

Appendix 1

History of Hurricane Protection System

Introduction

The chronologies of the hurricane protection system features at the 17th Street, London Avenue, and Orleans Avenue Outfall Canals, and the Inner Harbor Navigation Canal were prepared to meet the following objectives:

- (1) To prepare a chronologic history comprehensive in nature to ensure the IPET is aware of all activities prior to Katrina that have value in accomplishing the IPET scope of work.
- (2) To produce a report that includes descriptions of the various types of activities of value to the IPET and listings of documents that provide pertinent information.

The chronologies serve, more or less, as annotated bibliographies of the most critical documents of the thousands of documents made available to the research team.

The chronologies are arranged with the most recent entries listed first. The parenthetical information following each entry represents one of the four locations from which the documents were obtained: 1) the IPET public website, 2) the New Orleans District ProjectWise Server, (with control numbers A followed by 7-digit number), 3) the New Orleans District geotechnical map files, and 4) compact disks prepared in response to the U.S. Senate Committee on Homeland Security and Governmental Affairs.

17th Street Outfall Canal Chronology

- *Agenda, Contract 02-C-0016, 17th Street Outfall Canal, Metairie Relief, Hammond Hwy. Complex Progress Meeting, dated May 18, 2005.* The purpose of this meeting was to review job progress (89% complete through April 30, 2005) of completed phases of work, current work underway, and scheduled work. The purpose of the meeting was also to review outstanding submittals, modifications, and corrective actions. (A0000150).

- *Agenda, Contract 02-C-0016, 17th Street Outfall Canal, Metairie Relief, Hammond Hwy. Complex Progress Meeting*, dated **April 20, 2005**. The purpose of this meeting was to review job progress (87% complete through March 31, 2005) of completed phases of work, current work underway, and scheduled work. The purpose of the meeting was also to review outstanding submittals, modifications, and corrective actions. (A0000160).
- *Agenda, Contract 02-C-0016, 17th Street Outfall Canal, Metairie Relief, Hammond Hwy. Complex Progress Meeting*, dated **March 16, 2005**. The purpose of this meeting was to review job progress (86% complete through March 1, 2005) of completed phases of work, current work underway, and scheduled work. The purpose of the meeting was also to review outstanding submittals, modifications, and corrective actions. (A0000159).
- *Annual Inspection of Completed Works Program, 2004 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 20, 2004**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected October 15, 2004 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2).
- *Data pertaining to the Louisiana Hurricane Protection Study*, dated **March/April 2004**. The documents posit several proposed feasibility study alternatives to upgrade the hurricane protection project to accommodate a Category 4 or Category 5 storm. Alternatives include among others: raising all existing levees and building structures at outfall canal entrances; raising existing levees, with the exception of those along the IHNC and GIWW and placing a structure at the confluence of the GIWW and MRGO and a second structure at Seabrook; and structures at the Chef and Rigolets passes. (A0002025, A0002027, A0002028, A0002029, A0002030).
- *Annual Inspection of Completed Works Program, 2003 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **2003**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected September 19, 2003, and were assigned an ACCEPTABLE rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June 4, 2003 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2).
- *Transmittal No. 56*, dated **June 12, 2002**. Document indicates that ED-FS has reviewed the H-pile compression load test at Hammond Highway at the 17th Street Canal. The H-pile test pile was driven to elevation -78.5, or 2.5 feet deeper than the tip elevation of -76.0 shown on the plans. ED-FS recommends a pile tip elevation of -76.0 which will result in a F.S.> than 2.0. (A0000152)

- *Annual Inspection of Completed Works Program, 2002 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **2002**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected November 22, 2002. They were found to be “exceptionally well maintained,” and were assigned an ACCEPTABLE rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 31, 2002 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Drawings, Test Pile Frame, 17th Street Outfall Canal, Hammond Highway Complex,* dated **April 10, 2002**. (MVN Geotech Map Files)
- *Annual Inspection of Completed Works Program, 2001 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **2001**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected October 12, 2001. They were found to be “exceptionally well maintained,” and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 18, 2001 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Annual Inspection of Completed Works Program, 2000 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 12, 2000**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected October 13, 2000. They were found to be “exceptionally well maintained,” and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June 2, 2000 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Correspondence regarding directional boring under the Inner Harbor Canal, London Canal, and the 17th Street Canal,* dated **May 2000**. This is a series of correspondence between the Corps of Engineers, the Gilbert Southern Corporation, and Bay Equipment Company concerning the guidelines and safety factors of the referenced subject material. File contains drawings depicting the fiber optic cable route at the outfall canals. (A0001813) Supporting information can also be found in A0003693 and A0003694.
- *Annual Inspection of Completed Works Program, 1999 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 16, 1999**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected October 8, 1999. They were found to be “exceptionally well maintained,” and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 21, 1999 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Amendment of Solicitation/Modification of Contract,* dated **September 21, 1999**. This document indicates that Pittman Construction has 100% physically and financially completed the contract work (DACW29-93-C-0081) for Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, 17th Street Canal, Capping of Floodwalls, East Side. (A0006780)

- *Annual Inspection of Completed Works Program, 1998 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 15, 1998**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected October 9, 1998. They were found to be “exceptionally well maintained,” and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 29, 1998 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)

- *Correspondence regarding Sediment Sampling, Lake Pontchartrain and Vicinity, Hurricane Protection Plan, (HLP), Fronting Protection for Pumping Station Nos. 3, 4, 6, and 7 at London, 17th Street, and Orleans Avenue Outfall Canals, dated 1998.* This file contains a series of correspondence relating to the subject matter and includes maps and drawings of sediment sample locations. (A001811).

- *Lake Pontchartrain, LA, and Vicinity Hurricane Protection, High Level Plan, Orleans Parish – Jefferson Parish, Fronting Protection for Pumping Station No. 6 at the 17th Street Outfall Canal.* Construction drawings, DACW-29-99-C-0018, (98-B-0012) dated **1997**. (IPET).

- *Plans for Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection, High Level Plan, Orleans Parish – Jefferson Parish, Fronting Protection for Pumping Station No. 6 at 17th Street Outfall Canal, plan drawings dated 1997.* File also contains supporting documentation for contract DACW29-99-0018. (Senate CD 15, 15 Nov 05, disk 1 of 2)

- *General Surveys, 17th Street Canal, 1997.* This collection of documents contains survey data, field survey books and cross-section computations spanning the years 1979 through 1997. Sheets include: canal cross sections; cross section data by Walker and Avery, Inc. (119 sheets); field notes and traverse computations by ED-SS; and field notes by Modjeski and Masters. (A0001001)

- *Annual Inspection of Completed Works Program, 1997 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 24, 1997**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected September 19, 1997, and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 29, 1997 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Narrative Completion Report, dated December 10, 1997, for contract DACW29-95-C-0093, Floodproofing Veterans Boulevard Bridges at the 17th Street Outfall Canal.* (A0006524)

- *Supplemental Agreement between the United States of America, the Orleans Levee District, the East Jefferson Levee District, and the Sewerage and Water Board of New Orleans.* Signed agreement dated **February 18, 1997**. (Senate CD 16 – 24 Oct 05)

- *Orleans Marina Permit dated January 13, 1997.* This is a series of correspondence regarding a request from the Sewerage and Water Board for a permit to jack pipe under the levee and storage monolith at the Orleans Marina. (A0001822)

- *Annual Inspection of Completed Works Program, 1996 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 13, 1996**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected September 20, 1996, and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 31, 1996 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Design Memorandum No. 20, General Design Supplement No. 1, Orleans Parish/Jefferson Parish, 17th Street Outfall Canal, Lake Pontchartrain, LA, and Vicinity Hurricane Protection Project, High Level Plan, January 15, 1996.* This supplement posits a historical, design, and engineering analysis for improvements to the fronting protection at pumping station no. 6, in an effort to propose improvements that will allow the station to meet design heights for the standard project hurricane. Document includes analysis of hydrology, hydraulics, geology, foundation investigations, and design. (IPET)
- *Annual Inspection of Completed Works Program, 1995 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 12, 1995**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected September 22, 1995, and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1995 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *17th Street Canal East Bank Floodwall Capping, DACW29-93-C-0081, Canal Side Formwork Movement of an Uneven Leg I-Wall Prior to and During Placement of Concrete,* dated **September 14, 1995**. This paper provides background on the formwork movement of the uneven legged I-wall located between Hammond Highway and Veterans Boulevard on the east bank of the 17th Street Outfall Canal. (A0006929)
- *Lake Pontchartrain, LA, and Vicinity Hurricane Protection, High Level Plan, 17th Street Outfall Canal, Orleans Parish – Jefferson Parish, Veterans BLVD Bridges.* As built drawings, DACW-29-C-0093, (95-B-0095) dated **June 1995**. (IPET, Senate CD 13 – 15 Nov 05)
- *17th Street Outfall Canal, History of Surveys Used for Constructing Floodwalls and Canal Dredging,* dated **February 8, 1995**. This document analyses the surveys and concludes that the floodwalls on both sides of the canal were constructed approximately 5.5 inches lower than the elevations indicated on the plans and specifications. Also, the I-walls were supposed to have been constructed with 6 inches of allowable settlement; instead they were constructed with only an 0.5-inch overbuild. (A0001034)
- *17th Street Canal, East Side, Pittman Construction (DCAW29-93-C-0081), Concrete Compression Test Specimen Data,* dated **1995**. This collection contains 180-pages of test specimen data sheets ranging in dates from 1993 through 1995. (A0001112)

- *Annual Inspection of Completed Works Program, 1994 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 19, 1994**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected October 4, 1994, and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June, 1994 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Memorandum for File by Charlie Rome (CELMN-ED-G), dated November 21, 1994,* regarding 17th Street Canal Floodwall, Orleans Parish, Vets to Lake, Field Trip Report. This document is an account of the trip on November 8, 1994, to evaluate the extent of damage to an unidentified monolith after the contractor had removed defective concrete. The inspectors indicate that the monolith could be repaired by patching, and make several recommendations on how to complete the repairs. Photos of the defective monolith accompany the trip report. (A0001318)

- *Letter from Roussel Engineering, Inc. to Pittman Construction Company, Inc., dated July 27, 1994,* concerning sheet pile movement during concrete placement. This letter report details the tests on monoliths numbers 104, 108, and 110 and makes conclusions and recommendations. (A0006944)

- *Correspondence between Pittman Construction Company and the New Orleans District,* dated **July 1-5, 1994**, concerning the contract work (DACW29-93-C-0081) for capping of floodwalls and east side improvements for the 17th Street Outfall Canal, High Level Plan. Correspondence includes discussion of a job deficiency letter sent to Pittman by the Corps of Engineers. This entry also contains an engineering report on sheet pile deflections produced by Roussel Engineering, Inc. (A0006940)

- *Annual Inspection of Completed Works Program, 1993 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 22, 1993**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected October 22, 1993, and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1993 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *17th Street Canal Floodwall, Pittman Construction, (DCAW29-93-C-0081), Expansion Joint Filler Submittal,* dated **August 4, 1993**. In the supporting documentation, dated August 10, 1993 and contained within, the New Orleans District offers no objection to the recommended expansion joint filler provided that it meets all requirements of ASTM D 1752-84, including the .25-inch maximum for Extrusion. The document notes that the Recovery, reported as Compression Set, needs to be determined after 10 minutes or if the initial test fails, 1 hour and not the 24 hours reported. Documents also recommend that it be verified that the compression test results are in psi. (A0001075)

- *17th Street Canal Floodwall, Pittman Construction, (DCAW29-93-C-0081), Expansion Joint Filler Submittal*, dated **August 4, 1993**. The supporting documentation includes a letter from Louisiana Industries to Pittman Construction, dated July 13, 1993, concerning the 17th Street Canal (DACW29-93-B-0025). The letter certifies that the mix design will meet or exceed the indicated design strength at a designated age when tested in accordance with the applicable ASTM Standards. (A0001073)
- *Contract Award Information, Contract No. DACW29-93-C-0081*. Contract, dated **June 28, 1993**, for the Lake Pontchartrain, LA and Vicinity, Hurricane Protection Project, High Level Plan, 17th Street Outfall Canal, Flood Protection Improvement Project, Capping of Floodwall, East Side Improvements, Orleans Parish, LA, is awarded to Pittman Construction. Supporting contract documentation includes the court decision that settled the dispute between Pittman Construction and the Corps. The court decision posits a narrative history of the dispute. Documentation of driving sheet piling up to 16 ft in length on the canal side of the floodwall to serve as a cofferdam during construction is included. (Senate CD 15 – 15 Nov 05, disk 1 of 2)
- *Amendment of Solicitation/Modification of Contract*, dated **March 18, 1993**. This document posits contract parameters for (DACW29-93-B-0025) for Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, 17th Street Canal, Capping of Floodwalls, East Side Improvements. (A0006780)
- *Polaroid photographs taken of the 17th Street Canal floodwall*, dated **May 14, 1993**, a few weeks prior to bid opening. Photos start at the south end (below Veterans Highway) and continue north. Note particularly photograph number 17, taken from the east end of the Hammond Highway Bridge looking toward the area that failed during Katrina, which is not far beyond the excavator. As the photograph reveals, the failure area had large trees overhanging the floodwall at that time. The tree trunks were just outside the right-of-way limit, which was only 10-feet from the floodwall centerline in that area. (E-mail message from MVN employee Charles A. Studdard, April 7, 2006)
- *Annual Inspection of Completed Works Program, 1992 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 14, 1992**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected September 24, 1992, and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1992 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Lake Pontchartrain, LA, and Vicinity Hurricane Protection, High Level Plan, 17th Street Canal, Excavation and Floodwall Protection, Capping of Floodwalls*. Construction drawings, including supplemental drawing from Modjeski and Masters dated **November 1992**. (IPET, Senate CD 13 – 24 Oct 05)
- *Excavation and Flood Protection – 17th Street Canal, Capping of Floodwalls, East Side Levee Improvements*. As-built drawings (DACW29-93-0025) dated **November 1992**. (Senate CD 13 – 15 Nov 05)

- *17th Street Canal, West Side Levee Improvements* (Contract 92-1). Construction drawings from the Board of Levee Commissioners of the East Jefferson Levee District dated **March 1992**. Includes cross-section of levee and floodwall improvements and dredging cross-sections. (IPET)
- *Letter from the Sewerage and Water Board of New Orleans to Ron Ventola, Chief of Regulatory Function, New Orleans District*, dated **May 28, 1992**, regarding Permit No. LMNOD (17th Street Canal) 2, dated June 13, 1984. The intent of this letter is to seek an extension to the dredging permit issued by the Corps in 1984, but it also serves as a basic history of the three-phase dredging process carried out by the Sewerage and Water Board in the 17th Street Canal between June 1984 and May 1992. (CEMVN-OD)
- *Annual Inspection of Completed Works Program, 1991 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 10, 1991**. The hurricane protection levees and floodwalls within the East Jefferson Levee District were inspected October 29, 1991, and were assigned an OUTSTANDING rating. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June, 1991 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Letter from the Board of Levee Commissioners of the East Jefferson Levee District to Col. Richard V. Gorski, District Engineer, New Orleans District*, dated **April 26, 1991**. This letter serves as notification that the levee district intends to let its own construction contract to build most of the High Level Plan floodwall on the west bank of the 17th Street Outfall Canal. (A0008290)
- *Permit Review Sheet: 17th Street Canal 2, Req. by Boh Bros. to deposit dredged material from SW&B project to dredge 17th Street Canal*, dated **August 31, 1990**. This is a series of correspondence regarding the request by Boh Bros. to deposit the dredge material at the Bucktown Marina site. The New Orleans District offers no objections to the request provided that the material is not placed in the areas of new levee section, including any berms. (A0000110)
- *Lake Pontchartrain, LA, and Vicinity, Lake Pontchartrain High Level Plan, Design Memorandum No. 20, General Design, 17th Street Outfall Canal*, **March 1990**. The DM examines two alternative plans for providing “high level” standard project hurricane protection: fronting protection (butterfly gates at canal entrances) and parallel protection (floodwalls and flood proofing of bridges), with the parallel protection plan representing the recommended plan. DM includes discussion of the project plan, hydrology, hydraulics, geology, foundation investigation and design, and structural designs, and is complete with plates and diagrams. Includes pre-construction plan drawings. (IPET, Senate CD 13 – 24 Oct 05)
- *Excavation and Flood Protection – 17th Street Canal, Phase IB, Hammond Highway to Southern Railway* (Contract 2043-0489). As built drawings (DACW-29-93-B-0025) from the Board of Levee Commissioners of the Orleans Levee District dated **February 7, 1990**. (IPET)

- *Letter from Frederick M. Chatry, Chief, Engineering Division, New Orleans District, to Modjeski and Masters, Consulting Engineers, dated **October 20, 1989**, concerning the 17th Street Canal Parallel Flood Protection, Phase 1B, Hammond Highway to Southern Railway, OLB Project No. 2043-0207. In this letter, the Corps posits two additional revisions to the final plans and specifications submitted by Modjeski and Masters on October, 10, 1989 reducing the requirement for each layer to be compacted to a least 90 percent of the maximum dry density of optimum water content, rather than the proposed 95 percent (ASTM D698); and a revision in the sheet pile tip elevations to a higher elevation as imposed by LMVD, which will result in lower overall cost for the project. Letter indicates that once these revisions are incorporated into the plans and specifications, the Corps will have no objection to Modjeski and Masters proceeding with the proposed work. (A0000100)*
- *Letter from Modjeski and Masters, Consulting Engineers, to Frederick M. Chatry, Chief, Engineering Division, New Orleans District, dated **October 10, 1989**, concerning the 17th Street Canal Parallel Flood Protection, Phase 1B, Hammond Highway to Southern Railway, OLB Project No. 2043-0207. This letter posits the changes to the plans and specifications made in response to Corps letter of August 22, 1989, with a detailed description of the embankment construction process to address specific concerns toward the maximum density of the embankment material. (A0000099)*
- *Excavation and Flood Protection, 17th Street Canal, Phase 1B, Hammond Highway to Southern Railway. “Preliminary” specifications for contract 2043-____, dated **October 10, 1989**, by the Board of Commissioners of the Orleans Levee District. Document includes preliminary specifications for general specifications, demolition, dredging and levee construction, and steel sheet piling. (A0000095)*
- *Letter from Frederick M. Chatry, Chief, Engineering Division, New Orleans District, to Modjeski and Masters, Consulting Engineers, dated **August 22, 1989**, concerning the 17th Street Canal Parallel Flood Protection, Phase 1B, Hammond Highway to Southern Railway, OLB Project No. 2043-0207. In this letter, the Corps indicates that it has reviewed plans, specifications, and design calculations submitted by Modjeski and Masters on July 10, 1989, and posits four primary revisions to include: degrading the existing levee crown elevation at Station 570+00 to elevation 5.5 as shown in the design analyses; correcting the new I-wall B/L offset at Station 657+00 to 200 feet; and answering specific questions pertaining to the maximum density of the embankment material. Letter also acknowledges Corps concurrence to a request to delete the riprap specified for the east side levee between Hammond Highway bridge and Station 615+00. (A0000088). See, also memorandum from Rodney P. Picciola, Chief, Foundations and Materials Branch, dated July 28, 1989. (A0000089)*

