DEPARTMENT OF THE ARMY
NEW ORLEANS DISTRICT, CORPS OF ENGINEERS
P.O. BOX 60267
NEW ORLEANS, LOUISIANA 70160-0267

REPLY TO
ATTENTION OF

15 May 09

Planning, Programs, and
Project Management Division
Environmental Planning
and Compliance Branch

DRAFT FINDING OF NO SIGNIFICANT IMPACT (DFONSI)

Jefferson Parish Pump Station Stormproofing Activities

Environmental Assessment # 475

Description of Proposed Action. The U.S. Army Corps of Engineers, New Orleans District, proposes stormproofing activities for 21 of the existing drainage pump stations in Jefferson Parish, Louisiana. The purpose of the proposed action is to provide flood, hurricane, and storm damage risk reduction to those Jefferson Parish pump stations located on the east and west banks of the Mississippi River in order to ensure station operation during and immediately following tropical storm events.

The project will consist of structural upgrades and reinforcements to existing buildings including roof structures, windows, louvers and doors, enhanced water intrusion prevention, elevation of electrical equipment, establishing backup power, providing protection for existing backup power, enhancing fuel systems and capacities, providing alternative sources of water for equipment maintenance and operations, automating pump station control that allows for remote operation and other miscellaneous protection features.

This amended EA includes additional information and analysis of the construction sequencing plan not included in the EA originally released on April 14, 2009. The amended portions are highlighted in yellow.

Factors Considered in Determination. This office has assessed the impacts of the proposed action on significant resources, including non-wetland/upland resources, wildlife, endangered or threatened species, cultural resources, recreational resources, aesthetics, noise, air quality, social and economic resources and transportation. No significant adverse impacts were identified for any of the significant resources. There is a risk of encountering HTRW, as there was evidence of RECs at two pump stations that were greater than *de minimus*. However these will be designated no work zones and be avoided during construction. No impacts were identified that would require compensatory mitigation. By a faxsimile dated July 24, 2008, the U.S. Fish and Wildlife Service confirmed that the proposed action is not likely to adversely affect any endangered or threatened species. In a letter dated February 6, 2009, the Louisiana Department of Natural Resources concurred with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program. A Water Quality Certificate was not required. A Section 404(b)(1) Public Notice and a Section 404(b)(1) Evaluation were not required. In a letter dated February 21, 2006 the Louisiana State Historic Preservation Officer concurred with a recommendation of no effect on historic properties. This

office has concurred with, or resolved, all Fish and Wildlife Coordination Act recommendations contained in a letter from the U.S. Fish and Wildlife Service, dated December 8, 2008.

Environmental Design Commitments. The following commitments are an integral part of the proposed action:

1. HTRW identified RECs in the form of oil drums and other storage containers that showed evidence of spills. While these spills are greater than *de minimus*, they are not believed to pose a significant environmental risk to the subject property. With implementation of the recommended plan, the small spills of diesel fuel and lubricating oil at several pump stations would be avoided. The contaminated area will be marked as a no work zone.

2. The USFWS Coordination Act Report dated December 08, 2008 recommends that any proposed change in the proposed project features, locations or plans that would impact fish and wildlife habitat and/or wetlands shall be coordinated in advance with the U.S. Fish and Wildlife Service, National Marine Fishery Service, and Louisiana Department of Wildlife and Fisheries.

3. The USFWS Coordinated Act Report dated December 8, 2008 also recommends that if the proposed project has not been constructed within 1 year or if changes are made to the proposed project, the Corps should reinitiate Endangered Species Act consultation with the Service to ensure that the proposed project would not adversely affect any federally threatened or endangered species or their habitat

4. If any unrecorded cultural resources are determined to exist within the proposed project boundaries, then no work will proceed in the area containing these cultural resources until a CEMVN-PM-RN archeologist has been notified and final coordination with the SHPO and THPO has been completed.

Public Involvement. The proposed action has been coordinated with appropriate Federal, state, and local agencies and businesses, organizations, and individuals through distribution of Environmental Assessment # 475 (EA #475) for their review and comment. EA# 475 is attached hereto and made a part of this DFONSI.

Conclusion. This office has assessed the potential environmental impacts of the proposed action. Based on this assessment, a review of the comments made on EA #475, and the implementation of the environmental design commitments listed above, a determination has been made that the proposed action would have no significant impact on the human environment. Therefore, an Environmental Impact Statement will not be prepared.

_____ DRAFT _____

Date

Alvin B. Lee
Colonel, U.S. Army
District Commander

US ARMY CORPS OF ENGINEERS
STORMPROOFING INTERIOR DRAINAGE PUMP STATIONS IN JEFFERSON PARISH, LOUISIANA
ENVIRONMENTAL ASSESSMENT
EA #475 (REVISED, April 7, 2009)
(AMENDED May 15, 2009

Planters Pump Station in Jefferson Parish, Louisiana (photograph taken on July 9, 2008).

Prepared by:
U.S. Army Corps of Engineers
New Orleans District
Hurricane Protection Office

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1. INTRODUCTION

The U.S. Army Corps of Engineers (USACE), St. Louis District (MVS), has prepared this Environmental Assessment (EA #475) for the New Orleans District (MVN) to evaluate potential impacts associated with the proposed stormproofing modifications at the 21 existing pump stations on the east and west banks of the Mississippi River throughout Jefferson Parish, Louisiana (Fig. 1). These stormproofing measures are proposed to help ensure the operability of the stations during hurricanes, storms, and high water events. Without the appropriate stormproofing measures, pump stations would be unsafe for pump operators and flood waters may prevent pump operation. EA #475 has been prepared in accordance with the National Environmental Policy Act of 1969 (NEPA) and the Council on Environmental Quality's Regulations (40 CFR 1500-1508), as reflected in the USACE Engineering Regulation, ER 200-2-2. The following sections detail elements of the proposed action including discussion of purpose and need, authority, alternatives, affected significant resources, and impacts.

1.1 Location

Jefferson Parish is located in southeast Louisiana and contains part of the suburban area surrounding the City of New Orleans. The Mississippi River divides urban Jefferson Parish into an east bank (located north and east of the Mississippi River), and a west bank (located south and west of the Mississippi River). Six pump stations are located on the east bank and the remaining 15 are on the west bank.

East Bank Stations:

1.1.1 Bonnabel (Jefferson Pump Station #1)

The Bonnabel Pump Station is located at 1500 Beverly Gardens Drive, Metairie, Louisiana. The site is a manned pump station on the east bank of Jefferson Parish used to discharge water from the Bonnabel Canal to Lake Pontchartrain. The site vicinity is mostly residential and properties to the east, south, and west are residential in nature. The Bonnabel Boat Launch and an associated recreational space are located adjacent to the northeast of the site. Lake Pontchartrain is located to the north of the site across the Jefferson Parish Lakefront Levee. The Bonnabel Canal extends south from the Bonnabel Pump Station.

1.1.2 Canal Street Pump Station

The Canal Street Pump Station is located at 100 Canal Street, Metairie, Louisiana. The site is an unmanned pump station on the east bank of Jefferson Parish along the border between Orleans Parish. The pump station is used to discharge water from the Carroll Canal to the 17th Street Canal. The site vicinity is characterized as mixed residential-commercial. The 17th Street Canal is located along the eastern site border. Residential property surrounds the pump station, with commercial properties located near the site along the Carroll Canal and adjacent to the site to the south.

1.1.3 Duncan (Jefferson Pump Station #4)

The Duncan Pump Station is located at 1800 Joe Yenni Boulevard, Kenner, Louisiana. The site is a manned pump station on the east bank of Jefferson Parish used to discharge water from the Duncan Canal to Lake Pontchartrain. The site vicinity is characterized by residential property. The Pontchartrain Center commercial area is located to the east of the site. The properties to the south and west are residential. Lake Pontchartrain is located to the north of the site across the Jefferson Parish Lakefront Levee. The Duncan Canal extends south from the Duncan Pump Station.

1.1.4 Elmwood (Jefferson Parish Pump Station #3)

The Elmwood Pump Station is located at 5400 Caryota Drive, Metairie, Louisiana. The site is a manned pump station on the east bank of Jefferson Parish used to discharge water from the Elmwood Canal to Lake Pontchartrain. The site vicinity is characterized by residential to the east, south, and west with Lake Pontchartrain to the north of the site across the Jefferson Parish Lakefront Levee. The Elmwood Canal extends southeast from the Elmwood Pump Station.

1.1.5 Parish Line Pump Station

The Parish Line Pump Station is located at 3100 Grand Lake Boulevard, Kenner, Louisiana. The site is a manned pump station on the east bank of Jefferson Parish along the border between St Charles Parish. The pump station is used to discharge water from the Butler Canal to the Duncan Canal. The site vicinity is characterized by mixed use. Residential property is located to the north. Undeveloped wetland is located to the west across the Duncan Canal. Canal #17, also known as Butler Canal, terminates at the eastern site border. The Kenner Wastewater Treatment Plant operated by Veolia Incorporated is located to the south of the site.

1.1.6 Suburban (Jefferson Pump Station #2)

The Suburban Pump Station is located at 4800 Lake Villa Drive, Metairie, Louisiana. The site is a manned pump station on the east bank of Jefferson Parish used to discharge water from the Suburban Canal to Lake Pontchartrain. The site vicinity is characterized by residential property with residential properties to the east, south, and west. Lake Pontchartrain is located to the north of the site across the Jefferson Parish Lakefront Levee. The Suburban Canal extends south from the Suburban Pump Station.

West Bank Stations:

1.1.7 Ames Pumping Station

The Ames Pump Station is located at 5100 Rochester Drive, Marrero, Louisiana and is a manned pump station on the west bank of Jefferson Parish. The site is used to move water through the Millaudon Canal. The site vicinity is characterized as residential land with residential properties located to the south and east of the site. Undeveloped property is located to the north and west. The Mt Kennedy Pump Station is adjacent to the site to the southwest.

1.1.8 Bayou Segnette Pump Station

The Bayou Segnette Pump Station located at 801 Louisiana Street, Westwego, Louisiana. The site is consists of two separate, manned pump stations on the west bank of Jefferson Parish and is used to discharge water from the Main Canal to Bayou Segnette. The area is characterized as mixed use. The Main Canal terminates at the northern border of the site; Bayou Segnette State Park is located to the north and west of the site. Bayou Segnette is located along the eastern site border. The Inner Cataouatche Canal is located along the southern site border followed by the Lake Cataouatche Pump Station #2.

1.1.9a Lake Cataouatche Pump Station #1

Lake Cataouatche Pump Station #1 is located at 3901 Highway 90, Avondale, Louisiana. The site is a manned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Main Canal to the Inner Cataouatche Canal. The site vicinity is characterized as undeveloped land. To the north, the Main Canal terminates at the northern border of the site. The Inner Cataouatche Canal is located along the southern site border followed by the Lake Cataouatche Pump Station #2.

1.1.9b Lake Cataouatche Pump Station #2

Lake Cataouatche Pump Station #2 located at 3901 Highway 90, Avondale, Louisiana. The site is a manned, pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Inner Cataouatche Canal to the Outer Cataouatche Canal. The site vicinity is characterized as undeveloped land. The Inner Cataouatche Canal is located along the northern border of the sites. The Inner Cataouatche Canal is located along the southern site border followed by the Lake Cataouatche Pump Station #2.

1.1.10 Cousins Pump Station

The Cousins Pump Station is located at 2466 Destrehan Avenue, Harvey, Louisiana. The site is two separate manned pump stations with a third under construction on the west bank of Jefferson Parish. The site is used to discharge water from the Cousins Canal to the Harvey Canal. The site vicinity is characterized as mixed use. Industrial property is located to the north of the site. Undeveloped property is located to the south; however construction activities associated with the Harvey Canal Flood Gate are underway to the southeast. Residential property is located to the west of the site. The Harvey Canal is located along the eastern border of the site and the Cousins Canal terminates at the eastern border of the site.

1.1.11 Estelle Pumping Station #1

The Estelle Pump Station #1 is located at 4105 Cousins Boulevard, Marrero, Louisiana and is an unmanned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Pipeline Canal towards the Hero Canal cutoff. The site vicinity is characterized as undeveloped land with the Pipeline Canal is located to the east of the site.

1.1.12 Estelle Pumping Station #2

The Estelle Pump Station #2 is located at 3850 Destrehan Avenue, Harvey, Louisiana and is a manned pump station on the west bank of Jefferson Parish. The site is used to discharge water from a drainage canal in the area to the Hero Canal cutoff. The site vicinity is characterized as mixed use. Undeveloped land and waterways immediately surround the property. Residential property is located to the north of the site. Industrial property is located to the east of the site beyond the Hero Canal cutoff. Residential drainage canals from the north and additional drainage from the Pipeline Canal to the south terminate at the western border of the site.

1.1.13 Harvey Pump Station

The Harvey Pump Station is located at 1600 Destrehan Avenue, Harvey, Louisiana and is a manned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Patriot Canal to the Harvey Canal. The site vicinity is characterized as industrial. Industrial property surrounds the majority of the site. The Stewart-Stevenson Fabrication yard is an AST facility located to the east of the site. A multi-tenant commercial facility is located to the west of the site. Houma Industries is a RCRA-LQG located south of the site. Residential property is located to the southeast. The Harvey Canal is located along the eastern site border and the Patriot Canal terminates at the western border of the site.

1.1.14 Hero Canal Pump Station

The Hero Pump Station is located at 4644 Peters Road, Harvey, Louisiana. The site is two separate manned pump stations on the west bank of Jefferson Parish. The site is used to discharge water from Bayou Barataria to the Harvey Canal. The site vicinity is characterized as heavy industrial. Industrial property surrounds the pump station. Bollinger Shipyard, a former CERCLIS site, is located adjacent to the site to the north. Elmwood Dry Docks, a hazardous waste remediation site, is located to the west of the site. Bayou Barataria is located to the east of the site and the Harvey Canal is located along the western site border.

1.1.15 Highway 90 Pump Station

The Highway 90 Pump Station is an unmanned station on the west bank of Jefferson Parish and is located 1,000 feet south of US Highway 90 at Riverbirch Landfill. The site is used to discharge water from the Inner Cataouatche Canal to the Outer Cataouatche Canal. The site vicinity is undeveloped land. The Inner Cataouatche Canal terminates at the southern border of the site, and the Outer Cataouatche Canal is located along the western border of the site.

1.1.16 Mt Kennedy Pumping Station

The Mt Kennedy Pump Station is an unmanned pump station located at 3100 Mt. Kennedy Drive, Marrero, Louisiana on the west bank of Jefferson Parish. The site is used to assist the Ames Pump Station in moving water through the Millaudon Canal by discharging water from a residential drainage canal into the Millaudon Canal. The site vicinity is characterized as undeveloped land. Residential property is located to the east of the site. Undeveloped property is located to the north and west. The Ames Pump Station is adjacent to the site to the northeast.

1.1.17a Planters Canal Pump Station #1

The Planters Pump Station #1 is located across the Algiers Canal from Planters Pump Station #2, in Belle Chasse, Louisiana and is a manned station on the Algiers Canal in Plaquemines Parish, used to discharge water from Bayou Barriere to the Algiers Canal. The site vicinity is undeveloped land. A golf course is located to the south of the site. The Algiers Canal is located along the western site border. An unnamed canal draining water from Bayou Barriere terminates at the eastern site border.

1.1.17b Planters Canal Pump Station #2

The Planters Pump Station #2 is located at 268 Bypass Road, Harvey, Louisiana. The site is a manned station on the west bank of Jefferson Parish. The site is used to discharge water from the Planters Canal to the Algiers Canal. The site vicinity is characterized as undeveloped land. The Algiers Canal is located along the eastern site border; the Planters Canal terminates at the western site border. A developed golf course facility is located to the south of the site.

1.1.18 Westminster Pump Station

The Westminster Pump Station is located at 2050 Watling Drive, Marrero, Louisiana and is a manned station with an additional pump station facility currently under construction on the west bank of Jefferson Parish. The site is used to move water through the Millaudon Canal. The location is characterized as undeveloped land. A drainage canal is located along the northern and eastern site border. Residential property is located to the northeast of the site.

1.1.19 Westwego Pump Station #1

The Westwego Pump Station #1 is located at 801 Louisiana Street, Westwego and consists of two separate, manned stations on the west bank of Jefferson Parish. The site is used to discharge water from the Westwego Drainage Canal to Bayou Segnette. The area is characterized as mixed use. Residential property is located north of the site. The Westwego Waste Water Treatment Plant is adjacent to the south and east. Undeveloped land is located to the west, followed by Bayou Segnette further west.

1.1.20 Westwego Pump Station #2

The Westwego Pump Station #2 is a manned station located at 820 S. Laroussini Street, Westwego, Louisiana on the west bank of Jefferson Parish. The site is used to discharge water from the Westwego Drainage Canal to Bayou Segnette. The surrounding area is characterized as undeveloped land. Bayou Segnette is located along the western site border. The Westwego Drainage Canal is located to the east and north of the site.

1.1.21 Whitney-Barataria Pump Station

Whitney-Barataria Pump Station is located at 1600 Destrehan Avenue, Harvey, Louisiana. The site is a manned station on the west bank of Jefferson Parish and is used to discharge water from the Patriot Canal to the Harvey Canal. The site vicinity is characterized as industrial. The

Algiers Canal is located along the eastern site border and an unnamed canal draining water from Bayou Barataria terminates at the western site border.

1.2 Existing System

Flood control in Jefferson Parish is provided by a system of levees, floodwalls, canals and drainage pump stations. All rainfall runoff is conveyed by gravity through a system of subsurface drainage lines into a grid of lateral canals that connect to major outfall canals. Water flow in the lateral canals can move in different directions depending upon the rainfall patterns and available pump station capacities. Water collects in the suction bays of various pump stations and then diesel powered and hydraulic pumps transport the water outside the protection system into Lake Pontchartrain on the east bank and several tidal estuaries on the west bank. Pump operators are needed to run and maintain pumps and associated components and to manually remove trash and debris that can clog pump intakes.

Components of this project that could have a notable effect on the natural and human environment include:

- New generator installation
- Non-potable water well construction
- Fiber optic cable installation
- Diesel storage tank removal
- Construction of diesel storage tank containment
- Raising the elevation of an existing access road
- Age of existing pump stations

This EA will assist the USACE and Jefferson Parish with deciding among alternatives, determining the need for mitigation measures, and how best to implement proposed features.

