: This has been added in paragraph 3.b.(1).

Comment: 3. The construction of the levee system may promote a false sense of protection which could result in the relaxation of building and construction codes by local government. To eliminate this possibility, we suggest that the Corps of Engineers require the enactment of stringent building codes and their enforcement as a prerequisite to implementing the project.

Response: Building codes have already been revised by local authorities to make the buildings stronger and safer. There is a requirement that prehurricane season warnings and instructions as to hurricane procedures be issued so that there is no false sense of security. This is being done and the

community actions in recent storms indicates that in reality no sense of false security exists or is likely to develop.

Comment: 4. Any adverse environmental effects which cannot be avoided should the proposal be implemented. The adverse impacts discussed under item 2, above, should be further discussed in this section. An example could be the possible adverse environmental effect on improperly treated municipal and industrial wastes.

Response: It is felt that improperly treated municipal and industrial wastes are regulated under other authority and that these regulations will be enforced.

Comment: 5. The materials, manpower, funds, and their cost required for construction and operation of the project must be considered irreversible and irretrievable commitments of resources. Theoretically, the land and some of the material used in construction could be returned in time to a near-natural state for use by future generations. Renewable natural resources displaced as a result of the project will be irretrievable commitments for the life of the project. Any nonrenewable resource involved in the project would be an irretrievable commitment.

Response: Agreed and more attention has been given to this concept in paragraph 7.

Comment: 6. The following comments of a general nature should also be considered in developing the final statement:

a. Relocations of all pipelines and utilities should be accomplished in such manner as to avoid pollution of the surrounding environment.

b. A discussion of the devices, regulations, and/or constraints to be used by your agency for prevention and abatement of water, air, and noise pollution during construction would be helpful in assessing possible effects of the project on the area.

c. In many channels, borrow areas, and canals along the gulf, aquatic weeds cause operation and maintenance problems. Methods for control, particularly if herbicides are programed for use, should be discussed in the statement.

d. Clearing and disposing of the brush and vegetation along the right-of-way of the proposed project should include provisions for prevention of adverse effects on the environment. Methods of disposal should be covered in the statement. Open, uncontrolled burning should not be permitted, in order to meet the requirements given in 40 CFR 76.8.

e. If a public water supply source, treatment facility, or distribution system is to be affected by the project, precautionary measures to prevent damage to, or contamination of, the public water supply should be described.

f. Where appropriate, sanitary waste facilities should be provided and operated to treat and dispose of domestic wastes in conformance with state and Federal water pollution control regulations. Provisions of the Federal Occupational Safety and Health Act of 1970 should be considered.

Response: These general comments pertain to construction operations. It should be understood that the contractor will be required to comply with all applicable Federal, state, and local laws and regulations concerning environmental pollution control and abatement. He will be required to give appropriate consideration to air, water, land, noise, and solid waste management. This will be accomplished by control of dust, smoke, and noise; prevention of any spillage of oils and greases in the water of the area, and control of disposal of debris and restoration of temporary construction site.

In the operational phase, the use of herbicides is the subject of a separate study and impact statement and the findings of that study would apply to any use in this project.

(2) UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE

Comment: Some of the land lost, no doubt, would be valuable farmland. This loss would be partially offset by the additional grazing provided by the sodded levees. We believe the draft could be expanded to include this thought.

Response: The land lost could possibly be valuable farmland and the sodded levees in the future could be used for grazing.

(3) UNITED STATES DEPARTMENT OF COMMERCE, DEPUTY ASSISTANT SECRETARY OF COMMERCE FOR ENVIRONMENTAL AFFAIRS

Comment: The location of present levees should be more definitively indicated on the map.

Response: A more detailed map of the project area is furnished.

Comment: The environmental impact on Breton Sound and its adjacent marshes of placing a fuse plug levee across Pointe-a-la-Hache relief outlet south of Bohemia should be discussed.

Response: This has been done in paragraph 3.c.(12).

(4) UNITED STATES DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Comment: We, therefore, have no objection to the authorization of this project insofar as our interests and responsibilities are concerned.

Response: The review and comment are noted.

(5) UNITED STATES DEPARTMENT OF TRANSPORTATION

Comment: The proposed project apparently will have no adverse effect on highways or bridges serving the area.

Response: The review and comment are noted.

(6) UNITED STATES DEPARTMENT OF THE INTERIOR

Comment: The proposed action will not adversely affect any existing, proposed, or known potential unit of the National Park System, or any known natural or environmental education sites eligible or considered potentially eligible for the National Landmarks Program.

Response: Agreed.

Comment: The statement acknowledges the presence of two National Historic Landmarks (Fort Jackson and Fort St. Phillip). However, it fails to mention National Historic Landmark Fort de la Boulaye. The general map attached to the environmental

statement is not sufficient to determine the possible effect on these two National Historic Landmarks and a more detailed plat should be included in the final statement.

Response: Although Fort de la Boulaye (Boulage) lies well out of the project area, it has been mentioned in paragraph 2.g. for completeness. It is not possible to show details of a specific nature in a general document but additional coverage of this situation is given in the text.

Comment: We note the draft statement has been sent to the State Liaison Officer for Historic Preservation. His comments concerning the effect of the project upon nominations to the National Register of Historic Places being processed should be included in the final statement.

Response: These have been included in this section and a copy of the Memorandum of Agreement, with respect to the significant historical areas, has also been included.

Comment: The statement generally describes the Mississippi River cultures in the area, but the effect of the project upon them and the significance of the archeological resources present is not defined. The final statement should include an archeological survey of the project area.

Response: This has been done to the best of our ability and resources. Library searches were made by an archeologist and an engineer experienced in historical searches.

Comment: The only recreation mentioned refers to hunting and fishing. If other recreational activities are present, they should be clearly identified in the environmental statement. This paragraph also mentions the State of Louisiana's Pass a Loutre Waterfowl Management Area as a public hunting area. Another area of public lands not mentioned in the statement is the Bureau of Sport Fisheries and Wildlife's Delta National Migratory Waterfowl Refuge, located immediately north of the state area.

Response: The hunting and fishing are the primary recreational activities. The land is of such a nature that it is not readily suited for nature walks, birdspotting, photography, swimming, water sports, and the like. A few individuals are willing to make the effort but it is felt that it would be misleading to present such activities because they might be

assumed to be readily available to the general public. The statement has been changed to reflect this potential.

Comment: Environmental impact of the proposed action. It is mentioned in this section that there will be a long-range beneficial impact as a result of the limiting effect of the project upon uncontrolled encroachment on the marsh. While the installation of the project may encourage further municipal and industrial development within the protected area, it will not prevent development of the unprotected area. The statement should recognize this impact.

Response: This is true but it is felt that development of this area is so limited by many factors that the predominant nonindustrial development will be limited to the protected area.

Comment: The statement is made that there will be a minor short-term benefit to the saltwater marshes because of temporary freshening of these marshes as a result of runoff from borrow material from the river. Temporary freshening could be detrimental to the existing vegetation and could be of such short duration that any vegetation tolerant of a salinity change may not be established. We also note that there is no discussion of the impact that dredging will have on the river.

Response: It is believed that the freshening effect mentioned will be minor and difficult to predict either benefits or damages. The statement has been changed so as to reflect this a little more clearly. It is not felt that removal of material from the Mississippi River produces any impact upon the river when compared to natural processes.

Comment: It is stated that damages to the pond areas will be temporary and that recovery is expected within a year or two. These areas will probably support a different type of flora than the surrounding marsh.

Response: This is true and the statement now states that the majority of this land will be of a more upland nature plus a more comprehensive discussion of the long-range effect.