- *Memorandum from Fred H. Bayley III, Chief, Engineering Division, Lower Mississippi Valley Division, to the Commander, New Orleans District, Regarding Sheet Pile Wall Design Criteria, dated July 24, 1989.* This memorandum summarizes the guidance for determining sheet pile wall penetrations, deflections, and other topics, and it references the sources detailing new I-wall design criteria for determining the penetration of sheet pile floodwalls founded in soft clays; estimating sheet pile deflections and design of I-walls to withstand these deflections; and sheet pile finite element-based design procedures for sheet pile walls. (A0000097, A0000101, A0006787)

- *Letter from Modjeski and Masters, Consulting Engineers, to Frederick M. Chatry, Chief, Engineering Division, New Orleans District, dated July 10, 1989,* concerning the 17th Street Canal Parallel Flood Protection, Phase 1B, Hammond Highway to Southern Railway, OLB Project No. 2043-0207. This letter contains plans and design calculations submitted Modjeski and Masters, Consulting Engineers. The document posits revised slope stability and sheet pile design calculations that address comments made by the Corps by letter of April 25, 1989. A brief description of the revisions made to the cross-sections is given for each of the eight reaches. Also given for each of the reaches is a listing of new submittals, stating which comments from the Corps were addressed. (A0000090, A0000091, A0000092)

- *17th Street Canal Drawings, dated June 16, 1989.* Drawings depicting shear soil strength, stability, and sheet pile analyses for reaches 1 through 8. (A0000094)

- *Letter from Frederick M. Chatry, Chief, Engineering Division, New Orleans District, to Modjeski and Masters, Consulting Engineers, dated April 25, 1989,* concerning the 17th Street Canal Parallel Flood Protection, Phase 1B, Hammond Highway to Southern Railway, OLB Project No. 2043-0207. The letter posits revisions of the landside slope stability analysis furnished by Modjeski and Masters in letter dated April 10, 1989, and offers seven comments from the MVN Foundations and Materials Branch for consideration pertaining to soil shear strength, landside and canal side stability, and I-wall stability at various reaches. (A0000083, A0000084)

- *Letter from Modjeski and Masters, Consulting Engineers, to Frederick M. Chatry, Chief, Engineering Division, New Orleans District, dated April 10, 1989,* concerning the 17th Street Canal Parallel Flood Protection, Phase 1B, Hammond Highway to Southern Railway, OLB Project No. 2043-0207. This letter addresses comments posited by the Corps in a letter, dated October 21, 1989, with regard to preliminary plans submitted by Modjeski and Masters. Letter indicates that Modjeski and Masters' review of those comments reveal that the slope stability calculations for the first six reaches of the project do not properly reflect the actual factors of safety. The letter goes on to state that in order to achieve the required factors of safety using the cross-sections proposed by Eustis Engineers, a great deal of earthwork would be required on the landside of the levee. Because of proximity of development on the landside of the levee, Masters and Modjeski developed new levee cross sections that required no work on the landside slope, and provides descriptions of the revisions of cross sections, slope stability, and sheet pile analyses for reaches 1 thru 8. (A0000085, A0000086)

- *Letter from Eustis Engineering, Geotechnical Engineers, to Modjeski and Masters, Consulting Engineers*, dated **August 31, 1988**, concerning the geotechnical analyses of the Metairie Relief Canal (17th Street Canal) OLB Project No. 2043-0222. This report contains the results of revised cantilever floodwall analyses and revised slope stability analyses for the proposed modifications along the Orleans side of the canal between Stations 553+70 and 670+00. (A0000105)
- *17th Street Canal, I-Wall Criteria*. This handwritten document, dated **August 16, 1988**, appears to be an agenda or notes from a meeting of New Orleans district personnel and representatives from Modeski and Masters and Eustis Engineering. Topics include I-wall stability (Q&S cases), and stress loading conditions for maximum tip penetration. Last topic indicates, “Never run S-CASE F.S. = 1.0; never run deflections on S-CASE.” (A0000107)
- *Memorandum from Rodney P. Picciola, Chief of Foundations and Materials Branch, New Orleans District, to the Chief of Design Branch*, dated **May 10, 1988**, concerning GDM Design, 17th Street Outfall Canal, Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project, High Level Plan. Seventeen enclosures depicting the April 1998 revised design sections and design analyses for the new I-wall criteria for the 17th Street Outfall Canal, General Design Memorandum, Parallel Protection Plan accompany this memorandum. (A0006679). Additional design sections and analyses, also marked “Revised 4/88” can be found in: A0006671, A0006673, A0006676, A0006678, A0006686, and A0006730.
- *Excavation and Flood Protection of the 17th Street Canal, Phase III: Lake Pontchartrain to Hammond Highway Bridge* (Contract 4117). Sewerage and Water Board of New Orleans specifications for phase III of the project, dated **April 1988**. (Senate CD 13 – 15 Nov 05)
- *Computation Sheets, 17th Street Outfall Canal, Station 553+00 to Station 568+00*, dated **March 25, 1988**. This entry contains the March 1988 revised design sections and design analyses for Orleans Parish side of the canal between the subject stations. (A0006691) For the same information for other sections of the Orleans Parish side of the canal, please see: Stations 568+00 to 589+00 (A0006693); Stations 589+00 to 614+00 (A0006700); Stations 614+00 to 625+00 (A0006702); and Stations 625+00 to 635+00 (A0006703).
- *Letter from Frederick M. Chattry, Chief, Engineering Division, New Orleans District, to Modjeski and Masters, Consulting Engineers*, dated **January 4, 1988**, concerning the 17th Street Canal Parallel Flood Protection , Phase 1B, Hammond Highway to Southern Railway, OLB Project No. 2043-0207. This letter serves as the first review of Modjeski and Masters’ in-progress plans and specifications for the project, and offers several comments pertaining to sheet pile tip penetration and floodwall stability between Stations 636+00 and 638+31; 625+00 and 635+00; 614+00 and 615+00; and 589+00 and 590+00. Letter also addresses the issue of dredging on the Orleans Parish side of the canal and describes requirements necessary to detect scour/erosion and prevent levee failure. Requirements include adding control lines to drawings; cross-section surveys the existing levee and canal bank; initial cross-section surveys of the levee and dredged canal immediately after construction; and annual cross-sectional surveys to be provided to the Corps thereafter. Several enclosures accompany this document. (A0000109)

- *Memorandum from Fred H. Bayley III, Chief of Engineering Division, Lower Mississippi Valley Division, to the Commander, New Orleans District, dated **December 23, 1987**,* concerning sheet pile wall design criteria. This memorandum summarizes the findings of two investigations: “E-99 Sheet Pile Load Test, Final Report” and the “Development of Finite Element-Based Design Procedure for Sheet Pile Walls.” Based on those two studies, the memorandum posits design criteria to determine the required penetration for sheet pile flood-walls founded on soft clays. (Contained within A0006787)
- *17th Street Canal, (Contract 4117).* These drawings from the Sewerage and Water Board of New Orleans are marked “Final Check Set, **August 12, 1987**,” Drawings include typical sections, plans and profiles, canal contours, sheet pile wall details, cross sections, and pedestrian bridge. (MVN Geotech Map Files)
- *Memorandum from Rodney P. Picciola, Chief of Foundations and Materials Branch, New Orleans District, to the Chief of Design Branch, dated **April 24, 1987**,* concerning the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project, High Level Plan, 17th Street Outfall Canal. Ten enclosures depicting the design sections for the 17th Street Outfall Canal, General Design Memorandum, Parallel Protection Plan accompany this memorandum. (A0006607). Additional design sections can be found in: A0006615, A0006668, and A0006737
- *Cross Section, 17th Street Canal, dated **March 24, 1987**.* This entry contains the cross section survey data produced by Walker & Avery, Inc., for the Orleans side levee sections. (A0006664)
- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to the Louisiana Department of Transportation and Development, dated **March 16, 1987**,* concerning bridge crossings at the 17th Street Canal, with particular emphasis on the Hammond Highway Bridge. The letter indicates that two alternatives for providing hurricane flood protection at the canal are being evaluated and that the fronting protection plan will be less costly than the parallel protection plan. (A0006665)
- *Survey Data, Metairie Relief Canal, dated **March 10, 1987**.* This entry contains survey data produced by Walker & Avery, Inc., for the Orleans side levee sections from Stations 554+10 to 670+00. (A0006672)
- *Survey Data, Metairie Relief Canal, dated **February 20, 1987**.* This entry contains survey data produced by Walker & Avery, Inc., for the Jefferson levee sections from Stations 550+22.11 to 668+00. (A0006674)
- *Supplemental Agreement between the United States of America and the Jefferson Levee District for Local Cooperation at Lake Pontchartrain and Vicinity High Level Plan. Signed agreement, dated **January 16, 1987**.* (Senate CD 16 – 24 Oct 05)

- *Letter from Modjeski and Masters Consulting Engineers to Frederick M. Chatry, Chief of Engineering Division, New Orleans District*, dated **October 6, 1986**. This letter accompanies a seepage analysis at Pump Station No. 6 performed by Eustis Engineering. The seepage analysis contains computations to determine the recommended penetration for a sheet pile cutoff wall beneath a proposed sliding gate structure. (A0007065)
- *Review Comments from New Orleans District, Chief of Foundations and Materials Branch, Chief of Design Branch, and Chief of Design Services Branch*, dated **October 9-20, 1986**, concerning a seepage analysis at Pump Station No. 6 by Eustis Engineering. (A0007051)
- *Letter from Modjeski and Masters Consulting Engineers to Frederick M. Chatry, Chief of Engineering Division, New Orleans District*, dated **September 19, 1986**. This letter address the engineering firm's responses to comments provided by the New Orleans District by letter of September 8, 1986 to the report entitled, "A Study of High Level Flood Protection, 17th Street Outfall Canal, OLB Project No. 2043-0222." (A0007087)
- *Minutes of Meeting, Department of Transportation and Development*. This document provides a summary of the **June 19, 1986** meeting held to discuss the proposed High Level Plan flood protection system for the 17th Street Outfall Canal. (A0007126)
- *Letter from Eustis Engineering to Modjeski and Masters*, dated **June 11, 1986**. This letter contains the results of slope stability and I-wall analyses based on the furnished revised conditions between Stations 539+00 and 554+00. (A0007129)
- *Letter from Modjeski and Masters Consulting Engineers to Frederick M. Chatry, Chief of Engineering Division, New Orleans District*, dated **July 29, 1986**, concerning the engineering firm's responses to the technical and general review comments of the report entitled, "A Study of High Level Flood Protection, 17th Street Outfall Canal, OLB Project No. 2043-0222" provided by the New Orleans District on September 30, 1985. (A0007114)
- *Memorandum from Thomas E. Harrington, Jr., Chief of Design Services Branch, New Orleans District to the chiefs of Design Branch, Foundations and Materials Branch, and Hydraulics and Hydrology Branch*, dated **March 26, 1986**. This document contains survey plots (traverse and cross-sections) for the 17th Street Outfall Canal General Design Memorandum, High Level Plan. (A0007138)
- *I-Wall Analysis*, dated **October 31, 1985**. The Orleans side analysis is located in A0006669; the Jefferson side analysis is located in A0006670.
- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to the Board of Levee Commissioners, Orleans Levee District*, dated **September 30, 1985**, concerning technical and general review comments of the board's report entitled, "A Study of High Level Flood Protection, 17th Street Outfall Canal, OLB Project No. 2043-0222" that was prepared by Modjeski and Masters. (A0006791)

- *Supplemental Agreement between the United States of America and the Orleans Levee District for Local Cooperation at Lake Pontchartrain and Vicinity High Level Plan*. Signed agreement dated **June 21, 1985**. (Senate CD 16 – 24 Oct 05)

- *Interim Agreement between the United States of America and the Orleans Levee District for Local Cooperation at Lake Pontchartrain and Vicinity High Level Plan*. Signed agreement dated **February 20, 1985**. (Senate CD 16 – 24 Oct 05)

- *Memorandum from Maj. Gen. John F. Wall, Director of Civil Works, U.S. Army Corps of Engineers, to the Commander, Lower Mississippi Valley Division, dated February 7, 1985*, regarding the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project. In this memorandum, the director of civil works indicates that he reviewed the revised Post Authorization Change (PAC) Notification Report, the July 1984 Reevaluation Report and the final supplement to the Environmental Impact Statement, and approves the PAC. (Senate CD 16 – 24 Oct 05)

- *Metairie Relief Canal As Built Cross Sections, Phase I, Sewerage and Water Board Contract No. 4053*. These drawings are after-dredge sections for Stations 643-671, dated **December 1984**. (MVN Geotech Map Files)

- *17th Street Outfall Canal Hydraulic Grade Lines, Phase I, Contract 4053*. Sewerage and Water Board of New Orleans drawings dated **August 30, 1984**. Drawings also include cross sections. (MVN Geotech Map Files)

- *Lake Pontchartrain, LA, and Vicinity Hurricane Protection Project, Reevaluation Study, July 1984*. This study is conducted in response to a 1977 Federal injunction that halted portions of the project approved by the Flood Control Act of 1965, specifically the floodgate barrier components of the plan. The study examines the continued feasibility of the barrier plan and examines the feasibility of providing hurricane protection solely by the means of raising and strengthening levees or floodwalls (high level plans). The study concludes that a high level plan represents the most feasible plan of protection. The plan would provide for improved hurricane protection levee systems in Orleans Parish, St. Bernard Parish, and the east bank of Jefferson Parish; repairing and rehabilitating the Mandeville Seawall in St. Tammany Parish; a new levee on the east bank of St. Charles Parish north of US Highway 61. The treatment of the outfall canals at the lakefront remained unresolved, with five potential solutions, ranging from higher and stronger levees to floodgates and auxiliary pumping stations at the canal openings, discussed. Volume II of the study contains all technical and engineering data used to support information in the reevaluation study, including hydrology and hydraulics, foundation design and geology, engineering alternatives. This reevaluation study serves as the basis for the feasibility report of the hurricane protection project and becomes the vehicle which leads to authorization of the high-level plan. (IPET)

- *Department of the Army Permit, Permit No. LMNOD-SP (17th Street Canal) 2*, dated **June 13, 1984**. Permit to allow Sewerage and Water Board of New Orleans to dredge, enlarge and maintain an area and install and maintain flood walls and mooring structures in the 17th Street Canal (Metairie Relief Canal) from Pumping Station No. 6 to a point about 400 feet north of the Bucktown Pedestrian Bridge, subject to the conditions listed in the permit. Complete with 11 sheets. (CEMVN-OD)
- *Chronology of the 17th Street Canal Permit Application by Sewerage and Water Board of New Orleans*, dated **June 13, 1984**. This handwritten chronology details, extensively, the permit application process of the Sewerage and Water Board from its first submission of an application to dredge in the 17th Street Canal on July 15, 1974 through the final permit issuance on June 13, 1984. (CEMVN-OD)
- *Status of Lake Pontchartrain and Vicinity Project*, dated **May 1984**. This document provides a status update of the individual features of the Lake Pontchartrain and Vicinity Hurricane Protection Project. (A0006532)
- *Letter from Frederick M. Chatry, Chief, Engineering Division, New Orleans District, to the New Orleans Sewerage and Water Board*, dated **January 31, 1984**, regarding the Eustis Engineering report on the 17th Street Outfall Canal Test Section, forwarded by Modjeski and Masters on January 17, 1984. In this letter, the Corps concurs with Eustis' conclusions that a "layer of contaminated sand acts as a seal in preventing the water in the canal from influencing the hydrostatic head at and beyond the levee toe," and "Upon completion of the proposed dredging to design grade in the canal, sedimentation will probably deposit on the bottom ... further sealing off the water pressure in the canal from the surrounding ground water." (A0000087)
- *Letter from Modjeski and Masters Consulting Engineers to Frederic M. Chatry, Chief of Engineering Division, New Orleans District*, dated **August 10, 1983**, concerning soil analyses at the 17th Street Outfall Canal. The letter indicates that additional analyses for the levees and I-walls for the project have been completed and are attached for review. (A0006796)
- *Letter from Eustis Engineering Company to Modjeski and Masters Consulting Engineers*, dated **July 22, 1983**. This letter contains recommended procedures for performance of a test section from Stations 617+50 to 663+00 of the 17th Street Outfall Canal to develop more definitive information regarding the potential for a blow-out at the landside toe of the levee during high water conditions in the canal. (A0006790)
- *Seventeen Street Canal Drainage Basin Study*, **January 1983**. This study, prepared under the direction of the Sewerage and Water Board of New Orleans and the Jefferson Parish Council, provides the first in-depth study of the 17th Street Canal drainage basin that comprises 7,860 acres in Orleans Parish and 2,550 acres of Jefferson Parish. (IPET)
- *Additional Subsoil Investigation, Sewerage and Water Board of New Orleans, Metairie Relief Canal, Station 617+00 to Station 663+00*, dated **August 23, 1982**. This investigation, produced by Eustis Engineering Company for Modjeski and Masters, contains the results of a subsoil investigation for proposed improvements to the existing canal. (A0006799)

- *Report to the Secretary of the Army by the U.S. General Accounting Office: Improved planning needed by the Corps of Engineers to resolve environmental, technical, and financial issues on the Lake Pontchartrain Hurricane Protection Project*, dated **August 17th, 1982**. This document, which is critical of the Corps' planning effort with regard to the project, posits a general history of the hurricane protection project from its authorization 1965 through 1982. The treatment of the outfall canals is of great significance in this report. The document indicates that discussions between the corps and local sponsors about the alteration of the drainage canals were not conclusive, owing largely to the sponsors lack of financial capability. The report notes that the Orleans Levee District "believed that the Corps' standards may be too high for what is really needed for adequate protection and for what is affordable by local sponsors." (A0001840)
- *Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, Combined Phase I Type General Design Memorandum and Revised Environmental Impact Statement, Plan of Study*, dated **September 1981**. This plan of study was initiated in response to the court injunctions against the barrier complexes. The plan recommends the pursuit of a fast-track study effort and recommends a firm decision concerning the future study direction by mid-December, 1981. (Senate CD 13 – 15 Nov 05).
- *Times Picayune, 1979-1981*. This entry contains a series of articles from 1979-1981 pertaining to the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection project. (A0007458)
- *Modification of U.S. District Court Injunction, March 1978*. The court modified its order of December 1977 and lifted the injunction against all features of the authorized project other than the construction of the barrier complexes. The Corps determines the revised Environmental Impact Statement will need additional study and will not be complete until November 1985. As a result, in December 1981, the Corps directs future study efforts on toward the "high-level plan" that manifests itself in the July 1984 Reevaluation Study. (Contained within A0001840)
- *U.S. District Court Injunction, December 1977*. The Corps was enjoined by the court from constructing the barrier complexes, the New Orleans East levee system, and the Chalmette Area plan of the Lake Pontchartrain Hurricane Protection Project, authorized in 1965, pending the revision and acceptance of the Environmental Impact Statement. (A0001840, A0007362)
- *Record of Public Meeting, Lake Pontchartrain, Louisiana, and Vicinity, Hurricane Protection Project*, dated **June 1975**. This document is a transcript of the public meeting held at the University of New Orleans on February 22, 1975. (Senate CD 13 – 24 Oct 05)
- *Final Environmental Impact Statement: Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project*, dated **August 1974**. This study describes the protective features and identifies the environmental effects of the hurricane protection project described in House Document 231, 89th Congress, 1st session (barrier plan) and approved by the 1965 Flood Control Act. (Senate CD 13 – 24 Oct 05)
- *17th Street Canal Boring Locations*, dated **1973**. This log of boring samples from 1971 through 1973 is accompanied by transmittals of the results of soil tests. (A0000393)

