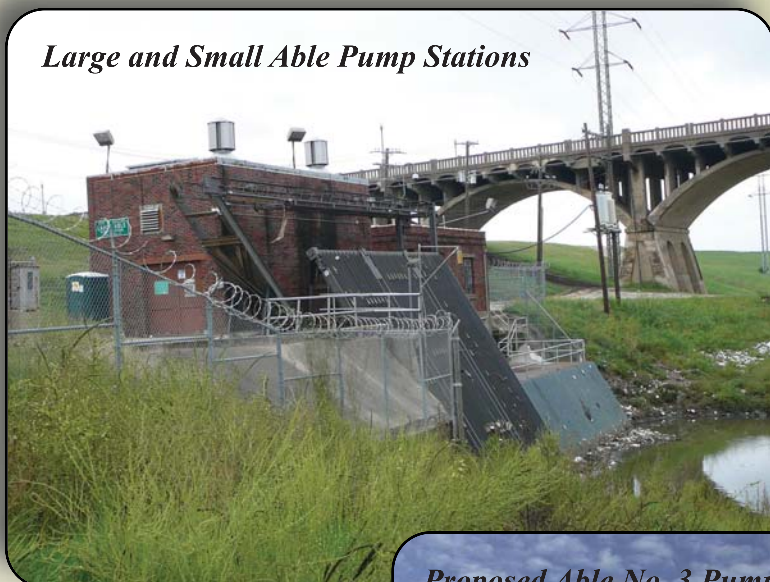
Environmental Assessment
Proposed Able Pumping Plant Improvements
City of Dallas, Texas



Large and Small Able Pump Stations

Proposed Able No. 3 Pumping Station (Rendering)

US Army Corps of Engineers ®

June 2014

City of Dallas

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ENVIRONMENTAL ASSESSMENT

Lead Agency for the EA: United States Army Corps of Engineers, Fort Worth District

Cooperating Agency: City of Dallas, Texas

Title of Proposed Action: **Proposed Able Pumping Plant Improvements, Dallas, Texas**

Designation: Environmental Assessment

Abstract

The United States Army Corps of Engineers (USACE) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act of 1969 (42 United States Code §§ 4321, et seq.), the Council on Environmental Quality regulations found in 40 Code of Federal Regulations (CFR) Parts 1500-1508, and USACE regulations found in 33 CFR Part 230. This EA describes the potential environmental consequences resulting from implementation of proposed improvements to the Able Pumping Plant in the City of Dallas, Texas (i.e., the "Proposed Action"). The purpose of the Proposed Action is to provide flood risk management for the 100-year, 24-hour storm event for the Able Pumping Plant service area within the Able Basin. The City of Dallas needs to implement Able Pumping Plant improvements because people and property in the Able Basin are currently subject to stormwater flooding impacts that are not efficiently controlled by the existing Able Pumping Plant. By improving the Able Pumping Plant, the City of Dallas would be able to provide improved flood risk management to people and property in the Able Basin.

Section 5141 of the Water Resources Development Act of 2007 (Public Law 110-114; 121 Stat.1041) provides authorization for improvements to interior drainage for the Dallas Floodway. The proposed improvements to the Able Pumping Plant would be implemented in compliance with 33 United States Code § 408. The City of Dallas is the action proponent.

Prepared By: United States Army Corps of Engineers
Fort Worth District

Point of Contact: United States Army Corps of Engineers
Fort Worth District
Attn: Marcia Hackett
819 Taylor Street, Room 3A14
Fort Worth, Texas 76102-0300
E-mail: Marcia.R.Hackett@usace.army.mil
Tel: (817) 886-1373
Fax: (817) 886-6499

June 2014

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EXECUTIVE SUMMARY

The United States Army Corps of Engineers (USACE) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] §§ 4321, et seq.), the Council on Environmental Quality regulations found in 40 Code of Federal Regulations (CFR) Parts 1500-1508, and USACE regulations found in 33 CFR Part 230. This EA describes the potential environmental consequences resulting from implementation of proposed improvements to the Able Pumping Plant in Dallas, Texas. The Able Pumping Plant is located adjacent to the East Levee, between the Houston Street Viaduct and the Jefferson Boulevard Viaduct, in the City of Dallas, Texas.

The City of Dallas manages interior drainage by allowing stormwater runoff to pool in sumps (low areas) in interior areas before pumping or gravity feeding it into the Trinity River within the Dallas Floodway. The Able Pumping Plant manages stormwater drainage in the Able Basin, which currently consists of nine sump ponds, two pump stations ("Small Able" and "Large Able"), and associated infrastructure. The existing pump stations have a combined pumping capacity of 220,000 gallons per minute.