Comment: The statement that the project will not effect any breeding areas not already affected by the present levee system is in error. Additional breeding areas will be affected

as borrow material is dredged from the river and as natural distributaries and man-made channels connected to the river are blocked by levees. Severance of distributaries will effect the distribution of waters and sedimentation for some distance from the river and have an effect on breeding areas, accretion, and erosion. The increased weight of the levees also may have some effect on subsidence of the marsh. These should be recognized in the statement.

Response: The statement was intended to be applicable only to breeding areas in the transitional land contiguous to the levees and has been changed to clarify this point. The loss of other breeding land is treated separately. There are no distributaries being blocked by the project. The weight of the levees is not expected to have any effect upon the subsidence of the marshland.

Comment: The impact statement would be more complete if the Mississippi River Delta Region project was also discussed in relation to this proposed project. The Mississippi Delta Region project plans provide four salinity control structures with training channels to introduce waters from the Mississippi River into oyster, waterfowl, and fur animal producing areas east and west of the Mississippi River to enhance production of these resources. The impact of this hurricane protection project on the successful implementation of the freshwater control structures should be included.

Response: The status of the Mississippi River Delta Region project is such that it would be difficult to comment upon it in this statement. The comment is appropriate to note this but the project does not conflict with anything in this statement because any diversion of water to the bays will be through control structures and channels which can be built without affecting the integrity of the hurricane plan.

(7) STATE OF LOUISIANA, DEPARTMENT OF PUBLIC WORKS

Comment: We have completed our review of the draft statement prepared by your office and wish to compliment you on the comprehensive coverage contained in this statement. The statement does indicate a complete overall concept and realistic attitude toward changes to the environment resulting from the project construction.

Response: The comment is noted.

Comment: There may be some confusion in the statement resulting from the information pertaining to the proposed east bank barrier levee. Although this barrier levee will become part of the authorized project, to date, no assurances have been provided by local interest. It may be best described in the impact statement as being a proposed addition to the authorized project since the statement that it "will be built" may be premature at this time.

Response: It is agreed that this comment is more precise with respect to authorization. This statement, must, however, analyze the situation presented by the plans. It is possible that any element might not obtain final approval, for various reasons.

(8) LOUISIANA WILD LIFE AND FISHERIES COMMISSION

Comment: None.

(9) LOUISIANA STATE PARKS AND RECREATIONAL COMMISSION

Comment: We have reviewed the above statement and find it adequate and comprehensive, and we have no comment.

Response: The comment is noted.

(10) STATE OF LOUISIANA, DEPARTMENT OF HIGHWAYS

Comment: We have reviewed the draft environmental statement for the New Orleans to Venice Hurricane Protection project prepared by your office and find that the Department of Highways has no objection to the proposed construction as outlined in that draft.

Response: The comment is noted.

(11) LOUISIANA AIR CONTROL COMMISSION

Comment: We have no further comment except that in the period since 1967 greater emphasis is being placed on air pollution control. There is no information as to whether or not there will be combustible materials from the work involved. If there will be such materials, we believe that any contract

could provide for compliance with the Louisiana Air Control Commission's standards and regulations.

Response: The specifications for all construction will require such compliance.

(12) LOUISIANA COMMISSION ON INTERGOVERNMENTAL RELATIONS

No comments received.

(13) STATE OF LOUISIANA, STREAM CONTROL COMMISSION

Comment: The sentence "The fine material which eventually flows into the waterway will temporarily increase the turbidity of the water but should not do any damage" is in conflict with the information preceding it. We suggest it be changed to read as follows: "The fine material which eventually flows into the waterway will temporarily increase the turbidity of the water but may not do any permanent damage."

Response: The addition of the word "permanent" is appropriate and has been done.

Comment: The sentence "Industrial wastes are generally pumped into the river as are human wastes with relatively poor treatment." is misleading as both industrial and municipal wastes generated in the project area either already receive or are scheduled for secondary or the equivalent degree of treatment by 31 December 1972. Therefore, the sentence should be changed to reflect this information.

Response: It has been omitted to avoid an issue.

Comment: The paragraph pertaining to treatment of areal discharges states unequivocally that treatment of areal discharges in the project area will be necessary. Assuming that this includes storm water (approximately 60 inches annually), it is suggested that the statement either be documented or deleted.

Response: The statement has been modified to reflect the conditional nature of the situation.

(14) LOUISIANA PLANNING COMMISSION

No comments received.

(15) LOUISIANA COASTAL COMMISSION

No comments received.

(16) LOUISIANA LAND OFFICE

No comments received.

(17) LOUISIANA PUBLIC SERVICE COMMISSION

No comments received.

(18) SECRETARY OF THE METROPOLITAN DISTRICT COMMISSION

No comments received.

(19) LOUISIANA WILD LIFE FEDERATION

No comments received.

(20) LOUISIANA DEPARTMENT OF CONSERVATION

No comments received.

(21) LOUISIANA STATE UNIVERSITY, DEPARTMENT OF GEOGRAPHY AND ANTHROPOLOGY

No comments received.

(22) LOUISIANA HISTORICAL PRESERVATION AND CULTURAL COMMISSION

No comments received.

(23) LOUISIANA ADVISORY COUNCIL ON HISTORIC PRESERVATION

No comments received.

(24) NATIONAL AUDUBON SOCIETY

No comments received.

(25) ORLEANS AUDUBON SOCIETY

No comments received.

(26) ECOLOGY CENTER OF LOUISIANA, INC.

No comments received.

(27) NATIONAL SIERRA CLUB

No comments received.

(28) NATIONAL WILDLIFE FEDERATION

No comments received.

(29) GULF STATES MARINE FISHERIES COMMISSION

No comments received.

(30) WILDLIFE MANAGEMENT INSTITUTE

No comments received.

(31) COMMISSION COUNCIL, PLAQUEMINES PARISH

No comments received.

(32) MAYOR, BOHEMIA

No comments received.

(33) MAYOR, BURAS

No comments received.

(34) MAYOR, EMPIRE

No comments received.

(35) MAYOR, POINTE-A-LA-HACHE

No comments received.

(36) MAYOR, TRIUMPH

No comments received.

(37) MAYOR, VENICE

No comments received.

(38) ADVISORY COUNCIL ON HISTORICAL PRESERVATION

Comment: Although your environmental statement contains evidence of having consulted the National Register of Historic Places, this is no indication that the most current listing was utilized.

Response: This has been so stated in paragraph g(1) of section 2, understanding that this is the most current edition.

Comment: On page 15 of the draft statement, mention is made of two National Register properties within the vicinity of the proposed project. The council has been informed by the National Park Service that a third, Fort de la Boulaye is also within the project area.

Response: The information is incorrect in that the site of Fort de la Boulaye is not within the project area. Since there is interest in this site, it has been mentioned in paragraph g(2) of section 2.

Comment: In the case of land under the control or jurisdiction of the Federal Government, a statement should be made as to whether or not the proposed undertaking will result in the transfer, sale, demolition, or substantial alteration of potential National Register properties.

Response: This statement has been included in section 3, paragraph g.

Comment: In the case of lands not under the control or jurisdiction of the Federal Government, a statement should be made as to whether or not the proposed undertaking will contribute to the preservation and enhancement of non-Federally owned districts, sites, buildings, structures, and objects of historical, archeological, architectural, or cultural significance.

Response: This has been included in section 3, paragraph g.

Comment: That a comprehensive interdisciplinary study has been made of all archeological, historical, architectural and cultural resources extant in the proposed project area; the

effects, if any, on these resources; and an account of steps taken to assure their preservation and enhancement.