- *The Board of Levee Commissioners of the Orleans Levee District, Emergency Operations Plan*, dated **1972**. The document details responsibilities of the board under the emergency operations plan in terms of preparations and surveillance; high tide emergencies; and hurricane emergencies. (A0001839)
- *Hurricane Study, History of Hurricane Occurrences along Coastal Louisiana*, dated **August 1972**. This document, prepared by the New Orleans District, posits historical research, a summary of hurricane occurrences, descriptions of hurricanes and hurricane tracks dating back to the 19th century. (Senate CD 13 – 24 Oct 05)
- *Orleans Parish Lakefront Levee West of IHNC: Outfall Canals*. Drawings, dated **1970**, depicting outfall canal cross-sections, piezometer ranges, and log borings for the 17th Street, London Avenue, and Orleans canals. (A0002038)
- *Lake Pontchartrain Louisiana and Vicinity, Design Memorandum No. 1, Hydrology and Hydraulic Analysis, Part III – Lakeshore*, dated **September 1968**. This document covers the hydraulic design of the lakeshore protection under the authorized project. (Senate CD 13 – 15 Nov 05)
- *Lake Pontchartrain Louisiana and Vicinity, Design Memorandum No. 1, Hydrology and Hydraulic Analysis, Part II – Barrier*, dated **August 1967**. This design memorandum includes the description and analyses of essential data, assumptions, and criteria used for studies which provide the basis for determining design surge heights, run-up, overtopping and frequencies for the Lake Pontchartrain Barrier. It also includes the average lake levels for the design hurricane on different tracks. (Senate CD 13 – 15 Nov 05)
- *House Document No. 231, 89th Congress, 1st session*. The report of the Chief of Engineers, **March 4, 1964**, transmitted to Congress the report of the Board of Engineers for Rivers and Harbors, accompanied by the reports of the district and division engineers and the concurring reports of the Mississippi River Commission for those areas under its jurisdiction. The report posits a recommendation for what came to be known as the “barrier plan”: “For protection from hurricane flood levels...the most suitable plan would consist of a barrier extending generally along US Highway 90...together with floodgates and a navigation lock in the Rigolets, and flood and navigation gates in Chef Menteur Pass; construction of a new lakeside levee in St. Charles Parish...; extension upward of the existing riprap slope protection along the Jefferson Parish levee; enlargement of the levee landward of the seawall along the 4.1 mile lakefront, and construction of a concrete-capped sheet pile wall along the levee west of the Inner Harbor Canal...” The report serves as the basis for the feasibility report on the hurricane protection project and subsequent project authorization in the Flood Control Act of 1965, also known as PL 298, 89th Congress, 1st Session. (IPET)
- *Effects on Lake Pontchartrain, LA., of Hurricane Surge Control Structures and Mississippi River Gulf Outlet Channel, Technical Report No. 2-636*, dated **November 1963**. This model study conducted by the Waterways Experiment Station from January 1960 through June 1961 analyzes the effects of gated structures under the proposed barrier system for hurricane protection on the salinity and hydraulic regimen of Lake Pontchartrain and its connecting waterways and lakes. (Senate CD 13 – 15 Nov 05)

- *Interim Survey Report, Hurricane Study, Lake Pontchartrain, Louisiana, and Vicinity*, dated **November 21, 1962**. This interim report posits the recommended plan for the Lake Pontchartrain basin. The recommended plan includes a barrier at the west end of the lake to exclude hurricane storm surges and the construction and enlargement of protective works fronting developed or potentially developable areas. (IPET)
- *Letter from Acting New Orleans District Engineer to the Board of Commissioners, Pontchartrain Levee District*, dated **September 5, 1962** regarding the 17th Street Canal Levees. The letter informs the board of commissioners that the 17th Street Canal Levee, Lake Pontchartrain Protection Levee, Station minus 3+62 lakeward of the Lake shore Hammond Highway to Station 118+12 at the Southern Railroad has been completed by the federal government under the 1928 Flood Control Act, as amended. (Senate CD 13 – 15 Nov 05)
- *Letter from the Board of Levee Commissioners of the Orleans Levee District to the District Engineer, New Orleans District*, dated **March 1, 1962**, concerning the board’s view of hurricane protection along the south shore of Lake Pontchartrain. In this letter the board indicates that since the time of the 1950 study by Bedell & Nelson in 1950, the Orleans Levee Board had done considerable work along the seawall in the Lakeshore Parkway. In light of this, the Orleans Levee Board suggests that the breakwater recommended in the 1950 report is unnecessary and undesirable from an esthetic point of view. (Letter contained within **House Document No. 231, 89th Congress, 1st session**, dated March 4, 1964).
- *A Detailed Report on Hurricane Study Area #1, Lake Pontchartrain and Vicinity, Louisiana*, report by the Department of the Interior, dated **March 1962**. This report analyzes the environmental effects of barrier structures and high level plans on the hydrological regime of Lake Pontchartrain. (Senate CD 13 – 15 Nov 05)
- *Levee Work, F.Y. 1957, Item C – 17th Street Canal Levee Enlargement, Lake Pontchartrain Protection Levee, Plan Profile and Borings* dated, **January, 1957**. Corps of Engineers drawings depicting boring and section data from west canal levee opposite current-day breach location. Dates of levee embankment borings are noted as Nov. 8-12 & 15, 1948; borrow area borings, Nos. 1-10, January 21, 1957. (MVN Geotech Map Files)
- *Geological Investigation of the New Orleans Harbor Area, TM No. 3-391*, dated **June 1954**. This study, produced by the Waterways Experiment Station, is based on boring logs collected in the late fall and winter of 1949-1950. A list of the borings is contained in Appendix C. (Senate CD 13 – 24 Oct 05)
- {Unknown Document Title}, by Bedell & Nelson, dated **October 1950**. The Orleans Levee Board and the Corps conducted a study of the lakefront to protect New Orleans from Lake Pontchartrain storm surges. The report by Bedell & Nelson, prepared for the board and shared with the Corps, recommended the installation of a breakwater from the New Basin Canal to the Industrial Canal along the south shore of Lake Pontchartrain to prevent overtopping of the seawall by wave action caused by hurricane winds. (See *Letter from the Board of Levee Commissioners of the Orleans Levee District to the District Engineer, New Orleans District*, dated March 1, 1962).

- *Review Report: Lake Pontchartrain, La., From the Orleans-Jefferson Parish Line Westward and Northward to the Vicinity of Frenie, La.* New Orleans District document dated **April 15, 1948**. This review report was prepared in the aftermath of the hurricane of September 19, 1947, and recommends modification of the adopted project (Flood Control Act of 1946) to provide for increased protection against storm surge and waves from Lake Pontchartrain, by landside enlargement of the existing embankment along the lake, with suitable wave erosion protection, and the enlargement of return levees along the Orleans and St. Charles Parish lines. Document includes wind velocity records, hydrographs of Sept-Oct of 1947 and March 1948, rainfall frequencies; boring data, and levee profiles and typical cross-sections.

London Avenue Canal Chronology

- *Annual Inspection of Completed Works Program, 2004 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 20, 2004**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected October 15, 2004 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)

- *Data pertaining to the Louisiana Hurricane Protection Study*, dated **March/April 2004**. The documents posit several proposed feasibility study alternatives to upgrade the hurricane protection project to accommodate a Category 4 or Category 5 storm. Alternatives include among others: raising all existing levees and building structures at outfall canal entrances; raising existing levees, with the exception of those along the IHNC and GIWW and placing a structure at the confluence of the GIWW and MRGO and a second structure at Seabrook; and structures at the Chef and Rigolets passes. (A0002025, A0002027, A0002028, A0002029, A0002030)

- *Annual Inspection of Completed Works Program, 2003 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **2003**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June 4, 2003 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)

- *Southeast Louisiana Project, Lake Pontchartrain, LA and Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Robert E. Lee Blvd.* This document, dated **March 10, 2003**, represents the 95 percent final submittal of construction solicitation and specifications. (A0005083)

- *London Avenue Outfall Canal Floodproofing, Robert E. Lee Boulevard Bridge, 95% Final Submittal.* Drawings, dated **February 2003**. (A0005091)

- *Annual Inspection of Completed Works Program, 2002 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **2002**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 31, 2002 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)

- *Lake Pontchartrain, LA and Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Fronting Protection at Pumping Station No. 3.* This document, dated **July 15, 2002**, contains the construction solicitation and specifications for the project. (A0000359, A0004791)
- *Annual Inspection of Completed Works Program, 2001 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **2001**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 18, 2001 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, London Ave. Outfall Canal, Parallel Floodproofing Protection of Mirabeau and Filmore Ave Bridges, Solicitation No. DACW29-01-B-0092.* The contract solicitation, dated **September 18, 2001** describes the magnitude of the proposed work. (A0002202)
- *Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, London Ave. Outfall Canal, Parallel Protection, Floodproofing of Mirabeau Ave and Filmore Ave Bridges.* Plans and specifications for contract no. DACW29-01-B-0092, **June 2001**. (Senate CD 15- 15 Nov. 05, disk 2 of 2)
- *Letter from the Planning, Programs and Project Management Division, New Orleans District to the Orleans Levee District,* dated **April 19, 2001** concerning completion of contract #DACW29-99-C-0005 for the London Avenue Outfall Canal, Parallel Protection, Floodproofing of Gentilly Boulevard Bridge. The letter indicates that a final inspection of the work was conducted on March 14, 2001 and was found to be in accordance with the contract plans and specifications. (A0000816)
- *Annual Inspection of Completed Works Program, 2000 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 12, 2000**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June 2, 2000 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Correspondence regarding directional boring under the Inner Harbor Canal, London Canal, and the 17th Street Canal,* dated **May 2000**. This is a series of correspondence between the Corps of Engineers, the Gilbert Southern Corporation, and Bay Equipment Company concerning the guidelines and safety factors of the referenced subject material. File contains drawings depicting the fiber optic cable route at the outfall canals. (A0001813) Supporting information can also be found in A0003693 and A0003694.
- *Narrative Completion Report,* dated **May 19, 2000** for contract DACW29-98-C-0082, London Avenue Outfall Canal, Parallel Protection, Floodproofing Leon C. Simon Boulevard Bridge. (A0006524)

- *Annual Inspection of Completed Works Program, 1999 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 16, 1999**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 21, 1999 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Drawings, London Avenue Canal, dated June 20, 1999.* Drawings depict sheet pile layout, abutments, and I-wall profiles. (A0005777)
- *Correspondence regarding Sediment Sampling, Lake Pontchartrain and Vicinity, Hurricane Protection Plan, (HLP), Fronting Protection for Pumping Station Nos. 3, 4, 6, and 7 at London, 17th Street, and Orleans Avenue Outfall Canals, dated 1998.* This file contains a series of correspondence relating to the subject matter and includes maps and drawings of sediment sample locations. (A001811)
- *Annual Inspection of Completed Works Program, 1998 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 15, 1998**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 29, 1998 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Drawings, London Avenue Outfall Canal, Leon C. Simon Blvd, dated November 18, 1998.* Drawings depict girder details, and stressing bed and detensioning layout. (A0005777)
- *Borings No. CU5, (S. Claiborne to Carrollton) taken under contract No. DACW29-98-D-0003 on May 5, 1998.* (A0000337)
- *London Avenue Outfall Canal, Parallel Protection, Floodproofing, Gentilly Bridge.* As built drawings for contract DACW29-99-C-0005, dated **February 1998**. (IPET)
- *London Avenue Outfall Canal, Parallel Protection, Floodproofing, Leon C. Simon Boulevard Bridge.* As built drawings for contract DACW29-98-C-0082, dated **February 1998**. (IPET)
- *Annual Inspection of Completed Works Program, 1997 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 24, 1997**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 29, 1997 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Supplemental Design Memorandum, Filmore Avenue and Mirabeau Avenue Bridge, London Avenue Outfall Canal, Orleans Levee Board Project No. 24912, A/E Project No. 9362C.* This report prepared by Meyer Engineers and dated **July, 1997** addresses the replacement of existing bridges with sealed bridges at reduced design speed and evaluates the replacement of existing bridges with raised bridges above the proposed I-wall and building floodgates at the existing bridges. (A0002063)

- *Final Calculations, 100% Design Submittal for Leon C. Simon Bridge.* The study prepared by Linfield, Hunter and Junius, Engineers and Architects and dated **May 1997** identifies design parameters used in preparing the design submittal, including design water elevations, roadway and bridge design parameters, material strengths, and Corps of Engineers design specifications. (A0002053)
- *Contract File, Contract No. DACW29-94-C-0079, Lake Pontchartrain, Louisiana & Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Mirabeau Avenue to Leon C. Simon Boulevard, dated February 1997.* (A0006740)
- *Letter from Eustis Engineering Company, Inc. to the New Orleans District* regarding soil mechanics laboratory tests on boring samples submitted by the Corps, dated **February 5, 1997**. Borings identified as 7-LUG, 8-LUG, and 9-LUG. (A0001687).
- *Annual Inspection of Completed Works Program, 1996 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 13, 1996**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 31, 1996 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Narrative Completion Report* dated **December 5, 1996** for contract DACW29-94-C-0079, Lake Pontchartrain, Louisiana & Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Mirabeau Avenue to Leon C. Simon Boulevard Floodwall. (A0004110, A0006524, A0007550)
- *Quality Assurance Report, Daily Log of Construction, for Contract No. DACW29-94-C-0079, Lake Pontchartrain, Louisiana & Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Mirabeau Avenue to Leon C. Simon Boulevard, dated September 16, 1994 through November 6, 1996.* (A0006523, A0006540, A0006553, A0006560, A0006571, A0006499, A0006504, A0006506, A0006509, A0006507, A0006512, A0006519, A0006522)
- *London Avenue Outfall Canal, boring logs for Stations 124+00, 154+00, and 158+00 taken on July 11, 1996.* (A0001096, A0001105, A0001108, A0001161, A0001162).
- *Supplemental Design Memorandum, Flood Control Modifications to the Leon C. Simon and Gentilly Boulevard Bridges Over the London Avenue Outfall Canal.* The study prepared by Linfield, Hunter and Junius, Engineers and Architects and dated **May 1996** identifies and evaluates alternatives available for providing hurricane flood protection at the bridges. (A0002066, Senate CD 13, 15 Nov. 05)
- *London Avenue Outfall Canal, Siphons and Telephone Conduits Crossings, April 1, 1996.* This is a proposed procedure from B&K Construction to install sheet piling under existing steel siphon tubes and telephone conduit crossings as part of contract DACW29-94-C-0079, London Avenue Canal – Mirabeau to Leon C. Simon Blvd. (A0000369)
- *TFG Files Inventory.* This entry contains information, dated **January 1996**, concerning tests of I-wall monolith with low concrete compressive strength breaks. (A0006554)

- *Correspondence File*, dated **1995**, regarding mills certificates relative to the steel used to form sheet piling used in DACW29-94-0079, Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Mirabeau Avenue to Leon C. Simon Blvd, Floodwall. (A0006552)
- *Annual Inspection of Completed Works Program, 1995 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 12, 1995**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1995 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Waiver Study Report for Sealed Bridges at Leon C. Simon Boulevard and Gentilly Boulevard Over the London Avenue Outfall Canal*. The study prepared by Linfield, Hunter, and Junius, Engineers and Architects and dated **October 31, 1995** addresses deviations from current design standards. (A0002062)
- *Design Waiver Report, Filmore Avenue and Mirabeau Avenue Bridge, London Avenue Outfall Canal, Orleans Levee Board Project No. 24912, A/E Project No. 9362*. This waiver report prepared by Meyer Engineers and dated **October 27, 1995** addresses the requirement for a design waiver from the Louisiana Department of Transportation and Development, which requires two feet of freeboard between the design water elevation and the bottom of bridge structures. The design water surface elevations calculated by the Corps of Engineers for the standard project hurricane exceed the bottom of the bridge, necessitating the need for a design waiver. (A0001882)
- *Amendment of Solicitation of Contract*, dated **October 1995**. Several entries contain modifications to contract DACW29-94-0079, Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Mirabeau Avenue to Robert E. Lee Blvd, West Bank; Mirabeau Avenue to Leon C. Simon Blvd, East Bank Floodwall. (A0004422, A0004438, A0004450, A0004528, A0004531, A0004532, A0004560, A0004592)
- *Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Design Memorandum No. 19A, General Design, London Avenue Outfall Canal, Supplement No. 2, Fronting Protection, Drainage Pumping Station No. 3*, dated **September 1995**. This supplement to Design Memorandum No. 19A, prepared by Pepper & Associates, Inc., presents the essential data, assumptions, computations and criteria used in the design of the fronting protection at Pumping Station No. 3 and is prepared in such detail to serve as the basis for preparing plans and specifications. (A0004740, Senate CD 13 – 24 Oct 05)
- *Narrative Completion Report*, dated **September 19, 1995** for contract No. DACW29-94-C-0003, Lake Pontchartrain, Louisiana & Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Pumping Station No. 3 to Mirabeau Avenue Floodwall. (A0003324, A0003553)