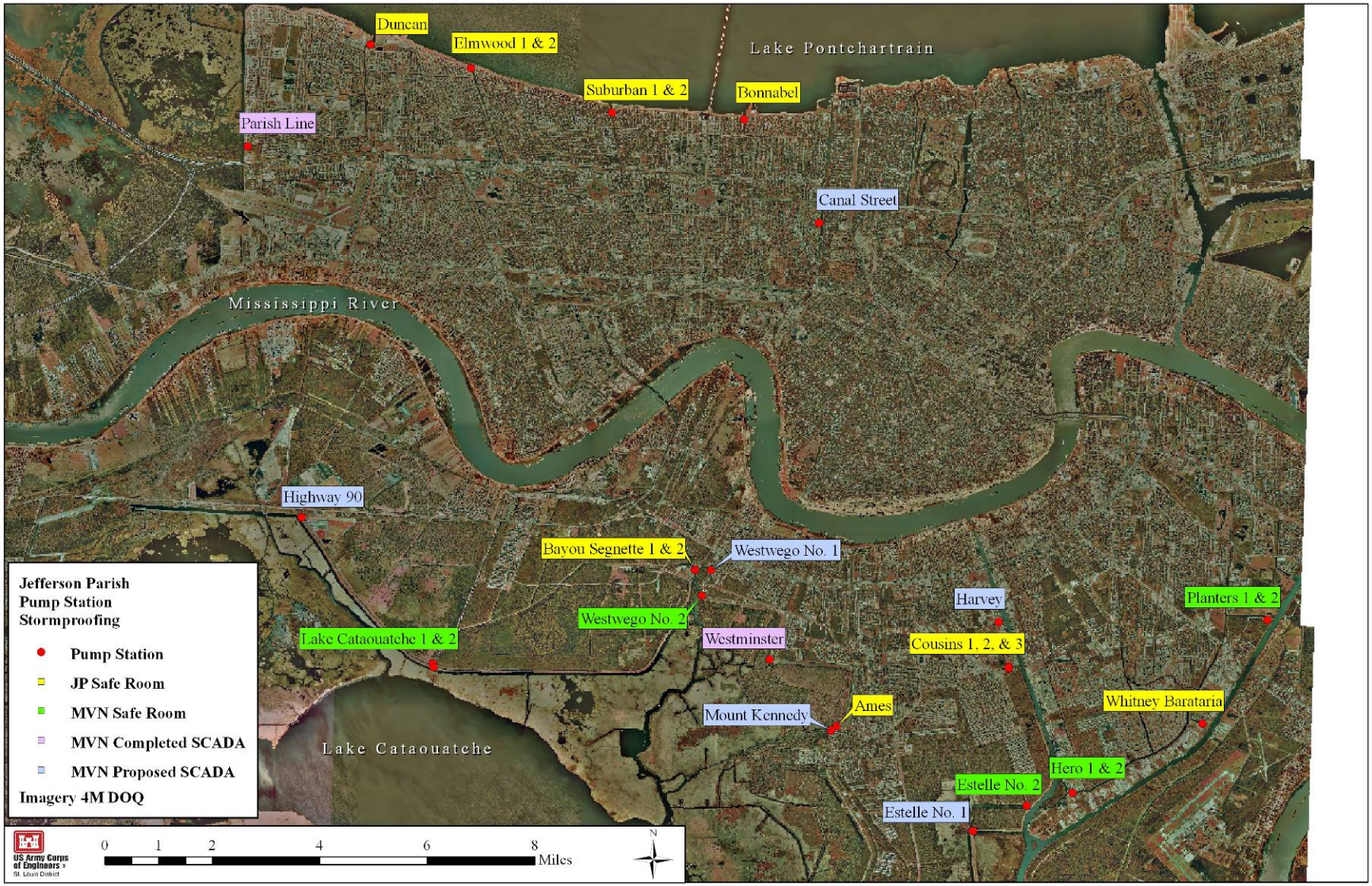

Figure 1: The 21 existing Jefferson Parish pump stations. Yellow = pump stations with safe rooms constructed by Jefferson Parish; Green = pump stations with safe rooms constructed by MVN; Purple = pump stations with remote operation capability; Blue = pump stations where remote operation is proposed in this EA #475.

1.3 Previous Actions

Since Hurricane Katrina, Jefferson Parish has borrowed $40 million and completed the construction of safe rooms at: Ames, Duncan, Elmwood, Suburban, Bonnabel, Bayou Segnette, Whitney-Barataria, and Cousins (Figure 1 & 2). These eight safe rooms provide refuge during severe storm events and eliminate the need to evacuate pump operators to inland location(s) prior to a storm's landfall. The parish has also completed automation projects that allow pump stations to be controlled from the safe rooms and provided mechanical trash and debris removal at pump screens (Figure 3).

Figure 2: Safe room at Lake Cataouatche

The USACE MVN has constructed safe rooms at the Lake Cataouatche, Westwego 2, Estelle 2, Hero, and Planters pump stations and provided remote operation capability for the Westminster and Parish Line pump stations as detailed in EA #454. To allow for remote operation, a Supervisory Control and Data Acquisition (SCADA) system was installed with fiber optic cable connecting an existing safe room to a pump station without a safe room. Climber screens, which are fully automated trash rakes that remove most debris that stacks up against pump screens during operation, were also added (Figure 3). Without climber screens, pump operators must manually operate machinery or remove, by hand, the debris from screens in front of pump intakes. This is done to maintain pumping efficiency and prevent overheating and pump failure from lack of cooling water.

Figure 3: Climber screens at Whitney Barataria that catch debris and remove trash from pump screens.

2. PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose of the proposed action is to modify pump stations throughout Jefferson Parish to better resist severe storm conditions so that stations can be safely staffed during and immediately following extreme weather events. The proposed action resulted from the need to provide continued pump station operation to reduce the risk of flooding to residences, businesses, infrastructure, transportation routes, and evacuation routes. Since 1851, 51 hurricanes have made landfall on the Louisiana coast and 10 have made landfall in Jefferson Parish (National Hurricane Center 2007). Even relatively small tropical storm events typically include large amounts of rainfall accompanied by high winds and potential storm surge. For example, Tropical Storm Frances deposited up to 21 inches of rainfall during a 3-day period in September 1998, causing extensive flooding in Jefferson Parish, Louisiana (National Hurricane Center 2007). Jefferson Parish is in an urbanized metropolitan area with a relatively flat topography and ground elevations that vary from slightly above to about five feet below sea level (Jefferson Parish 2007). Without full operation of all 21 pump stations, high rainfall amounts have the potential to flood much of the low-lying areas. The proposed stormproofing actions would help maintain pump station operation during and after severe weather events by increasing protection against hurricane force winds, wind driven water, and loss of power.

3. AUTHORITY FOR THE PROPOSED ACTION

The proposed action was authorized by the Emergency Supplemental Appropriations Act for Defense, the Global War on Terror, and Hurricane Recovery, 2006 (Public Law [PL] 109-234; 4th Supplemental). Additional funding was provided in the Fiscal Year 2008 Emergency Supplemental Funding, P.L. 110-252 (6th Supplemental).

4. PRIOR REPORTS

Information on pump stations and pump station repairs completed immediately following Hurricane Katrina come from the Project Information Report for Rehabilitation of Damaged Flood Control Works, Federal and Non-federal Pump Stations, Flood Control, Jefferson Parish, Louisiana (2006). The following reports are associated with the proposed action and are incorporated herein by reference.

West Bank of the Mississippi River in the Vicinity of New Orleans Project Feasibility Report (1986)

Jefferson and Orleans Parishes, Louisiana Urban Flood Control and Water Quality Management Reconnaissance Study (1992)

EA #165 – Westwego to Harvey Canal Disposal Site (1992)

West Bank of the Mississippi River in the Vicinity of New Orleans, Louisiana (East of Harvey Canal) Feasibility Report (1994)

EA #208 – Lake Pontchartrain Stormwater Discharge, Louisiana, Jefferson Parish Demonstration Project (1995)

Supplemental EA #208A – Lake Pontchartrain Stormwater Damage Discharge, Jefferson Parish, Louisiana Demonstration Project (1996)

EA #236 – Southeast Louisiana Urban Flood Control Jefferson Parish Technical Report (1996)

EA #238 – Southeast Louisiana Urban Flood Control Jefferson Parish Technical Report #2 (1996)

Westwego to Harvey Canal, Louisiana Hurricane Protection Project Lake Cataouatche Area, Environmental Impact Statement (1996)

EA #320 – Harvey Canal Hurricane Protection Features Jefferson Parish, Louisiana (2000)

EA #315 – Southeast Louisiana Urban Flood Control Project East of Harvey Canal, 533(d) Report, West Bank Basin Canal and Pumping Station Modifications, Jefferson Parish, Louisiana (2001)

EA #306 - West Bank and Vicinity, New Orleans, Louisiana, Hurricane Protection Project, Harvey Canal Sector Gate Site Relocation and Construction Method Change (2002)

EA #337 – West Bank and Vicinity New Orleans Louisiana Hurricane Protection Project Algiers Canal Levee Alternate Borrow Site (2003).

Supplemental EA #306A – West Bank of the Mississippi River in the Vicinity of New Orleans, East of the Harvey Canal, Floodwall Realignment and Change in Method of Sector Gate (2005)

EA #433 - U.S. Army Corps of Engineers Response to Hurricanes Katrina and Rita in Louisiana (2006)

EA #454 - U.S. Army Corps of Engineers Jefferson Parish Pump Station Stormproofing activities (2007)

IER #2 – Lake Pontchartrain and Vicinity, West Return Floodwall, Jefferson and Orleans Parishes, Louisiana (2008)

IER #3 – Lake Pontchartrain and Vicinity, Lakefront Levee, Jefferson Parish, Louisiana (2008)

IER 12 – Harvey and Algiers Canal Levee and Floodwalls, Jefferson, Orleans and Plaquemines Parishes, Louisiana (2009)

IER #14 – Lake Pontchartrain and Vicinity, Westwego to Harvey Levee, Jefferson Parish, Louisiana (2008)

IER #15 – Lake Cataouatche Levee, Jefferson Parish, Louisiana (2008)

IER #17 – Company Canal Floodwall, Jefferson Parish, Louisiana (2009)

5. PUBLIC CONCERNS

The greatest area of public concern is related to the importance of reducing the risk of hurricane, storm, and flood damage to businesses and residences, and providing for public safety during major storm events. Additionally, Jefferson Parish is responsible for the safety of pump operators during major tropical storm events. Without the appropriate stormproofing measures at manned pump stations, pump station operators must be evacuated to a location that would help ensure their safety during and immediately following the storm event.

6. DESCRIPTION OF THE PROPOSED ACTION

This proposed project consists of stormproofing up to a total of 21 existing pump stations and associated structures within the Hurricane Protection System (HPS) in Jefferson Parish. Each pump station is slightly different and thus different stormproofing activities are proposed for each site. Table 1 contains a summary of the proposed actions for each pump station. The following paragraphs provide a detailed description of each of the proposed actions. A detailed breakdown of the proposed action at each pump station is described in Appendix A.

6.1 Frame, Walls, and Roofs – The frames, walls and roofs of some pump stations would be strengthened to resist wind speeds up to 140 mph (Figure 4). This work involves: upgrading the steel frame, retrofitting the insulated metal panel walls, and retrofitting the steel joists with corrugated metal deck roofing. If the pump station has a flood control perimeter wall, it would be assessed for water tightness. Work to strengthen components to resist wind speeds up to 156 mph may involve the features discussed above in addition to some or all of the following: a structural analysis of the reinforced and precast/prestressed frame, upgrading the steel frame, raising the flood control perimeter wall, reinforcing masonry or precast concrete walls, retrofitting the steel joists with acoustical metal deck roofing, and retrofitting the roof material (Figure 4).

Table 1: Summary of the proposed actions at the 21 existing pump stations throughout Jefferson Parish, Louisiana

	Pump Station	Frame	Walls	Roof	Louvers, Doors, Windows	Ventilation	NPW System	Trash Rakes	Fuel System	Pumps	Electrical Equipment	Standby Power	House Power	SCADA Systems	CCTV	Access Roads	Safe Rooms	Other	HTRW	Climber Screens
East Bank	Bonnabel [a]	X	X	X	X	X	X	X	X	X	X	X	X				X			X
	Canal Street [a]	X	X	X	X	X	X		X		X	X		X	X					X
	Duncan [a]	X	X	X	X	X		X	X	X	X	X	X				X			X
	Elmwood No.1 [a]	X	X	X	X	X	X	X	X	X	X	X	X				X			X
	Elmwood No.2 [a]	X	X	X		X				X	X	X	X							
	Parish Line [a]	X	X	X	X	X	X			X	X	X								
	Suburban No.1 [c]	X	X	X	X	X		X	X		X	X	X				X	X		X
	Suburban No.2 [a]	X	X	X	X	X	X			X	X		X							
West Bank	Ames [c]	X	X	X	X	X	X	X	X	X	X	X	X				X	X		X
	Bayou Segnette No.1 [c]	X	X	X	X	X			X		X		X	X	X					X
	Bayou Segnette No.2 [a]	X	X	X	X	X	X		X		X		X		X		X			
	Cataouatche No.1 [b]						X		X		X	X	X			X		X		X
	Cataouatche No.2 [c]	X	X	X	X	X			X		X		X							X
	Cousins No.1 [c]	X	X	X	X	X	X	X			X	X	X	X	X			X		X
	Cousins No.2 [c]	X	X	X	X	X	X	X	X	X	X	X		X	X					X
	Cousins No.3 [c]	X	X	X	X	X			X	X	X	X		X	X		X			
	Estelle No.1-1 [b]												X	X						X
	Estelle No.1-2 [b]								X	X	X	X		X	X					X
	Estelle 2 [a]		X	X	X	X			X		X									X
	Harvey [a]	X	X	X	X	X	X	X	X	X	X	X	X	X	X					X
	Hero No.1 [c]	X	X	X	X	X	X	X	X		X		X					X	X	X
	Hero No.2 [c]	X	X	X	X	X	X		X		X			X				X		X
	Highway 90 [b]									X	X	X		X	X					
	Mount Kennedy [b]						X			X	X	X		X	X					X
	Planters No.1 [c]	X		X	X	X	X	X	X		X							X		X
	Planters No.2 [c]	X	X	X	X	X		X		X	X	X								X
	Westminster [a]	X	X	X	X		X				X		X					X		
	Westwego No.1 [c]	X		X	X	X	X		X		X		X	X	X					X
	Westwego No.2 [c]	X	X	X	X	X	X		X		X	X	X						X	X
	Whitney Barataria [c]	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X		

a. Frame, walls, and roof reinforced to withstand wind speeds up to 156 mph b. No structural hardening would be done at these pump stations. c. Frame, walls, and roof reinforced to withstand wind speeds up to 140 mph. HTRW issues at the pump stations will be avoided as they do not interfere with construction. (Paragraph 8.15)

Figure 4: Features of Planters pump station proposed for stormproofing to resist wind speeds up to 140 mph: (1) roof, (2) window, and (3) coiling door.

6.2 Louvers, Doors, and Windows - To minimize impacts from wind driven projectiles and rain, all existing windows would be removed and replaced with wall construction; coiling doors would be reinforced, exterior doors would be replaced with heavy duty hollow metal doors and louvers would be replaced with hurricane type louvers (Figure 5).

6.3 Ventilation - The ventilation systems would be enhanced and protected by providing automatically controlled dampers, ventilation fans, new power roof ventilators, missile barriers for fan openings, and hurricane type louvers.

6.4 Non-Potable Water (NPW) System – At some pump stations, the NPW system would be protected by raising the well's electrical controls and equipment boxes above the station's operating floor and enclosing them in a stormproof cabinet or box. Screen barriers would be added over the well openings to prevent debris entering during flood conditions. At some stations, a booster pump would be installed to increase the city's water supply pressure and create adequate pressure to cool bearings. To backup the existing NPW system at some stations, canal water pumps would be added.

Figure 5: Bonnabel pump station is proposed for stormproofing to resist storm force winds. Features include: (1) precast concrete walls (2) windows

At Canal Street and Planters 1, a well would be added to backup the existing NPW system. The current NPW system uses either city water or filtered canal water to lubricate the pump bearings during operation. Well water would be provided for those times when the city water connection is lost or the canals become filled with salt water. If the city water connection is lost or the canals become contaminated with salt water, the operators will switch over to well water. The anticipated frequency of well water use is approximately once every ten years. The increase in water temperature passed over the bearings would be below the ability to measure since less than 0.014% of the discharged water is used to lubricate the bearings. New wells would be constructed on pump station property. All excavated material would be disposed of legally at a proper disposal facility.

In New Orleans after Hurricane Katrina, pump bearings were lubricated with salt contaminated canal water. This damaged many pump bearings resulting in repair costs that exceeded $15 million and a loss of pumping power while the bearings were replaced. The main purpose of providing the wells is to prevent such damage in the future. The cost to provide the wells is significantly lower than the cost to repair bearings.

6.5 Fuel System – Fuel filtration, containment for bulk storage tanks, fuel day tanks, fuel transfer pumps, and additional bulk fuel storage tanks would be installed (Figure 6). Containment for bulk fuel storage tanks would consist of berms; the location and type would be determined during the design phase of this project. The design would be fully compliant with all applicable regulations. To protect against flooding and flying debris, external fuel day tanks and transfer pumps would be relocated inside the pump station and the fuel piping would be rerouted. Vertical tanks would be removed and replaced with horizontal tanks.

6.6 Trash Rakes - The controls, motors and disconnects for the mechanical trash rakes and other miscellaneous mechanical equipment would be raised above the operating floor.

Figure 6: Bulk fuel storage tank and fuel system containment structure.

6.7 Pumps – To prevent water infiltration, the recessed gear pits at the horizontal pumps and adjacent doors would be waterproofed and the diesel engine air inlets and air cooled radiators would be elevated above the operating floor level. To protect against projectiles, missile barriers would be provided for vertical pump motors.

6.8 Electrical Equipment – Weather protection would be provided for the indoor switchgear. Missile barrier protection would be provided for exterior electrical equipment. Exterior lighting and wet location interior lighting would be reinforced or provided. Multilin motor protection relays would be standardized for all electric driven pump motors. For flood protection, platforms would be constructed to elevate utility transformers, and switchgear batteries. Electrical equipment enclosures would be raised above the operating floor. Watertight threaded conduits, fittings, and boxes would be provided below the operating floor and on the building exterior.

6.9 Standby Power – Missile barriers would be provided to protect the outside radiators, air intakes, and outside gensets from flying debris during storms with high wind conditions. Dual standby supplies for electric pump power would be provided.

6.10 House Power – A redundant house power genset, automatic transfer switch for house power, and associated wiring would be provided. New redundant power (generators) for the safe rooms would be provided at Bonnabel, Duncan, Elmwood 1, Suburban 1, Ames, Bayou Segnette 2, Cousins 3 and Whitney Barataria (Figure 7).

6.11 Supervisory Control and Data Acquisition (SCADA) System – Replace the existing programmable automation control (PAC) remote terminal units with Allen Bradley PAC to standardize monitoring and control systems at Jefferson Parish pump stations (Figure 8). To allow remote operation and monitoring from the safe rooms diesel engine and electric motor driven vertical pumps and their ancillary systems, including but not limited to, well pumps, fuel pumps, air compressors, vacuum pumps, mechanical rake-type trash screens, and emergency generators would be added to the Allen Bradley PAC system. SCADA systems, including fiber optic lines or microwave towers, would be installed to allow for remote operation of pump stations without safe rooms. The fiber optic lines would run from one pump station without a safe room to another station's safe room (Appendix B). These lines would be buried within HDPE conduit along the canal banks. The length of fiber optic cable under Option 1 would be approximately 6.4 miles and Option 2 would be 9.7 miles (Table 2).

Based upon cost, length of cable required and impacts on the surrounding natural and human environment, Option 1 was deemed to have the least impact and will be implemented as part of the stormproofing activities.