Response: This has been done to the best of our ability. It must be recognized that an exceedingly small amount of factual information and research is available in this area. A literature search was made by an archeologist and an engineer experienced in historical matters because of the recent interest in more contemporary technical history. The coordination to insure adequate protection of the Fort St. Phillip site as required by Section 106 of the National Historic Preservation Act of 1966 has been accomplished. This coordination includes a Memorandum of Agreement concerning the proposed construction and details to protect the site which has been executed with the Advisory Council in Historic Preservation and the Louisiana Preservation Officer. A copy of this agreement has been attached to the end of this section.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

Post Office Box 1630, Alexandria, Louisiana 71301

LMNED-PC

October 10, 1972

Colonel Richard L. Hunt
District Engineer
U. S. Corps of Engineers
Post Office Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

Reference is made to your letter, LMNED-PC, transmitting for comment the draft environmental statement for the authorized project, "New Orleans to Venice, Louisiana, Hurricane Protection".

The draft states that if the project is implemented, an additional strip of land, generally several hundred feet wide, will be irretrievably lost. The land, due to its closeness to development, is not particularly valuable for wildlife purposes and so the loss is considered to be minor.

Some of the land lost, no doubt, would be valuable farmland. This loss would be partially offset by the additional grazing provided by the sodded levees. We believe the draft could be expanded to include this thought.

We appreciate the opportunity to review and comment on this draft statement.

Sincerely yours,

Thomas G. Rockenbaugh

Thomas G. Rockenbaugh
Acting State Conservationist

cc: Dr. T. C. Byerly
Kenneth E. Grant

ENVIRONMENTAL PROTECTION AGENCY
REGION VI
1600 PATTERSON, SUITE 1100
DALLAS, TEXAS 75201

October 4, 1972

OFFICE OF THE
REGIONAL ADMINISTRATOR

Colonel Richard L. Hunt
District Engineer
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Re: 06-3-33-LA
Your Re: LMNED-PC

Dear Colonel Hunt:

We have reviewed the Draft Environmental Statement prepared by your staff for the project, New Orleans to Venice, Louisiana, Hurricane Protection. The project is intended to provide hurricane and flood protection to the more highly developed areas along the lower Mississippi River delta south of New Orleans. The project provides for enlargement of back levees from City Price to Venice (approximately 36 miles) on the west bank of the Mississippi River, including a new flood gate at Empire and construction of a new levee from Phoenix to Bohemia (approximately 16 miles) on the east bank. Drainage capability and roadway access will be maintained within the project area.

In general, the statement covers many of the environmental impacts of the proposed action. However, we suggest that the Final Environmental Statement address more fully the following items:

1. Project Description. The inclusion and discussion of the following items should strengthen this section:

a. Levee width, height, and land area.

b. Location of borrow area.

c. Method of transporting construction material.

d. Time schedules for getting levees to grade.

e. Type of levee construction - if built by hydraulic fill, will ring levees be used to control water runoff?

f. Location of the levee in relation to the subsiding area along the shoreline of Breton Sound.

2. Environmental Impact of the Proposed Project.

Implementation of the proposed action should trigger additional industrial and residential growth in the area. This growth could produce numerous secondary effects, such as increased volume of solid waste, increased municipal and industrial waste, home and business development resulting in increased surface runoff and additional loss of existing vegetation, and numerous other impacts - both beneficial and adverse - to the environment. We believe a detailed discussion of the secondary effects of the proposed action on the area's environment would strengthen the statement. Also, the construction of the levee system may promote a false sense of protection which could result in the relaxation of building and construction codes by local government. To eliminate this possibility, we suggest that the Corps of Engineers require the enactment of stringent building codes and their enforcement as a prerequisite to implementing the project.

3. Any Adverse Environmental Effects Which Cannot Be Avoided Should the Proposal Be Implemented.

The adverse impacts discussed under item 2, above, should be further discussed in this section. An example could be the possible adverse environmental effect of improperly treated municipal and industrial wastes.

4. Any Irreversible and Irretrievable Commitment of Resources Which Would Be Involved in the Proposed Action Should It Be Implemented.

The materials, manpower, funds and their cost required for construction and operation of the project must be considered irreversible and irretrievable commitments of resources. Theoretically, the land and some of the material used in construction could be returned in time to a near-natural state for use by future generations. Renewable natural resources displaced as a result of the project will be irretrievable commitments for the life of the project. Any non-renewable resource involved in the project would be an irretrievable commitment.

5. The following comments of a general nature should also be considered in developing the Final Statement:

a. Relocation of all pipelines and utilities should be accomplished in such manner as to avoid pollution of the surrounding environment.

b. A discussion of the devices, regulations, and/or constraints to be used by your agency for prevention and abatement of water, air, and noise pollution during construction would be helpful in assessing possible effects of the project on the area.

c. In many channels, borrow areas, and canals along the Gulf, aquatic weeds cause operation and maintenance problems. Methods for control, particularly if herbicides are programed for use, should be discussed in the statement.

d. Clearing and disposing of the brush and vegetation along the right-of-way of the proposed project should include provisions for prevention of adverse effects on the environment. Methods of disposal should be covered in the statement. Open, uncontrolled burning should not be permitted, in order to meet the requirements given in 40 CFR 76.8.

e. If a public water supply source, treatment facility, or distribution system is to be affected by the project, precautionary measures to prevent damage to, or contamination of, the public water supply should be described.

f. Where appropriate, sanitary waste facilities should be provided and operated to treat and dispose of domestic wastes in conformance with State and Federal water pollution control regulations. Provisions of the Federal Occupational Safety and Health Act of 1970 should be considered.

We appreciate the opportunity to review the Draft Environmental Impact Statement and would appreciate receiving two copies of the Final Environmental Statement.

Sincerely yours,

for Arthur W. Busch
Regional Administrator

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Engr

THE ASSISTANT SECRETARY OF COMMERCE
Washington, D.C. 20230

November 6, 1972

Colonel Richard L. Hunt
District Engineer
New Orleans District, Corps of
Engineers
P.O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

The draft environmental impact statement for New Orleans to Venice, Louisiana Hurricane Protection, and your accompanying letter has been received by the Department of Commerce for review and comment.

The Department of Commerce has reviewed the draft environmental statement and has the following comments to offer for your consideration.

The location of present levees should be more definitively indicated on the map.

The environmental impact on Breton Sound and its adjacent marshes of placing a fuse plug levee across Pointe a la Hache relief outlet south of Bohemia should be discussed.

We hope these comments will be of assistance to you in the preparation of the final statement.

Sincerely,

Sidney R. Galler

Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGIONAL OFFICE
1114 COMMERCE STREET
DALLAS, TEXAS 75202

October 3, 1972

OFFICE OF
THE REGIONAL DIRECTOR

Our Reference: EIS 0972-174

Mr. Richard L. Hunt
Colonel, CE
District Engineer
Department of the Army
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Re: New Orleans to Venice, Louisiana Hurrican Protection

Dear Mr. Hunt:

Pursuant to your request, we have reviewed the Environmental Impact Statement for the above project proposal in accordance with Section 102(2)(C) of P. L. 91-190, and the Council on Environmental Quality Guidelines of April 23, 1971.

Environmental health program responsibilities and standards of the Department of Health, Education, and Welfare include those vested with the United States Public Health Service and the Facilities Engineering and Construction Agency. The U. S. Public Health Service has those programs of the Federal Food and Drug Administration, which include the National Institute of Occupational Safety and Health and the Bureau of Community Environmental Management (housing, injury control, recreational ehalth and insect and rodent control).

Accordingly, our review of the Draft Environmental Statement for the project discerns no adverse health effects that might be of significance where our program responsibilities and standards pertain, provided that appropriate guides are followed in concert with State, County, and local environmental health laws and regulations.

We therefore have not objection to the authorization of this project insofar as our interests and responsibilities are concerned.

Very truly yours,

Jerry W. Stephens
Environmental Impact Coordinator

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
REGION SIX
750 Florida Boulevard
Baton Rouge, Louisiana 70801

September 14, 1972

IN REPLY REFER TO

Draft Environmental Statement
New Orleans to Venice, Louisiana
Hurricane Protection

Colonel Richard L. Hunt, CE
District Engineer
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

The subject draft environmental statement dated August 31, 1972, has been reviewed as requested in your transmittal letter.