- *Letter from Cletis Wagahoff, Deputy District Engineer for Project Management, New Orleans District, to the Board of Levee Commissioners, Orleans Levee District, dated August 24, 1995.* The letter informs the Board of Levee Commissioners that contract DACW29-94-C-0003 for the Lake Pontchartrain, Louisiana & Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Pumping Station No. 3 to Mirabeau Avenue Floodwall has been completed and that an inspection was conducted on August 17, 1995, with all work found to be completed satisfactorily. (A0003561)
- *Design Memorandum Supplement, Filmore Avenue and Mirabeau Avenue Bridge, London Avenue Outfall Canal, Orleans Levee Board Project No. 24912, A/E Project No. 9362.* This design memorandum supplement prepared by Meyer Engineers and dated **July 21, 1995** addresses the replacement of existing bridges with three-sided tunnel bridges and replacing the existing bridges with floodsafe bridges above the proposed I-wall. The supplement contains a letter from Col. Kenneth Chow, New Orleans District Engineer, to the Orleans Levee District, whereby Col. Chow reluctantly agrees to the levee district's request to design the outfall canal bridges with its own A/E firm. (A0001881)
- *Memorandum from Chester Ashley, Area Engineer, New Orleans Area Office, to the Chief of Engineer Division, Lower Mississippi Valley Division, regarding Contract No. DACW29-94-C-0003, Lake Pontchartrain and Vicinity, High Level Plan, London Avenue Outfall Canal, Pumping Station No. 3 to Mirabeau Avenue Floodwall, dated July 6, 1995.* The document contains final elevations for settlement reference markers submitted by Boh Brothers for the subject contract. (A0002287, A0003562)
- *Lake Pontchartrain, LA and Vicinity, High Level Plan, Design Memorandum No. 19A, General Design Supplement No. 2, London Avenue Outfall Canal, Fronting Protection, Drainage Pumping Station No. 3, dated March 1995.* This supplement presents the essential data, assumptions, computations, and criteria to be used in the project, and is prepared in sufficient detail to serve as the basis for preparing plans and specifications. (Senate CD 27 – 24 Oct. 05)
- *Back Up Papers, Contract No. DACW29-94-C-0079, Lake Pontchartrain, Louisiana & Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Mirabeau Avenue to Leon C. Simon Boulevard, dated January 25, 1995.* (A0006577)
- *TFG Files Inventory.* This entry is a general correspondence file, dated **1994**, for Contract #3, London Avenue Outfall Canal Floodwall. (A0006888)
- *Annual Inspection of Completed Works Program, 1994 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 19, 1994**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June, 1994 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Lake Pontchartrain, La. and Vicinity, Lake Pontchartrain High Level Plan, Design Memorandum No 19A, General Design, Supplement No. 1, London Avenue Outfall Canal, Fronting Protection, Pumping Station No. 4*, dated **December 1994**. This document indicates that the Orleans Levee Board withdrew its support for the construction of the gated structure contained in the January 1989 DM for the project in favor of the parallel protection alternative which, in turn, was mandated by the Energy and Water Development Appropriations Act of 1992. The purpose of this supplement is to present the essential data, computations, and criteria used in the design of the fronting protection for Pumping Station No. 4, and is prepared in sufficient detail to provide the basis for preparing plans and specifications. (A0001886, Senate CD 13 – 24 Oct 05)
- *Contract File, DACW29-94-B-0047, Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Mirabeau Avenue to Robert E. Lee Blvd, West Bank; Mirabeau Avenue to Leon C. Simon Blvd, East Bank Floodwall*, dated **June 1994**. (A0006830)
- *Amendment of Solicitation of Contract*, dated **May 25, 1994**. Document contains modifications to contract DACW29-94-B-0047, Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Mirabeau Avenue to Robert E. Lee Blvd, West Bank; Mirabeau Avenue to Leon C. Simon Blvd, East Bank Floodwall. (A0004697, A0006786)
- *Solicitation No. DACW29-94-B-0047*, dated May 3, 1994 for Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Mirabeau Avenue to Robert E. Lee Blvd, West Bank; Mirabeau Avenue to Leon C. Simon Blvd, East Bank Floodwall. (A0006789)
- *Geotechnical Investigation, London Avenue Outfall Canal, Proposed Levee Crown Degrading, Mirabeau Avenue to Leon C. Simon Boulevard*, dated **March 29, 1994**. This letter report contains the results of geotechnical engineering analyses based on data developed by Eustis Engineering Company, Inc. and the Corps of Engineers. (Senate CD 13 – 24 Oct. 05)
- *Narrative Completion Report*, dated **March 24, 1994**, for contract DACW29-93-C-0050, London Avenue Outfall Canal, HPL, First Lift. (A0006524)
- *Plans for Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection, High Level Plan, London Avenue Outfall Canal, Parallel Protection: Mirabeau Avenue to Robert E. Lee Boulevard, West Bank; Mirabeau Avenue to Leon C. Simon Boulevard, East Bank*. Plans and specifications for contract no. DACW29-94-B-0047, dated **February 1994**. (A0006584, Senate CD 27 – 24 Oct 05)
- *TFG Files Inventory*. This entry contains local review comments, dated **1993**, for Contract #3, London Avenue Outfall Canal Floodwall. (A0006867)
- *TFG Files Inventory*. These entries are general correspondence files, dated **1993**, for Contract #3, London Avenue Outfall Canal Floodwall. (A0006893, A0006871)

- *Annual Inspection of Completed Works Program, 1993 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 22, 1993**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1993 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Boring Request Memorandum*, dated **November 30, 1993**. This document requests that boring numbers 9-LUG (Station 99+80 east bank) and 10-LUG (102+30 east bank) be made at the London Avenue Outfall Canal, Pumping Station No. 4. The document also requests that ground elevation and water table elevation be obtained for each boring. (A0001316)
- *Local Review of Plans and Specifications, London Avenue Canal Floodwall*, dated **November 1993**. This entry contains comments pertaining to the review of plans and specifications of the high level plan for the London Avenue Outfall Canal from Pumping Station No. 3 to Mirabeau Avenue submitted by local agencies and interests. (A0002168)
- *Memorandum from Rodney P. Picciola, Chief, Foundations and Materials Branch, New Orleans District, to Walter Baummy, Chief, Design Branch, New Orleans District*, dated **September 17, 1993** concerning the review of plans and specifications for London Avenue Outfall Canal Floodwall, Parallel Protection, Contract 3, Mirabeau Avenue to Leon C. Simon Boulevard, East Bank, Mirabeau Avenue to Robert E. Lee Boulevard, West Bank. (A0001893)
- *Lake Pontchartrain and Vicinity, High Level Plan, London Avenue Outfall Canal, Parallel Protection, Pumping Station No. 3 to Mirabeau Avenue.* Plans and specifications for contract no. DACW29-93-B-0080 dated **July 1993**. (Senate CD 09 Dec 05)
- *Lake Pontchartrain, London Avenue Outfall Canal, Hurricane Protection Levee*, boring analysis for samples taken from Stations 142+00 through 151+00 and 154+00 through 155+00 from **June 30 – July 2 1993**. (A0001333, A0001336, A0001337, A0001338)
- *Computation Sheet, London Avenue Canal, Contract 2*, dated **June 30, 1993**. This document contains concrete quantities for the East I-Wall from Station 1+24 to 68+55.62. (A0002166)
- *Lake Pontchartrain and Vicinity, London Avenue Outfall Canal*. This entry contains a series of memoranda, dated from **February 12-June 23, 1993**, that detail the Lower Mississippi Valley Division technical comments for the review of plans and specifications of the high level plan for the London Avenue Outfall Canal from Pumping Station No. 3 to Mirabeau Avenue. (A0002185)
- *Additional Geotechnical Analyses, London Avenue Outfall Canal, Proposed I-Walls and T-Walls, Mirabeau Avenue to Leon C. Simon Boulevard*, dated **May 19, 1993**. This letter report contains the results of additional geotechnical analyses based on data developed by Eustis Engineering Company, Inc. and the Corps of Engineers. (A0006937)

- *London Avenue, Contract 3*, dated **April, 1993**. This entry contains notes and comments with regard to the 35 percent review of the plans and specifications for Lake Pontchartrain and Vicinity, London Avenue Outfall Canal, Mirabeau Avenue to Leon C. Simon Boulevard Floodwall (Contract N0. 3). (A0002453)
- *Sheet pile Analysis*, Contract No. 2, dated **January 1993**. This entry contains analyses, computations, sketches, and correspondence regarding I-wall sheet piles and shear soil strengths and I-wall deflections. (A0002163)
- Letter from *Col. Michael Diffley, District Engineer, New Orleans District, to the Board of Levee Commissioners of the Orleans Levee District*, dated **January 15, 1993**. This letter expresses Col Diffley's disappointment with the lack of progress made by the Board of Levee Commissioners on the parallel protection along the London Avenue and Orleans Avenue Canals. Diffley warns that he may be forced to reconsider the design-construction agreements reached between the New Orleans District and the Board of Levee Commissioners. (A0001667)
- *Annual Inspection of Completed Works Program, 1992 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 14, 1992**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1992 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Local Review of Plans and Specifications, London Avenue Canal Floodwall, Contract No. 2*, dated **November 4, 1992**. This entry contains internal New Orleans District comments pertaining to the review of plans and specifications of the high level plan for the London Avenue Outfall Canal from Pumping Station No. 3 to Mirabeau Avenue. (A0002167)
- *Memorandum from Rodney P. Picciola, Chief, Foundations and Materials Branch, New Orleans District, to Chief, Design Branch*, dated **July 8, 1992**, concerning interim protection the London Avenue Outfall Canal hurricane Protection levee construction. The memorandum provides interim protection specifications to be in place during construction of the geotextile reinforced hurricane protection levee. (A0002448)
- *Computation Sheets, London Avenue Canal, (East)*, Drawings, surveys, and notations from a **May 20, 1992** field trip depicting the east side of the London Avenue Canal. (A0003668)
- *Computation Sheets, London Avenue Canal, (West)*, Drawings, surveys, and notations from a **May 19, 1992** field trip depicting the west side of the London Avenue Canal. (A0003664)
- *Letter from Col. Michael Diffley, District Engineer, New Orleans District, to the Board of Levee Commissioners of the Orleans Levee District*, dated **May 5, 1992**. In response to the Board of Levee Commissioners' letter of April 28, 1992, Col. Diffley agrees to suspend the New Orleans District's A/E selection process on Contract No. 3 and agrees to complete the design on contracts No.1 and No 2 for the London Avenue Outfall Canal. (A0001793)

- *Computation Sheets*, dated **April 1992**. This document contains design analysis for the London Avenue Outfall Canal for west side Stations 21+00 to 70+00 and east side Stations 37+00 to 100+00. (A0003670)

- *Letter from the Board of Levee Commissioners of the Orleans Levee District to Col. Michael Diffley, District Engineer, New Orleans District*, dated **April 28, 1992**. This letter informs Col. Diffley that the Board of Levee Commissioners passed a resolution that the New Orleans District is not to proceed with the selection of consultants for all contracts for both the Orleans Avenue and London Avenue projects, including Contract No. 3 of the London Avenue Canal project. The letter also indicates that, upon completion of the foundation design of Contract No. 1 and No. 2 on London Avenue, the New Orleans District should consult with the Orleans Levee District to determine the need for utilizing the Corps of Engineers' design personnel for the design effort. (A0001793)

- *Letter from Col. Michael Diffley, District Engineer, New Orleans District, to the Board of Levee Commissioners of the Orleans Levee District*, dated **April 17, 1992**. This letter lays out Col. Diffley's understanding of the agreements reached in the April 14, 1992 with the Orleans Levee District. The letter posits who will be responsible for designing different phases of project work at the London Avenue and Orleans Avenue outfall canals. (A0001796)

- *Letter from the Board of Levee Commissioners of the Orleans Levee District to Col. Michael Diffley, District Engineer, New Orleans District*, dated **March 16, 1992**. This letter informs Col. Diffley that the Orleans Levee District will secure its own engineering and construction services from private firms to implement the parallel protection program on the London Avenue Canal, rather than use the New Orleans District's engineering and design services. Col. Diffley responds by a letter, dated **April 2, 1992**, and indicates that what the levee district proposes did not agree with his understanding of an earlier agreement reached to proceed with the London Avenue and Orleans Avenue outfall canals. Col. Diffley suggests a meeting be held between on April 14, 1992 to clarify the matter. (A0001800)

- *Aerial Photographs*, London Avenue Canal, dated **March 24, 1992**. (A0002190)

- *Annual Inspection of Completed Works Program, 1991 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 10, 1991**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June, 1991 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Memorandum from W. Eugene Tickner, Chief of Engineering Division, New Orleans District, to CELMN-OD-OS*, dated **February 8, 1991**, concerning a request by the University of New Orleans to install a well on their campus approximately 900 feet south of the lakefront levee in the vicinity of levee Station 159+90. (A0002187)

- *London Avenue Canal, Interim Floodwalls and Levees, Revised General Design Memorandum*, dated **May 1990**. This document, prepared by Burk and Associates, Inc, for the Board of Levee Commissioners of the Orleans Levee District (contract 2049-0269) posits an interim flood protection plan after the Corps abandoned the proposed barrier plan in favor of the high level plan. The document states, “In April 1986, a general design memorandum was prepared for this flood protection (protection for a 300 year storm plus two feet of freeboard with the Corps’ current geotechnical design standards) which indicates a cost of 44 million dollars.” The document then goes on to indicate that the cost was too high for the budget of the Orleans Levee Board and that the Corps standards were too stringent, leading the authors to design a flood protection system designed for a 100 year storm water elevation plus two feet freeboard and with geotechnical standards set by ASCE. (A0001883)

- *Memorandum from Fred H. Bayley III, Chief, Engineering Division, Lower Mississippi Valley Division, to the Commander, New Orleans District, Regarding Sheet Pile Wall Design Criteria*, dated **July 24, 1989**. This memorandum summarizes the guidance for determining sheet pile wall penetrations, deflections, and other topics, and it references the sources detailing new I-wall design criteria for determining the penetration of sheet pile floodwalls founded in soft clays; estimating sheet pile deflections and design of I-walls to withstand these deflections; and sheet pile finite element-based design procedures for sheet pile walls. (A0000097, A0000101)

- *Lake Pontchartrain, La. and Vicinity, Lake Pontchartrain High Level Plan, Design Memorandum No 19A, General Design, London Avenue Outfall Canal*, dated **January 1989**. The DM examines two alternative plans for providing “high level” standard project hurricane protection: fronting protection (butterfly gates at canal entrances) and parallel protection (floodwalls and flood proofing of bridges), with the construction of a butterfly control valve type gated structure near the lake end of the canal between Leon C. Simon Boulevard and Lakeshore Drive representing the recommended plan. DM includes discussion of the project plan, hydrology, hydraulics, geology, foundation investigation and design, and structural designs, and is complete with plates and diagrams including pre-construction plan drawings. (A0004702)

- *Memorandum from Frederic M. Chatry, Chief, Engineering Division, New Orleans District, to the Commander, Lower Mississippi Valley Division*, dated **January 19, 1989**, concerning the Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project Model Study. The letter serves as a request for authorization to proceed with the second phase of model testing on the proposed butterfly gates for the London Avenue Canal. (A0004551)

- *Lake Pontchartrain, La. and Vicinity, Lake Pontchartrain High Level Plan, Design Memorandum No 19A, General Design, London Avenue Outfall Canal, Structural Design Section*. This document contains several correspondence items dated from **February 1989 to June 1989**, that contain review comments needing resolution prior to full approval of the subject DM. Review comments include discussion of I-walls subject to wave loads, and discussion of sand levee and foundation soils discussed in I-wall analyses. (A0001885, A0001887)

- *Routing slip soliciting comments on draft General Design Memorandum for London Avenue Canal*, dated **December 13, 1988**. This document contains handwritten comments from New Orleans District personnel on the subject design memorandum. Paragraph 41 references a 1980 failure of the floodwall between Pumping Station No. 4 and B/L Station 120+00 east, caused by erosion along the canal side. This paragraph discusses attempts to stabilize the floodwall and remedies taken after the failure.
- *Computation Sheets*, dated **October 1988** for the London Avenue Outfall Canal, Station 59+00 to Station 120+10, East T-Wall. Sketches depict piling extending from El 2.0 to El -26.0 and varying sand layers extending from El -7.0 to El -53.0. (A0002450, A0002467)
- *Computation Sheet*, dated **August 1988** for the London Avenue Outfall Canal. This document compares the use of I-walls versus setback levees. (A0002454)
- *Levee and Sheet pile Analysis*, dated **January 1988 and April 1988**. These entries contain analyses, computations, sketches, and correspondence regarding load stresses and deflections for levees, floodwalls, and sheet pile usage on the London Avenue Canal. (A0002159, A0002160, A0002161)
- *Computation Sheets*, dated **February 1988** for the London Avenue Outfall Canal Lateral Protection, East Side: Stations 1+95 to 159+70; West Side: Stations 0+00 to 159+70. (A0002444, A0002445)
- *Computation Sheets*, dated **February 9, 1988** for the London Avenue Outfall Canal, Stations 0+00 to Station 120+10, East and West side. Disposition form attached to the computation sheets indicates that the information is furnished for use in preparing the GDM for the High Level Protection Plan, but notes that the information is subject to change pending receipt and evaluation piezometric data that had yet to be furnished. (A0002460)
- *Technical Report HL-87-16, Hurricane Protection Structure for London Avenue Outfall Canal, Lake Pontchartrain*, dated **December 1987**. This final report by the Waterways Experiment Station discusses a model investigation conducted to give a three-dimensional analysis of the hydraulic performance of the vertical butterfly gated structure, measure the torque on each gate shaft due to incoming and outgoing flows, and evaluate the effects of wave action on the gates. (A0004534, A0004784, Senate CD 13 – 15 Nov 05)
- *Effects of Wave Action on a Hurricane Protection Structure for London Avenue Outfall Canal, Lake Pontchartrain*, dated **August 1987**. This paper discusses the results of wave action on the proposed gated structure for the London Avenue Canal produced by a wave generator on a hydraulic model replication of the lower reaches of the London Avenue Outfall Canal. (A0008116, Senate CD 13 – 24 Oct 05)
- *Supplemental Agreement between the United States of America and the Jefferson Levee District for Local Cooperation at Lake Pontchartrain and Vicinity High Level Plan*. Signed agreement, dated **January 16, 1987**. (Senate CD 16 – 24 Oct 05)

- *London Avenue Canal Floodwalls and Levees, General Design Memorandum (Draft)*, dated **April 1986**. This document was prepared by Burk & Associates, Inc. for the Board of Levee Commissioners or the Orleans Levee District. The recommended plan covered by this document includes 4,300 feet of earthen levee improvements between Stations 120+00 and 146+50 on the west levee and between Stations 127+20 and 144+50 on the east levee; 380 feet linear feet of concrete, inverted T-floodwall along the east levee between Station 2+80 and 6+60; and more than 26,000 linear feet of cantilever steel sheet pile I-wall floodwalls constructed into the existing earthen levees. The document indicates that all levee improvements were based on design criteria data obtained from the Corps of Engineers. (Senate CD 13 – 15 November 2005)

- *Geotechnical Investigation, Orleans Levee District, London Avenue Outfall Canal, OLB Project No. 2049-0269, New Orleans, Louisiana, Volume I*. Study produced by Eustis Engineering Company for the Board of Levee Commissioners of the Orleans Levee District, dated **March 4, 1986**. The report contains the results of the geotechnical investigation for the London Avenue Canal between Lake Pontchartrain and pumping Station No. 3. Investigation included the drilling of 98 soil borings between October 3, 1985 and December 17, 1985 to determine subsoil conditions and stratification. Sixty-nine of the soil borings were drilled at the centerline of the existing levee or at the existing levee toe. Forty-eight of these were drilled to depths of 50 feet; three to depths of 65 feet, three to depths of 70 feet, three to depths of 80 feet, and nine to depths of 100 feet below the ground surface. The remaining 29 borings were drilled in the canal to a depth of 10 feet below the canal bottom or until a sand stratum was encountered. (A0001880)

- *TFG Files Inventory*. This entry contains information, dated **1985**, provided to Burk and Associates, Inc. and Design Engineers, Inc, for Contract #3, London Avenue Outfall Canal Floodwall. Information includes aerial photographs, soil borings, hydraulic design criteria and floodwall design criteria. (A0006858)

- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to the Board of Levee Commissioners, Orleans Levee District*, dated **September 30, 1985**, concerning technical and general review comments of the board's report entitled, "A study of High Level Flood Protection, 17th Street Outfall Canal, OLB Project No. 2043-0222." (A0006791)

- *Supplemental Agreement between the United States of America and the Orleans Levee District for Local Cooperation at Lake Pontchartrain and Vicinity High Level Plan*. Signed agreement dated **June 21, 1985**. (Senate CD 16 – 24 Oct 05)

- *Interim Agreement between the United States of America and the Orleans Levee District for Local Cooperation at Lake Pontchartrain and Vicinity High Level Plan*. Signed agreement dated **February 20, 1985**. (Senate CD 16 – 24 Oct 05)

- *Memorandum from Maj. Gen. John F. Wall, Director of Civil Works, U.S. Army Corps of Engineers, to the Commander, Lower Mississippi Valley Division, dated **February 7, 1985**, regarding the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project. In this memorandum, the director of civil works indicates that he reviewed the revised Post Authorization Change (PAC) Notification Report, the July 1984 Reevaluation Report and the final supplement to the Environmental Impact Statement, and approves the PAC. (Senate CD 16 – 24 Oct 05)*