Figure 7: Bonnabel safe room generator

Figure 8: Allen Bradley programmable automated controller that allows remote operation of equipment from the safe room.

6.12 Closed Circuit Television (CCTV) – Installation of CCTV cameras and interfacing with head-end equipment would provide visual and audio monitoring of critical equipment from the safe room.

Table 2: List of Jefferson Parish pump stations without safe rooms that would be linked through fiber optic cable or microwave tower to stations with safe rooms for remote operation and the length of fiber optic cable.

Pump Station without Safe Room	Pump Station with Safe Room	Cable Length Option 1	Cable Length Option 2	Habitat
Highway 90	Lake Cataouatche	3.6 miles	3.5 miles	Canal bank
Westwego No. 1	Westwego No. 2	0.5 miles	1.4 miles	Canal bank
Harvey	Cousins	0.9 miles	None	Canal bank
Estelle No. 1	Estelle No. 2	1.3 miles	1.4 miles	Canal bank
Mt. Kennedy	Ames	0.1 miles	None	Canal bank/access road
Canal St.	Bonnabel	Microwave tower	3.4 miles	Lakeshore and canal bank

6.13 Access Roads - The access road into the Lake Cataouatche 1 pump station would be elevated and drainage installed to allow access to the station during and immediately following major storm events. The road, which is approximately 2.8 miles long, would be raised 2 feet, utilizing an estimated 8,000 cubic yards (CY) of limestone aggregate and 38,000 CY of dirt acquired from a commercial source. This raise would increase the road footprint by no more than 6' on each side; however the footprint will remain within the existing Right of Way (ROW).

Figure 9: Bonnabel safe room (1) fuel tank, (2) pump and motor would be elevated and secured to protect from flooding.

6.14 Other – The walls of the pump pit would be raised and the openings would be sealed and protected.

6.15 Safe Rooms – Conduits from the station to the safe room would be replaced with rigid galvanized steel conduits. The safe room fuel tank, pump, and motor would be moved and

protected against flooding (Fig. 9).

6.16 Climber Screens - Climber screens, fully automated trash rakes that remove most debris that stacks up against pump intakes during operation, would be added. Without climber screens, pump operators must manually remove debris and debris jams from machinery. Debris removal maintains pumping efficiency and keeps pumps from failing from overheating. The order of construction of the climber screens scheduled for installation at the pump stations will be constructed sequentially until the programs funds are expended.

6.17 Construction Sequence - In order to minimize the impact on the drainage pumping capacity, the following projects would be built in a phased construction approach. These projects would probably be awarded sequentially beginning at the top of the proposed list and proceeding until all appropriated funds have been expended. During the execution of the stormproofing program, this construction sequence plan may be adjusted if operational, engineering, or funding concerns developed. Within the projects currently programmed to be within available funding amounts, adjustments to bidding schedules may occur.

The 4th and 6th Supplementals provided discrete funding amounts. Most of the stormproofing measures indentified for Jefferson Parish are likely to be constructed given these funding amounts. The current budget includes costs for planning, engineering, project management, and construction as well as an allowance for escalation, inflation and unforeseen construction issues. These projects have also been sized to create projects that will appeal to more contractors in order to develop more interest and competition with the goal of achieving lower construction costs. These projects have also been sequenced in order to build as much of the Jefferson Parish identified stormproofing needs to the greatest extent possible within the funding constraints of the 4th and 6th Supplementals.

The proposed Construction Plan and associated sequencing was coordinated and developed in detail with the Jefferson Parish Drainage Department. The following is the proposed Construction Plan for the remaining Jefferson Parish stormproofing program in the order that these projects would be awarded and constructed.

Projects JSP-02, JSP-05, JSP-06, and JSP-07 provides stormproofing to the majority of the larger stations on both the on the West Bank and the East Bank. These four stormproofing projects account for approximately 56% of the total pumping capacity in Jefferson Parish (see pump station capacities below).

JSP-02: Stormproofing Mount Kennedy Pump Station

JSP-05: Stormproofing Westwego No. 2, Estelle No. 2, Hero, Cataouatche, and Planters Pump Stations

JSP-06: Stormproofing Ames and Duncan Pump Stations

JSP-07: Stormproofing Bonnabel and Suburban Pump Stations

Projects JSP-08, JSP-09, JSP-10, and JSP-11 provides stormproofing to the remaining larger stations on both the on the West Bank and the East Bank. These four stormproofing projects account for approximately 41% of the total pumping capacity in Jefferson Parish (see pump station capacities below).

JSP-08: Stormproofing Cousins and Elmwood Pump Stations

JSP-09: Stormproofing Bayou Segnette and Whitney Barataria Pump Stations

JSP-10: Stormproofing Westminster and Parish Line Pump Stations

JSP-11: Stormproofing Canal Pump Station and Climber Screen

Projects JSP-12, JSP-13, JSP-14, and JSP-15 are the final pump station stormproofing projects on the list. All four stations are on the West Bank and except for Highway 90 pump station, are within drainage basin areas that have pump stations that have been stormproofed earlier in the program. These four stormproofing projects account for only 3% of the total pumping capacity in Jefferson Parish (See pump station capacities below).

JSP-12: Stormproofing Highway 90 Pump Station

JSP-13: Stormproofing Estelle No. 1 Pump Station

JSP-14: Stormproofing Harvey Pump Station, and Climber Screen

JSP-15: Stormproofing Westwego No. 1 Pump Station and Climber Screen: This project provides for stormproofing the Westwego No. 1 pump station and providing climber screens. The climber screens are needed because this station has no operator during a storm event. However, Westwego No. 1 is one of two pump stations that serve the Westwego drainage basin area and provides a relatively small portion of the total pumping capacity for the area. Flow that normally goes to this station can be diverted to Westwego No. 2 and therefore the need to stormproof this station is less. If construction costs do not escalate and the bidding environment is favorable this project can be constructed within the available funding. However, if actual costs come in above the current estimates, funding may not be available to complete this project.

The last project (JSP-16) in the program provides for climber trash screens to be added to a number of the previously stormproofed stations for operational improvement and operator safety. Based on current projection of project construction costs, JSP-16 appears to be beyond the current available project funding. Therefore, these stations may continue to require the removal of trash from the intake basins through current means rather than automated trash screens. For this project, these stations either have operator presence at the station, operator presence at an adjacent station, or are remotely controlled, therefore making the installation of these climber screens less necessary for the pump station to operate during and after storm events.

JSP-16: Climber Screens Projects:

This project provides for installing climber screens at the following pump stations:

Ames
Bonnabel
Cousins
Elmwood No. 1
Hero
Planters
Westwego No. 2
Bayou Segnette
Cataouatche
Duncan
Estelle No. 2
Mount Kennedy
Suburban No. 1

Jefferson Parish Pump Stations – Capacities				
Basin No.	Basin Name	Basin Capacity (cfs)	Pump Station	Pump Station Capacity (cfs)
East Bank Total Pumping Capacity 20,250 cfs				
1	Bonnabel	3910	Bonnabel	3750
			Canal St.	160
2	Suburban	5040	Suburban	5040
3	Elmwood	5600	Elmwood	5600
4	Duncan	5700	Duncan	4800
			Parish Line	900
West Bank Total Pumping Capacity 25,495 cfs				
5	District No. 9	9362	Hero	3852
			Planters	2360
			Whitney Barataria	3150
6	Harvey	6620	Cousins	5660
			Harvey	960
7	Estelle	1240	Estelle No. 1	100
			Estelle No. 2	1140
8	Ames	3631	Ames	1930
			Westminster	1200
			Mount Kennedy	501
9	Westwego	1236	Westwego No. 2	936
			Westwego No. 1	300
10	Bayou Segnette	2156	Bayou Segnette	2156
11	Avondale	1100	Cataouatche	1100
12	Waggaman	150	Highway 90	150
Jefferson Parish Total Drainage Pumping System Capacity 45,745 cfs				

7. ALTERNATIVES TO THE PROPOSED ACTION

Two alternatives to the proposed action were considered. These alternatives were: No-Action and Non-Structural.

7.1 No Action Alternative

The President's Council on Environmental Quality (CEQ) regulations and USACE's ER for implementing NEPA require that a no action alternative be evaluated. Under the no-action alternative, the proposed action would not be constructed by the MVN. Immediately prior to a severe storm reaching Jefferson Parish, the pump operators would be evacuated to one of the 13 existing safe rooms or to another secure location. A total of 15 pump stations could be operated during severe storms because 13 stations have safe rooms and 2 have remote operation capabilities. The six remaining pump stations without safe rooms or automation would remain inoperable during the passage of the storm, and would only come online when conditions were safe for the pump operators to return to the stations. The 15 pump stations would remain operational until flood waters reached the mechanical and electrical motors and equipment near the operating floor. If flood waters reached this height, all 21 pump stations would be rendered inoperable.

7.2 Non-Structural Alternative

Section 73 of the Water Resources Development Act of 1974 requires that nonstructural alternatives be evaluated in flood damage risk reduction studies. The Planning Guidance Notebook (Engineering Regulation (ER) 1105-2-100) provides guidance on applicable nonstructural measures. Nonstructural flood damage reduction measures typically include raise in place, permanent relocation, evacuation, or demolition of structures in the floodplain, flood proofing, flood warning systems, and regulation of floodplain uses.

7.2.1 Raise in Place

Raise in place flood proofing would require elevating all residential and commercial properties subject to flooding in the study area above the expected levels of flooding. This option of the Non-structural Alternative would also have to consider elevating roadways, public buildings, and some forms of public infrastructure that need to continue operations during and after a storm event. Some facilities, such as roadways, railroads, and runways might remain at grade when repair from storm damage would be less costly than the construction, operation, and maintenance of them on elevated structures. The average cost of elevating residential structures in the study area has been estimated at approximately $95 per square foot (USACE 2007b). This includes the cost of administration, design, inspection, cost estimating, project management, and all other associated costs of elevating the structures as well as the costs of the occupants of the residential structures being relocated to temporary housing during the time period that the structures are being elevated. There were approximately 184,000 homes in the east and west banks of Jefferson Parish and 20,000 homes in St. Bernard Parish that were damaged by flooding from Hurricane Katrina (U.S. Department of Housing and Urban Development [HUD] 2006). At $95 per square foot, the cost to raise the average 1,600-square-foot residence above the expected level of flooding would be approximately $152,000. Based on this figure, the raise in place option of the Non-Structural Alternative would cost $27.9 billion in Jefferson Parish.

Other costs associated with flood proofing would include elevating non-residential buildings, roads and railroads, and other infrastructure. No information is available on the cost of elevating commercial, industrial, and public buildings because these buildings are so non-homogeneous that information would have to be developed for each individual building. However, it can reasonably be expected that it would easily double the costs of elevating the residential structures and bring the total to more than $40 billion.

No information is available on the costs for elevating other infrastructure such as electrical distribution and transmission grids, gas distribution lines, drainage, sewage and water distribution facilities, communication networks, public transit, and waterborne navigation facilities. However, the estimated costs of elevating all flood-damaged properties in the study area would likely exceed $50 billion, which would be much more than the costs of other structural alternatives. Therefore, this alternative was eliminated from further consideration.

The average annual cost of implementing nonstructural measures, such as flood proofing by raising individual homes and businesses within Jefferson Parish, exceed the projected average annual benefits and the amount allocated to this project. Flood warning systems and evacuation plans are already in place in Jefferson Parish. Therefore, the non-structural alternative was eliminated from further consideration.

8. ENVIRONMENTAL SETTING

8.1 General

The project covers 21 existing pump stations in Jefferson Parish, Louisiana, on both the east and west bank of the Mississippi River. The land at each of the 21 pump stations and canal banks where modifications are proposed is developed with structures, gravel and concrete roads, and mowed grass. Even those pump station in relatively isolated areas, such as Lake Cataouatche, are within the Jefferson Parish storm drainage system and are located on maintained canal banks (Figure 10).

Figure 10: Lake Cataouatche pump station and surrounding habitat.

8.2 Climate

Extreme rainfall events are common along the Gulf Coast. Even non-tropical rainfall events can be extremely damaging. In Metropolitan New Orleans on the night of May 8, 1995, 12.4 inches of rain was recorded at New Orleans International Airport, and a maximum of 24.5 inches of rain was reported from May 8 – 10, in Abita Springs, Louisiana (Ricks et al. 1997). The rainfall event lasted 40 hours and damaged 44,500 homes and businesses (Ricks et al. 1997).

Tropical storms and hurricanes typically produce the highest wind speeds and greatest rainfall events along the Gulf Coast (National Hurricane Data Center 2007). Category 5 hurricanes, such as Hurricane Camille which made landfall just east of New Orleans on August 17, 1969, generate the highest sustained wind speeds in the region (greater then 155 miles per hour) (Blake et al. 2007). The high winds are typically accompanied by massive storm surge which can exceed 18 feet (Blake et al. 2007). Between 1926 and 2005, a total of 10 hurricanes have made landfall in Jefferson Parish, Louisiana (National Hurricane Center 2007). The frequency of hurricanes is greatest between August and October; however, hurricane season is from 1 June through 30 November (National Climate Data Center 2007). Prior to Hurricane Katrina in 2005, Hurricane Betsy, making landfall on September 9, 1965, was the most damaging tropical event in Metropolitan New Orleans. Hurricane Betsy caused a storm surge of 10 feet, flooding large parts of the city, claiming 81 lives and causing $1 billion in damage (Blake et al. 2007).

8.3 Geology

The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS) and the Soil Survey of Jefferson Parish, Louisiana has soil data for the areas where the 21 pump stations are located (USDA-SCS 1983). Soil types found at the pump stations include Kenner muck; Kenner muck drained; Barbary muck; Harahan clay; and Westwego clay. Kenner muck and Kenner muck drained are level, poorly drained organic soils with a high total subsidence potential. Barbary muck, Harahan clay, and Westwego clay are level, poorly drained mineral soils with medium to high total subsidence potential (USDA-SCS 1983). Although Harahan clay is classified as a prime farmland soil, the areas where construction is taking place is not utilized for farmland.

8.4 Important Resources

This section contains a description of important resources that could potentially be impacted and the impacts of the proposed action on these resources. The important resources described in this section are those recognized by: laws, executive orders, regulations, and other standards of national, state, or regional agencies and organizations; technical or scientific agencies, groups, or individuals; and the general public.

The important resources described in this section are non-wetland/upland, wildlife, endangered or threatened species, cultural resources, recreational resources, aesthetics, noise, air quality, social and economic, and transportation. Water quality, essential fish habitat (EFH), fisheries, wetlands and water bodies are institutionally and technically important resources. However, project activities are occurring on upland sites.

The water quality of canals and adjacent water bodies (*i.e.*, the Lake Pontchartrain and Barataria basins) as affected by the operation of pumps would continue as normal for rain fall and storm events. The occasional use of added canal water pumps and NPW wells when existing systems are not functioning would have little impact. Standards for construction and operation and State of Louisiana permits are in place to regulate and monitor water quality of the drainage basins. Therefore, these resources will not be evaluated further.

8.5 Non-wetland Resources / Upland Resources

These resources are institutionally important because of the Food Security Act of 1985, as amended; the Farmland Protection Policy Act of 1981; and the Fish and Wildlife Coordination Act of 1958, as amended. These resources are technically important because of the habitat provided for both open and forest dwelling wildlife, and the provision or potential for provision of forest products and human and livestock food products. These resources are publicly important because of their present economic value or potential for future economic value.

8.5.1 Existing Conditions - All of the proposed stormproofing features are located along canal banks, immediately adjacent to pump stations and levees, or inside existing structures. The vegetation at these sites is maintained turf grasses. There is woody vegetation in the form of scrub/shrub and forested wetlands adjacent to the canal banks and access roads.

8.5.2 Future Conditions with No Action - No change in upland resources would occur under this alternative because stormproofing features and additional automation would not be constructed. There would be no direct or indirect impacts to upland resources under the No Action plan.

8.5.3 Future Conditions with the Proposed Action – Uplands including canal banks and pump station grounds would be directly impacted by the proposed action. However, all areas to be disturbed are regularly mowed and planted with turf grasses. No upland habitats that are rare or unique would be directly or indirectly impacted as a result of the proposed action, and no woody vegetation would be removed.

At the Lake Cataouatche station, the elevation of the access road will increase the footprint of the road by no more than 6' on each side. The increase is within the existing ROW and will directly impact previously disturbed areas.

8.6 Wildlife

This resource is institutionally important because of the Fish and Wildlife Coordination Act of 1958, as amended, and the Migratory Bird Treaty Act of 1918. Wildlife resources are technically important because they are a critical element of many valuable aquatic and terrestrial habitats, they are an indicator of the health of various aquatic and terrestrial habitats, and many species are important commercial resources. Wildlife resources are publicly important because of the high priority that the public places on their aesthetic, recreational, and commercial value (Louisiana Department of Wildlife and Fisheries 2005).

8.6.1 Existing Conditions - The habitat directly adjacent to the pump stations is disturbed and dominated by turf grass (Fig. 10). The majority of pump stations are located in urban and semi-urban areas though a few such as Lake Cataouatche are more rural. Several areas managed for wildlife, such as Jean Lafitte Historic Park and Bayou Segnette State Park, are located near these more rural stations. However, the majority of wildlife species that would be present near the pump stations are disturbance adapted species.

8.6.2 Future Conditions with No Action – No direct or indirect impacts to wildlife would be anticipated under this alternative. Current management practices would continue unchanged on all nearby managed areas.

8.6.3 Future Conditions with the Proposed Action – Construction noise may indirectly impact wildlife in surrounding areas. However, the temporary nature of construction activities located on the mowed pump station grounds and canal banks occurring during daylight hours would minimize impacts. Additionally, routine testing of new generators would be a minimal change in normal pump station operations. Current management practices would continue on nearby managed areas. Wildlife would avoid the area during construction, but would return after construction has ended.

8.7 Threatened and Endangered Species

This resource is institutionally important because of the Endangered Species Act of 1973, as amended, the Marine Mammal Protection Act of 1972, and the Bald Eagle Protection Act of 1940. Threatened and Endangered (T&E) species are technically important because the status of such species provides an indication of the overall health of an ecosystem. These species are publicly important because of the desire of the public to protect them and their habitats.

8.7.1 Existing Conditions - Six federally endangered and four federally threatened species have been found within Jefferson Parish (Table 3).

Table 3: List of federally T&E species that may occur in or adjacent to the project areas.

Common Name	Scientific Name	Status
Brown pelican	*Pelecanus occidentalis*	Endangered
West Indian manatee	*Trichechus manatu*	Endangered
Hawksbill sea turtle	*Eretmochelys imbricate*	Endangered
Kemp's ridley sea turtle	*Lepidochelys kempii*	Endangered
Leatherback sea turtle	*Dermochelys coriacea*	Endangered
Pallid sturgeon	*Scaphirhynchus albus*	Endangered
Green sea turtle	*Chelonia mydas*	Threatened
Loggerhead sea turtle	*Caretta caretta*	Threatened
Piping plover	*Charadrius melodus*	Threatened
Gulf sturgeon	*Acipenser oxyrinchus desotoi*	Threatened

The Brown Pelican (*Pelecanus occidentalis*) was observed in Lake Pontchartrain during the February 2007 survey of the proposed safe room locations for a previous EA (#454), however they were not observed during the June 2008 site visit to Bonnabel Pump Station. None of the other species, or suitable habitat to support any listed species, was observed at the proposed sites or along canal banks during the February 2007 survey. Currently, Gulf Sturgeon (*Acipenser oxyrinchus desotoi*) has critical habitat designated within Jefferson Parish (U.S. Fish and Wildlife Service (USFWS) 2003). The Gulf Sturgeon's designated critical habitat is along the south shore of Lake Pontchartrain in eastern Jefferson Parish. The Bonnabel Pump Station is adjacent to waters designated as Gulf Sturgeon critical habitat.