The proposed project apparently will have no adverse effect on highways or bridges serving the area.

Sincerely yours,

M. C. Reinhardt
Division Engineer

United States Department of the Interior

OFFICE OF THE SECRETARY
SOUTHWEST REGION
Room 4030, 517 Gold Avenue SW.
Albuquerque, New Mexico 87101

November 14, 1972

ER-72/1099

District Engineer
U.S. Army Corps of Engineers
P.O. Box 60267
New Orleans, Louisiana 70160

Dear Sir:

This is in response to your request for our comments concerning the draft environmental statement on the "New Orleans to Venice, Louisiana, Hurricane Protection Project, Louisiana."

The draft statement for the most part adequately describes the resources present in the area. We believe, however, that the statement could be strengthened in certain areas. The following specific comments are provided for your consideration.

2. Environmental setting without the project. The last paragraph on page 13 mentions that the bullfrog (Rana pipiens sphenocephala) is present. The genus and species names for the bullfrog are Rana catesbeiana, and the genus and species names of the leopard frog are Rana pipiens.

On page 14 the American alligator is listed as being an endangered species. The southern bald eagle, an endangered species, has been observed in the vicinity of the project and should be included also. The list of fresh-water species of fish includes the largemouth bass (Micropterus salmonoides). The correct spelling of this species name is salmoides. The carp (Cyprinus carpio) also should be added to the species list.

The proposed action will not adversely affect any existing, proposed or known potential unit of the National Park system, or any known natural or environmental education sites eligible or considered potentially eligible for the National Landmarks Programs.

On page 15 the statement acknowledges the presence of two National Historic Landmarks (Fort Jackson and Fort St. Phillip). However, it fails to mention National Historic Landmark Fort de la Boulage. The general map attached to the environmental statement is not sufficient to determine the possible effect on these two National Historic Landmarks and a more detailed plat should be included in the final statement.

Whether Fort de la Boulage will be affected cannot be ascertained from the map included with the statement. Although the boundaries of Fort de la Boulage have not been precisely defined, the location of the Fort is approximately one mile from the river eastward up the Gravelot Canal. It appears the construction of the East Bank barrier levee could have an impact on this National Register of Historic Places property.

We suggest that because of the possible effects of this project on the historical sites there be consultation with the Advisory Council on Historic Preservation as provided for by the Historic Preservation Act of 1966 as published in the Federal Register, Part II, March 15, 1972.

We note the draft statement has been sent to the State Liaison Officer for Historic Preservation. His comments concerning the effect of the project upon nominations to the National Register of Historic Places being processed should be included in the final statement.

The statement generally describes the Mississippi River cultures in the area, but the effect of the project upon them and the significance of the archeological resources present is not defined. The final statement should include an archeological survey of the project area.

On page 19 the only recreation mentioned refers to hunting and fishing. If other recreational activities are present, they should be clearly identified in the environmental statement. This paragraph also mentions the State of Louisiana's Pass a Loutre Waterfowl Management Area as a public hunting area. Another area of public lands not mentioned in the statement is the Bureau of Sport Fisheries and Wildlife's Delta National Migratory Waterfowl Refuge, located immediately north of the State area.

3. Environmental impact of the proposed action. It is mentioned in this section that there will be a long range beneficial impact as a result of the limiting effect of the project upon uncontrolled encroachment on the marsh. While the installation of the project may encourage further municipal and industrial development within the protected area, it will not prevent development of the unprotected area. The statement should recognize this impact.

On page 20 the statement is made that there will be a minor short-term benefit to the salt-water marshes because of temporary freshening of these marshes as a result of runoff from borrow material from the river. Temporary freshening could be detrimental to the existing vegetation and could be of such short

STATE OF LOUISIANA
DEPARTMENT OF PUBLIC WORKS
P. O. BOX 44155. CAPITOL STATION
BATON ROUGE, LA. 70804

ROY AGUILLARD
DIRECTOR

October 18, 1972

Colonel Richard L. Hunt, District Engineer
New Orleans Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Re: LMNED-PC
September 1972

Dear Colonel Hunt:

A draft environmental statement for the authorized project "New Orleans to Venice, Louisiana, Hurricane Protection" was recently forwarded to this department for our review and comments. This impact statement is required by the National Environmental Policy Act of 1969, Public Law 91-190.

We have completed our review of the draft statement prepared by your office and wish to compliment you on the comprehensive coverage contained in this statement. The statement does indicate a complete overall concept, and realistic attitude toward changes to the environment resulting from the project construction.

There may be some confusion in the statement resulting from the information pertaining to the proposed east bank barrier levee. Although this barrier levee will become part of the authorized project, to date no assurances have been provided by local interest. It may be best described in the impact statement as being a proposed addition to the authorized project since the statement that it "will be built" may be premature at this time.

The overall content of your impact statement is extremely good and is concurred in by this department. We appreciate the opportunity to review your statement and present our comments on it.

Sincerely yours,

Roy Aguillard

ROY AGUILLARD
DIRECTOR

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duration that any vegetation tolerant of a salinity change may not be established. We also note that there is no discussion of the impact that dredging will have on the river.

On page 21 it is stated that damages to the pond areas will be temporary and that recovery is expected within a year or two. These areas will probably support a different type of flora than the surrounding marsh. If the ponds are used to treat effluents, as mentioned in (d) on page 22, additional adverse impact on the ponds may occur.

The statement, on page 22, that the project will not affect any breeding areas not already affected by the present levee system is in error. Additional breeding areas will be affected as borrow material is dredged from the river and as natural distributaries and man-made channels connected to the river are blocked by levees. Severance of distributaries will affect the distribution of waters and sedimentation for some distance from the river and have an effect on breeding areas, accretion, and erosion. The increased weight of the levees also may have some effect on subsidence of the marsh. These should be recognized in the statement.

The impact statement would be more complete if the Mississippi River Delta Region Project was also discussed in relation to this proposed project. The Mississippi Delta Region Project plans provide four salinity control structures with training channels to introduce waters from the Mississippi River into oyster, waterfowl, and fur animal producing areas east and west of the Mississippi River to enhance production of these resources. The impact of this hurricane protection project on the successful implementation of the fresh water control structures should be included.

We appreciate the opportunity to comment on this draft statement.

Sincerely,

Copp Collins
Field Representative

Louisiana State Parks and Recreation Commission
P.O. DRAWER 1111 BATON ROUGE, LOUISIANA 70821 • TELEPHONE (504) 389-5761

GILBERT C. LAGASSE
DIRECTOR

November 29, 1972

District Engineer
Department of the Army
New Orleans District, Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Re: New Orleans to Venice, Louisiana Hurrican Protection (Your letter dated 10/11/72.

Mississippi River-Gulf Outlet, Michoud Canal, Louisiana; Associated Water Features Mississippi River-Gulf Outlet and Gulf Intracoastal Waterway. (Your letter dated 11/15/72.

Morgan City, Louisiana, and Vicinity (Franklin and Vicinity Area) Your letter dated 11/16/72.

Dear Sir:

We have reviewed the above statements and find it adequate and comprehensive, and we have no comment.

We appreciate the opportunity to review and comment on these projects.

Sincerely,

Gilbert C. Lagasse
Director-Liaison Officer

Gus Stacy III
Research Statistician

GS/pd

STATE OF LOUISIANA
DEPARTMENT OF HIGHWAYS
P. O. BOX 44245, CAPITOL STATION
BATON ROUGE, LA. 70804

OFFICE OF THE CHIEF ENGINEER

September 18, 1972

NEW ORLEANS TO VENICE, LOUISIANA
HURRICANE PROTECTION
(PLAQUEMINES PARISH)

Your File: LMNED-PC

District Engineer
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, Louisiana 70160

Dear Sir:

We have reviewed the Draft Environmental Statement for the New Orleans to Venice Hurricane Protection prepared by your office and find that the Department of Highways has no objection to the proposed construction as outlined in that draft.