- *Lake Pontchartrain, LA, and Vicinity Hurricane Protection Project, Reevaluation Study, **July 1984**. This study is conducted in response to a 1977 Federal injunction that halted portions of the project approved by the Flood Control Act of 1965, specifically the floodgate barrier components of the plan. The study examines the continued feasibility of the barrier plan and examines the feasibility of providing hurricane protection solely by the means of raising and strengthening levees or floodwalls (high level plans). The study concludes that a high level plan represents the most feasible plan of protection. The plan would provide for improved hurricane protection levee systems in Orleans Parish, St. Bernard Parish, and the east bank of Jefferson Parish; repairing and rehabilitating the Mandeville Seawall in St. Tammany Parish; a new levee on the east bank of St. Charles Parish north of US Highway 61. The treatment of the outfall canals at the lakefront remained unresolved, with five potential solutions, ranging from higher and stronger levees to floodgates and auxiliary pumping stations at the canal openings, discussed. Volume II of the study contains all technical and engineering data used to support information in the reevaluation study, including hydrology and hydraulics, foundation design and geology, engineering alternatives. This reevaluation study serves as the basis for the feasibility report of the hurricane protection project and becomes the vehicle which leads to authorization of the high-level plan. (IPET)*

- *Status of Lake Pontchartrain and Vicinity Project, dated **May 1984**. This document provides a status update of the individual features of the Lake Pontchartrain and Vicinity Hurricane Protection Project. (A0006532)*

- *Report to the Secretary of the Army by the U.S. General Accounting Office: Improved planning needed by the Corps of Engineers to resolve environmental, technical, and financial issues on the Lake Pontchartrain Hurricane Protection Project, dated **August 17th, 1982**. This document, which is critical of the Corps' planning effort with regard to the project, posits a general history of the hurricane protection project from its authorization 1965 through 1982. The treatment of the outfall canals is of great significance in this report. The document indicates that discussions between the corps and local sponsors about the alteration of the drainage canals were not conclusive, owing largely to the sponsors lack of financial capability. The report notes that the Orleans Levee District "believed that the Corps' standards may be too high for what is really needed for adequate protection and for what is affordable by local sponsors." (A0001840)*

- *Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, Combined Phase I Type General Design Memorandum and Revised Environmental Impact Statement, Plan of Study*, dated **September 1981**. This plan of study was initiated in response to the court injunctions against the barrier complexes. The plan recommends the pursuit of a fast-track study effort and recommends a firm decision concerning the future study direction by mid-December, 1981. (Senate CD 13 – 15 Nov 05).
- *Modification of U.S. District Court Injunction, March 1978*. The court modified its order of December 1977 and lifted the injunction against all features of the authorized project other than the construction of the barrier complexes. The Corps determines the revised Environmental Impact Statement will need additional study and will not be complete until November 1985. As a result, in December 1981, the Corps directs future study efforts on toward the “high-level plan” that manifests itself in the July 1984 Reevaluation Study. (Contained within A0001840)
- *U.S. District Court Injunction, December 1977*. The Corps was enjoined by the court from constructing the barrier complexes, the New Orleans East levee system, and the Chalmette Area plan of the Lake Pontchartrain Hurricane Protection Project, authorized in 1965, pending the revision and acceptance of the Environmental Impact Statement. (A0001840, A0007362)
- *Record of Public Meeting, Lake Pontchartrain, Louisiana, and Vicinity, Hurricane Protection Project*, dated **June 1975**. This document is a transcript of the public meeting held at the University of New Orleans on February 22, 1975. (Senate CD 13 – 24 Oct 05)
- *Final Environmental Impact Statement: Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project*, dated **August 1974**. This study describes the protective features and identifies the environmental effects of the hurricane protection project described in House Document 231, 89th Congress, 1st session (barrier plan) and approved by the 1965 Flood Control Act. (Senate CD 13 – 24 Oct 05)
- *The Board of Levee Commissioners of the Orleans Levee District, Emergency Operations Plan*, dated **1972**. The document details responsibilities of the board under the emergency operations plan in terms of preparations and surveillance; high tide emergencies; and hurricane emergencies. (A0001839)
- *Hurricane Study, History of Hurricane Occurrences along Coastal Louisiana*, dated **August 1972**. This document, prepared by the New Orleans District, posits historical research, a summary of hurricane occurrences, descriptions of hurricanes and hurricane tracks dating back to the 19th century. (Senate CD 13 – 24 Oct 05)
- *Orleans Parish Lakefront Levee West of IHNC: Outfall Canals*. Drawings, dated **1970**, depicting outfall canal cross-sections, piezometer ranges, and log borings for the 17th Street, London Avenue, and Orleans canals. (A0002038)
- *Lake Pontchartrain Louisiana and Vicinity, Design Memorandum No. 1, Hydrology and Hydraulic Analysis, Part III – Lakeshore*, dated **September 1968**. This document covers the hydraulic design of the lakeshore protection under the authorized project. (Senate CD 13 – 15 Nov 05)

- *Lake Pontchartrain Louisiana and Vicinity, Design Memorandum No. 1, Hydrology and Hydraulic Analysis, Part II – Barrier*, dated **August 1967**. This design memorandum includes the description and analyses of essential data, assumptions, and criteria used for studies which provide the basis for determining design surge heights, run-up, overtopping and frequencies for the Lake Pontchartrain Barrier. It also includes the average lake levels for the design hurricane on different tracks. (Senate CD 13 – 15 Nov 05)

- *House Document No. 231, 89th Congress, 1st session*. The report of the Chief of Engineers, **March 4, 1964**, transmitted to Congress the report of the Board of Engineers for Rivers and Harbors, accompanied by the reports of the district and division engineers and the concurring reports of the Mississippi River Commission for those areas under its jurisdiction. The report posits a recommendation for what came to be known as the “barrier plan”: “For protection from hurricane flood levels...the most suitable plan would consist of a barrier extending generally along US Highway 90...together with floodgates and a navigation lock in the Rigolets, and flood and navigation gates in Chef Menteur Pass; construction of a new lakeside levee in St. Charles Parish...; extension upward of the existing riprap slope protection along the Jefferson Parish levee; enlargement of the levee landward of the seawall along the 4.1 mile lakefront, and construction of a concrete-capped sheet pile wall along the levee west of the Inner Harbor Canal...” The report serves as the basis for the feasibility report on the hurricane protection project and subsequent project authorization in the Flood Control Act of 1965, also known as PL 298, 89th Congress, 1st Session. (IPET)

- *Effects on Lake Pontchartrain, LA., of Hurricane Surge Control Structures and Mississippi River Gulf Outlet Channel, Technical Report No. 2-636*, dated **November 1963**. This model study conducted by the Waterways Experiment Station from January 1960 through June 1961 analyzes the effects of gated structures under the proposed barrier system for hurricane protection on the salinity and hydraulic regimen of Lake Pontchartrain and its connecting waterways and lakes. (Senate CD 13 – 15 Nov 05)

- *Interim Survey Report, Hurricane Study, Lake Pontchartrain, Louisiana, and Vicinity*, dated **November 21, 1962**. This interim report posits the recommended plan for the Lake Pontchartrain basin. The recommended plan includes a barrier at the west end of the lake to exclude hurricane storm surges and the construction and enlargement of protective works fronting developed or potentially developable areas. (IPET)

- *Letter from the Board of Levee Commissioners of the Orleans Levee District to the District Engineer, New Orleans District*, dated **March 1, 1962**, concerning the board’s view of hurricane protection along the south shore of Lake Pontchartrain. In this letter the board indicates that since the time of the 1950 study by Bedell & Nelson in 1950, the Orleans Levee Board had done considerable work along the seawall in the Lakeshore Parkway. In light of this, the Orleans Levee Board suggests that the breakwater recommended in the 1950 report is unnecessary and undesirable from an esthetic point of view. (Letter contained within *House Document No. 231, 89th Congress, 1st session*, dated March 4, 1964).

- *A Detailed Report on Hurricane Study Area #1, Lake Pontchartrain and Vicinity, Louisiana*, report by the Department of the Interior, dated **March 1962**. This report analyzes the environmental effects of barrier structures and high level plans on the hydrological regime of Lake Pontchartrain. (Senate CD 13 – 15 Nov 05)
- *Geological Investigation of the New Orleans Harbor Area, TM No. 3-391*, dated **June 1954**. This study, produced by the Waterways Experiment Station, is based on boring logs collected in the late fall and winter of 1949-1950. A list of the borings is contained in Appendix C. (Senate CD 13 – 24 Oct 05)
- {Unknown Document Title}, by Bedell & Nelson, dated **October 1950**. The Orleans Levee Board and the Corps conducted a study of the lakefront to protect New Orleans from Lake Pontchartrain storm surges. The report by Bedell & Nelson, prepared for the board and shared with the Corps, recommended the installation of a breakwater from the New Basin Canal to the Industrial Canal along the south shore of Lake Pontchartrain to prevent overtopping of the seawall by wave action caused by hurricane winds. (See *Letter from the Board of Levee Commissioners of the Orleans Levee District to the District Engineer, New Orleans District*, dated March 1, 1962).
- *Review Report: Lake Pontchartrain, La., From the Orleans-Jefferson Parish Line Westward and Northward to the Vicinity of Frenie, La.*. New Orleans District document dated **April 15, 1948**. This review report was prepared in the aftermath of the hurricane of September 19, 1947, and recommends modification of the adopted project (Flood Control Act of 1946) to provide for increased protection against storm surge and waves from Lake Pontchartrain, by landside enlargement of the existing embankment along the lake, with suitable wave erosion protection, and the enlargement of return levees along the Orleans and St. Charles Parish lines. Document includes wind velocity records, hydrographs of Sept-Oct of 1947 and March 1948, rainfall frequencies; boring data, and levee profiles and typical cross-sections. (A00001300)

Orleans Canal Chronology

- *Annual Inspection of Completed Works Program, 2004 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 20, 2004**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected October 15, 2004 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Data pertaining to the Louisiana Hurricane Protection Study*, dated **March/April 2004**. The documents posit several proposed feasibility study alternatives to upgrade the hurricane protection project to accommodate a Category 4 or Category 5 storm. Alternatives include among others: raising all existing levees and building structures at outfall canal entrances; raising existing levees, with the exception of those along the IHNC and GIWW and placing a structure at the confluence of the GIWW and MRGO and a second structure at Seabrook; and structures at the Chef and Rigolets passes. (A0002025, A0002027, A0002028, A0002029, A0002030)

- *Geotechnical Investigation, Sewerage & Water Board of New Orleans, Sewer Force Main Crossings, Orleans Avenue Canal at Porteous Street, Filmore Avenue at Bayou St. John, Filmore Avenue at Marconi Drive, Eustis Engineering Project No. 18230, dated **February 9, 2004***. This investigation included the drilling of soil test borings to determine subsoil conditions and stratification, and to obtain samples of the various strata encountered. Engineering analyses, based on the soil borings and laboratory tests, were performed to determine allowable pile load capacities and estimated settlement. (A0001401)
- *Annual Inspection of Completed Works Program, 2003 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District. Memorandum dated **2003***. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June 4, 2003 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Annual Inspection of Completed Works Program, 2002 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District. Memorandum dated **2002***. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 31, 2002 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Annual Inspection of Completed Works Program, 2001 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District. Memorandum dated **2001***. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 18, 2001 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Letter from John P. Saia, Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District, dated **December 17, 2001***, concerning completion of contract #DACW29-00-C-0073 for the Orleans Avenue Outfall Canal, Floodwall, Phase IB, Robert E. Lee Bridge. The letter indicates that a final inspection of the work was conducted on October 29, 2001, and was found to be in accordance with the contract specifications. (Senate CD – 9 December 05)
- *Quality Assurance Report, Daily Log of Construction for Contract No. DACW29-00-C-0073, Orleans Avenue Outfall Canal, Phase I-B, Robert E. Lee Boulevard Bridge, dated September 22, 2000 through **December 10, 2001***. (Senate CD 15 – 24 Oct 05)
- *CELMN-ED-GM, Memorandum for File by Charlie Rome, Senior Materials Engineer, dated **May 16, 2001***, concerning flood proofing of the Robert E. Lee Bridge at the Orleans Canal. The memorandum documents a field trip conducted to evaluate hairline cracks in two floodwall sections that were being placed on top of the bridge deck. The document concludes that the cracks do not need repairing, but should be monitored. (A0002261)
- *Memorandum thru Construction Division, dated **May 2, 2001***, concerning Contract DACW29-00-C-0073, Lake Pontchartrain, Louisiana and Vicinity High Level Plan, Orleans Avenue Outfall Canal, Phase 1-B, Robert E. Lee Bridge. This document contains driving logs for the H-piles for the contract. (A0001835)

- *Annual Inspection of Completed Works Program, 2000 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 12, 2000**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June 2, 2000 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Contract No. DACW29-00-C0073, Lake Pontchartrain, Louisiana and Vicinity High Level Plan, Orleans Avenue Outfall Canal, Phase I-B, Orleans Parish Louisiana, Robert E. Lee Bridge.* Contract document dated **July 20, 2000**. (Senate CD 15 - 24 Oct 2005)
- *Letter from Dale A. Knieriemen, Acting Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District, dated **June 15, 2000**, concerning completion of contract #DACW29-98-C-0050 for the Lake Pontchartrain and Vicinity, Hurricane Protection Project, High Level Plan, Orleans Lakefront Levee, Orleans Marina, Phase V – Sluice Gates.* The letter indicates that a final inspection of the work was conducted on May 18, 2000, and was found to be satisfactorily completed. (Senate CD – 9 December 05)
- *Correspondence regarding directional boring under the Inner Harbor Canal, London Canal, and the 17th Street Canal, dated **May 2000**.* This is a series of correspondence between the Corps of Engineers, the Gilbert Southern Corporation, and Bay Equipment Company concerning the guidelines and safety factors of the referenced subject material. File contains drawings depicting the fiber optic cable route at the outfall canals. (A0001813) Supporting information can also be found in A0003693 and A0003694.
- *Narrative Completion Report, dated May 19, 2000 for contract #DACW29-99-C-0025, Orleans Avenue Canal Floodwall, Phase I-C, Filmore and Harrison Avenue Bridges.* The letter indicates that a final inspection of the work was conducted on April 17, 2000, and was found to be satisfactorily completed. (A0006524)
- *Letter from Dale A. Knieriemen, Acting Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District, dated **May 9, 2000**, concerning completion of contract #DACW29-99-C-0025 for the Orleans Avenue Canal Floodwall, Phase I-C, Filmore and Harrison Avenue Bridges.* The letter indicates that a final inspection of the work was conducted on April 17, 2000, and was found to be satisfactorily completed. (Senate CD – 9 December 05)
- *Quality Assurance Report, Daily Log of Construction for Contract No. DACW29-99-C-0025, Orleans Avenue Outfall Canal, Phase I-C, Filmore and Harrison Avenue bridges.* Dated September 29, 1999 through **April 18, 2000**. (Senate CD 15 – 24 Oct 05)
- *Plans for Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Orleans Avenue Outfall Canal, Phase I-B, Robert E. Lee Boulevard Bridge.* As built plans for contract no. DACW29-00-B-0094, dated **March 8, 2000**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)

- *Annual Inspection of Completed Works Program, 1999 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 16, 1999**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 21, 1999 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Annual Inspection of Completed Works Program, 1998 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 15, 1998**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 29, 1998 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Correspondence regarding Sediment Sampling, Lake Pontchartrain and Vicinity, Hurricane Protection Plan, (HLP), Fronting Protection for Pumping Station Nos. 3, 4, 6, and 7 at London, 17th Street, and Orleans Avenue Outfall Canals, dated 1998.* This file contains a series of correspondence relating to the subject matter and includes maps and drawings of sediment sample locations. (A001811)
- *Orleans Avenue Outfall Canal, Phase I-C, Filmore and Harrison Avenue Bridges.* As built drawings, dated **September 1998**. (IPET)
- *Letter from Robert L. Tisdale, Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District, dated July 22, 1998,* concerning completion of contract #DACW29-97-C-0029 for Orleans Avenue Canal Flood Protection, Phase II-A Floodwall. The letter indicates that a final inspection of the work was conducted on July 14, 1998, and was found to be satisfactorily completed. (Senate CD – 9 December 05)
- *Quality Assurance Report, Daily Log of Construction for Contract No. DACW29-97-C-0029, Orleans Avenue Outfall Canal, Phase II-A Floodwall, dated April 22, 1997 through May 22, 1998.* (Senate CD 15 – 24 Oct 05)
- *Letter from Robert L. Tisdale, Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District, dated January 15, 1998,* concerning completion of contract #DACW29-96-C-0080 for the Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, High Level Plan, New Orleans Lakefront Levee West of Inner Harbor-Navigation Canal, Orleans Marina Floodwall. The letter indicates that a final inspection of the work was conducted on November 4, 1997, and was found to be satisfactorily completed. (Senate CD – 9 December 05)
- *Annual Inspection of Completed Works Program, 1997 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 24, 1997**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 29, 1997 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Miscellaneous Correspondence, Contract No. DACW29-97-C-0029, Orleans Avenue Canal Flood Protection, Phase IIA Floodwall*, dated **April to October 1997**. This collection contains information to I-wall layout, berm stability, and piezometer information. (A0001834)
- *100% Design Report for Orleans Avenue Outfall Canal, Fronting Protection, Pumping Station No. 7*, (DACW29-96-C-0010), dated **October 13, 1997**. This report presents an in-progress view of the design of the fronting protection and includes discussion of construction sequences, recommendations, costs, design criteria and loading combinations. (A0001359)
- *Letter from Robert L. Tisdale, Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District*, dated **August 7, 1997**, concerning completion of contract #DACW29-95-C-0022 for the Orleans Avenue Canal Floodwall, West Side, Phase II-C, baseline Stations 21+34.52 to 63+66.22. The letter indicates that a final inspection of the work was conducted on July 21, 1997, and was found to be satisfactorily completed. (Senate CD – 9 December 05)
- *Annual Inspection of Completed Works Program, 1996 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 13, 1996**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 31, 1996 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Orleans Avenue Outfall Canal, Parallel Protection, Phase II-A, East Side Floodwall, West Side: Station 3+60.00 to Station 90+26.33*. As built drawings, dated **September 1996**. (IPET)
- *Letter from Cletis Wagahoff, Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District*, dated **December 22, 1995**, concerning completion of contract #DACW29-93-C-0071 for the Orleans Avenue Canal Floodwall, West Side, Phase II-B, baseline Stations 54+51.53 to 90+26.91. The letter indicates that a final inspection of the work was conducted on December 12, 1995, and was found to be satisfactorily completed. (Senate CD – 9 December 05)
- *Narrative Completion Report* dated **December 22, 1995** for contract #DACW29-93-C-0071 for the Orleans Avenue Canal Floodwall, West Side, Phase II-B, baseline Stations 54+51.53 to 90+26.91 (A0006524)
- *Annual Inspection of Completed Works Program, 1995 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 12, 1995**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1995 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Letter from Cletis Wagahoff, Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District, dated **October 23, 1995**, concerning completion of contract #DACW29-93-C-0060 for the Orleans Avenue Outfall Canal, Phase I-A, Hurricane Protection I-Wall and Levee. The letter indicates that a final inspection of the work was conducted on September 7, 1995 and was found to be satisfactorily completed. (Senate CD – 9 December 05, A0001390)*
- *Plans for Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Orleans Avenue Outfall Canal, Phase II-C, (West Side) Floodwall. Preliminary plans for contract no. DACW29-95-B-0035, dated **1994**. (Senate CD 15 – 15 Nov 05, disk 2 of 2) As built drawings for this contract work dated November 1994 can be found on the IPET website.*
- *Annual Inspection of Completed Works Program, 1994 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District. Memorandum dated **December 19, 1994**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June, 1994 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)*
- *Plans and Specifications, Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Orleans Avenue Canal Flood Protection Improvement. This contains plans and specifications drawings, dated **November 1994**, for Phase 2C, (Contract DACW29-95-B-0035) West Side Floodwall. (Senate CD 13 – 24 October 2005)*
- *CELMN-ED-GM, Memorandum for File, by Bob Becker, P.E., dated **October 31, 1994**. The memorandum documents a field trip conducted to evaluate three vertical cracks in the concrete T-wall on the west side of the Orleans Canal (Phase II-B). The document concludes that the cracks do not need repairing, but should be monitored. (A0002440)*
- *Letter from Cletis Wagahoff, Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District, dated **August 25, 1994**, concerning completion of the Orleans Avenue Canal Floodwall, Phase II-D,. The letter indicates that a final inspection of the work was conducted on August 3, 1994, and was found to be satisfactorily completed. (Senate CD – 9 December 05)*
- *Narrative Completion Report dated **August 25, 1994** for contract DACW29-93-C-0077, Lake Pontchartrain, Louisiana & Vicinity, Hurricane Protection Levee, New Orleans Lakefront Levee West of IHNC, Orleans Avenue Canal Flood Protection Improvement, Phase II-D (West Side: Stations 2+39.00 to 29+07.05. (A0006524)*
- *Annual Inspection of Completed Works Program, 1993 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District. Memorandum dated **December 22, 1993**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1993 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)*