On August 9, 2007, the Bald Eagle (*Haliaeetus leucocephalus*) was removed from the federal list of T&E species. It remains protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (USFWS 2007a, 2007b). The Bald and Golden Eagle Protection Act prohibits unregulated taking of Bald Eagles which has been defined to include disturbance (USFWS 2007c).

In Louisiana, the bald eagle typically nests from October to mid-May. Following nesting activities in autumn, egg laying/incubation and hatching/rearing of young typically occur between fall and spring, with fledging of young as early as January and typically by mid-May (USFWS 2007a, USFWS 2007b). Bald eagle nests typically are in mature trees (e.g., bald cypress, sycamore, willow, etc.) near fresh and intermediate marshes or open water. Breeding bald eagles occupy "territories" that they will typically defend against intrusion by other eagles, and that they likely return to each

year. A territory may include one or more alternate nests that are built and maintained by the eagles, but which may not be used for nesting in a given year. Potential nest trees within a nesting territory may, therefore, provide important alternative bald eagle nest sites. In forested areas, bald eagles often select the tallest trees with limbs strong enough to support their nest. Most nests are located in the upper 30 feet of the tree. Shoreline trees or snags located near large water bodies provide the visibility and accessibility needed to locate aquatic prey. Bald eagles are vulnerable to disturbance during courtship, nest building, egg laying, incubation, and brooding. Disturbance during this critical period may lead to nest abandonment, cracked and chilled eggs, and exposure of small young to the elements. Human activity near a nest late in the nesting cycle may also cause flightless birds to jump from the nest tree, thus reducing their chance of survival.

Bald Eagles are known to occur in Jefferson Parish; however, no nests have been noted in the vicinity of any of the pump stations. Bald Eagles, Brown Pelicans, and Piping Plover (*Charadrius melodus*) may forage in water bodies in the immediate vicinity of the pump stations.

8.7.2 Future Conditions with No Action - Under this alternative there would be no direct or indirect impacts hence, no adverse effects to T&E species or critical habitat would occur. There would be no construction or change in condition within the project area.

8.7.3 Future Conditions with the Proposed Action – The pump station grounds and canal banks do not provide suitable habitat to support any listed species. However with implementation of the proposed action, there may be a temporary direct impact on wildlife, including any T&E species utilizing habitat near the pump stations, which may be disturbed by construction noise. This disturbance would cease upon construction completion and wildlife would avoid the area during construction, but would return after construction ended. There could be some indirect minor beneficial effects to aquatic species that could occur with implementation of the proposed action because continuously functioning pump stations would reduce flooding in industrial and residential areas. This would reduce the level of contamination in water pumped into the Lake Pontchartrain and Barataria basins during and following major storm events.

This evaluation was coordinated with and reviewed by the USFWS by fax/email letter dated 24 July 2008. As a result of this review, MVN and USFWS jointly concluded that the proposed action is not likely to adversely affect any T&E species or their critical habitat (USFWS fax dated 24 July, 2008).

8.8 Cultural Resources

This resource is institutionally important because of the National Historic Preservation Act of 1966, as amended, the Native American Graves Protection and Repatriation Act of 1990, and the Archeological Resources Protection Act of 1979, as well as other statutes. Cultural resources are technically important because of their association or linkage to past events, to historically important persons, to design and/or construction values, and for their ability to yield important information about prehistory and history. Cultural resources are publicly important because preservation groups and private individuals support their protection, restoration, enhancement, or recovery (The Parish of Jefferson 2007).

8.8.1 Existing Conditions - Most of the Jefferson Parish pump stations became operational after the 1960s. Westwego No. 1 has a historical plaque commemorating the organization and

reorganization of the drainage district in 1919 and 1949. The February 21, 2006 letter from the Louisiana State Historic Preservation Officer (SHPO) indicates the building was constructed in 1969. The Hero Pump Station is older than 50 years, and therefore potentially eligible for the National Register of Historic Places (NRHP). It has been heavily modified through time and neither the buildings nor the pumps are considered eligible. Therefore, no pump station is considered eligible for the NRHP. This conclusion for Section 106 was coordinated with the Louisiana State Historic Preservation Officer (SHPO) in correspondence dated February 21, 2006. No pump station is considered of historic significance.

Based upon visitation and a visual survey, the area surrounding the pump stations and along canal banks where fiber optic cable installation is proposed has been previously disturbed. There is no indication or expectation of cultural resources either above ground or below ground at these 21 pump stations or along the proposed route of fiber optic cables, and no further investigation is warranted. This conclusion for Section 106 was coordinated with the SHPO in correspondence dated March 7, 2007.

8.8.2 Future Conditions with No Action - Under the No Action alternative, there would be no direct impacts to historic properties. The current potential flooding conditions in all of Jefferson Parish would remain the same. As a result, there is a potential for historic properties, particularly historic structures and objects, to be indirectly adversely impacted by floods if the pumps are not able to operate during severe tropical storm events.

8.8.3 Future Conditions with the Proposed Action - Construction of the proposed stormproofing features and trenching for fiber optics between existing safe rooms and pump stations would occur within previously disturbed areas (e.g., canal banks). These areas have been examined for historical significance and determined by the MVN and SHPO to not be significant. It is anticipated that there would be no direct or indirect adverse impacts to cultural resources resulting from stormproofing activities, additional automation at these locations, or from fiber optic cable installation along the canal banks. The stormproofing would allow for operation of the pumps during storm events, and would reduce the potential for flooding to take place within Jefferson Parish. As a result, historic properties within Jefferson Parish would experience long-term beneficial impacts from the implementation of the proposed action.

8.9 Recreational Resources

This resource is institutionally important because of the Federal Water Project Recreation Act of 1965, as amended, and the Land and Water Conservation Fund Act of 1965, as amended. Recreational resources are technically important because of the high economic value of recreational activities and their contribution to local, state, and national economies. Recreational resources are publicly important because of the high value that the public places on fishing, hunting, and boating, as measured by the large number of fishing and hunting licenses sold in Louisiana, and the large per-capita number of recreational boat registrations in Louisiana (Southwick Associates 2005).

8.9.1 Existing Conditions – Recreational opportunities within the proposed project area include Bayou Segnette State Park, Jean Lafitte National Historic Park and Preserve –

Barataria Unit, Barataria Preserve, Lake Pontchartrain, and over 30 Jefferson Parish parks, playgrounds, and sports complexes. There are several parks adjacent to pump stations where construction activities are proposed. Bayou Segnette State Park is directly adjacent to Bayou Segnette pump station and across the canal from Westwego 1 and 2. Jean Lafitte National Historic Park and Preserve – Barataria Unit is across the canal from Lake Cataouatche, Ames, and Mt. Kennedy pump stations.

Bayou Segnette State Park and Jean Lafitte National Historic Park and Preserve – Barataria Unit, offer a multitude of recreational opportunities. Bayou Segnette State Park offers cabins, camping, fishing, boating, canoeing, swimming and playgrounds. Additionally, the Jean Lafitte National Historic Park and Preserve – Barataria Unit offers boardwalks and hiking throughout its 20,000 acres and encourages canoeing and kayaking through its waterways (National Park Service 2006).

8.9.2 Future Conditions with No Action - Under the No Action alternative, flooding of recreational areas on the east and west banks of Jefferson Parish during severe storms could occur. Flooding would directly limit recreational use during the duration of the flooding episode. Indirect impacts could include potential reduction in the recreational capacity of the area after flood waters recede due to possible damage to park infrastructure.

8.9.3 Future Conditions with the Proposed Action – The proposed fiber optic cable path between Cataouatche and Highway 90 pump stations is adjacent to Jean Lafitte National Historic Park. Duncan, Elmwood, Suburban and Bonnabel Pump Stations are adjacent to parks which line the shores of Lake Pontchartrain including: Linear Park, Williams Boulevard Park, and Retif Park. With implementation of the proposed action, there would be direct temporary impacts on recreational activities as the area is temporarily disturbed and potentially disrupted by construction activities. This disturbance would cease within approximately 4 to 6 months upon the completion of construction. Additionally, the risk of flooding during major storms would be reduced because the Jefferson Parish pumps could operate continuously. Recreational resources may still remain unusable during severe weather events, but damage to park infrastructure from large-scale flooding would be reduced.

8.10 Aesthetics (Visual Resources)

This resource's institutional significance is derived from laws and policies that affect visual resources, most notably the National Environmental Policy Act of 1969, the Coastal Barrier Resources Act of 1990, Louisiana's Natural and Scenic River's Act of 1988, and National and Local Scenic Byway Programs. This resource is technically significant because of visual accessibility to unique combinations of geological, botanical, and cultural features that may be an asset to a project area. Public significance is based on expressed public perceptions and professional evaluation.

8.10.1 Existing Conditions - The aesthetic resources in the vicinity of the proposed action include the architectural character and landscape of surrounding residential areas and natural areas. There are no Louisiana Scenic Rivers Act defined scenic rivers visible from the construction sites (pump stations and canal banks). However, Jean Lafitte National Historic Park, Bayou Segnette State Park, Linear Park, Retif Park, and Williams Boulevard Park are

potentially visible from the construction sites. The pump station buildings consist of industrial-style buildings and structures, paved or graveled areas, and maintained grass areas.

8.10.2 Future Conditions with No Action – Under the No Action Alternative, no change in the aesthetic setting of the pump stations would occur. However, an indirect impact on the aesthetic resources of nearby residential areas could occur as the areas would be susceptible to degradation from flooding.

8.10.3 Future Conditions with the Proposed Action – With implementation of the proposed action, aesthetic resources would be directly temporarily impacted for approximately 7 to 12 months as the presence and transportation of construction equipment and materials would temporarily increase the industrial character of affected areas. Impacts would be minimal because of the temporary nature of construction activities, including the construction of the climber screens, restoration of affected canal banks and vegetated areas to pre-project conditions, and existing industrial elements of the pump stations.

There would be permanent direct impacts with regards to the Canal Pump Station where there is the potential for the installation of a microwave tower for the purposes of remote station operation however; the tower would be located on pump station property in a previously disturbed area. There would be significant direct impacts would occur as a result of the fiber optic cable option for the Canal pump station since it would require road closures, movement of equipment and the installation of the cable. There would be no indirect impacts as a result of the proposed action.

8.11 Noise

This resource is institutionally important because of the Noise Control Act of 1972. Compliance with surface carrier noise emissions is technically important. Exposure of persons to or generation of noise levels in excess of applicable standards is publicly significant.

8.11.1 Existing Conditions - Noise is usually defined as "unwanted sound", and is recognized as an environmental pollutant that can produce physiological or psychological damage and/or interfere with communication, work, rest, recreation, and sleep. Sound is represented on a logarithmic scale with a unit called the decibel (dB). Sound on the decibel scale is referred to as a sound level. The threshold of human hearing is approximately 0 dB, and the threshold of discomfort or pain is around 120 dB.

Sound levels are computed over a 24-hour period and adjusted for nighttime annoyances to produce the Day-Night Average Sound Level (DNL). DNL is the standard community noise measurement recommended for use by the U.S. Environmental Protection Agency (USEPA) and its use has been adopted by most federal agencies (USEPA 1974). A-weighted decibels (dBA) are used to express the relative loudness of sounds in air as perceived by the human ear (Generac Power Systems, Inc. 2004). A-weighting is necessary to compare the effects of sounds on the human body, because the human ear is less sensitive at low frequencies than at high frequencies. A DNL of 65 dBA is most commonly used for noise planning purposes. Areas exposed to DNL above 65 dBA are generally not considered suitable for residential use.

A DNL of 55 dBA was identified by USEPA as a level below which there are effectively no adverse impacts (USEPA 1974).

Noise levels surrounding the project sites are varied depending on the time of day and climatic conditions. The activities potentially causing elevated noise levels within the project corridor would include diesel and gasoline powered generators, trucks, drilling equipment, and operation of construction equipment. Heavy duty trucks generate a noise level of approximately 90 dBA. Attenuation to 55 dBA occurs at a distance of approximately 2,600 ft depending on climatic conditions, topography, vegetation, and man-made barriers (Generac Power Systems, Inc. 2004). Noise levels for other types of construction equipment range from the loudest, tractors and backhoes (70 to 95 dBA) to pumps and generators (65 to 85 dBA) (Bugliarello *et al*. 1976).

8.11.2 Future Conditions with No Action - The No Action Alternative would have no direct or indirect impacts to noise; existing noise levels would remain at their current levels.

8.11.3 Future Conditions with the Proposed Action – Large trucks, portable generators, drilling equipment and tools would result in a direct temporary increase in noise levels during construction. The drilling equipment units would produce approximately 65 dBA of noise and a portable generator produces approximately 65 dBA of noise, depending on the particular manufacturer. Noise generated from the generators, drilling equipment, trucks, and tools would be rapidly attenuated depending on weather/season, nearby vegetation density, and topography. Most installation and transport activities would occur during daylight hours over a course of approximately 7 to 12 months. It is possible that concrete would be poured in the pre-dawn hours to account for the heat restrictions for adequate drying and curing processes. The effects of noise from these construction activities would be minor, localized, and cease upon completion of construction.

With the installation of the climber screens, noise production would be slightly higher than those described for the other stormproofing activities. Additionally, there would be a short term increase in noise as the screens are operated during storm events.

The addition of standby generators would involve some pile driving activities. Pile driving would take place over the course of 2 weeks time, on weekdays during daylight hours only. Given the short duration of the activity, any potential direct impacts would be minimal in nature.

Back up power generators are proposed for safe rooms at Bonnabel, Duncan, Elmwood 1, Suburban 1, Ames, Bayou Segnette 2, Cousins 3, and Whitney Barataria. These generators would serve a backup function and would be run to test components and when needed during power outages. Testing would occur weekly for approximately one hour during daylight hours. Power outages are typically associated with storm events which produce noise and wind that would drown out generator noise.

8.12 Air Quality

This resource is considered institutionally important because of the Louisiana Environmental Quality Act of 1983, as amended, and the Clean Air Act of 1963, as amended. Air quality is technically important because of the status of regional ambient air quality in relation to the National Ambient Air Quality Standards (NAAQS). It is publicly important because of the desire for clean air expressed by virtually all citizens.

8.12.1 Existing Conditions - The Federal Clean Air Act (CAA) requires that all states comply with the National Ambient Air Quality Standards (NAAQS). NAAQS have been developed for seven pollutants which include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO2), ozone (O3), sulfur dioxide (SO2), and two forms of particulate matter (PM10 – particulate matter with a diameter of 10 micrometers or less; and PM2.5 - particulate matter with a diameter of 2.5 micrometers or less).

When ambient air pollution parameters exceed NAAQS, federal and state governments are responsible for implementing an air quality management plan for the air-shed. These air-sheds are called "non-attainment" and "air maintenance" zones. Jefferson Parish is in attainment for all of the seven NAAQS pollutants. A number of parishes west of Jefferson Parish are designated as "non-attainment" areas for the 8-hour ozone standard. These include East Baton Rouge, Ascension, Iberville, and West Baton Rouge parishes.

Air emissions from internal combustion engines produce Volatile Organic Compounds (VOCs) and nitrogen oxides (NOx) which are precursor molecules that react with oxygen in the atmosphere to create ozone. If metropolitan New Orleans experiences a southeast wind, which is common during summer months, air pollution from Jefferson Parish may migrate into the designated non-attainment parishes mentioned above.

8.12.2 Future Conditions with No Action - The No Action Alternative would not require any construction, and therefore would not result in any direct or indirect impacts to air pollution.

8.12.3 Future Conditions with the Proposed Action – Direct temporary increases in air pollution would occur from the use of construction equipment. Operation of construction equipment, portable light generators, and support vehicles would temporarily increase combustible emissions, VOCs; PM-10, NOx, CO, SOx and ozone during the construction phase of the project. Particulate emissions (fugitive dust) would be generated by vehicle trips on unpaved roads, bulldozing, compacting, truck dumping, and grading operations.

Contractors would be instructed to conduct proper and routine maintenance and maintain vehicles and equipment in good operating condition to minimize emissions. These actions would ensure that emissions would be within the design standards of all construction equipment. Standard construction best management practices, such as routine watering of access roads, would be used as a primary means of fugitive dust control.

During the operation of the proposed standby generators and safe room back up power generators, combustible emissions would increase in the vicinity of the pump stations. Because these generators serve to back up existing power, they would be run for

approximately 1 hour weekly for testing and when the main power source goes out. Therefore, direct impacts on ambient air quality would be expected to be minor.

8.13 Social and Economic Resources

Compliance with Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations, is institutionally important. Evaluating all actions to determine if they disproportionately affect low income or minority populations is technically important. The displacement of substantial numbers of existing housing or people is publicly important.

8.13.1 Existing Conditions

Population and Demographics

In July 2005, just prior to Hurricane Katrina, the population of Jefferson Parish was estimated at 448,578 (Greater New Orleans Community Data Center 2007). The population estimate for Jefferson Parish dropped to 411,305 after Hurricane Katrina. By August 2006, the population grew to 434,666 (Greater New Orleans Community Data Center 2007). The 2005 racial mix of Jefferson Parish, prior to Hurricane Katrina, was 66.2 percent Caucasian, 26.7 percent African-American and 3.4 percent Asian, with the remaining 3.7 percent split between American Indians, Alaskan Natives, Native Hawaiians, other Pacific Islanders, and other races (U.S. Census Bureau 2007a). The 2006 data places Jefferson Parish population at approximately 423,520 with a racial mix of 65.7 percent Caucasian, 26.2 percent African-American and 3.6 percent Asian, with the remaining 4.5 percent split between American Indians, Alaskan Natives, Native Hawaiians, other Pacific Islanders, and other races (U.S. Census Bureau 2005-2007 American Community Survey). Jefferson parish challenged this estimate and the U.S. Census Bureau recently concurred that parish population for 2007 had reached 431,350 and with 34.3% comprised of minorities.

Table 4.
Demographics of Jefferson Parish

Year	Total Population	White (%)	African-American (%)	Asian (%)	Other (%)
2005	448,578	66.2	26.7	3.4	3.7
2006	423,520	65.7	26.2	3.6	4.5
2007 **	431,350	65.7	26.2	0.1	4.1

Source: U.S. Census 2008;. **Estimates.