Very truly yours,

S. L. POLEYNARD
ASSISTANT CHIEF ENGINEER

SLP:ebg
cc: Mr. W. T. Taylor, Jr.
cc: Mr. A. B. Ratcliff, Jr.
cc: Mr. George Landry (w/Draft for your file)

LOUISIANA AIR CONTROL COMMISSION

Louisiana State Office Building
P.O. Box 60630
NEW ORLEANS 70160

October 28, 1971

Department of the Army
New Orleans District
Corps of Engineers
P. O. Box 60267
New Orleans, La. 70160

Attention: Colonel Richard L. Hunt, CE
District Engineer

Gentlemen:

Thank you for your letter of October 15, 1971 in regard to various authorized projects including the "New Orleans to Venice, Louisiana" hurricane protection project.

We have no further comment except that in the period since 1967 greater emphasis is being placed on air pollution control.

There is no information as to whether or not there will be combustible materials from the work involved. If there will be such materials, we believe that any contract could provide for compliance with the Louisiana Air Control Commission's standards and regulations.

At the direction of Andrew Hedmeg, M.D., M.P.H.

Very truly yours,

John E. Trygg

John E. Trygg
Technical Secretary

JET:ls

STATE OF LOUISIANA
STREAM CONTROL COMMISSION
P. O. DRAWER FC
UNIVERSITY STATION
BATON ROUGE, LOUISIANA 70803

November 21, 1972

Department of the Army
New Orleans District, Corps of
Engineers
Post Office Box 60267
New Orleans, Louisiana 70160

Attention: Colonel Richard L. Hunt, C. E.
District Engineer

Gentlemen:

Subject: LMNED-PC

Reference is made to your letter requesting our review and comments on the draft environmental statement for the authorized project, "New Orleans to Venice, Louisiana, Hurricane Protection."

We have reviewed the above subject statement and in general are in agreement with its contents. However, we feel that the following comments should be considered.

Page 3 - "The fine material which eventually flows into the waterway will temporarily increase the turbidity of the water but should not do any damage."

Comment: The above sentence is in conflict with the information preceding it. We suggest it be changed to read as follows: "The fine material which eventually flows into the waterway will temporarily increase the turbidity of the water but may not do any permanent damage."

Page 5, Paragraph 3 - "Industrial wastes are generally pumped into the river as are human wastes with relatively poor treatment."

Comment: This sentence is misleading as both industrial and municipal wastes generated in the project area either already receive or are scheduled for secondary or the equivalent degree of treatment by December 31, 1972. Therefore, the sentence should be changed to reflect this information.

ADVISORY COUNCIL
ON
HISTORIC PRESERVATION
WASHINGTON, D.C. 20240

January 10, 1973

Colonel Richard L. Hunt
District Engineer
New Orleans District, Corps of Engineers
New Orleans, Louisiana 70160

Dear Colonel Hunt:

In response to your request of October 1972 for comments on the environmental statement for the New Orleans to Venice, Louisiana, Hurricane Protection Project, and pursuant to its responsibilities under Section 102(2)(C) of the National Environmental Policy Act of 1969, the Advisory Council on Historic Preservation has determined that your draft environmental statement is inadequate regarding our area of expertise as it does not contain sufficient information to enable the Advisory Council to comment. Therefore, the Council considers your draft environmental statement incomplete and cannot comment until sufficient information is supplied by your agency indicating:

a. That the most recent listing of the National Register has been consulted and that no National Register properties are affected by the proposed project.

1. Although your environmental statement contains evidence of having consulted the National Register of Historic Places, there is no indication that the most current listing was utilized. The National Register is published in the Federal Register of March 15, 1972, and monthly supplements are published on the first Tuesday of each month.

2. In addition, on page 15 of the draft statement, mention is made of two National Register properties within the vicinity of the proposed project (Fort Jackson and Fort St. Philip). The Council is informed by the National Park Service that a third, Fort de la Boulaye, is also within the proposed project area. Although your environmental statement states that the National Register properties "are outside of the project areas", the Advisory Council is concerned that construction activities may have an effect of these properties. Please provide the Council with available information on which you have determined that there will be no effect on the National Register properties resulting from the proposed project.

b. Compliance with Executive Order 11593 of May 13, 1971.

1. In the case of land under the control or jurisdiction of the Federal Government, a statement should be made as to

Corps of Engineers, New Orleans District
November 21, 1972

Page 22, Item (d.) - This paragraph states unequivocally that treatment of area discharges in the project area will be ncesssary. Assuming that this includes storm water (approximately sixty inches annually) it is suggested that the statement either be documented or deleted.

Very truly yours,

Robert A. Lafleur, Executive Secretary
Louisiana Stream Control Commission

rcs

whether or not the proposed undertaking will result in the transfer, sale, demolition, or substantial alteration of potential National Register properties.

2. In the case of lands not under the control or jurisdiction of the Federal Government, a statement should be made as to whether or not the proposed undertaking will contribute to the preservation and enhancement of non-federally owned districts, sites, buildings, structures, and objects of historical, archeological, architectural, or cultural significance.

c. That a comprehensive interdisciplinary study has been made of all archeological, historical, architectural and cultural resources extant in the proposed project area; the effects, if any, on these resources; and an account of steps taken to assure their preservation and enhancement.

To insure as comprehensive a review of historical, cultural, archeological and architectural resources as possible, the Advisory Council suggests that the draft environmental statement contain evidence of contact with the State Historic Preservation Officer and that a copy of his comments concerning the effect of the undertaking upon these resources be included in the environmental statement. The State Liaison Officer for Historic Preservation for Louisiana is George M. Leake, 833 Howard Avenue, New Orleans, Louisiana 70113.

In order to expedite our review of the draft environmental statement, please furnish the Advisory Council with the necessary information at your earliest convenience. Should you have any questions on these comments or require any additional assistance, please contact Mr. Wall of the Advisory Council staff.

Sincerely yours,

Robert R. Garvey, Jr.
Executive Secretary

ADVISORY COUNCIL
ON
HISTORIC PRESERVATION

WASHINGTON, D.C. 20240

October 3, 1973

Richard L. Hunt
Colonel, CE
District Engineer, New Orleans District
Department of the Army
P.O. Box 60267
New Orleans, Louisiana 70160

Dear Colonel Hunt:

The Advisory Council is pleased to inform you that the Memorandum of Agreement for the Fort St. Phillip National Historic Landmark in Louisiana has been approved by the Chairman of the Advisory Council. This completes the Section 106 process and the Corps of Engineers may proceed with the proposed construction of the New Orleans to Venice, Louisiana hurricane protection project pursuant to P.L. 874, 87 Congress, 2nd Session, approved 23 October 1962.

The Council appreciates your cooperation in the resolution of this matter and commends your contribution to the preservation of our national heritage.

Sincerely yours,

Ken Tapman
Director, Office of Compliance

Enclosure

ADVISORY COUNCIL
ON
HISTORIC PRESERVATION

WASHINGTON, D.C. 20240

MEMORANDUM OF AGREEMENT

WHEREAS, the New Orleans District, Corps of Engineers, Department of the Army, proposes to construct the New Orleans to Venice, Louisiana hurricane protection project pursuant to Public Law 874, 87 Congress, 2nd Session, approved 23 October 1962; and,

WHEREAS, the New Orleans District, Corps of Engineers, Department of the Army, has determined that this proposal will affect Fort St. Phillip National Historic Landmark, a National Register property, and pursuant to the National Historic Preservation Act of 1966 has requested the comments of the Advisory Council on Historic Preservation; and,

WHEREAS, pursuant to the procedures of the Advisory Council on Historic Preservation (Federal Register, November 14, 1972, pp. 24146-24148) representatives of the Advisory Council on Historic Preservation, the Corps of Engineers, and the Louisiana Historic Preservation Officer have consulted and reviewed the undertaking to determine the nature of the effect; now,

THEREFORE:

It is mutually agreed that implementation of the undertaking as indicated in the attached letter of August 16, 1973 from Colonel Richard L. Hunt, New Orleans District Engineer, Corps of Engineers, Department of the Army, which contains specific conditions to insure preservation of the historic integrity of the property, will not have an adverse effect.