- *Amendment of Solicitation/Modification of Contract, Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, New Orleans Lakefront Levee, West of IHNC, Orleans Avenue Flood Protection Improvement, Phase I-A, Levees: Robert E. Lee Boulevard to Lakefront (DACW29-93-C-0060), dated **December 6, 1993***. This document amends the contract by reducing the levee height from elevation 18.0 to elevation 15.0 between baseline Stations 117+00 east and 121+07.5 east. (A0001654)
- *Correspondence Log, Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project, High Level Plan, Orleans Avenue Canal, Flood Protection Improvement Project, Phase IA*. This log contains internal New Orleans District correspondence, dated from April 1 to **October 26, 1993**, regarding requests to amend or modify contracts, comments to plans and specifications, preconstruction meetings, and piezometer removals. (A0001456)
- *Transmittal Slip, dated **August 5, 1993***. Transmittal slip accompanies information regarding geotextile fabric installation. (A00001905)
- *Correspondence Log, Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project, High Level Plan, Orleans Avenue Canal, Flood Protection Improvement Project, Phase IA*. This log contains New Orleans District correspondence, dated from September 21, 1992 to **March 31, 1993**. Most of the correspondence pertains to plans and specifications and review comments for the Phase IA work. (A0001414)
- *Plans and Specifications, Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Orleans Avenue Canal Flood Protection Improvement*. This contains plans and specifications drawings, dated **March 1993**, for Phase 2B, (Contract DACW29-93-B-0059) West Side from Station 64+51.53 to Station 90+26.97 and Phase 2D, (Contract DACW29-93-B-0042) West Side from Station 2+39.00 to Station 29+07.50. (Senate CD 13 – 24 October 2005) As-built drawings for Phase 2D, dated March 1993, can be found on the IPET website.
- *Letter from Col. Michael Diffley, District Engineer, New Orleans District, to the Board of Levee Commissions of the Orleans Levee District, dated **January 15, 1993***. This letter expresses Col Diffley’s disappointment with the lack of progress made by the Board of Levee Commissioners on the parallel protection along the London Avenue and Orleans Avenue Canals. The lack of performance on getting the plans and specifications for the Orleans Avenue Canal prompted Col. Diffley to give up \$5.5 million of the \$12 million in construction funds appropriated for the fiscal year. Diffley warns that he may be forced to reconsider the design-construction agreements reached between the New Orleans District and the Board of Levee Commissioners. (A0001667)
- *Annual Inspection of Completed Works Program, 1992 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 14, 1992**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1992 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Plans and Specifications, Lake Pontchartrain, Louisiana and Vicinity, High Level Plan, Lakefront Levee, West of IHNC, Orleans Avenue Canal Flood Protection Improvement.* This contains plans and specifications drawings, dated **December 1992**, for Phase 1A, Levees: Robert E. Lee Blvd to Lakefront, Contract DACW29-93-B-0002. Also contains undated plans and specifications drawings for Phase 1B, Filmore Ave. Bridge Reconstruction. (Senate CD 13 – 24 October 2005)
- *Correspondence between the New Orleans District and Design Engineering, Inc., regarding the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project, Orleans Avenue Outfall Canal.* This series of correspondence, dated **July 1992**, concerns a request from Design Engineering, Inc. for the New Orleans District to review T-wall design computations for Phase II-B Floodwall, West Side Baseline Station 64+51 to 90+26. (A0001980)
- *Test Pile Program, Orleans Avenue Canal, Flood Protection Improvement Project, OLB Project No. 24804, Appendices, dated July, 6 1992.* (A0007167)
- *Letter from the Board of Levee Commissioners of the Orleans Levee District to Col. Michael Diffley, District Engineer, New Orleans District, dated April 28, 1992.* This letter informs Col. Diffley that the Board of Levee Commissions passed a resolution that the New Orleans District is not to proceed with the selection of consultants for all contracts for both the Orleans Avenue and London Avenue projects, including Contract No. 3 of the London Avenue Canal project. The letter also indicates that, upon completion of the foundation design of Contract No. 1 and No. 2 on London Avenue, the New Orleans District should consult with the Orleans Levee District to determine the need for utilizing the Corps of Engineers' design personnel for the design effort. (A0001793)
- *Letter from Col. Michael Diffley, District Engineer, New Orleans District, to the Board of Levee Commissions of the Orleans Levee District, dated April 17, 1992.* This letter lays out Col. Diffley's understanding of the agreements reached in the April 14, 1992 with the Orleans Levee District. The letter posits who will be responsible for designing different phases of project work at the London Avenue and Orleans Avenue outfall canals. (A0001796)
- *Letter from the Board of Levee Commissioners of the Orleans Levee District to Col. Michael Diffley, District Engineer, New Orleans District, dated March 16, 1992.* This letter informs Col. Diffley that the Orleans Levee District will secure its own engineering and construction services from private firms to implement the parallel protection program on the London Avenue Canal, rather than use the New Orleans District's engineering and design services. Col. Diffley responds by a letter, dated **April 2, 1992**, and indicates that what the levee district proposes did not agree with his understanding of an earlier agreement reached to proceed with the London Avenue and Orleans Avenue outfall canals. Col. Diffley suggests a meeting be held between on April 14, 1992 to clarify the matter. (A0001800)

- *Annual Inspection of Completed Works Program, 1991 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 10, 1991**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June, 1991 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)
- *Letter from W. Eugene Tickner, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc,* dated **June 24, 1991**, concerning review comments on design computations of the Harrison Avenue Bridge, and plans and specifications for the Orleans Avenue Outfall canal, Phase IA contract. (A0001421)
- *Memorandum from Rodney B. Picciola, Chief of Foundations and Materials Branch,* dated **June 14, 1991**, concerning review and comments on final plans and specifications for Phase I-A of the Orleans Avenue Outfall Canal produced by Design Engineering, Inc. The review comments recommend that the use of geotextiles be investigated for the areas where levees are to be shifted off of the present alignment and for baseline Station 113+86.87 to 119+90.43 where I-walls are being used. (A0001443)
- *Letter from W. Eugene Tickner, Chief of Engineering, New Orleans District, to Design Engineering, Inc.,* dated **November 23, 1990**, concerning the district's review of T-wall load diagrams and supporting geotechnical engineering analysis produced by Eustis Engineering for the reach of the west side floodwall between Stations 50+00 and 90+00. Among other suggestions, the district asks that the firm design the sand embankment into the excavation for a factor of safety equal to 1.3 rather than the 1.19 shown in the analysis. (A00001722)
- *Contract Administration Office Record, Orleans Outfall Canal.* This log contains correspondence and notes dated from June 7, 1989 to **July 30, 1990** regarding T-wall design and flood proofing of bridges. (A0006854)
- *Attendance Record, Discussion of Proposed Parallel Protection Work along the Orleans Outfall Canal* among representatives of the New Orleans District and Design Engineering, Inc., dated **March 23, 1990**. The supporting documentation includes responses by Eustis Engineering to the district's comments pertaining to design parameters and stability analyses of sheetpile floodwalls along the Orleans Avenue Canal. (A00001720)
- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc.,* dated **September 22, 1989** concerning the Orleans Avenue Outfall Canal flood improvement project. The letter offer comments from the New Orleans District covering the Phase I, Advanced Final plans (Revised) and the structural calculations for flood proofing the Robert E. Lee, Filmore Avenue, and Harrison Avenue bridges. (A00002001)

- *Memorandum from Fred H. Bayley III, Chief, Engineering Division, Lower Mississippi Valley Division, to the Commander, New Orleans District, Regarding Sheet Pile Wall Design Criteria*, dated **July 24, 1989**. This memorandum summarizes the guidance for determining sheet pile wall penetrations, deflections, and other topics, and it references the sources detailing new I-wall design criteria for determining the penetration of sheet pile floodwalls founded in soft clays; estimating sheet pile deflections and design of I-walls to withstand these deflections; and sheet pile finite element-based design procedures for sheet pile walls. (A0000097, A0000101)
- *Geotechnical Investigation, Orleans Levee District, Orleans Avenue Outfall Canal, OLB Project No. 2048-0304*, dated **June 19, 1989**. This study contains the results of the geotechnical investigation performed on the Orleans Avenue Outfall Canal between Lake Pontchartrain and Drainage Station No. 7. The scope of the investigation covered in this document included the drilling of soil borings to determine subsoil conditions and stratification. Engineering analyses based on the borings and laboratory tests were then made to determine allowable pile load capacities, slope stability analyses, cantilever sheetpile analyses, T-wall analyses, underseepage evaluations, and estimates of settlement. (A0001403, A0001405)
- *Lake Pontchartrain, Louisianan and Vicinity, High Level Plan, Design Memorandum No 19, General Design, Orleans Avenue Outfall Canal*, dated **August 1988**. This design memorandum recommends the construction of a butterfly control valve type gated structure at the lake end of the outfall canal between Robert E. Lee Boulevard and Lakeshore drive. Volume II contains a discussion and examination of the parallel protection plan, and Volume III contains discussion of the model study produced by the Waterways Experiment Station. (A0002059, Senate CD 13 – 24 October 05)
- *Draft Review, Lake Pontchartrain, LA and Vicinity Hurricane Protection Project, Design Memorandum No. 19, Orleans Avenue Outfall Canal*, dated **July 1988**. This document contains comments on the draft design memorandum made by various elements of the New Orleans District, Engineering Division. (A00002024)
- *Orleans Avenue Outfall Canal, Flood Protection, Phase II, T-Wall West Side*, dated **July 12, 1988**. This document contains structural and geotechnical analyses, and design criteria for the pile foundation for T-walls. (A0006898)
- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc.*, dated **April 26, 1988**. This letter responds to a letter of April 7, 1988 from Design Engineering, Inc., concerning the Orleans Avenue Canal Flood Protection Improvement Project (OLB Project No. 2048-0424, DEI Project No. 1006). In this letter the New Orleans District indicates that it has reviewed the stability analyses for the T-wall and anchored bulkhead alternatives proposed for Stations 50+00 to 90+00 and offer four precise comments pertaining to foundation design and two comments regarding structural design. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Computation Sheet, Orleans Avenue Outfall Canal*, dated **May 1988**. This series of drawings contains underseepage analyses for the west side floodwall from Stations 2+44 to 90+50. Includes use of HARR method. (A0001380)

- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc., dated **March 31, 1988***. This letter responds to a letter of February 4, 1988 from Design Engineering, Inc., concerning the Orleans Avenue Canal Flood Protection Improvement Project (OLB Project No. 2048-0424, DEI Project No. 1006). In this letter the New Orleans District offers comments on its review of the preliminary plans for the project. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Computation Sheet, Orleans Avenue Outfall Canal, dated **February 1988***. Series contains floodwall profiles and sheetpile loading diagram. (A0006941)
- *Letter from Design Engineering, Inc., to Van Stutts, Project Coordinator, New Orleans District, dated **February 4, 1988***. This letter forwards the revised preliminary plans for Phase I of the Orleans Avenue Canal Flood Protection Improvement Project and provides a summary of the resolution of review comments submitted by the New Orleans District by letter of August 7, 1987. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc., dated **December 3, 1987***. This letter posits additional review comments to the responses submitted by Eustis Engineering on October 6, 1987. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Letter from Design Engineering, Inc., to Frederic M. Chatry, Chief of Engineering, New Orleans District, dated **October 6, 1987***. This letter forwards a Eustis Engineering response letter dated September 28, 1987 that posits replies to the January 12, 1987 geotechnical review comment letter from the New Orleans District. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc., dated **August 7, 1987***. This letter contains the New Orleans District's comments regarding its review of the Phase I preliminary plans for parallel protection from Robert E. Lee Boulevard to the lake and modifications to the bridges at Robert E. Lee Boulevard, Harrison Avenue and Filmore Avenue. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc., dated **August 6, 1987***. This letter contains comments on the water pipeline T-wall design submitted by Design Engineering, Inc. (A0006853)
- *Letter from Eustis Engineering to the New Orleans District, dated **March 16, 1987***. This letter contains piezometric data for the Orleans Avenue Outfall Canal accumulated by Eustis Engineering. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Letter from Eustis Engineering to the New Orleans District, Engineering Division, dated **March 16, 1987***, concerning piezometric data for the Orleans Avenue Outfall Canal, OLB Project No. 2048-0304. Enclosures include piezometric data for: Robert E. Lee gage, dated April-December 1986; Harrison Avenue gage, dated April-December 1986 and the West End gage, dated September-October 1985. (A00002006)

- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc.*, dated **January 12, 1987**. This letter offers comments from the New Orleans District's review of the geotechnical report and general design memorandum submitted by Design Engineering Inc., on August 12, 1986 and November 5, 1986. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Orleans Avenue Outfall Canal, Design Engineering Data, I-Wall Analyses*, dated **October 1986**. Data contained in the analyses includes tip elevation, Q-case, factor of safety, seepage, and wave load. (A00002011)
- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc.*, dated **August 28, 1986**. This letter offers a response to the request for clarification on matters pertaining to load factors used in the design of the proposed T-wall section at the 30-inch pipeline crossing at the Orleans Avenue Outfall Canal posited in the August 13, 1986 letter from Design Engineering, Inc. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Letter from Design Engineering, Inc., to Frederic M. Chatry, Chief of Engineering, New Orleans District*, dated **August 13, 1986**, regarding the Orleans Avenue Canal Flood Protection Project. This letter requests clarification on the load factors used in the design of the proposed T-wall section at the 30-inch pipeline crossing at the Orleans Avenue Outfall Canal. The letter is contained within DM No. 19, Vol. II. (A0002059)
- *Letter from Design Engineering, Inc., to the New Orleans District*, dated **August 12, 1986**. This letter posits responses to the New Orleans District review of the general design memorandum and the draft geotechnical report for the Orleans Avenue Outfall Canal prepared by Eustis Engineering. The letter, which is contained within DM No. 19, Vol. II, also indicates that further discussion with the New Orleans District will be necessary to resolve other comments. (A0002059)
- *Computation Sheets, Orleans Avenue Outfall Canal, Lake Pontchartrain, LA, and Vicinity (High Level Plan)*. This document, dated **July 18, 1986**, contains pile capacity and sub grade modulus curves for the eastside and west side pile supported floodwall at Station 44+44. The document indicates that the required sheet pile cutoff tip penetration is elevation -9.0 for the eastside floodwall and elevation -16.0 for the west side floodwall. For the west side floodwall, the document indicated that an unbalanced horizontal force of 3100# must be developed due to a critical failure surface at elevation -13.0. (A00002017)
- *Letter from Eustis Engineering, Inc., to the Orleans Levee District*, dated **June 30, 1986**, concerning the geotechnical investigation for the Orleans Avenue Outfall Canal. This letter posits comments from the New Orleans District review of the geotechnical aspects of the project. The letter is contained within DM No. 19, Vol. II. (A0002059)

- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc.*, dated **June 25, 1986**. This letter serves as a response to the June 12, 1986 letter from design Engineering, Inc. The letter is accompanied by shear strength design lines prepared by the New Orleans District, and a sketch depicting a phreatic water surface landward of an embankment. This document is contained within DM No. 19, Vol. II. (A0002059)
- *Letter from Design Engineering, Inc., to Frederic M. Chatry, Chief of Engineering, New Orleans District*, dated **June 12, 1986**, regarding the Orleans Avenue Canal Flood Protection Project. This letter requests additional information from the New Orleans District concerning design soil shear strengths and clarification on analysis parameters that establish landside water surface elevations at 0.0 NGVD. This document is contained within DM No. 19, Vol. II. (A0002059)
- *Correspondence from the New Orleans District to Design Engineering, Inc.*, dated **June 9, 1986**, concerning the details of the analysis by Design Engineering, Inc., for the sheet pile wall between Stations 50+00 and 90+00 on the west side of the Orleans Avenue Outfall Canal. This document, which is contained within DM No. 19, Vol. II, recommends guidelines to determine passive pressures against an I-wall where the critical wedge is not against the wall, and suggests that a safety factor of 1.5 should be applied to the soil design shear strengths. The document also recommends that the ground water elevation used on the protected side for the I-wall analysis be 0.0 NGVD at the I-wall and at the natural ground surface at the embankment toe. (A0002059)
- *Letter from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to Design Engineering, Inc.*, dated **June 3, 1986**, concerning comments from the New Orleans District on the draft design memorandum for the Orleans Avenue Canal flood protection project prepared by Design Engineering, Inc. as a precursor for preparation of plans and specifications. The letter indicates that much of what is contained in the draft design memorandum relies on data contained in a geotechnical report received by the New Orleans District in October 1985 and commented on in a letter of February 1986, and that several items pertaining to that geotechnical report had not yet been adequately addressed. The letter also indicates that the comments regarding the draft design memorandum provided by the New Orleans District must be considered tentative pending resolution of the comments pertaining to the geotechnical report. Last, the letter indicates that credit for any work done in connection with upgrading levees along the canal is dependent upon the outcome of the Corps of Engineers' general design memorandum studies. This document is contained within DM No. 19, Vol. II. (A0002059, A0006999)
- *Orleans Avenue Canal, Flood Protection Phase II*, dated **May 28, 1986**. This contains levee sectional drawings of Station 44+40, east side. (A0006914)
- *Memorandum for Record from Design Engineering, Inc.*, dated **May 13, 1986**, regarding the inverted T-floodwall for the Orleans Avenue Outfall Canal. This document provides the size and dimension criteria for T-walls. This document is contained within DM No. 19, Vol. II. (A0002059)