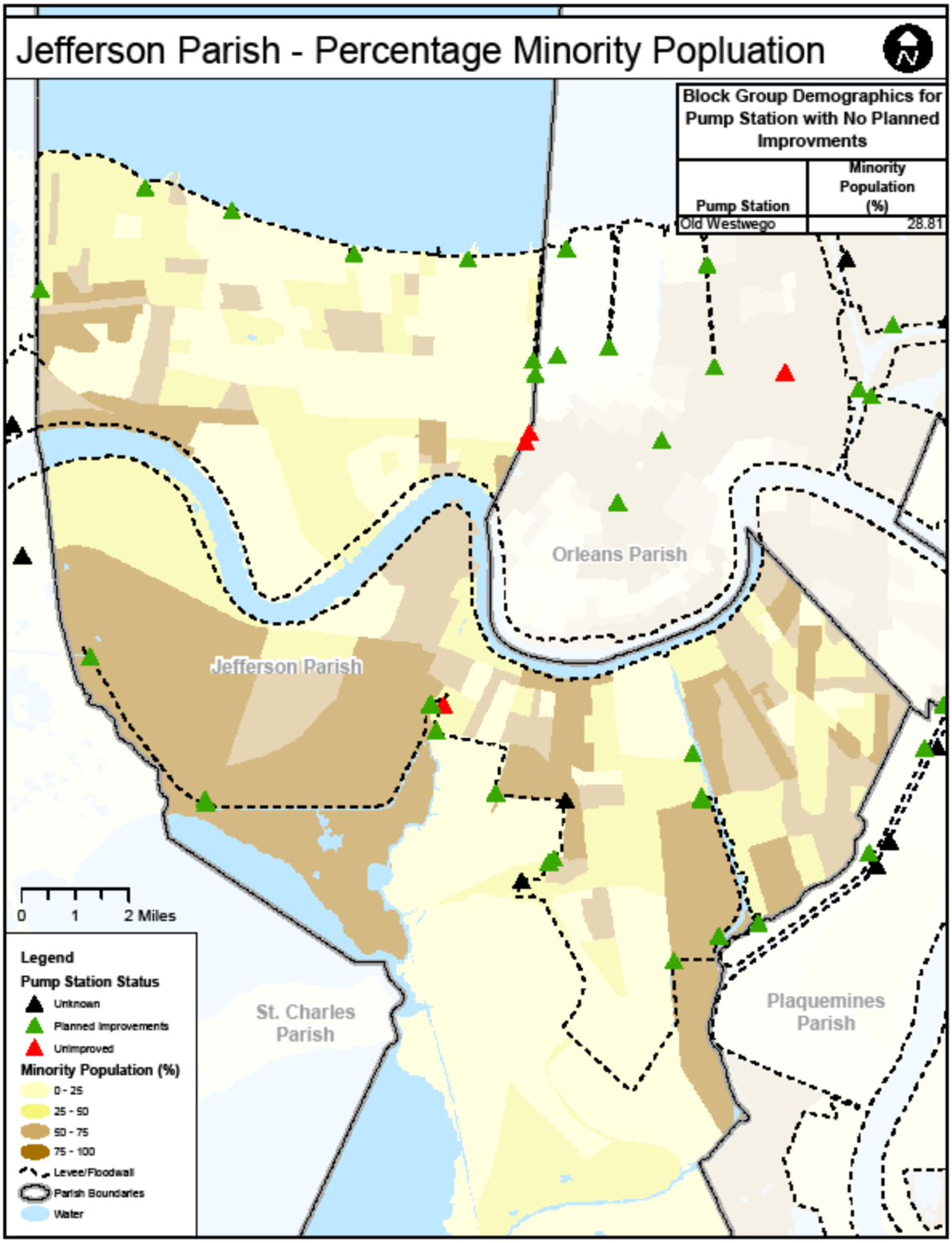

Figure 11. Jefferson Parish Polders and Demographics

Economics

In 2004, 65 percent (231,173 persons) of the total population of Jefferson Parish was in the labor force. In 2004, Jefferson Parish had a per capita personal income (PCPI) of $32,156. This PCPI ranked second in the state of Louisiana, and was 11.8 percent above the state average of $27,297, and 3 percent below the National average of $33,050. The average annual growth rate of PCPI from 1994 to 2004 was 4.3 percent. This average annual growth rate was higher than that for the state (4.0 percent) and the Nation (4.1 percent). In 2004, Jefferson Parish had a Total Personal Income (TPI) of $14.6 billion. This TPI ranked 1st in the state and accounted for 11.8 percent of the state total. The 2004 TPI reflected an increase of 5.7 percent from 2003, which was lower than 2003-2004 state change of 5.9 percent and the National change of 6.0 percent (Bureau of Economic Analysis 2007).

In the 2005-2007 demographic estimates from the Census Bureau, Jefferson Parish had a median household income of $46,498 and a median family income of $57,207. The Census Bureau reports that the 2007 poverty threshold for a family of four is $21,200. The percent of individuals below that poverty level in 2007 was 15.0 percent. These are the most recent economic estimates for the parish.

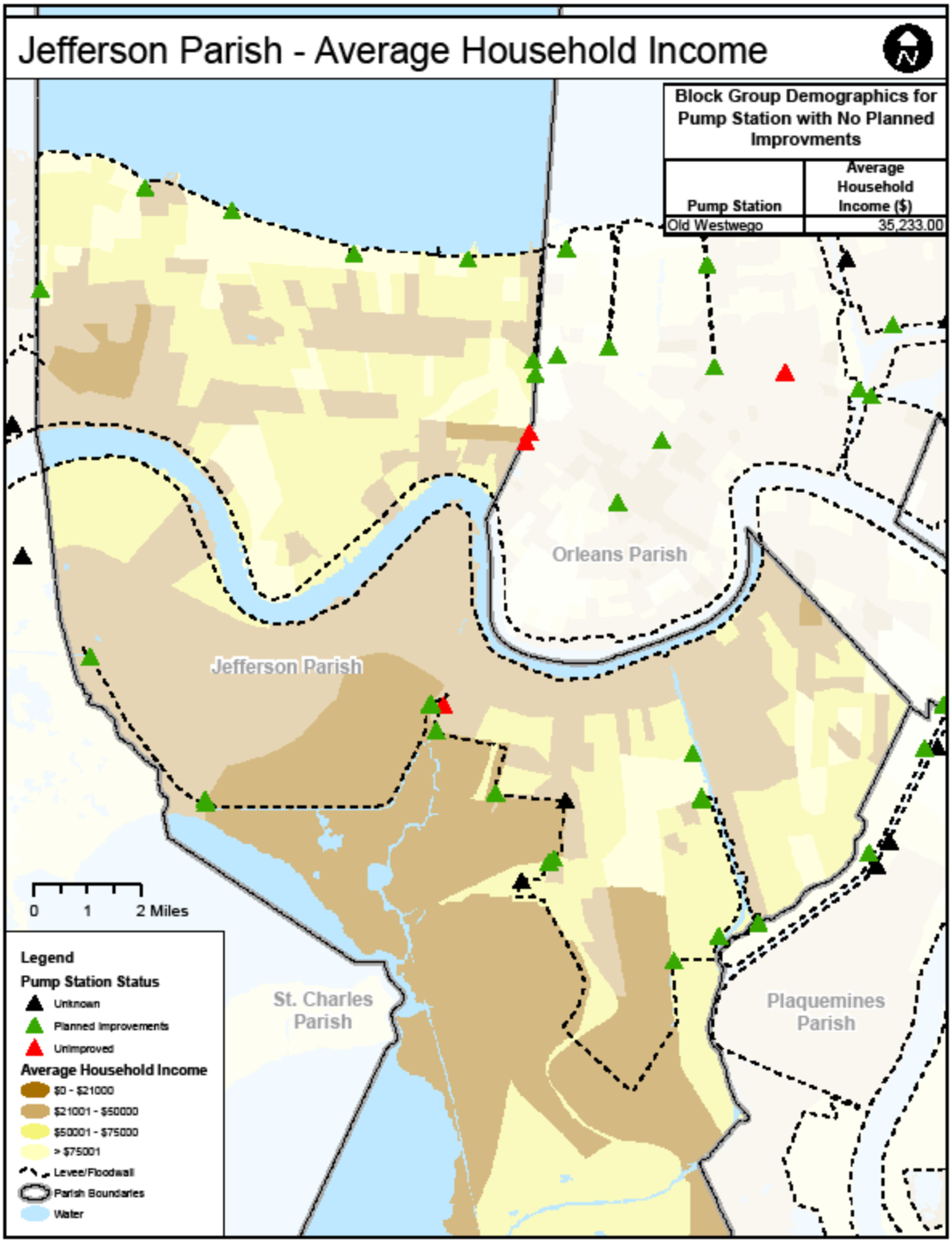

Figure 12. Jefferson Parish Polders and Income.

Housing - Jefferson Parish had a total of 176,234 housing units according to the 2000 U.S. Census Bureau, and an estimated 192,373 housing units in 2005 (U.S. Department of Housing and Urban Development 2006; U.S. Census Bureau 2007a). An estimated 93,872 occupied housing units, 53.3 percent of the total occupied houses, in Jefferson Parish, experienced some damage from Hurricane Katrina.

Environmental Justice

This resource is important because of Executive Order 12898 of 1994 and the Department of Defense's Strategy on Environmental Justice of 1995, which direct Federal agencies to identify and address any disproportionately high adverse human health or environmental effects of Federal actions to minority and/or low-income populations. The Environmental Protection Agency (EPA) defines Environmental Justice as the fair and equitable treatment (fair treatment and meaningful involvement) of all people with respect to environmental and human health consequences of federal laws, regulations, policies, and actions.

In 2007, 34.8 percent of the total population of Jefferson Parish was comprised of minorities. Of the 2007 total population of Jefferson Parish, an estimated 15.0 percent were living at or below poverty levels (U.S. Census Bureau 2007b). Based on the low percentage of low-income and/or minority populations in the parish, the likelihood of disproportionately impacting those citizens is low.

According to the November 2005 CRS Report for Congress, *Hurricane Katrina: Social-Demographic Characteristics of Impacted Areas*, Hurricane Katrina disproportionately impacted poor and minorities, mostly African-Americans, across the three states it impacted (Gabe *et al*. 2005). A total of 272,000 African-Americans were displaced by flooding or damage, accounting for 73 percent of the population affected by the storm (Gabe *et. al*. 2005). Because of the USACE's commitment to fair and equitable treatment this current proposed action has been evaluated for consistency with Executive Order 12898.

The pumps within Jefferson Parish affect a greater basin area than the immediate community block group in which they are located. The impacts that would occur due to pump station failure due to inadequate stormproofing are compared at a basin or polder level for this analysis. Information on the names and locations of these stations are detailed in table 5.

8.13.2 Future Conditions with No Action

Under the No Action Alternative, no additional stormproofing would be undertaken. A total of 15 pump stations could be operated during severe storms because 13 have safe rooms and 2 have remote operation capabilities. Six pump stations would need to be evacuated during a severe storm event and would be inoperable. Of the 21 pump stations, 17 could become inoperable if flood waters reached critical electrical equipment. Therefore, without implementation of the proposed action, the status quo would remain in Jefferson Parish in regards to flood risks.

8.13.3 Future Conditions with the Proposed Action

With the implementation of the proposed action, short-term, direct beneficial economic impacts would occur from construction activities and material purchases during installation of storm proofing features and fiber optic lines. The storm proofing, climber screens, and automation would

provide a better chance for the pump stations to be operated throughout a tropical storm event and would reduce the risk of large-scale flooding in Jefferson Parish. As a result, an indirect impact in the form of a reduction in flood damage costs could be expected from the implementation of the proposed action.

The stormproofing work in the Jefferson Parish area that may not occur due to funding constraints is discussed in sections 6.16 and 6.17 of this document. In summary, stormproofing of Westwego No. 1 pump station and climber screens for Westwego, Ames, Bonnabel, Cousins, Elmwood, Hero, Planters, Westwego No. 2, Bayou Segnette, Cataouatche 1 and 2, Duncan, Estelle No. 2, Mount Kennedy, and Suburban may be beyond current available project funding.

The rationale for sequencing these projects last is that Westwego No. 1 pump station handles only 300 cfs of the 1236 cfs basin capacity, and is within a basin that contains pump stations (i.e. Westwego No. 2) that have been stormproofed earlier in the program. Drainage for the basin would still occur even if Westwego No. 1 was offline during a storm event.

The climber screens would be added to a number of the previously stormproofed pump stations. The screens assist with debris removal that could be manually accomplished by pump operators that are able to stay in adjacent or nearby safe houses during the severe storm time period. Of the thirteen basins served by pump stations that will be stormproofed but may not receive any climber screens only five (Avondale, Bayou Segnette, Estelle, Bonnabel, and Duncan) contain residents living below the poverty threshold. Of those five, three will receive climber screens for other pump stations within the basin. Seven of the basins that may not receive climber screens contain significant minority populations. Of those seven, five will receive climber screens for other existing pump stations.

Please see table 5 for detailed demographic information on the basins served by these pump stations.

The pumping capacity of the pump stations in basins with low-income or minority residents is not negatively impacted by the storm proofing options outlined in this document. The proposed action as discussed in this EA would not disproportionately negatively impact minority or low-income populations in Jefferson Parish.

Table 5. Environmental Justice Storm Proofing Data

Zip Code	Minority Community (25%+)	Low-Income Community (to $21K)	Polder	PS Name	Improved?	Basin	Design Capacity (cfs)
70002			Jefferson East Bank	Bonnabel (1)	Conditional CS	Bonnabel	3750
70005		x	Jefferson East Bank	Canal	Yes	Bonnabel	160
70065	x		Jefferson East Bank	Duncan (4)	Conditional CS	Duncan	4800
70065		x	Jefferson East Bank	Parish Line	Yes	Duncan	900
70003			Jefferson East Bank	Elmwood (3)	Conditional CS	Elmwood	5600
70006			Jefferson East Bank	Suburban (2)	Conditional CS	Suburban	5040
70037	x		Harvey Algiers	Hero	Conditional CS	District 9	3852
70037			Harvey Algiers	Planters 1	Yes	District 9	2360
70037			Harvey Algiers	Planters 2	Yes	District 9	2360
70037			Harvey Algiers	Whitney Barataria	Yes	District 9	3150
70072			Westwego Harvey	Ames	Conditional CS	Ames	1930
70072	x		Westwego Harvey	Mt Kennedy	Conditional CS	Ames	501
70072	x	x	Westwego Harvey	Westminster	Yes	Ames	1200
70094	x	x	Westwego Harvey	Lake Cat 1	Conditional CS	Avondale	1100
70094	x	x	Westwego Harvey	Lake Cat 2	Conditional CS	Avondale	0
70094	x	x	Westwego Harvey	Bayou Segnette	Conditional CS	Bayou Segnette	2156
70058			Westwego Harvey	Estelle 1	Yes	Estelle	100
70058	x	x	Westwego Harvey	Estelle 2	Conditional CS	Estelle	1140
70058			Westwego Harvey	Cousins	Conditional CS	Harvey	5660
70058			Westwego Harvey	Harvey	Yes	Harvey	960
70094	x		Westwego Harvey	Hwy 90	Yes	Waggaman	150
70094			Westwego Harvey	Old Westwego	Conditional	Westwego	300
70094			Westwego Harvey	Westwego 2	Yes	Westwego	936

8.14 Transportation

8.14.1 Existing Conditions – Construction access to the pump station sites is provided by Interstate 10 (I-10) on the east bank and the West Bank Expressway (U.S. 90) on the west bank. Both I-10 and U.S. 90 are limited access, divided highways. Secondary roads, such as Williams Boulevard and Clearview Parkway on the east bank, and Lapalco Boulevard on the west bank provide access between I-10 and US 90. Local 2-lane street networks provide access to the pump stations. Generally, the level of service for 1-10 and U.S. 90, as well as secondary multi-lane roads, includes large volumes of traffic with a high density of vehicles during peak commuting hours.

8.14.2 Future Conditions with No Action – The No Action Alternative would not require any construction, and therefore, there would be no change in traffic flow or patterns.

8.14.3 Future Conditions with the Proposed Action – Transportation of construction equipment and materials would be required during the construction period at each of the 21 pump stations. Minor short-term direct impacts would occur on 2-lane roads and residential streets adjacent to the pump stations over the course of 7 to12 months in the form of increased traffic during daylight hours as equipment is delivered to the pump stations. There are no road closures expected to be associated with the proposed action. Once the stormproofing construction is completed, direct impacts to traffic flow and patterns would return to pre-construction conditions.

8.15 Hazardous, Toxic, and Radioactive Waste

Under Engineer Regulation (ER) 1165-2-132 the reasonable identification and evaluation of Hazardous, Toxic, and Radioactive Waste (HTRW) contamination within a proposed area of construction is required. ER 1165-2-132 identifies the CEMVN HTRW policy to avoid the use of project funds for HTRW removal and remediation activities. Costs for necessary special handling or remediation of wastes (e.g., Resource Conservation and Recovery Act [RCRA] regulated), pollutants and other contaminants, which are not regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), will be treated as project costs if the requirement is the result of a validly promulgated Federal, state or local regulation.

A Phase I ESA, entitled Jefferson Parish Pump Stations, was completed in April 2007 by Gulf South Research Corporation. A Phase I Environmental Site Assessment Update Report: Jefferson Parish Pump Stations East Bank and West Bank Metro Area, Jefferson Parish, Louisiana, was completed on September 24, 2008. These reports will be maintained on file at the CEMVN and are incorporated herein by reference. Copies of the reports are available by requesting them from the CEMVN, or accessing them at www.nolaenvironmental.gov.

8.15.1 Existing Conditions - Overall, none of the sites or corridors contain major environmental risk conditions that would prevent installation of new buildings or equipment, or that would require additional assessments involving soil or groundwater sampling and analysis.

No evidence of Recognized Environmental Conditions (REC) were found on the following properties:

- Bonnabel
- Suburban
- Elmwood
- Duncan
- Parish Line
- Canal Street
- Ames
- Highway 90
- Lake Cataouatche #1 & #2
- Bayou Segnette
- Westminster
- Estelle #1
- Estelle #2
- Hero #1
- Mt. Kennedy
- Cousins
- Harvey
- Whitney-Barataria
- Planter's Canal #1
- Planter's Canal #2
- Westwego #1

The following stations had RECs in the form of oil drums and other storage containers that showed evidence of spills. While these spills are greater than *de minimus*, they are not believed to pose a significant environmental risk to the subject property and could be remediated with minor effort (via removal and disposal of contaminated soils by the local sponsor) or avoided entirely as they are not in the construction area:

- Westwego #2
- Hero #2

The Hero #2 pumping station had a REC in the form of continuing oil contamination of soils around the generator station and the Westwego #2 station had an REC in the form of stained soil around a 55 gallon drum storage area. While these spills are greater than *de minimus*, they are not believed to pose a significant environmental risk to the subject property and could be remediated (via removal and disposal of contaminated soils by the local sponsor) or avoided completely as they are not in the construction area. It is also recommended that the generator relief exhaust piping be modified to collect future oil mist discharges from these motors.

There is an observed difference in operational procedures between pump stations on the east bank and those on the west bank. All of the east bank pump stations store drums of lubricating oil, grease, and paints, as well as containers of used oil and antifreeze under cover in the main pump station building or inside closed storage sheds or containers. This eliminates the possibility of petroleum products leaking or spilling on the bare ground or being impacted by storm water runoff.