Robert R. Garvey Jr. 9/6/73 (date)
Executive Secretary
Advisory Council on Historic Preservation

Richard L. Hunt 17 Sept 73 (date)
Corps of Engineers
Department of the Army

John N. Brown 9/10/73 (date)
Louisiana Historic Preservation Officer

C. W. Snyder 10/24/73 (date)
Chairman, Advisory Council on
Historic Preservation

LAKE PONTCHARTRAIN LA. & VIC.
CHALMETTE AREA PLAN

NEW ORLEANS

Gretna

Violet

Verret

LAKE BORGNE

Belle Chasse

LAKE LERY

70 (1962)

Bertrandville

Belair

MISSISSIPPI

Phoenix

REACH "C"

BLACK BAY

Pointe a la Hache

Bohemia

Diamond

City Price

POINTE A LA HACHE RELIEF OUTLET

PLAQUEMINES PARISH

JEFFERSON PARISH

Port Sulphur

REACH "A"

Tropical Bend

Empire

BARATARIA BAY

Grande Ecaille

Fort St. Philip

Ostrica Lock

Buras

Fort Jackson

W. EMPIRE TO THE GULF

Baptiste Collette Bayou

Venice

REACH "B-1"

REACH "B-2"

Grand Isle

GULF OF MEXICO

CHANDELEUR SOUND

BRETON SOUND

MISSISSIPPI RIVER-GULF OUTLET

ST. BERNARD PARISH

PLAQUEMINES PARISH

DELTA NATIONAL WILDLIFE REFUGE

MAIN PASS

PASS A LOUTRE

Head Of Passes

GRAND PASS

SOUTH PASS

SOUTHWEST PASS

PASS A LOUTRE WATERFOWL MANAGEMENT AREA

Burrwood

SCALE OF MILES

5 0 5 10

LEGEND

Authorized levee alignment

East Bank Barrier levee plan

30° 00'

29° 30'

29° 00'

90° 00'

89° 30'

89° 00'