- *Letter from Eustis Engineering Company to the New Orleans District*, dated **April 22, 1986**, concerning analyses for the sheet pile wall between Stations 50+00 and 90+00 on the west side of the Orleans Avenue Outfall Canal. This letter is accompanied by detailed hand calculations and computer output for the sheet pile wall. This document is contained within DM No. 19, Vol. II. (A0002059)

- *Supplemental Agreement between the United States of America and the Orleans Levee District for Local Cooperation at Lake Pontchartrain and Vicinity High Level Plan*. Signed agreement dated **June 21, 1985**. (Senate CD 16 – 24 Oct 05)

- *Interim Agreement between the United States of America and the Orleans Levee District for Local Cooperation at Lake Pontchartrain and Vicinity High Level Plan*. Signed agreement dated **February 20, 1985**. (Senate CD 16 – 24 Oct 05)

- *Memorandum from Maj. Gen. John F. Wall, Director of Civil Works, U.S. Army Corps of Engineers, to the Commander, Lower Mississippi Valley Division*, dated **February 7, 1985**, regarding the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project. In this memorandum, the director of civil works indicates that he reviewed the revised Post Authorization Change (PAC) Notification Report, the July 1984 Reevaluation Report and the final supplement to the Environmental Impact Statement, and approves the PAC. (Senate CD 16 – 24 Oct 05)

- *Lake Pontchartrain, LA, and Vicinity Hurricane Protection Project, Reevaluation Study*, **July 1984**. This study is conducted in response to a 1977 Federal injunction that halted portions of the project approved by the Flood Control Act of 1965, specifically the floodgate barrier components of the plan. The study examines the continued feasibility of the barrier plan and examines the feasibility of providing hurricane protection solely by the means of raising and strengthening levees or floodwalls (high level plans). The study concludes that a high level plan represents the most feasible plan of protection. The plan would provide for improved hurricane protection levee systems in Orleans Parish, St. Bernard Parish, and the east bank of Jefferson Parish; repairing and rehabilitating the Mandeville Seawall in St. Tammany Parish; a new levee on the east bank of St. Charles Parish north of US Highway 61. The treatment of the outfall canals at the lakefront remained unresolved, with five potential solutions, ranging from higher and stronger levees to floodgates and auxiliary pumping stations at the canal openings, discussed. Volume II of the study contains all technical and engineering data used to support information in the reevaluation study, including hydrology and hydraulics, foundation design and geology, engineering alternatives. This reevaluation study serves as the basis for the feasibility report of the hurricane protection project and becomes the vehicle which leads to authorization of the high-level plan. (IPET)

- *Status of Lake Pontchartrain and Vicinity Project*, dated **May 1984**. This document provides a status update of the individual features of the Lake Pontchartrain and Vicinity Hurricane Protection Project. (A0006532)

- *Report to the Secretary of the Army by the U.S. General Accounting Office: Improved planning needed by the Corps of Engineers to resolve environmental, technical, and financial issues on the Lake Pontchartrain Hurricane Protection Project*, dated **August 17th, 1982**. This document, which is critical of the Corps' planning effort with regard to the project, posits a general history of the hurricane protection project from its authorization 1965 through 1982. The treatment of the outfall canals is of great significance in this report. The document indicates that discussions between the corps and local sponsors about the alteration of the drainage canals were not conclusive, owing largely to the sponsors lack of financial capability. The report notes that the Orleans Levee District "believed that the Corps' standards may be too high for what is really needed for adequate protection and for what is affordable by local sponsors." (A0001840)
- *Times Picayune, 1979-1981*. This entry contains a series of articles from 1979-1981 pertaining to the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection project. (A0007458)
- *Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, Combined Phase I Type General Design Memorandum and Revised Environmental Impact Statement, Plan of Study*, dated **September 1981**. This plan of study was initiated in response to the court injunctions against the barrier complexes. The plan recommends the pursuit of a fast-track study effort and recommends a firm decision concerning the future study direction by mid-December, 1981. (Senate CD 13 – 15 Nov 05).
- *Modification of U.S. District Court Injunction, March 1978*. The court modified its order of December 1977 and lifted the injunction against all features of the authorized project other than the construction of the barrier complexes. The Corps determines the revised Environmental Impact Statement will need additional study and will not be complete until November 1985. As a result, in December 1981, the Corps directs future study efforts on toward the "high-level plan" that manifests itself in the July 1984 Reevaluation Study. (Contained within A0001840)
- *U.S. District Court Injunction, December 1977*. The Corps was enjoined by the court from constructing the barrier complexes, the New Orleans East levee system, and the Chalmette Area plan of the Lake Pontchartrain Hurricane Protection Project, authorized in 1965, pending the revision and acceptance of the Environmental Impact Statement. (Contained within A0001840)
- *Record of Public Meeting, Lake Pontchartrain, Louisiana, and Vicinity, Hurricane Protection Project*, dated **June 1975**. This document is a transcript of the public meeting held at the University of New Orleans on February 22, 1975. (Senate CD 13 – 24 Oct 05)
- *Final Environmental Impact Statement: Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project*, dated **August 1974**. This study describes the protective features and identifies the environmental effects of the hurricane protection project described in House Document 231, 89th Congress, 1st session (barrier plan) and approved by the 1965 Flood Control Act. (Senate CD 13 – 24 Oct 05)

- *The Board of Levee Commissioners of the Orleans Levee District, Emergency Operations Plan*, dated **1972**. The document details responsibilities of the board under the emergency operations plan in terms of preparations and surveillance; high tide emergencies; and hurricane emergencies. (A0001839)
- *Hurricane Study, History of Hurricane Occurrences along Coastal Louisiana*, dated **August 1972**. This document, prepared by the New Orleans District, posits historical research, a summary of hurricane occurrences, descriptions of hurricanes and hurricane tracks dating back to the 19th century. (Senate CD 13 – 24 Oct 05)
- *Orleans Parish Lakefront Levee West of IHNC: Outfall Canals*. Drawings, dated **1970**, depicting outfall canal cross-sections, piezometer ranges, and log borings for the 17th Street, London Avenue, and Orleans canals. (A0002038)
- *Lake Pontchartrain Louisiana and Vicinity, Design Memorandum No. 1, Hydrology and Hydraulic Analysis, Part III – Lakeshore*, dated **September 1968**. This document covers the hydraulic design of the lakeshore protection under the authorized project. (Senate CD 13 – 15 Nov 05)
- *Lake Pontchartrain Louisiana and Vicinity, Design Memorandum No. 1, Hydrology and Hydraulic Analysis, Part II – Barrier*, dated **August 1967**. This design memorandum includes the description and analyses of essential data, assumptions, and criteria used for studies which provide the basis for determining design surge heights, run-up, overtopping and frequencies for the Lake Pontchartrain Barrier. It also includes the average lake levels for the design hurricane on different tracks. (Senate CD 13 – 15 Nov 05)
- *House Document No. 231, 89th Congress, 1st session*. The report of the Chief of Engineers, **March 4, 1964**, transmitted to Congress the report of the Board of Engineers for Rivers and Harbors, accompanied by the reports of the district and division engineers and the concurring reports of the Mississippi River Commission for those areas under its jurisdiction. The report posits a recommendation for what came to be known as the “barrier plan”: “For protection from hurricane flood levels...the most suitable plan would consist of a barrier extending generally along US Highway 90...together with floodgates and a navigation lock in the Rigolets, and flood and navigation gates in Chef Menteur Pass; construction of a new lakeside levee in St. Charles Parish...; extension upward of the existing riprap slope protection along the Jefferson Parish levee; enlargement of the levee landward of the seawall along the 4.1 mile lakefront, and construction of a concrete-capped sheet pile wall along the levee west of the Inner Harbor Canal...” The report serves as the basis for the feasibility report on the hurricane protection project and subsequent project authorization in the Flood Control Act of 1965, also known as PL 298, 89th Congress, 1st Session. (IPET)
- *Effects on Lake Pontchartrain, LA., of Hurricane Surge Control Structures and Mississippi River Gulf Outlet Channel, Technical Report No. 2-636*, dated **November 1963**. This model study conducted by the Waterways Experiment Station from January 1960 through June 1961 analyzes the effects of gated structures under the proposed barrier system for hurricane protection on the salinity and hydraulic regimen of Lake Pontchartrain and its connecting waterways and lakes. (Senate CD 13 – 15 Nov 05)

- *Interim Survey Report, Hurricane Study, Lake Pontchartrain, Louisiana, and Vicinity*, dated **November 21, 1962**. This interim report posits the recommended plan for the Lake Pontchartrain basin. The recommended plan includes a barrier at the west end of the lake to exclude hurricane storm surges and the construction and enlargement of protective works fronting developed or potentially developable areas. (IPET, A0008069)
- *Letter from the Board of Levee Commissioners of the Orleans Levee District to the District Engineer, New Orleans District*, dated **March 1, 1962**, concerning the board's view of hurricane protection along the south shore of Lake Pontchartrain. In this letter the board indicates that since the time of the 1950 study by Bedell & Nelson in 1950, the Orleans Levee Board had done considerable work along the seawall in the Lakeshore Parkway. In light of this, the Orleans Levee Board suggests that the breakwater recommended in the 1950 report is unnecessary and undesirable from an esthetic point of view. (Letter contained within **House Document No. 231, 89th Congress, 1st session**, dated March 4, 1964).
- *A Detailed Report on Hurricane Study Area #1, Lake Pontchartrain and Vicinity, Louisiana*, report by the Department of the Interior, dated **March 1962**. This report analyzes the environmental effects of barrier structures and high level plans on the hydrological regime of Lake Pontchartrain. (Senate CD 13 – 15 Nov 05)
- *Geological Investigation of the New Orleans Harbor Area, TM No. 3-391*, dated **June 1954**. This study, produced by the Waterways Experiment Station, is based on boring logs collected in the late fall and winter of 1949-1950. A list of the borings is contained in Appendix C. (Senate CD 13 – 24 Oct 05)
- {Unknown Document Title}, by Bedell & Nelson, dated **October 1950**. The Orleans Levee Board and the Corps conducted a study of the lakefront to protect New Orleans from Lake Pontchartrain storm surges. The report by Bedell & Nelson, prepared for the board and shared with the Corps, recommended the installation of a breakwater from the New Basin Canal to the Industrial Canal along the south shore of Lake Pontchartrain to prevent overtopping of the seawall by wave action caused by hurricane winds. (See *Letter from the Board of Levee Commissioners of the Orleans Levee District to the District Engineer, New Orleans District*, dated March 1, 1962).
- Review Report: Lake Pontchartrain, La., From the Orleans-Jefferson Parish Line Westward and Northward to the Vicinity of Frenie, La. New Orleans District document dated **April 15, 1948**. This review report was prepared in the aftermath of the hurricane of September 19, 1947, and recommends modification of the adopted project (Flood Control Act of 1946) to provide for increased protection against storm surge and waves from Lake Pontchartrain, by landside enlargement of the existing embankment along the lake, with suitable wave erosion protection, and the enlargement of return levees along the Orleans and St. Charles Parish lines. Document includes wind velocity records, hydrographs of Sept-Oct of 1947 and March 1948, rainfall frequencies; boring data, and levee profiles and typical cross-sections. (A00001300)

Inner Harbor Navigation Canal Chronology

- *Undated Drawing depicting area of IHNC floodwall that subsided by 1 foot.* (A0002007, A0002012)
- *Annual Inspection of Completed Works Program, 2004 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **December 20, 2004**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected October 15, 2004 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Data pertaining to the Louisiana Hurricane Protection Study, dated March/April 2004.* The documents posit several proposed feasibility study alternatives to upgrade the hurricane protection project to accommodate a Category 4 or Category 5 storm. Alternatives include among others: raising all existing levees and building structures at outfall canal entrances; raising existing levees, with the exception of those along the IHNC and GIWW and placing a structure at the confluence of the GIWW and MRGO and a second structure at Seabrook; and structures at the Chef and Rigolets passes. (A0002025, A0002027, A0002028, A0002029, A0002030)
- *Annual Inspection of Completed Works Program, 2003 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **2003**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June 4, 2003 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *E-mail Correspondence from Amy Powell, New Orleans District, to Shung Chiu, Bob Grubb, and Frank Vojkovich regarding 03-08-09 Floodwall Design Criteria, dated August 18, 2003.*
- *Correspondence from Professional Construction Services, Inc, dated July 29, 2003.* This document contains sections from Engineering Manual No. 1110-2-2504, Design of Sheet Pile Walls, along with a computer print out of the design with and without friction. (A0001841)
- *Annual Inspection of Completed Works Program, 2002 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District.* Memorandum dated **2002**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 31, 2002 and received an ACCEPTABLE rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Request by Port of New Orleans to Install Two 6” RR Conduit Through the Existing IHNC East Floodwall at Florida Avenue, dated April 19, 2002.* The New Orleans District recommends against placing utility lines below the base slab of the existing pile-supported T-walls but indicated that is has no objection to the request provided that the contractor complete the installation with a plastic sealant and backfill of impervious fill compacted to 95% standard density. (A0001826)

- *IHNC Floodwall-West wall between hwy 90 and I-10*, dated **April 5, 2002**. This document provides Q-case, factor of safety, water elevation, and sheet pile tip elevation from Stations 129 to 132+00. (A0002003)
- *Annual Inspection of Completed Works Program, 2001 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **2001**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 18, 2001 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Project Cooperation Agreement between the Department of the Army and the Board of Commissioners of the Port of New Orleans for the Construction of the Deep Draft Increment of the Inner Harbor Navigational Canal Lock Replacement, (Authorized as the Mississippi River, Baton Rouge to the Gulf of Mexico Mississippi River-Gulf Outlet, Louisiana, New Lock and Connecting Channels)*, dated **September 27, 2001**. (Senate CD 16 – 24 Oct 05)
- *Annual Inspection of Completed Works Program, 2000 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 12, 2000**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June 2, 2000 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Mississippi River-Gulf Outlet, New Lock and Connecting Channels (Inner Harbor Navigation Canal Lock Replacement), Evaluation Report, Supplement No. 1*, dated **September 20, 2000**. The purpose of this document is to present the justification and rationale for determining the appropriate cost-sharing requirements for the IHNC lock replacement project. (Senate CD 16 – 24 Oct 05)
- *Correspondence regarding directional boring under the Inner Harbor Canal, London Canal, and the 17th Street Canal*, dated **May 2000**. This is a series of correspondence between the Corps of Engineers, the Gilbert Southern Corporation, and Bay Equipment Company concerning the guidelines and safety factors of the referenced subject material. File contains drawings depicting the fiber optic cable route at the outfall canals. (A0001813) Supporting information can also be found in A0003693 and A0003694.
- *Letter from Modjeski and Masters, Inc.*, dated **January 25, 2000**, concerning floodwall modifications, Florida Avenue Bridge replacement. This document contains information regarding east side T-wall sheet pile tip elevations and pile capacities. (A0001815)
- *Annual Inspection of Completed Works Program, 1999 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 16, 1999**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 21, 1999 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)

- *Florida Avenue Bridge Replacement*, dated **December 7, 1999**. This document provides shear strength used in the design of the existing floodwalls on the east and west sides. (A0001804) Specifications for floodwalls for the bridge replacement are found (A0001807).
- *Memorandum from Ronald J. Ventola, Chief of Regulatory Branch, Operations Division, New Orleans District, to the Chief of Engineering Division, New Orleans District*, dated **July 26, 1999**, concerning permit application EF-19-990-3373, Williams Communication. The memorandum and supporting documentation discuss the permit application by Williams Communication to install and maintain a fiber optic cable that will cross the Industrial Canal and two federal levees. (A0003698)
- *Request by the Port of New Orleans to Modify the IHNC-East and West Floodwall at the Florida Avenue Bridge in the Vicinity of Baseline Stations 56+20 and 26+55*. **July 6-14, 1999**. This document contains the New Orleans District's review comments on the proposed action. (A0001821)
- *Florida Avenue, T-wall, East Side*, dated **June 15, 1999**. This document contains drawings and calculations by Modjeski and Masters, Inc. concerning typical T-wall sections, load cases, overturning forces, uplift forces, and stability. (A0001817)
- *Letter from Robert L. Tisdale, Deputy District Engineer for Project Management, to the Board of Levee Commissioners, Orleans Levee District*, dated **May 4, 1999**, concerning completion of contract #DACW29-98-C-0022 for East and West of IHNC, Miscellaneous Floodwall Capping, Lake Marina Avenue to Collins. The letter indicates that a final inspection of the work was conducted on April 20, 1999, and was found to be satisfactorily completed. (Senate CD – 9 December 05)
- *Inner Harbor Navigation Canal Lock Replacement Project, Design Documentation Report No. 1, Site Preparation and Demolition*, dated **February 1999**. This report, contained in 8 volumes, provides analyses of potential environmental hazards, summaries of quality control data, photographs, and copies of chain-of-custody documents. (Senate CD 13 – 15 November 05)
- *Annual Inspection of Completed Works Program, 1998 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 15, 1998**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 29, 1998 and received an OUTSTANDING rating. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Annual Inspection of Completed Works Program, 1997 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 24, 1997**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 29, 1997 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, Relocation of IHNC Flood Protection, France Road Terminal, Design Memorandum No. 2, General Design, Supplement No. 8A*, dated **October 15, 1997**. Volume presents the basic report covering the proposed alignment of flood protection to protect the France Road Terminal against tidal surges, Volume II contains the geotechnical report, Corps of Engineers design criteria and guidance, and pertinent correspondence. Volume III contains typical structural design computations. (Senate CD 13 – 15 November 05)

- *Annual Inspection of Completed Works Program, 1996 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 13, 1996**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May 31, 1996 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Annual Inspection of Completed Works Program, 1995 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 12, 1995**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1995 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Correspondence concerning a request from Cox Cable to install cable pipeline across the IHNC*, dated **November 1995**. (A0001851)

- *Annual Inspection of Completed Works Program, 1994 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 19, 1994**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June, 1994 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Annual Inspection of Completed Works Program, 1993 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 22, 1993**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1993 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Annual Inspection of Completed Works Program, 1992 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 14, 1992**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected May, 1992 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Annual Inspection of Completed Works Program, 1991 Annual Inspection for Maintenance of Completed MR&T Flood Control Works in the New Orleans District*. Memorandum dated **December 10, 1991**. The hurricane protection levees and floodwalls within the Orleans Levee District were inspected June, 1991 and received an OUTSTANDING rating. (Senate CD 09 Dec 05)

- *Memorandum from Rodney P. Picciola, Chief of Foundations and Materials Branch, New Orleans District, to the Chief of Design Branch, dated **March 27, 1991**, concerning responses to the attached Orleans Levee Board letter of March 11, 1991 regarding the subsidence and settlement below project grade of portions of the IHNC floodwalls. The memorandum indicates that the stability criteria for floodwalls have changed significantly since the IHNC floodwalls were built. It also indicates that if the floodwalls were raised by less than two feet, no changes to the tip penetration are expected. (A0001761)*

- *Memorandum from Rodney P. Picciola, Chief of Foundations and Materials Branch, New Orleans District, to the Chief of Design Branch, dated **January 17, 1989**, concerning the IHNC east levee from Dwyer Road to the U.S. Highway 90 floodwall. The memorandum indicates that the Design Branch has investigated the deterioration of the subject floodwall and has consulted with personnel from the Waterways Experiment Station, and that the best method for repairing the monolith is replacement with conventional concrete placement by either partial depth replacement or full depth replacement. (A0001729)*