Most of the west bank pump stations store new and used oil and lubricants, and sometimes paint containers, on the ground adjacent to other buildings, and all of the minor contamination problems encountered in this assessment are the result of this practice. Additionally, the east bank pump stations normally recycle used oil and other fluids within a short time after they are collected in drums or storage tanks. Some of the west bank pump stations appeared to have an inordinately large amount of used oil on the site in drums, and sometimes open containers, which contributes to the possibility for leakage of used oil onto the ground.

8.15.2 Future Conditions with No Action – Under the No Action Alternative, no additional stormproofing would be undertaken. As a result, six pump stations would need to be evacuated and would be inoperable during a severe storm event. The remaining pump stations would become inoperable if flood waters reached critical electrical equipment. This could result in flooding of RCRA hazardous waste facilities and CERCLIS listed sites on the east and west bank of Jefferson Parish. Floodwaters could potentially carry hazardous wastes stored at RCRA facilities and leachate from Type I and II landfills, contaminating soils and nearby water bodies.

8.15.3 Future Conditions with the Proposed Action – With implementation of the proposed action, the small spills of diesel fuel and lubricating oil at several pump stations would be avoided. The contaminated area will be marked as a no work zone. Fuel and oil storage practices should be improved and future cleanup should be accomplished by the local sponsor.

The proposed action would reduce flooding during major storm events through continuous pump operation. RCRA hazardous waste facilities, Type I and II landfills and CERCLIS listed sites may still receive flood water but the potential for extreme flooding would be lessened and the potential for off-site migration of hazardous chemicals would be minimized.

8.16 Cumulative Impacts

CEQ Regulations define cumulative impacts as

> "The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time."

The Metropolitan New Orleans HPS is divided into three USACE authorized projects:

- Lake Pontchartrain and Vicinity (LPV)
- West Bank and Vicinity (WBV)
- New Orleans to Venice (NOV)

The NOV Project is not discussed further because its alignment is not located within the project area. The LPV Project was authorized by Section 204 of the Flood Control Act of 1965 (PL 89-298 as amended) and currently provides for enlargement of hurricane protection levees along Lake Pontchartrain in Orleans, Jefferson, and St. Charles Parishes and in portions of Orleans and St. Bernard Parishes between the Mississippi River and the Mississippi River-Gulf Outlet (MRGO). The WBV Project was originally authorized by the Water Resources Development Act (WRDA) of 1986 (PL 990-662) and named the Westwego to Harvey Canal Hurricane Protection Project. The WRDA of 1996 modified the project and added the Lake Cataouatche area to the project. WRDA 1996 also authorized the East of Harvey Canal Hurricane Protection Project. WRDA 1999 combined the three projects into a single project under the current name. The project includes the construction and raising of levees, floodwalls, and a flood gate, and is located on the west bank of the Mississippi River in Jefferson, Orleans and Plaquemines Parishes.

Currently, there are a total of 21 pump stations in Jefferson Parish. Many of the pump stations were damaged by Hurricane Katrina, and all of the damaged pump stations are being repaired to pre-Katrina conditions. Prior to Hurricane Katrina, Jefferson Parish maintained and operated the canals and pump stations under its authority on both the east and west banks of the Mississippi river. This included maintenance and upgrades of the existing pump stations and canal maintenance including mowing of vegetation along the banks, clearing of debris, and periodic dredging to insure adequate capacity. Also prior to Hurricane Katrina, Jefferson Parish started construction of several safe rooms at select pump stations. Due to funding issues, none of the safe rooms were completed prior to Hurricane Katrina. In 1997, the MVN entered into a Project Cooperative Agreement with Jefferson Parish to improve drainage under the Southeast Louisiana Urban Flood Control Project authority (SELA). Drainage improvements done by MVN consist of channel improvement projects, increasing existing pump station capacity (Elmwood and Suburban), and constructing new pump

station buildings (Suburban and Cousins).
Since Hurricane Katrina, there has been a substantial amount of proposed infrastructure repair and upgrade in the vicinity of the 21 pump stations. Work is ongoing throughout the New Orleans HPS to increase the level of storm protection. On the east bank, there is a proposal to raise the lakefront levee to provide 100-year hurricane, storm, and flood damage risk reduction. There is also a proposal to repair and modify the west return floodwall in Kenner to improve its stability. On the west bank, levees and floodwalls would be modified, and additional pump station fronting protection and modifications would occur to provide 100-year hurricane, storm, and flood damage risk reduction as part of the proposed WBV Project.

Rebuilding efforts are taking place throughout southeast Louisiana, along the Mississippi River and along the Alabama Gulf Coast. The Insurance Information Institute has estimated that the total insured losses from Hurricane Katrina in Louisiana were $25.3 billion (Insurance Information Institute 2007). Much of this insurance money is being used in the regional rebuilding effort. In Jefferson Parish, it has been estimated that 93,872 occupied housing units experienced some damage from Hurricane Katrina. Although it is unknown how many structures will be rebuilt in Jefferson Parish and throughout the Gulf Coast over the next 5 to 10 years, a large-scale rebuilding effort is underway.

The implementation of the proposed action would have no cumulative adverse impacts because all of the proposed stormproofing and additional automation would occur on pump station grounds, roads and along existing canal banks. No change in normal pump station operations would occur. However, the proposed action would have cumulative beneficial impacts to socioeconomics and water quality because it would provide flood damage and pollution reduction in conjunction with other projects such as those improving levees and floodwalls in Jefferson Parish. Improved hurricane, storm, and flood damage reduction is a benefit to all residents, regardless of income or race, and allows for development and redevelopment of existing urban areas.

9. COORDINATION

Preparation of this EA and a draft Finding of No Significant Impact (FONSI) has been coordinated with appropriate Congressional, Federal, state, and local interests, as well as environmental groups and other interested parties. The following agencies, as well as other interested parties, are receiving copies of this EA and draft FONSI:

U.S. Department of the Interior, Fish and Wildlife Service
U.S. Environmental Protection Agency, Region VI
U.S. Department of Commerce, National Marine Fisheries Service
U.S. Natural Resources Conservation Service, State Conservationist
Advisory Council on Historic Preservation
Governor's Executive Assistant for Coastal Activities
Louisiana Department of Wildlife and Fisheries
Louisiana Department of Natural Resources, Coastal Management Division
Louisiana Department of Natural Resources, Coastal Restoration Division
Louisiana Department of Environmental Quality, PER-REGC
Louisiana Department of Environmental Quality, EP-SIP

Louisiana State Historic Preservation Officer
Recommendations of the U.S. Fish and Wildlife Service in accordance with the Fish and Wildlife Coordination Act.

Recommendation 1: Any proposed change in the proposed project features, locations or plans that would impact fish and wildlife habitat and/or wetlands shall be coordinated in advance with the Service, NMFS and LDWF.

MVN Response 1: MVN shall coordinate in advance with the Service, NMFS and LDWF should there be any proposed change in the proposed project features, locations or plans that would impact fish and wildlife habitat and/or wetlands.

Recommendation 2: If the proposed project has not been constructed within 1 year or if changes are made to the proposed project, the Corps should re-initiate Endangered Species Act consultation with the Service to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

MVN Response 2: Should the proposed project not be constructed within 1 year of concurrence, dated December 8, 2008, MVN will re-initiate Endangered Species Act consultation with the Service to ensure that the proposed project would not adversely affect any federally listed threatened or endangered species or their habitat.

10. MITIGATION

With implementation of the proposed action, the small spills of diesel fuel and lubricating oil at several pump stations would be avoided. The contaminated area will be marked as a no work zone. Fuel and oil storage practices should be improved and future cleanup should be accomplished by the local sponsor.

11. COMPLIANCE WITH ENVIRONMENTAL LAWS AND REGULATIONS

Environmental compliance for the proposed action would be achieved upon coordination of this EA and draft Finding of No Significant Impact (FONSI) with appropriate agencies, organizations, and individuals for their review and comments; U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) confirmation that the proposed action would not be likely to adversely affect any endangered or threatened species; Louisiana Department of Natural Resources concurrence with the determination that the proposed action is consistent, to the maximum extent practicable, with the Louisiana Coastal Resources Program; Receipt of the Louisiana State Historic Preservation Officer Determination of No Affect on cultural resources; Receipt and acceptance or resolution of all USFWS Fish and Wildlife Coordination Act recommendations; Receipt and acceptance or resolution of all Louisiana Department of Environmental Quality comments on the air quality impact analysis documented in the EA; Receipt and acceptance or resolution of all NMFS Essential Fish Habitat recommendations.

The draft FONSI will not be signed until the proposed action achieves environmental compliance with applicable laws and regulations, as described above.

12. CONCLUSION

The proposed action consists of additional stormproofing at the 21 existing pump stations in Jefferson Parish, Louisiana. This office has assessed the environmental impacts of the proposed action and has determined that the proposed action would have no impacts upon cultural resources. The proposed action would have no negative cumulative impacts. With the implementation of the proposed action, short-term, minor, direct beneficial economic impacts would occur from construction activities and material purchases during installation of stormproofing features and fiber optic lines. Minor temporary impacts to non-wetland, wildlife, T&E species, uplands, noise, air quality, and transportation resources would occur with the proposed action. There would be no impacts from HTRW contamination because contaminated areas are not in the construction area and will be designated as no work zones.

13. PREPARED BY

EA #475 was prepared by Amanda Oliver and Ken Cook of the St. Louis District, USACE in conjunction with Patricia Leroux of the New Orleans District, USACE. The point of contact for this EA is Laura Lee Wilkinson, USACE, New Orleans District, Hurricane Protection Office. Table 4 lists the preparers of relevant sections of this report. Mrs. Wilkinson can be reached at the U.S. Army Corps of Engineers, New Orleans District; Hurricane Protection Office, P.O. Box 60267, New Orleans, Louisiana 70160-0267.

Table 6: Environmental assessment preparation team

EA Section	Team Member
Environmental Manager	Patricia Leroux, CEMVN - HPO
Report Production	Amanda Oliver, CEMVS
Report Production	Ken Cook, CEMVS
Cultural Resources	Dr. Paul Hughbanks, CEMVN PM–RN
HTRW	Dr. Christopher Brown, CEMVN
HTRW	Christopher Whitehead, Aerostar Environmental Services
HTRW	Guy Allard, Aerostar Environmental Services
Environmental Justice Analysis	Getrisc Coulson CEMVN PM-RS
EA Project Manager	John Ashley, CEMVN - HPO
Technical Review	Nathan Dayan, CEMVN PM–RS

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15. APPENDICES

Appendix A – Detailed description of stormproofing actions

Table A-1. Detailed description of the proposed stormproofing activities at the 21 existing pump stations in Jefferson Parish, Louisiana

IMPROVEMENT DESCRIPTION	Bonnabel	Duncan	Elmwood No.1	Elmwood No.2	Parish Line	Suburban No.1	Suburban No.2	Canal St.	Ames	Bayou Segnette No.1	Bayou Segnette No.2	Cataouatche No.1	Cataouatche No.2	Cousins No.1	Cousins No.2	Cousins No.3	Estelle No.2	Hero No.1	Hero No.2	Mt. Kennedy	Planters No.1	Planters No.2	Westminster	Estelle No.1-1	Estelle No.1-2	Harvey	Hwy. 90	Westwego No.1	Westwego No.2	Whitney Barataria
Building Frame																														
Upgrade steel frame building for 140 mph winds (3-sec. gust)									X	X		X	X	X	X		X	X		X	X						X	X	X
Upgrade steel frame building for 156 mph winds (3-sec. gust)					X																	X			X				
Assess if reinforced concrete and precast/prestressed frame is adequate for 156 mph winds (3-sec. gust)	X	X	X	X		X	X	X			X																		
Assess water tightness of the flood control perimeter wall for 140 mph winds (3-sec. gust)									X						X	X		X	X		X	X							
Raise flood control perimeter wall to resist higher flood water			X	X		X	X																						
Replace timber frame with rigid frame for 140 mph winds (3-sec. gust)																											X		
Building Walls																													
Reinforce masonry walls to resist 156 mph winds (3-sec. gust)		X			X	X	X	X			X						X					X							
Retrofit insulated metal panel walls to resist 140 mph winds									X	X				X	X	X		X	X									X	X
Retrofit precast concrete walls to resist 156 mph winds (3-sec. gust)	X	X	X	X		X	X						X													X			
Retrofit metal panel walls to resist 140 mph winds (3-sec. gust)																												X	
Building Roof																													
Retrofit steel joists with acoustical metal deck roof to resist 156 mph winds (3-sec. gust)	X	X																											
Retrofit steel joist with corrugated metal deck roof to resist 140 mph winds (3-sec. gust)									X	X				X	X	X		X	X		X	X					X	X	X
Retrofit steel joists with corrugated metal deck roof to resist 156 mph winds (3-sec gust)	X	X		X	X			X									X					X			X				
Retrofit steel joists with corrugated metal deck roof to resist 156 mph winds (3-sec gust)	X	X		X	X			X									X					X			X				
Retrofit fibro plank roof supported with steel shapes to resist 156 mph winds (3-sec. gust)			X										X																
Retrofit P/P concrete double-tee slab roof to withstand 156 mph winds (3-sec. gust)						X	X																						
Retrofit treated wood deck with metal roof to withstand 156 mph winds (3-sec. gust)											X																		
Louvers - Doors - Windows																													
Remove all existing windows and replace with wall construction	X	X	X		X	X			X	X	X		X	X	X	X	X	X			X						X		X	X
Replace louvers with hurricane type louvers	X	X	X		X			X	X	X	X		X		X	X	X		X		X	X	X				X		X	X
Reinforce coiling doors	X	X	X		X	X	X	X	X		X		X	X	X	X	X	X	X		X	X	X				X		X	X
Replace exterior doors with heavy-duty hollow metal doors	X	X			X			X	X				X	X	X	X	X	X			X		X				X		X	X
Ventilation																														
Provide ventilation fans									X				X																	
Provide automatically controlled dampers	X	X	X		X	X	X	X	X	X	X		X	X	X	X	X	X	X		X	X					X		X	X	
Provide missile barriers for ventilation fan openings	X	X		X	X	X	X	X	X	X			X	X	X	X	X	X	X		X	X					X		X	X	X
Replace power roof ventilators			X			X	X							X	X						X	X								
Provide hurricane type louvers for ventilation air														X				X												
Non-Potable Water (NPW) System																														
Add well to backup existing NPW system								X													X									
Raise well's electrical controls and equipment boxes	X		X		X		X				X				X					X			X				X		X	X
Add enclosure to protect well																										X				
Add screen barrier over openings into wet well												X		X				X	X		X		X							X
Add canal water pumps to back-up NPW system									X									X										X		
Trash Screens																														
Replace non-mechanized screen with climber type screen								X		X		X							X	X				X	X			X		
Replace mechanical chain screens with climber type screens	X	X	X			X			X				X	X	X		X	X			X	X					X		X	
Raise controls for mechanical screens	X	X	X			X			X					X	X			X			X	X					X			
Raise trash screen motors and controls	X	X	X			X			X					X	X			X			X	X					X			
Fuel System																														

IMPROVEMENT DESCRIPTION	Bonnabel	Duncan	Elmwood No.1	Elmwood No.2	Parish Line	Suburban No.1	Suburban No.2	Canal St.	Ames	Bayou Segnette No.1	Bayou Segnette No.2	Cataouatche No.1	Cataouatche No.2	Cousins No.1	Cousins No.2	Cousins No.3	Estelle No.2	Hero No.1	Hero No.2	Mt. Kennedy	Planters No.1	Planters No.2	Westminster	Estelle No.1-1	Estelle No.1-2	Harvey	Hwy. 90	Westwego No.1	Westwego No.2	Whitney Barataria
Move fuel day tanks inside building										X			X					X			X							X		
Replace vertical fuel tank with horizontal tank									X	X		X	X								X							X	X	
Relocate fuel transfer pumps inside building						X			X				X		X						X								X	
Provide additional bulk fuel storage capacity	X	X	X			X									X			X											X	X
Provide fuel filtration with containment for bulk fuel storage tanks										X	X	X	X				X	X	X						X	X			X	X
Provide fuel filtration for bulk fuel storage tanks		X	X					X	X						X						X						X			
Provide dedicated fuel day tank for gensets		X																						X						
Pumps																														
Waterproof pump gear pits	X			X					X						X	X														X
Raise diesel engine air cooled radiator			X	X																										
Raise diesel engine air inlet	X			X			X																							X
Provide missile barrier protection for vertical pump motors	X	X			X															X		X			X		X			
Re-anchor straps and re-cap saddle beams supporting discharge pipes					X																									
Electrical Equipment																														
Provide platform to raise utility transformers			X		X													X				X	X					X		
Provide platform for switchgear batteries									X									X				X				X				
Standardize multilin motor protection relays					X	X		X											X	X	X	X	X			X			X	
Provide weather protection for indoor switchgear/motor control centers	X		X	X	X	X	X	X			X	X		X	X		X	X	X		X	X	X			X				X
Raise electrical equipment enclosures above operating floor	X			X	X		X					X					X	X				X	X			X				X
Provide water tight conduit system below floor on building exterior	X	X		X	X		X																							
Provide wall back-mounted exterior lights	X	X	X		X	X	X		X	X				X	X		X	X			X	X				X	X			
Provide poster size electrical one-line diagram	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X		X	X			X	X	X	X	X	X
Provide wet location interior lighting	X	X	X	X	X	X	X	X	X	X			X	X			X	X	X		X					X		X	X	X
Provide missile barrier for exterior electrical equipment					X					X		X								X			X		X		X			
Install 4160V Switchgear					X																									
Standby Power																														
Provide missile barriers for outside radiators	X	X	X	X		X		X	X			X		X	X	X	X	X			X	X						X		X
Provide missile barriers for outside gensets					X				X							X									X					
Provide dual standby supplies for electrical pump power	X	X	X			X		X	X			X		X				X				X			X	X			X	X
Provide permanent dual standby generators on site																				X							X			
House Power																														
Provide redundant room power genset	X	X	X	X	X	X			X	X	X	X	X	X				X					X	X		X		X	X	X
Provide automatic transfer switch for room power						X	X		X				X								X	X				X				
SCADA																														
Add diesel engine driven vertical pumps to Allen Bradley Programmable automated controller (PAC) system										X			X															X		
Add electric motor driven vertical pumps to Allen Bradley PAC system								X					X							X					X	X	X			
Add pump ancillary systems to Allen Bradley PAC								X		X			X	X	X					X					X	X		X		X
Replace existing PS Bristol Babcock & SCADA Pack remote terminal units with Allen Bradley PAC System								X		X			X							X					X	X	X	X		X
Provide remote operation of pump station to nearest safe room								X												X				X		X	X	X		
CCTV																														
Expand CCTV monitoring to safe room											X				X															X
Add CCTV System								X		X	X									X					X	X	X	X		
Add audio CCTV System													X																	X
Add additional camera to the CCTV system													X	X	X															X
Access Road																														
Raise access road												X																		
Provide drainage along road												X					X													
Safe Room																														
Provide rigid galvanized steel conduits to safe room	X	X	X			X			X		X					X														X
Provide standby power supply for safe room	X	X	X			X			X		X					X														X
Move safe room ground level fuel tank	X	X	X			X			X		X					X														X
Move safe room fuel pump and motor	X	X	X			X			X		X					X														X