ARKANSAS

MISSISSIPPI

LOUISIANA

TEXAS

VICKSBURG

ALEXANDRIA

BATON ROUGE

NEW ORLEANS

HOUMA

GULF OF MEXICO

VICINITY MAP

SCALE OF MILES

20 0 20 40 60

LOCATION OF WORK

ENVIRONMENTAL STATEMENT
NEW ORLEANS TO VENICE, LOUISIANA
HURRICANE PROTECTION

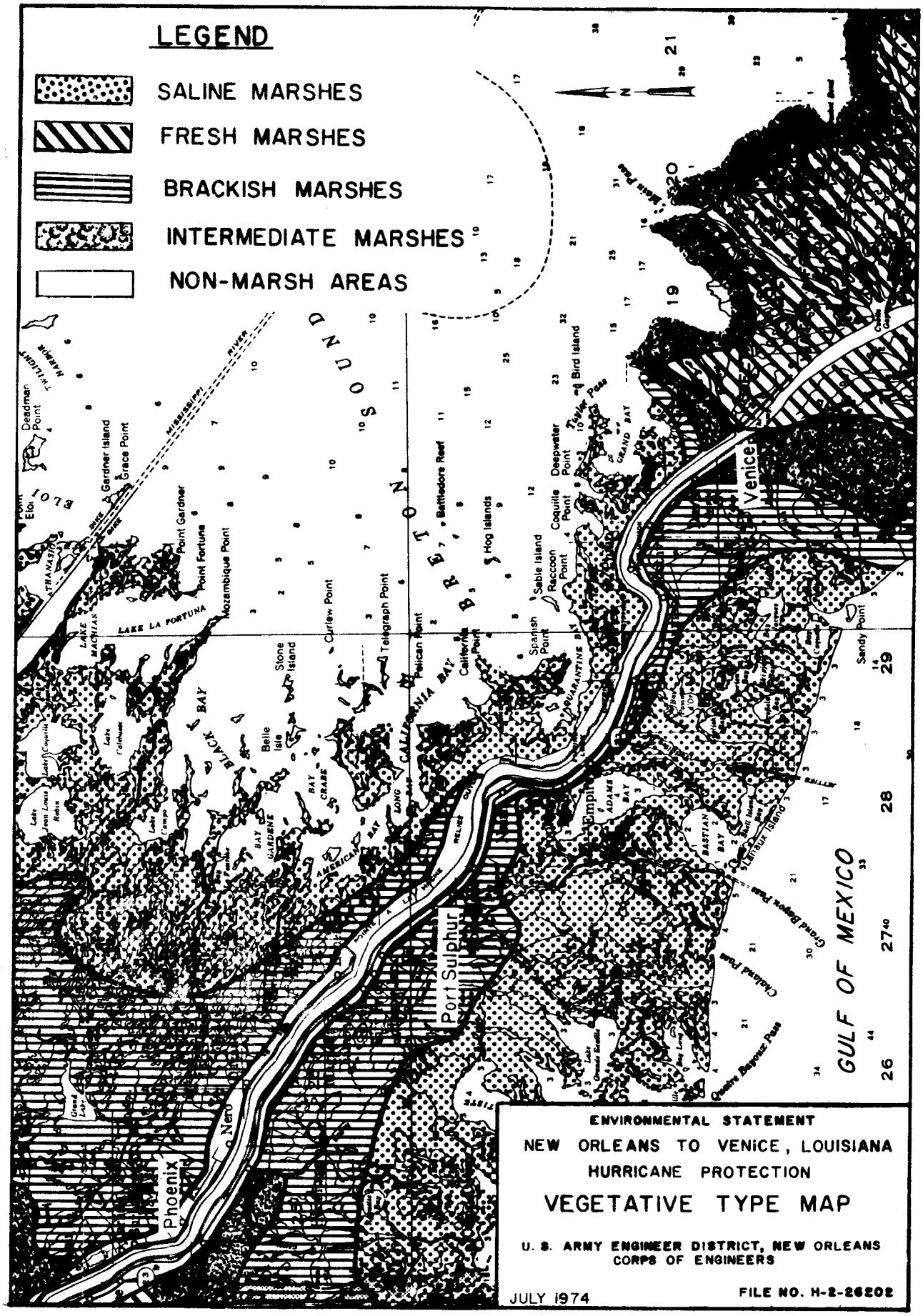
GENERAL MAP

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

JULY 1974

FILE NO. H-2-26202

PLATE 1



ENVIRONMENTAL STATEMENT

NEW ORLEANS TO VENICE, LOUISIANA

HURRICANE PROTECTION

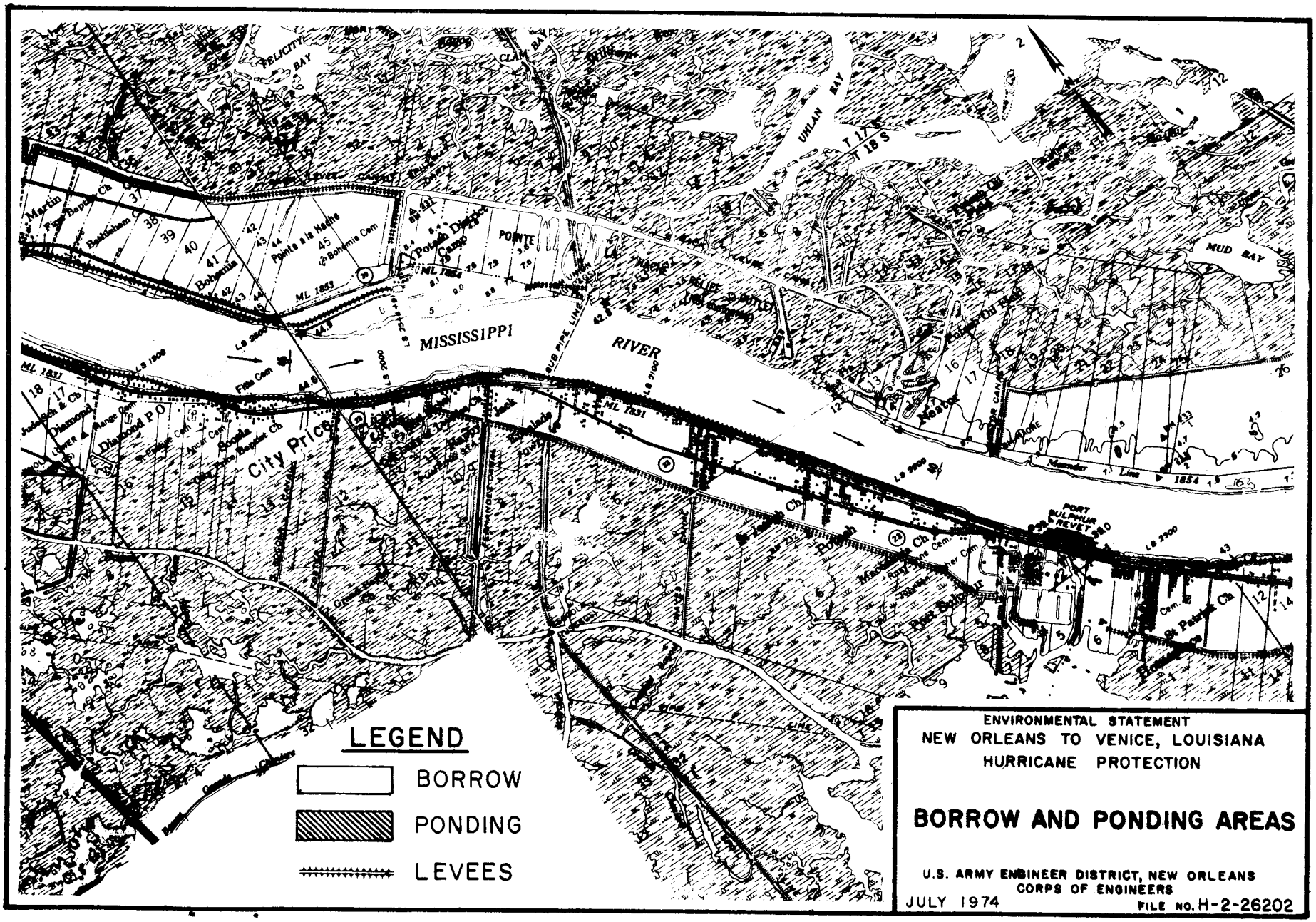
VEGETATIVE TYPE MAP

U. S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS

JULY 1974

FILE NO. H-2-26202

PLATE 2

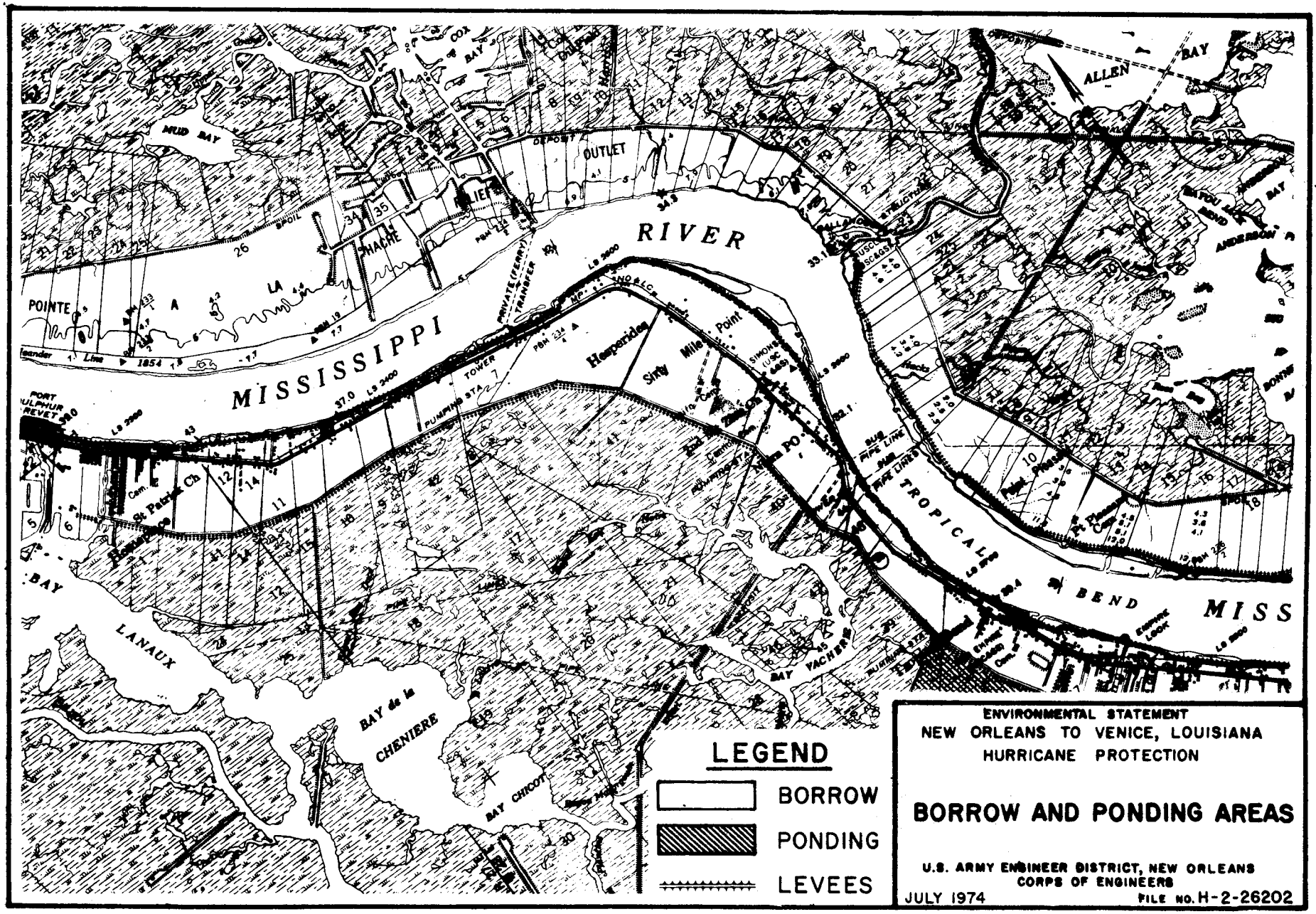


ENVIRONMENTAL STATEMENT
NEW ORLEANS TO VENICE, LOUISIANA
HURRICANE PROTECTION

BORROW AND PONDING AREAS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
JULY 1974
FILE NO. H-2-26202

PLATE 3



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NEW ORLEANS TO VENICE, LOUISIANA
HURRICANE PROTECTION

BORROW AND PONDING AREAS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
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PLATE 4