- *Memorandum from Frederic M. Chatry, Chief of Engineering, New Orleans District, to the Chief of Operations Division, New Orleans District, dated **November 12, 1987**, concerning a request by the Port of Orleans to install 8-inch underground drainage pump discharge line through the France Road hurricane protection levee within the France Road Terminal. (A0001867)*

- *Memorandum from Frederic M. Chatry, Chief of Engineering, New Orleans District, to the Chief of Operations Division, New Orleans District, dated **June 23, 1987**, concerning a request by AT&T to install a light guide cable through the east and west IHNC floodwalls in the vicinity of baseline Stations 120+35 and 113+00, respectively. (A0001868)*

- *Memorandum from Frederic M. Chatry, Chief of Engineering, New Orleans District, to the Chief of Operations Division, New Orleans District, dated **February 17, 1987**, concerning a request by Sprint to install fiber optic cable over levees and through floodwalls along the IHNC and Mississippi River. (A0001869)*

- *Memorandum from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to the Chief of Operations Division, New Orleans District, dated **October 28, 1985**, concerning a request by the Sewerage and Water Board of New Orleans to excavate adjacent to the IHNC East Levee between Stations 16+00 and 57+00. This memorandum recommends that the applicant submit a new permit request that provides details of required control weirs, and stability analyses showing adequate factors of safety against I-wall embankment failure. (A0001845, see also A0001842)*

- *Memorandum from Frederic M. Chatry, chief of Engineering Division, to New Orleans District to the Commander, Lower Mississippi Valley Division, dated **August 7, 1985**, regarding NGS benchmarks. This memorandum is located toward the end of the larger IHNC miscellaneous correspondence file under this entry number. The memorandum details the problems to be encountered by adjusting NGS benchmarks in terms of the elevation differences between already completed/partially completed projects constructed using the old NGS data and new hurricane protection projects using the latest available NGS data. (A0004608)*

- *Memorandum from Maj. Gen. John F. Wall, Director of Civil Works, U.S. Army Corps of Engineers, to the Commander, Lower Mississippi Valley Division, dated **February 7, 1985**, regarding the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project. In this memorandum, the director of civil works indicates that he reviewed the revised Post Authorization Change (PAC) Notification Report, the July 1984 Reevaluation Report and the final supplement to the Environmental Impact Statement, and approves the PAC. (Senate CD 16 – 24 Oct 05)*

- *Memorandum from Frederic M. Chatry, Chief of Engineering Division, New Orleans District, to the Chief of Operations Division, New Orleans District, dated **November 7, 1984**, concerning the permit application by the Sewerage and Water Board of New Orleans for pumping station and appurtenant structures in the IHNC. Engineering Division indicates that it has no adverse comments for the permit provided that the contractor accept responsibility to plan and design the excavation sequence and temporary steel sheet pile cofferdams and submit the detailed design calculations and drawings for both for review. (A0001853)*

- *Letter from Eustis Engineering Company, dated **October 5, 1984**, concerning soil borings on the Florida Avenue Floodwall, east side of the Industrial Canal between Stations 1+00 and 4+05. This document provides the boring logs for 13 borings drilled to depths ranging from 35 to 40 feet. (A0001704)*

- *Lake Pontchartrain, LA, and Vicinity Hurricane Protection Project, Reevaluation Study, **July 1984**. This study is conducted in response to a 1977 Federal injunction that halted portions of the project approved by the Flood Control Act of 1965, specifically the floodgate barrier components of the plan. The study examines the continued feasibility of the barrier plan and examines the feasibility of providing hurricane protection solely by the means of raising and strengthening levees or floodwalls (high level plans). The study concludes that a high level plan represents the most feasible plan of protection. The plan would provide for improved hurricane protection levee systems in Orleans Parish, St. Bernard Parish, and the east bank of Jefferson Parish; repairing and rehabilitating the Mandeville Seawall in St. Tammany Parish; a new levee on the east bank of St. Charles Parish north of US Highway 61. The treatment of the outfall canals at the lakefront remained unresolved, with five potential solutions, ranging from higher and stronger levees to floodgates and auxiliary pumping stations at the canal openings, discussed. Volume II of the study contains all technical and engineering data used to support information in the reevaluation study, including hydrology and hydraulics, foundation design and geology, engineering alternatives. This reevaluation study serves as the basis for the feasibility report of the hurricane protection project and becomes the vehicle which leads to authorization of the high-level plan. (IPET)*

- *Status of Lake Pontchartrain and Vicinity Project, dated **May 1984**. This document provides a status update of the individual features of the Lake Pontchartrain and Vicinity Hurricane Protection Project. (A0006532)*

- *Plans for Lake Pontchartrain, Louisiana and Vicinity Hurricane Protection, IHNC East and West Levee, and Citrus Back Levee, Capping Floodwall. As built drawings for contract no. DACW29-83-R-0056, **dated 1983**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)*

- *Report to the Secretary of the Army by the U.S. General Accounting Office: Improved planning needed by the Corps of Engineers to resolve environmental, technical, and financial issues on the Lake Pontchartrain Hurricane Protection Project*, dated **August 17th, 1982**. This document, which is critical of the Corps' planning effort with regard to the project, posits a general history of the hurricane protection project from its authorization 1965 through 1982. The document indicates that discussions between the corps and local sponsors about the alteration of the drainage canals were not conclusive, owing largely to the sponsors lack of financial capability. The report notes that the Orleans Levee District "believed that the Corps' standards may be too high for what is really needed for adequate protection and for what is affordable by local sponsors." (A0001840)
- *Lake Pontchartrain, Louisiana and Vicinity, Hurricane Protection Project, Combined Phase I Type General Design Memorandum and Revised Environmental Impact Statement, Plan of Study*, dated **September 1981**. This plan of study was initiated in response to the court injunctions against the barrier complexes. The plan recommends the pursuit of a fast-track study effort and recommends a firm decision concerning the future study direction by mid-December, 1981. (Senate CD 13 – 15 Nov 05).
- *Times Picayune, 1979-1981*. This entry contains a series of articles from 1979-1981 pertaining to the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection project. (A0007458)
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan and Chalmette Area Plan, Design Memorandum No. 4, General Design, Florida Avenue Complex, IHNC*, dated **June 1980**. This document presents the essential data, assumptions, criteria, and computations for developing the plan, design, and costs for the protective works for the project floodwall feature along the IHNC in the vicinity of Florida Avenue. (Senate CD 16 – 15 Nov 05)
- *Miscellaneous plans and drawings, IHNC and Chalmette Area*, dated **February 1980**. Drawings depict soil borings, typical sections, tailbay sections of the new IHNC lock, and minimum distances. (A0004445)
- *Modification of U.S. District Court Injunction, March 1978*. The court modified its order of December 1977 and lifted the injunction against all features of the authorized project other than the construction of the barrier complexes. The Corps determines the revised Environmental Impact Statement will need additional study and will not be complete until November 1985. As a result, in December 1981, the Corps directs future study efforts on toward the "high-level plan" that manifests itself in the July 1984 Reevaluation Study. (Contained within A0001840)
- *U.S. District Court Injunction, December 1977*. The Corps was enjoined by the court from constructing the barrier complexes, the New Orleans East levee system, and the Chalmette Area plan of the Lake Pontchartrain Hurricane Protection Project, authorized in 1965, pending the revision and acceptance of the Environmental Impact Statement. (A0001840, A0007362)
- *Record of Public Meeting, Lake Pontchartrain, Louisiana, and Vicinity, Hurricane Protection Project*, dated **June 1975**. This document is a transcript of the public meeting held at the University of New Orleans on February 22, 1975. (Senate CD 13 – 24 Oct 05)

- *Final Environmental Impact Statement: Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project*, dated **August 1974**. This study describes the protective features and identifies the environmental effects of the hurricane protection project described in House Document 231, 89th Congress, 1st session (barrier plan) and approved by the 1965 Flood Control Act. (Senate CD 13 – 24 Oct 05)
- *Plans for Inner Harbor-Navigation Canal, St. Claude and Florida Avenue Bridges, 1973 Bridge Repairs, Phase III*. Project plans for contract no. DACW29-73-R-0139 dated **March 1973**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *The Board of Levee Commissioners of the Orleans Levee District, Emergency Operations Plan*, dated **1972**. The document details responsibilities of the board under the emergency operations plan in terms of preparations and surveillance; high tide emergencies; and hurricane emergencies. (A0001839)
- *Hurricane Study, History of Hurricane Occurrences along Coastal Louisiana*, dated **August 1972**. This document, prepared by the New Orleans District, posits historical research, a summary of hurricane occurrences, descriptions of hurricanes and hurricane tracks dating back to the 19th century. (Senate CD 13 – 24 Oct 2005)
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan, Inner Harbor Navigation Canal, West Levee, France Road Ramp to Florida Avenue Bridge (Station 206+16.73 to Station 26+55), Plans for Levee and Floodwall*. Construction plans for contract no. DACW29-73-B-0009, dated **July 1972**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan, Modification of Protective Alignment and Pertinent Design Information, IHNC Remaining Levees, West Levee Vicinity France Road, and Florida Avenue Containerization Complex*, dated **October 1971**. This documents presents design and cost information required to support a revised alignment for the protective works on the west bank of the IHNC. The recommended plan includes gated structures from Stations 16+89.83 to 17+99.33 and from Stations 23+65.58 to 24+75.08. The gates structures were included in the plan at the formal request of local interests who agreed to bear the additional costs over that of providing I-type floodwalls. The plan represents a modification to the Lake Pontchartrain Barrier Plan, Design Memorandum No. 2, General, Supplement No. 8 – IHNC Remaining Levees. (Senate CD 13 – 24 Oct 2005)
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan, Inner Harbor Navigation Canal, West Levee, U.S. Highway 90 to Almonaster Avenue (Station 105+66 to Station 167+00), Plans for Levee and Floodwall*. As constructed plans for contract no. DACW29-70-B-0126, dated **March 1970**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan, Inner Harbor Navigation Canal, East Levee, Gate 1E, Gate 2E, and Dwyer Road to U.S. Highway 90, Plans for Levee and Floodwall*. Construction plans for contract no. DACW29-70-B-0137, dated **March 1970**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)

- *Lake Pontchartrain, Louisiana and Vicinity, Chalmette Area Plan, Inner Harbor Navigation Canal, East Levee-IHNC to Florida Avenue, Levee and Floodwall Capping.* As constructed plans for contract no. DACW29-70-B-0088, dated **November, 1969**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan, Inner Harbor Navigation Canal, East Levee, Hayne Boulevard to Dwyer Road (Station 33+95 to Station 83+00), Plans for Levee and Floodwall Capping.* Project plans for contract no. DACW29-68-B-0148, dated **May 1968**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan, Inner Harbor Navigation Canal, West Levee, Hayne Boulevard to U.S. Highway 90, Almonaster Avenue to Florida Avenue, Plans for Levee and Floodwall Capping.* As constructed plans for contract no. DACW29-68-B-0141, dated **May 1968**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan, Design Memorandum No. 2 – General, Supplement No. 8, Inner Harbor Navigation Canal Remaining Levees,* dated **February 1968**. This supplement presents the essential data, assumptions, criteria, and computations for developing the plan, design, and costs for the protective works for the west bank of the IHNC extending from Florida Avenue to approximately 400 feet south of Hayne Boulevard. (Senate CD 13 – 15 November 05)
- *Lake Pontchartrain Louisiana and Vicinity, Design Memorandum No. 1, Hydrology and Hydraulic Analysis, Part II – Barrier,* dated **August 1967**. This design memorandum includes the description and analyses of essential data, assumptions, and criteria used for studies which provide the basis for determining design surge heights, run-up, overtopping and frequencies for the Lake Pontchartrain Barrier. It also includes the average lake levels for the design hurricane on different tracks. (Senate CD 13 – 15 Nov 05)
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan, Design Memorandum No. 2, General advance Supplement, Inner Harbor Navigation Canal West Levee, Florida Avenue to IHNC Lock,* dated **March 1967**. This supplement presents the essential data, assumptions, criteria, and computations for developing the plan, design, and costs for the protective works for the west bank of the IHNC. The document was submitted in advance of the general design memorandum as a means of expediting construction to an area hit hard by hurricane Betsy. (Senate CD 13 – 24 Oct 2005)
- *Memorandum from A.J. Davis, Chief of Engineering Division, Lower Mississippi Valley Division, to the District Engineer, New Orleans District,* dated **March 9, 1967** concerning interim floodwall construction on the IHNC as a part of the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project. This memorandum provides review comments on the data and designs of the proposed interim floodwall construction. The memorandum suggests that the stability of the west levee between elevations -17 and -32 from Stations 91+00 and 106+00 be reexamined using a shear strength of 400 psi. It also suggests that the stability of the east levee between elevations -6 to -24 from Stations 80+00 and 83+00 be reexamined using a lower shear strength. (A0001873, see also A0001871)

- *Memorandum from A.J. Davis, Chief of Engineering Division, Lower Mississippi Valley Division, to the District Engineer, New Orleans District, dated **March 9, 1967** concerning floodwall construction on the IHNC as a part of the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project. This memorandum posits direction for pile penetration, stresses and deflection, and soil shear strength factors of safety for sandy levees such as those found in the area of the interim floodwall for the IHNC east and west levees between U.S. Highway 90 to Lake Pontchartrain. The memorandum also approves of the commencement of the contract for the proposed project pending the completion of further levee stability analyses. (A0001870)*
- *Piezometer Readings, dated January 19, 1967 and **March 2, 1967**. The series of documents contained in these entries provide piezometric data for various sections of the IHNC. (A0001739, A0001740, A0001741, A0001742, A0001743)*
- *Memorandum from A.J. Davis, Chief of Engineering Division, Lower Mississippi Division, to the District Engineer, New Orleans District, dated **February 9, 1967** concerning interim floodwall construction on the IHNC as a part of the Lake Pontchartrain, Louisiana, and Vicinity Hurricane Protection Project. This memorandum approves the design analysis and plans and specifications for the construction of the interim floodway pending revisions posited in the memorandum. (A0001874).*
- *Lake Pontchartrain, Louisiana and Vicinity, Lake Pontchartrain Barrier Plan, Inner Harbor Navigation Canal, East and West Levees, Interim Floodwall-North of U.S. Highway 90. Project plans for contract no. DACW29-67-B-0115, dated **February, 1966**. (Senate CD 15 – 15 Nov 05, disk 2 of 2)*
- *House Document No. 231, 89th Congress, 1st session. The report of the Chief of Engineers, **March 4, 1964**, transmitted to Congress the report of the Board of Engineers for Rivers and Harbors, accompanied by the reports of the district and division engineers and the concurring reports of the Mississippi River Commission for those areas under its jurisdiction. The report posits a recommendation for what came to be known as the “barrier plan”: “For protection from hurricane flood levels...the most suitable plan would consist of a barrier extending generally along US Highway 90...together with floodgates and a navigation lock in the Rigolets, and flood and navigation gates in Chef Menteur Pass; construction of a new lakeside levee in St. Charles Parish...; extension upward of the existing riprap slope protection along the Jefferson Parish levee; enlargement of the levee landward of the seawall along the 4.1 mile lakefront, and construction of a concrete-capped sheet pile wall along the levee west of the Inner Harbor Canal...” The report serves as the basis for the feasibility report on the hurricane protection project and subsequent project authorization in the Flood Control Act of 1965, also known as PL 298, 89th Congress, 1st Session. (IPET)*
- *Effects on Lake Pontchartrain, LA., of Hurricane Surge Control Structures and Mississippi River Gulf Outlet Channel, Technical Report No. 2-636, dated **November 1963**. This model study conducted by the Waterways Experiment Station from January 1960 through June 1961 analyzes the effects of gated structures under the proposed barrier system for hurricane protection on the salinity and hydraulic regimen of Lake Pontchartrain and its connecting waterways and lakes. (A0008231, Senate CD 13 – 15 Nov 05)*

- *Interim Survey Report, Hurricane Study, Lake Pontchartrain, Louisiana, and Vicinity*, dated **November 21, 1962**. This interim report posits the recommended plan for the Lake Pontchartrain basin. The recommended plan includes a barrier at the west end of the lake to exclude hurricane storm surges and the construction and enlargement of protective works fronting developed or potentially developable areas. (IPET, A0008069)
- *Letter from the Board of Levee Commissioners of the Orleans Levee District to the District Engineer, New Orleans District*, dated **March 1, 1962**, concerning the board's view of hurricane protection along the south shore of Lake Pontchartrain. In this letter the board indicates that since the time of the 1950 study by Bedell & Nelson in 1950, the Orleans Levee Board had done considerable work along the seawall in the Lakeshore Parkway. In light of this, the Orleans Levee Board suggests that the breakwater recommended in the 1950 report is unnecessary and undesirable from an esthetic point of view. (Letter contained within **House Document No. 231, 89th Congress, 1st session**, dated March 4, 1964).
- *A Detailed Report on Hurricane Study Area #1, Lake Pontchartrain and Vicinity, Louisiana*, report by the Department of the Interior, dated **March 1962**. This report analyzes the environmental effects of barrier structures and high level plans on the hydrological regime of Lake Pontchartrain. (Senate CD 13 – 15 Nov 05)
- *Memorandum from E.P. Fortson, Jr., Chief of Hydraulics Division to the District Engineer, New Orleans District*, dated **June 21, 1961**, concerning the Lake Pontchartrain model study. This memorandum presents the preliminary results of four model tests to determine the effects of partial openings of a control structure at the Lake Pontchartrain end of the IHNC on salinity conditions in the lake. (A0008028)
- *Geological Investigation of the New Orleans Harbor Area, TM No. 3-391*, dated **June 1954**. This study, produced by the Waterways Experiment Station, is based on boring logs collected in the late fall and winter of 1949-1950. A list of the borings is contained in Appendix C. (Senate CD 13 – 24 Oct 05)
- {Unknown Document Title}, by Bedell & Nelson, dated **October 1950**. The Orleans Levee Board and the Corps conducted a study of the lakefront to protect New Orleans from Lake Pontchartrain storm surges. The report by Bedell & Nelson, prepared for the board and shared with the Corps, recommended the installation of a breakwater from the New Basin Canal to the Industrial Canal along the south shore of Lake Pontchartrain to prevent overtopping of the seawall by wave action caused by hurricane winds. (See *Letter from the Board of Levee Commissioners of the Orleans Levee District to the District Engineer, New Orleans District*, dated March 1, 1962).

- Review Report: Lake Pontchartrain, La., From the Orleans-Jefferson Parish Line Westward and Northward to the Vicinity of Frenie, La. New Orleans District document dated **April 15, 1948**. This review report was prepared in the aftermath of the hurricane of September 19, 1947, and recommends modification of the adopted project (Flood Control Act of 1946) to provide for increased protection against storm surge and waves from Lake Pontchartrain, by landside enlargement of the existing embankment along the lake, with suitable wave erosion protection, and the enlargement of return levees along the Orleans and St. Charles Parish lines. Document includes wind velocity records, hydrographs of Sept-Oct of 1947 and March 1948, rainfall frequencies; boring data, and levee profiles and typical cross-sections. (A00001300)