IMPROVEMENT DESCRIPTION	Bonnabel	Duncan	Elmwood No.1	Elmwood No.2	Parish Line	Suburban No.1	Suburban No.2	Canal St.	Ames	Bayou Segnette No.1	Bayou Segnette No.2	Cataouatche No.1	Cataouatche No.2	Cousins No.1	Cousins No.2	Cousins No.3	Estelle No.2	Hero No.1	Hero No.2	Mt. Kennedy	Planters No.1	Planters No.2	Westminster	Estelle No.1-1	Estelle No.1-2	Harvey	Hwy. 90	Westwego No.1	Westwego No.2	Whitney Barataria
Other																														
Raise walls and close-up openings of pump pit						X			X			X		X				X	X		X		X							X

Appendix B – Figure of the fiber optic cable paths

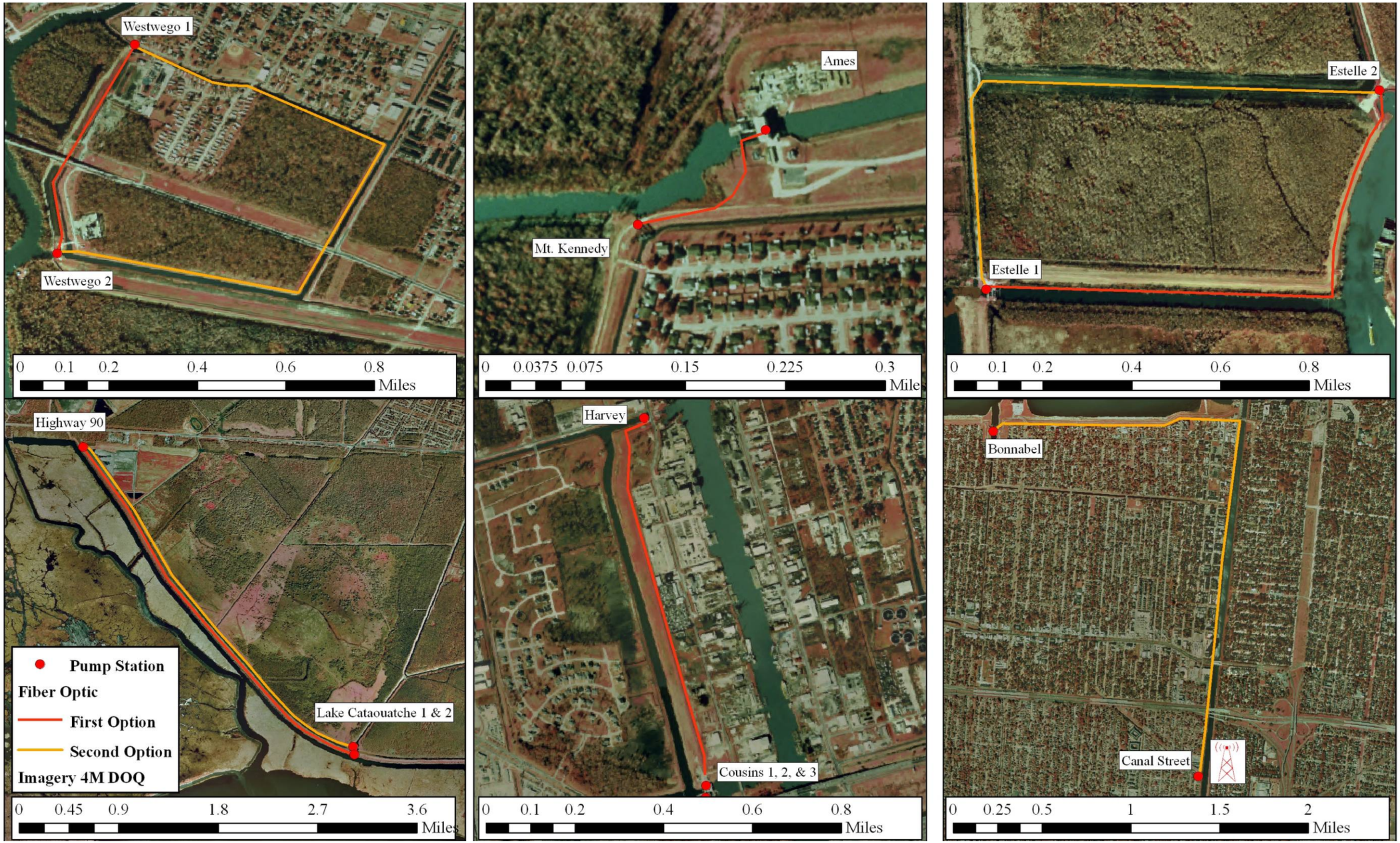

Figure B-1: Proposed fiber optic cable paths between pump stations with safe rooms and pump stations without safe rooms.

APPENDIX C

Phase I Environmental Site Assessment Update Report
Jefferson Parish Pump Stations
East Bank and West Bank Metro Area, Jefferson Parish, Louisiana

September 24, 2008

Introduction

Christopher Whitehead and Guy Allard, CEMVN environmental contractors, present the findings of the Phase I Environmental Site Assessment (ESA) Update at the East Bank and West Bank Metro Area Pump Stations. The facilities are located in Jefferson Parish, except two stations, Planters Pump Station #1 and Planters Pump Station #2, located in Plaquemines Parish. This report was generated to update the findings of the report entitled *Jefferson Parish Pump Stations* conducted in April 2007 by Gulf South Research Corporation.

Twenty-two separate sites were studied as part of this investigation. These pump stations included Pump Station No. 1 (Bonnabel), Pump Station No. 2 (Suburban), Pump Station No. 3 (Elmwood), Pump Station No. 4 (Duncan), and Parish Line Pump Station on the East Bank; on the West Bank, Highway 90 Pump Station, Lake Cataouatche Pump Station #1, Lake Cataouatche Pump Station #2, Bayou Segnette Pump Station, Westwego Pump Station #1, Westwego Pump Station #2, Westminister Pump Station, Ames Pump Station, Mt. Kennedy Pump Station, Estelle Pump Station #1, Estelle Pump Station #2, Hero Pump Station, Cousins Pump Station, Harvey Pump Station, Whitney-Barataria Pump Station, and Planters Pump Station #1 and Planters Pump Station #2 were also included in this investigation. For the purposes of this study, the common name or the given name omitting the phrase "Pump Station" will be used to refer to each site.

In accordance with United States Army Corps of Engineers (USACE) HTRW Guidance for Civil Works Projects (ER-1165-2-132) and American Society for Testing Materials Standard for Phase I ESA Investigations (ASTM E 1527-05), a site inspection, interviews, and review of environmental data was performed for each of twenty-two separate pump station sites. The site was inspected to assess the current conditions and determine if any changes have occurred since the April 2007 Phase I ESA which would constitute the presence of a recognized environmental condition (REC) at the site. CEMVN contractor personnel toured the portion of the sites accessible by truck or by foot. The site and adjacent areas were visually inspected for the presence of tanks or drums, solid waste, electrical transformers, evidence of fire, questionable dirt mounds or excavations in the landscape, ponds or lagoons, sheens on surface water bodies, discoloration of vegetation or soils, and odors indicative of poor water quality or chemical presence.

Conditions at the Pump Stations investigated have a common general form. In general, there are two types of stations: 1) manned stations with several types of hazardous materials and their containers stored for operation of the site and 2) unmanned stations with little or no hazardous materials. Conditions at sites of type 1 generally have large diesel storage tanks outside to power pumps inside. Several “day tank” aboveground storage tanks (ASTs) located inside the site facility stage diesel from the external tanks to operate the pumps as needed. Drum storage areas either inside or outside the site interior containing mineral spirits, railroad oil for lubrication, and small volumes of

degreasers, paints and gasoline are also stored in this area. Also located at each manned site are newly constructed, raised storm shelters with an approximate 500-gallon diesel AST. A site-specific investigation is described in the following twenty-two sections.

Jefferson Pump Station #1 (Bonnabel)

CEMVN-contractor personnel made a site visit to the Bonnabel Pump Station located at 1500 Beverly Gardens Drive, Metairie, Louisiana on August 26th, 2008. The site is a manned pump station on the east bank of Jefferson Parish used to discharge water from the Bonnabel Canal to Lake Pontchartrain.

At the time of the inspection, two approximate 10,000-gallon diesel ASTs were observed on the west side of the pump station structure. The ASTs were observed in a secondary containment system that appeared to be in well-maintained condition. A rusted, metal, approximate 500-gallon AST was observed outside the secondary containment of the large ASTs. One 500-gallon AST was observed in the southeast corner of the site associated with the raised storm shelter. Approximately twenty 55-gallon drums containing heavy lubricating oil were observed along the south wall of the pump station interior. Five approximate 100-gallon "day tank" ASTs containing diesel were observed suspended from the ceiling above the drums of lubricating oil along the south wall of the site interior. No staining was observed on the concrete floor or the drains in the floor in this area. Twenty-four five-gallon buckets containing degreaser and fiberglass resin were observed in a maintenance bay in the eastern portion of the pump house structure. Wooden shelving containing various one-gallon paint buckets were observed in the central portion of the site. A waste oil tank was observed in the lower deck of the pump station. Heavy staining was observed on the concrete flooring around the waste oil tank; this area drains into the outfall of the Bonnabel Canal to Lake Pontchartrain.

The site vicinity is mostly residential. The properties to the east, south, and west are residential. The Bonnabel Boat Launch and an associated recreational space are located adjacent to the northeast of the site. Lake Pontchartrain is located to the north of the site across the Jefferson Parish Lakefront Levee. The Bonnabel Canal extends south from the Bonnabel Pump Station.

In an interview with site manager Manny Aspuria, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. Mr. Aspuria also stated that the rusted, metal AST observed outside the secondary containment in the western portion of the site was formerly used for waste oil collection but has been replaced by a newer, larger tank located underneath the facility. He stated disposal of the former tank has not yet occurred. He stated he had no knowledge of any environmental concerns from the facility.

Jefferson Pump Station #2 (Suburban)

CEMVN-contractor personnel made a site visit to the Suburban Pump Station located at 4800 Lake Villa Drive, Metairie, Louisiana on August 26th, 2008. The site is a manned pump station on the east bank of Jefferson Parish used to discharge water from the Suburban Canal to Lake Pontchartrain.

At the time of the inspection, three approximate 10,000-gallon diesel ASTs were observed on the southwest corner of the site. The ASTs were observed in a secondary containment system that appeared to be in well-maintained condition. One 500-gallon AST was observed in the southeast

corner of the site associated with a raised storm shelter. Multiple 55-gallon drums containing heavy lubricating oil and mineral spirits were staged in three separate locations throughout the interior of the site. A row of ten drums of heavy lubricating oil were observed laid on their sides on dispensing racks in the central portion of the pump house structure; two catch troughs were observed under the dispenser on the drums to prevent migration of discharges. A self-contained parts washer was observed in the northwest corner of the structure. Some staining was observed on the concrete floor throughout the structure mostly in areas around engines used to run the pumps. Spill containment products were dispersed around the engines at the time of the inspection.

The site vicinity is characterized by residential property. The properties to the east, south, and west are residential. Lake Pontchartrain is located to the north of the site across the Jefferson Parish Lakefront Levee. The Suburban Canal extends south from the Suburban Pump Station.

In an interview with site manager Manny Aspuria, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated disposal of the former tank has not yet occurred. He stated he had no knowledge of any environmental concerns from the facility.

Jefferson Parish Pump Station #3 (Elmwood)

CEMVN-contractor personnel made a site visit to the Elmwood Pump Station located at 5400 Caryota Drive, Metairie, Louisiana on August 26th, 2008. The site is a manned pump station on the east bank of Jefferson Parish used to discharge water from the Elmwood Canal to Lake Pontchartrain.

At the time of the inspection, three approximate 10,000-gallon diesel ASTs were observed on the southwest corner of the site. The ASTs were observed in a secondary containment system that appeared to be in well-maintained condition. Two approximate 200-gallon propane tanks were observed in this portion of the site servicing two raised pad-mounted generators. One 500-gallon AST was observed in the southeast corner of the site associated with a raised storm shelter. Wooden shelving containing various one-gallon paint buckets were observed in the western portion of the site. Six five-gallon buckets containing fiberglass resin were also located in this portion of the site. Multiple 55-gallon drums containing heavy lubricating oil and mineral spirits were staged in various locations throughout the interior of the site. Drums of heavy lubricating oil were observed laid on their sides on dispensing racks throughout the site interior; five-gallon buckets were observed under the dispenser on the drums to prevent migration of discharges. Three approximate 100-gallon "day tanks" containing diesel were observed suspended from the ceiling along the south wall of the site interior. No leaks or stained concrete were observed in the site interior.

The site vicinity is characterized by residential property. The properties to the east, south, and west are residential. Lake Pontchartrain is located to the north of the site across the Jefferson Parish Lakefront Levee. The Elmwood Canal extends southeast from the Elmwood Pump Station.

In an interview with site manager Manny Aspuria, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated he had no knowledge of any environmental concerns from the facility.

Jefferson Pump Station #4 (Duncan)

CEMVN-contractor personnel made a site visit to the Duncan Pump Station located at 1800 Joe Yenni Boulevard, Kenner, Louisiana on August 26th, 2008. The site is a manned pump station on the east bank of Jefferson Parish used to discharge water from the Duncan Canal to Lake Pontchartrain.

At the time of the inspection, three diesel ASTs (approximately 10,000 gallons) were observed on the southwest corner of the site. The ASTs were observed in a secondary containment system that appeared to be in well-maintained condition. Eight 55-gallon drums labeled heavy lubricating oil were observed outside the secondary containment area. Three pad-mounted transformers were observed in a fenced area near the diesel ASTs. Stained concrete was observed around some of the transformers. One 500-gallon AST was observed in the southeast corner of the site associated with a raised storm shelter. A dilapidated structure was observed in the northwest corner of the site housing the former Duncan Pump Station pumps. Approximately ten 55-gallon drums containing heavy lubricating oil were observed along the south wall of the pump station interior. Five approximate 100-gallon "day tanks" containing diesel were observed suspended from the ceiling above the drums of lubricating oil along the south wall of the site interior. No staining was observed on the concrete floor or the drains in the floor in this area.

The site vicinity is characterized by residential property. The Pontchartrain Center commercial area is located to the east of the site. The properties to the south and west are residential. Lake Pontchartrain is located to the north of the site across the Jefferson Parish Lakefront Levee. The Duncan Canal extends south from the Duncan Pump Station.

In an interview with site manager Manny Aspuria, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. Mr. Aspuria stated that the Old Duncan Pump Station located in the northwest corner of the site was still in operation on a limited scale and was connected to the diesel ASTs observed in the southwest corner of the site. He stated he had no knowledge of any environmental concerns from the facility.

Parish Line Pump Station

CEMVN-contractor personnel made a site visit to the Parish Line Pump Station located at 3100 Grand Lake Boulevard, Kenner, Louisiana on August 26th, 2008. The site is a manned pump station on the east bank of Jefferson Parish along the border between St Charles Parish. The pump station is used to discharge water from the Butler Canal to the Duncan Canal.

At the time of the inspection, there was a diesel AST (approximately 8,000 gallons) on the southern border of the site. The AST was in a secondary containment system that appeared to be in well-maintained condition. There were three pad-mounted transformers in a fenced area near the diesel AST. There was an AST (approximately 500-gallons) on the deck of the pump house that is used to power three generators. There were sixteen automotive batteries, in an acrylic containment system along the south wall of the pump house, that are used to operate electronic components in the interior. In the center of the pump house, there was a rusted metal locker used to store one-gallon paint buckets.

The site vicinity is characterized by mixed use. Residential property is located to the north. Undeveloped wetland is located to the west across the Duncan Canal. Canal #17, also known as Butler Canal, terminates at the eastern site border. The Kenner Wastewater Treatment Plant operated by Veolia Incorporated is located to the south of the site.

In an interview with site manager Manny Aspuria, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated he had no knowledge of any environmental concerns from the facility.

Canal Street Pump Station

CEMVN-contractor personnel made a site visit to the Canal Street Pump Station located at 100 Canal Street, Metairie, Louisiana on August 26th, 2008. The site is an unmanned pump station on the east bank of Jefferson Parish along the border between Orleans Parish. The pump station is used to discharge water from the Carroll Canal to the 17th Street Canal.

At the time of the inspection, there was a diesel AST (approximately 1,000 gallons) on the southern border of the site. The AST was in a secondary containment system that appeared to be well-maintained.

The site vicinity is characterized as mixed residential-commercial. The 17th Street Canal is located along the eastern site border. Residential property surrounds the pump station with commercial properties located near the site along the Carroll Canal. Labiche Plumbing is adjacent to the site to the south. There was an AST of approximately 250 gallons in secondary containment; there was no stained soil or stressed vegetation in the area of the AST.

In an interview with site manager Manny Aspuria, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated he had no knowledge of any environmental concerns from the facility.

Highway 90 Pump Station

CEMVN-contractor personnel made a site visit to the Highway 90 Pump Station located 1,000 feet south of US Highway 90 at Riverbirch Landfill on August 27th, 2008. The site is an unmanned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Inner Cataouatche Canal to the Outer Cataouatche Canal.

During the site visit, three-pole mounted transformers were found, but there was no stained soil or stressed vegetation.

The site vicinity is undeveloped land. The Inner Cataouatche Canal terminates at the southern border of the site, and the Outer Cataouatche Canal is located along the western border of the site. During the site inspection, levee construction activities were visible on the southern adjacent property. There was heavy machinery and a 1,000-gallon AST in secondary containment in this area, but no evidence of stained soil or stressed vegetation.

In an interview with site manager Keith Tharton, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He said that

the site ran only on electrical power, and no liquid fuels are stored at the site; he had no knowledge of any environmental concerns from the facility.

Lake Cataouatche Pump Station #1

CEMVN-contractor personnel made a site visit to the Lake Cataouatche Pump Station #1 located at 3901 Highway 90, Avondale, Louisiana on August 27th, 2008. The site is a manned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Main Canal to the Inner Cataouatche Canal.

At the time of the inspection there were two diesel ASTs (approximately 7,000 gallons each) on the western border of the site. Under the generator platform there were five 55-gallon drums containing heavy lubricating oil; there was heavy staining on the concrete floor in this location. There were two five-gallon carboys containing gasoline in this area of the site. There was a gasoline-powered pump on a concrete pad at the terminus of the Main Canal in the northern portion of the site. No stained concrete was observed in this area of the site.

The site vicinity is characterized as undeveloped land. To the north, the Main Canal terminates at the northern border of the site. Levee construction activities were visible to the east of the site. The Inner Cataouatche Canal is located along the southern site border followed by the Lake Cataouatche Pump Station #2.

In an interview with site manager Keith Tharton, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated he had no knowledge of any environmental concerns from the facility.

Lake Cataouatche Pump Station #2

CEMVN-contractor personnel made a site visit to the Lake Cataouatche Pump Station #2 located at 3901 Highway 90, Avondale, Louisiana on August 27th, 2008. The site is a manned, pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Inner Cataouatche Canal to the Outer Cataouatche Canal.