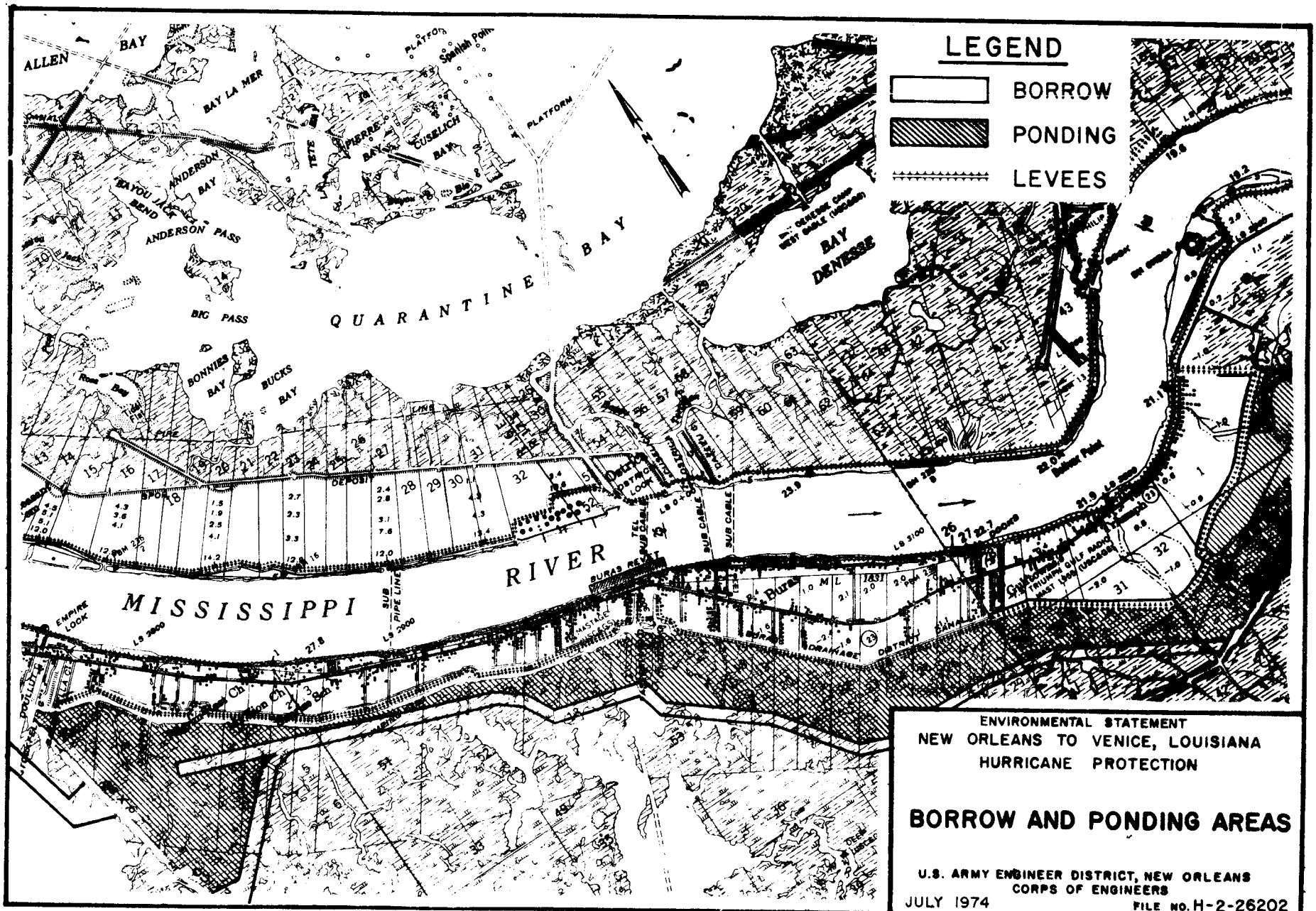

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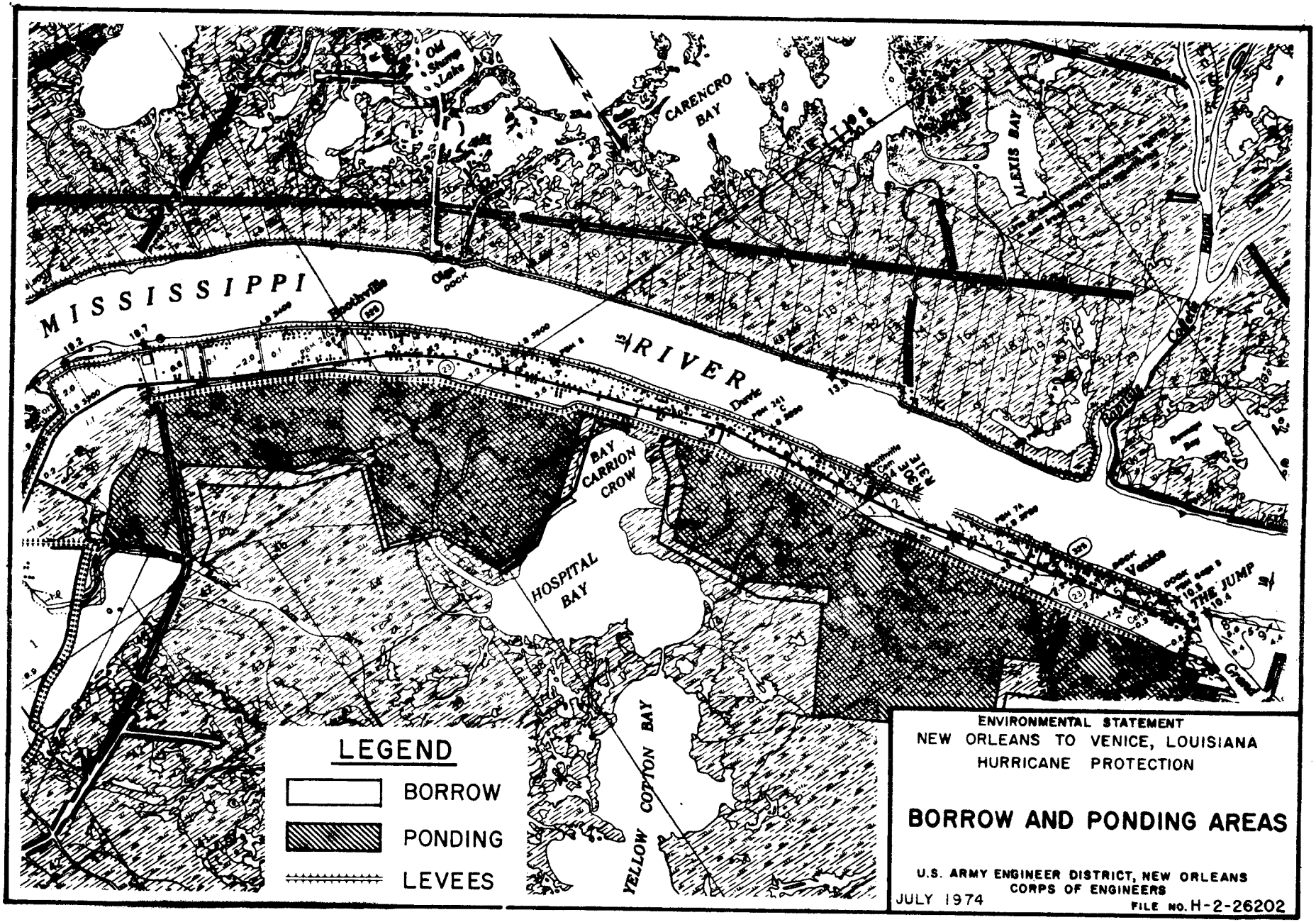
PLATE 5



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BORROW AND PONDING AREAS

U.S. ARMY ENGINEER DISTRICT, NEW ORLEANS
CORPS OF ENGINEERS
JULY 1974
FILE NO. H-2-26202

PLATE 6