At the time of the inspection, a 10,000-gallon diesel ASTs were observed on the northern border of the site. Three approximate 100-gallon "day tanks" were observed on the platform around the exterior of the pump house structure. One 1,000-gallon propane AST was observed in western portion of the site. Approximately five 55-gallon drums containing heavy lubricating oil were observed throughout the structure; some of these drums were in use on dispensing racks. Heavily stained concrete was observed in the site interior.

The site vicinity is characterized as undeveloped land. The Inner Cataouatche Canal is located along the northern border of the site. Levee construction activities were visible to the east of the site. Several pieces of heavy machinery were staged or in use in this area of the site including cranes, dump trucks, excavators, and front-end loaders. The Inner Cataouatche Canal is located along the southern site border followed by the Lake Cataouatche Pump Station #2.

In an interview with site manager Keith Tharton, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated he had no knowledge of any environmental concerns from the facility.

Bayou Segnette Pump Station

CEMVN-contractor personnel made a site visit to the Bayou Segnette Pump Station located at 801 Louisiana Street, Westwego, Louisiana on August 27th, 2008. The site is two separate, manned pump stations on the west bank of Jefferson Parish. The site is used to discharge water from the Main Canal to Bayou Segnette.

At the time of the inspection, two 10,000-gallon diesel ASTs were observed on the eastern border of the site. The ASTs were observed in a secondary containment system that appeared to be in well-maintained condition. Two approximate 8,000-gallon diesel ASTs were observed on the western border of the site. Six approximate 100-gallon "day tanks" were observed on the platform to the western pump house. Four 55-gallon drums containing heavy lubricating oil were observed in this area; no stained concrete was observed beneath the drums. The interior of the eastern pump house contained several 55-gallon drums in storage or in use on dispensing rack. A waste oil tank was observed in the sub-floor of the eastern pump house. No stained concrete was observed in the eastern or western pump houses.

The site vicinity is characterized as mixed use. The Main Canal terminates at the northern border of the site; Bayou Segnette State Park is located to the north and west of the site. Bayou Segnette is located along the eastern site border. The Inner Cataouatche Canal is located along the southern site border followed by the Lake Cataouatche Pump Station #2.

In an interview with site manager Keith Tharton, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated he had no knowledge of any environmental concerns from the facility.

Westwego Pump Station #1

CEMVN-contractor personnel made a site visit to the Westwego Pump Station #1 located at 801 Louisiana Street, Westwego, Louisiana on August 27th, 2008. The site is two separate, manned pump stations on the west bank of Jefferson Parish. The site is used to discharge water from the Westwego Drainage Canal to Bayou Segnette.

At the time of the inspection, there were two 8,000-gallon diesel ASTs in the center of the site, on a platform between the two pump houses. There were two automotive batteries attached to a radio antenna on a wooden palette outside a pump house. There were six 55-gallon drums containing heavy lubricating oil in a storage bay. There were diesel engines in the pump house, heavily stained on their surface, and the concrete floor around them was also stained; on the concrete floor there were automotive batteries that connected to these engines.

The site vicinity is characterized as mixed use. Residential property is located north of the site. The Westwego Waste Water Treatment Plant is adjacent to the south and east. Undeveloped land is located to the west, followed by Bayou Segnette further west.

In an interview, site manager Keith Tharton, Jefferson Parish Consolidated Drainage District No. 2, stated that no significant releases or impacts have occurred from this facility. He had no knowledge of any environmental concerns from the facility.

Westwego Pump Station #2

CEMVN-contractor personnel made a site visit to the Westwego Pump Station #2 located at 820 S. Laroussini Street, Westwego, Louisiana on August 27th, 2008. The site is a manned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Westwego Drainage Canal to Bayou Segnette.

At the time of the inspection, two 5,000-gallon diesel ASTs were observed in the eastern portion of the site. The ASTs were observed in a secondary containment system that appeared to be in well-maintained condition. Three pole-mounted transformers were observed in the northern portion of the site. A 55-gallon drum storage area was observed along the north wall of the pump house structure; the drums were resting on palettes or on soil and contained heavy lubricating oil or were unlabelled. Stained soil was observed in the area around the drums. Several 55-gallon drums were located inside the pump house structure unused or resting on dispensing racks. Stained concrete was observed throughout the pump house structure.

The site vicinity is characterized as undeveloped land. Bayou Segnette is located along the western site border. The Westwego Drainage Canal is located to the east and north of the site. Undeveloped land surrounds the remaining site.

In an interview with site manager Keith Tharton, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated he had no knowledge of any environmental concerns from the facility.

Westminister Pump Station

CEMVN-contractor personnel made a site visit to the Westminister Pump Station located at 2050 Watling Drive, Marrero, Louisiana on August 27th, 2008. The site is a manned pump station with an additional pump station facility currently under construction on the west bank of Jefferson Parish. The site is used to move water through the Millaudon Canal.

At the time of the inspection, two 10,000-gallon diesel ASTs were observed in the southern portion of the site. The ASTs were observed in a secondary containment system that appeared to be in well-maintained condition. This area was under construction of a new pump house facility adjacent to south of the Westminister Pump Station. A pole-mounted transformer was observed in the eastern portion of the site. Five 100-gallon "day tanks" were observed inside each of the pump house structures. Twenty-four automotive batteries were observed in an acrylic containment system in the newly constructed pump house structure used to operate electronic components in the interior. Several 55-gallon drums of heavy lubricating oil were observed in the northern pump station. An engine heavily stained with oil was observed in the center of the pump house; however, trace staining was observed on the concrete flooring around the engine. Wooden shelving containing one-gallon paint buckets, cleaning fluids, and other household hazardous chemicals was located in a bay in the northern portion of the pump house. Five-gallon carboys containing gasoline and 10-gallon drums of heavy lubricating oil were also located in this area.

The site vicinity is characterized as undeveloped land. A drainage canal is located along the northern and eastern site border. Residential property is located to the northeast of the site.

In an interview with site manager Keith Tharton, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. Mr Tharton stated that the Westminister Pump Station is currently under construction with a second structure. He stated he had no knowledge of any environmental concerns from the facility.

Ames Pumping Station

CEMVN-contractor personnel made a site visit to the Ames Pump Station located at 5100 Rochester Drive, Marrero, Louisiana on August 27th, 2008. The site is a manned pump station on the west bank of Jefferson Parish. The site is used to move water through the Millaudon Canal.

At the time of the inspection, four 10,000-gallon diesel ASTs were observed in the southern portion of the site. Three pad-mounted transformers were observed along the western border of the site; no staining was observed on the concrete pad supporting the transformers. A 500-gallon diesel AST associated with a raised storm shelter was observed in the northern potion of the site. In this area, a 200-gallon propane tank was observed. A scrap and materials staging yard was observed in the northern portion of the site. Metal pump housing, vehicles, and waste metal were observed in this area. In the interior of the pump house, several 55-gallon drums of heavy lubricating oil and oil absorption products were observed in the facility. Heavily stained engines and flooring were observed throughout the pump house. Twenty automotive batteries were observed in an acrylic containment system in the pump house structure used to operate electronic components in the interior. Metal shelving was observed in the northern portion of the pump house containing one-gallon buckets of paint, degreaser, and five-gallon carboys of gasoline. Several, stacked five-gallon buckets unlabelled, but containing a tar-like substance, were also observed in this area of the facility.

The site vicinity is characterized as residential land. Residential property is located to the south and east of the site. Undeveloped property is located to the north and west. The Mt Kennedy Pump Station is adjacent to the site to the southwest.

In an interview with site manager Keith Tharton, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated he had no knowledge of any environmental concerns from the facility.

Mt Kennedy Pumping Station

CEMVN-contractor personnel made a site visit to the Mt Kennedy Pump Station located at 3100 Mt. Kennedy Drive, Marrero, Louisiana on August 27th, 2008. The site is an unmanned pump station on the west bank of Jefferson Parish. The site is used to assist the Ames Pump Station in moving water through the Millaudon Canal by discharging water from a residential drainage canal into the Millaudon Canal.

At the time of the site inspection, three pole-mounted transformers were observed in the western portion of the site.

The site vicinity is characterized as undeveloped land. Residential property is located to the east of the site. Undeveloped property is located to the north and west. He stated the site ran only on electrical power and no liquid fuels are stored at the site. The Ames Pump Station is adjacent to the site to the northeast.

In an interview with site manager Keith Tharton, Jefferson Parish Consolidated Drainage District No. 2, he stated that no significant releases or impacts have occurred from this facility. He stated he had no knowledge of any environmental concerns from the facility.

Estelle Pumping Station #1

CEMVN-contractor personnel made a site visit to the Estelle Pump Station #1 located at 4105 Cousins Boulevard, Marrero, Louisiana on August 28th, 2008. The site is an unmanned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Pipeline Canal towards the Hero Canal cutoff.

At the time of the site inspection, two 10,000-gallon diesel ASTs were observed in the western portion of the site. Three pole-mounted transformers were observed in the southern portion of the site. The transformers service two generators on the western portion of the site; two 55-gallon drums containing heavy lubricating oil were observed in this portion of the site. A wooden shed was observed in the eastern portion of the site housing lawn care equipment, five-gallon carboys containing gasoline, and one-gallon buckets of paint. No staining was observed on the wooden flooring in the shed or the soil outside the shed.

The site vicinity is characterized as undeveloped land. The Pipeline Canal is located to the east of the site. Levee construction activities were visible on the property to the south of the site. Heavy machinery was observed operating on the southern adjacent property associated with these activities.

No interviews regarding this pump station were conducted.

Estelle Pumping Station #2

CEMVN-contractor personnel made a site visit to the Estelle Pump Station #2 located at 3850 Destrehan Avenue, Harvey, Louisiana on August 28th, 2008. The site is a manned pump station on the west bank of Jefferson Parish. The site is used to discharge water from a drainage canal in the area to the Hero Canal cutoff.

At the time of the site inspection, two 10,000-gallon diesel ASTs were observed in the northern portion of the site. The ASTs were observed in a secondary containment system that appeared to be in well-maintained condition. One 500-gallon AST was observed in secondary containment in the northern portion of the site associated with a raised storm shelter. Wooden shelving was observed in the pump house structure containing household hazardous chemicals. Boxes containing five-gallon buckets of grease were observed next to the shelving. Several 55-gallon drums were stored and observed in use on dispensing racks in the engine room of the pump house. Stained concrete was

observed in this area of the structure; however, catch trays with absorbent pads were observed under the drums in use.

The site vicinity is characterized as mixed use. Undeveloped land and waterways immediately surround the property. Residential property is located to the north of the site. Industrial property is located to the east of the site beyond the Hero Canal cutoff. Residential drainage canals from the north and additional drainage from the Pipeline Canal to the south terminate at the western border of the site.

No interviews regarding this pump station were conducted.

Hero Canal Pump Station

CEMVN-contractor personnel made a site visit to the Hero Pump Station located at 4644 Peters Road, Harvey, Louisiana on August 28th, 2008. The site is two separate manned pump stations on the west bank of Jefferson Parish. The site is used to discharge water from Bayou Barataria to the Harvey Canal.

At the time of the site inspection, two 10,000-gallon diesel ASTs were observed in the northwestern portion of the site. The ASTs were observed in a secondary containment system that appeared to be in well-maintained condition. One 500-gallon AST was observed in secondary containment in the northern portion of the site associated with a raised storm shelter. Three pad-mounted transformers were observed in the northern portion of the site. Staining was observed on rock placed in carport bays in the northern portion of the site. Two heavily stained 100-lb air compressors were observed under the path across Bayou Barataria; the concrete flooring supporting it was also heavily stained with oil. Sheens were observed on the surface of waterways around the pump station structure; nuisance litter was collected in the water in this area. A wooden shelving unit was observed inside the pump house containing degreaser and other household hazardous chemicals. Several 55-gallon drums containing heavy lubricating oil were observed throughout the station. Engines were observed in the central portion of the pump house heavily stained with oil. Heavy staining was observed throughout the pump house floor.

The site vicinity is characterized as heavy industrial. Industrial property surrounds the pump station. Bollinger Shipyard, a former CERCLIS site, is located adjacent to the site to the north. Elmwood Dry Docks, a hazardous waste remediation site, is located to the west of the site. Bayou Barataria is located to the east of the site and the Harvey Canal is located along the western site border.

No interviews regarding this pump station were conducted.

Cousins Pump Station

CEMVN-contractor personnel made a site visit to the Cousins Pump Station located at 2466 Destrehan Avenue, Harvey, Louisiana on August 28th, 2008. The site is two separate manned pump stations with a third under construction on the west bank of Jefferson Parish. The site is used to discharge water from the Cousins Canal to the Harvey Canal.

At the time of the site inspection, three 10,000-gallon diesel ASTs were observed in the southern portion of the site. The ASTs were observed in a secondary containment system that appeared to be

in well-maintained condition. One 250-gallon AST in secondary containment was observed resting on grass in the southwest corner of the site. No stained soil or stressed vegetation was observed in the area around the AST. Two palettes containing several one-gallon buckets of paint were observed in the southern-most pump house. Multiple 55-gallon drums containing heavy lubricating oil were observed throughout the pump houses at the site. Several of these drums were in use on dispensing racks during the site inspection. Five-gallon buckets were placed under the dispenser to collect discharges from them; however, some staining was observed around some of the buckets in this area. Five 100-gallon "day tanks" were observed inside each of the pump house structures.

The site vicinity is characterized as mixed use. Industrial property is located to the north of the site. Undeveloped property is located to the south; however construction activities associated with the Harvey Canal Flood Gate are underway to the southeast. Residential property is located to the west of the site. The Harvey Canal is located along the eastern border of the site and the Cousins Canal terminates at the eastern border of the site.

No interviews regarding this pump station were conducted.

Harvey Pump Station

CEMVN-contractor personnel made a site visit to the Harvey Pump Station located at 1600 Destrehan Avenue, Harvey, Louisiana on August 28th, 2008. The site is a manned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Patriot Canal to the Harvey Canal.

At the time of the inspection there were 3 pad-mounted transformers in the southern portion of the site. Two 10-gallon drums were observed in this area resting on soil heavily stained with oil; however, no stained soil or stressed vegetation were observed in this area. A 500-gallon AST on skids was observed under a walkway along the western wall of the site. A drum storage area was observed in a walkway attached to the pump house; several 55-gallon drums containing heavy lubricating oil and unlabelled five-gallon buckets were observed in this area. A 5-gallon bucket filled with waste oil was observed under a sub-floor in this area; the origin of this substance was not identified.

The site vicinity is characterized as industrial. Industrial property surrounds the majority of the site. The Stewart-Stevenson Fabrication yard is an AST facility located to the east of the site. A multi-tenant commercial facility is located to the west of the site. Houma Industries is a RCRA-LQG located south of the site. Residential property is located to the southeast. The Harvey Canal is located along the eastern site border and the Patriot Canal terminates at the western border of the site.

No interviews regarding this pump station were conducted.

Whitney-Barataria Pump Station

CEMVN-contractor personnel made a site visit to the Whitney-Barataria Pump Station located at 1600 Destrehan Avenue, Harvey, Louisiana on August 28th, 2008. The site is a manned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Patriot Canal to the Harvey Canal.

At the time of the site inspection there were two 7,000-gallon diesel ASTs in the northern portion of the site. The ASTs were in a secondary containment system that appeared to be well-maintained. Five approximately 100-gallon "day tanks" containing diesel were observed suspended from the ceiling of the pump house. Little evidence of staining was visible beneath the "day tanks" or throughout the pump house.

The site vicinity is characterized as industrial, since properties of this type surround the site. The Algiers Canal is located along the eastern site border. An unnamed canal draining water from Bayou Barataria terminates at the western site border.

No interviews regarding this pump station were conducted.

Planters Canal Pump Station #1

CEMVN-contractor personnel made a site visit to the Planters Pump Station #1 located across the Algiers Canal from Planters Pump Station #2, in Belle Chasse, Louisiana on August 28th, 2008. The site is a manned pump station on the Algiers Canal in Plaquemines Parish, used to discharge water from Bayou Barriere to the Algiers Canal.

At the time of the site inspection there were three 10,000-gallon diesel ASTs in the northern portion of the site, and also a 250-gallon diesel AST and a 200-gallon propane AST. There were three pole-mounted transformers in the western portion of the site; in this portion of the site there was also a drum storage area; a 55-gallon metal drum with unknown contents, and five 55-gallon poly drums with unknown contents. On the exterior of the pump house there was a 250-gallon waste oil AST, used to power generators. There was wooden shelving storing one-gallon buckets of paint in the eastern portion of the pump house. There were multiple 55-gallon drums containing heavy lubricating oil throughout the pump house. Some were on dispensing racks, in use at the time of the inspection; there were catch trays beneath these drums to collect drips. Throughout the pump house there were numerous light stains on the concrete floor.

The site vicinity is undeveloped land. A golf course is located to the south of the site. The Algiers Canal is located along the western site border. An unnamed canal draining water from Bayou Barriere terminates at the eastern site border.

No interviews regarding this pump station were conducted.

Planters Canal Pump Station #2

CEMVN-contractor personnel made a site visit to the Planters Pump Station #2 located at 268 Bypass Road, Harvey, Louisiana on August 28th, 2008. The site is a manned pump station on the west bank of Jefferson Parish. The site is used to discharge water from the Planters Canal to the Algiers Canal.

During the site inspection, three pole-mounted transformers were observed in the northern portion of the site. Access to the interior of the site was not possible at the time of the inspection.

The site vicinity is characterized as undeveloped land. The Algiers Canal is located along the eastern site border; the Planters Canal terminates at the western site border. A developed golf course facility is located to the south of the site.

No interviews regarding this pump station were conducted.

Conclusion

Generally, the presence of hazardous materials or their containers, present at all pump stations, must be considered a REC for each site. Additionally, there was evidence of *de minimus* releases at all pump stations. A *de minimus* release is not considered evidence of a REC; however, evidence of a series of releases can be construed as a suspected REC, due to a compounding condition. The presence of compounding *de minimus* releases was observed at most stations studied as part of this investigation. Most pump stations are located in residential or undeveloped areas reducing the risk of off-site RECs impacting the sites; however, pump stations located in industrial areas are at higher risk of being impacted by off-site RECs or impacted groundwater migrating through the stations pumps.

Based on this information, none of the pump stations studied above show evidence of RECs, other than those previously stated, except for the following:

RECs were noted at the Hero Pump Station from unreported releases of diesel fuel and surface water sheens at the site. Historical offsite RECs were noted from the Bollinger Shipyard facility adjacent to the north of the site and the Elmwood Dry Dock and Repair facility located to the west of the site.

RECs were noted at the Westwego Pump Station #2 from drums resting on stained soil in two locations at the site.

This investigation does not presume to be an exhaustive search of the current conditions, nor the past usage of the site and vicinity since the original Phase I ESA. Reasonable care has been taken to identify all sources of potential impacts to the surrounding area, but a complete update of all conditions is not feasible. No recommendations or findings other than those expressly stated in this report should be implied or inferred from the contents herein.

Based on the findings of this report, further investigation at the Hero Canal Pump Station and the Westwego Pump Station #2 is recommended to determine the extent of contamination, if any, at the sites.

Christopher Whitehead – PreparerJ. Christopher Brown - Approved
CEMVN-PM-RP-ContractorEnvironmental Planning and Compliance Branch