Over the last 50 years, improvements to the Able Pumping Plant have not kept up with changes in area hydrology or technology. The Able Pumping Plant is not capable of managing predicted 100-year, 24-hour storm event water levels, resulting in increased flood potential and associated threats to people and property in the Able Basin.

The purpose of the Proposed Action is to provide improved flood risk management for the 100-year, 24-hour storm event within the Able Basin. The City of Dallas needs to construct a new and more efficient pump station (Able No. 3) at Able Pumping Plant with larger pumping capacity in order to reduce flood risk to people and property in the Able drainage basin that currently is not efficiently controlled by the existing Able Pumping Plant. By constructing the Able No. 3 Pump Station, the City of Dallas would be able to provide improved flood risk management to people and property in the Able Basin.

Section 5141 of the Water Resources Development Act of 2007 (Public Law 110-114; 121 Stat.1041) provides authorization for improvements to interior drainage for the Dallas Floodway. As part of this authorization, proposed improvements to the Able Pumping Plant were initially included as part of the on-going Dallas Floodway Project EIS. However, due to pressing safety concerns associated with flooding impacts, the proposed improvements to the Able Pumping Plant have been extracted from the Dallas Floodway Project EIS to expedite the analysis of proposed stormwater flood risk management actions in the Able Basin.

The proposed improvements to the Able Pumping Plant would be implemented in compliance with 33 USC § 408. As the lead agency for this NEPA document, the USACE Fort Worth District must determine the technical soundness and environmental acceptability of this Water Resources Development Act - authorized project, as documented in this EA. The City of Dallas, the action proponent for this EA, has approved the proposed improvements to the Able Pumping Plant with the passing of the 2006 Bond Program in an election held on November 7, 2006.

Implementation of the Proposed Action would reduce predicted 100-year, 24-hour storm event water levels to elevations at or below the established City of Dallas design water levels, reducing the potential flooding impacts to people and property in the Able Basin. In addition, the current Small and Large Able pump stations would be replaced with a single modernized station (Able No. 3); Small Able and Large Able pump stations would be demolished once Able No. 3 is partially operational.

ENVIRONMENTAL ASSESSMENT
PROPOSED ABLE PUMPING PLANT IMPROVEMENTS
CITY OF DALLAS, TEXAS

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Acronyms and Abbreviations

ACM	asbestos containing materials
ADT	average daily traffic
AQCR	Air Quality Control Region
AR	Army Regulation
BMPs	Best Management Practices
CAA	Clean Air Act
CH_4	methane
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CVP	concrete volute pump
CWA	Clean Water Act
DART	Dallas Area Rapid Transit
dB	decibel
dBA	A-weighted decibels
DCLID	Dallas County Levee Improvement District
DFE	Dallas Floodway Extension
DSHS	Department of State Health Services
EA	Environmental Assessment
EDR	Environmental Data Resources
EIS	Environmental Impact Statement
EO	Executive Order
ER	Engineering Regulation
EWLIDS	East and West Levee Interior Drainage Systems
GHGs	greenhouse gases
gpm	gallons per minute
HTRW	Hazardous, Toxic, and Radioactive Waste
Hz	Hertz
IH	Interstate Highway
kV	kilovolt
LBP	lead-based paint
MLK	Martin Luther King
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NCA	Noise Control Act
NCTCOG	North Central Texas Council of Governments
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOx	nitrogen oxides
NRHP	National Register of Historic Places
O_3	ozone
OSHA	Occupational Safety and Health Administration
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
PM_{10}	particulate matter less than 10 microns in diameter
RBC	reinforced box culvert
RCP	reinforced concrete sewer pipe
RGP	Regional General Permit
ROD	Record of Decision
ROI	Region of Influence
RONA	Record of Non-Applicability
SCADA	Supervisory Control and Data Acquisition
SIP	State Implementation Plan
SOx	oxides of sulfur
SPF	Standard Project Flood
SWPPP	Stormwater Pollution Prevention Plan
TCEQ	Texas Council on Environmental Quality
THC	Texas Historical Commission
TPWD	Texas Parks and Wildlife Division
TRCCLUP	Trinity River Corridor Comprehensive Land Use Plan
TREIS	Trinity River and Tributaries Regional Environmental Impact Statement
TRFCD	Trinity River Flood Control District
TxDOT	Texas Department of Transportation
U.S.	United States
USACE	U.S. Army Corps of Engineers
USC	U.S. Code
USDA	U.S. Department of Agriculture
USEPA	U.S. Environmental Protection Agency
UST	underground storage tanks
VOCs	volatile organic compounds

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CHAPTER 1
PURPOSE AND NEED FOR PROPOSED ACTION

1.1 INTRODUCTION

The United States Army Corps of Engineers (USACE) has prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [USC] Section 4321, et seq.), the Council on Environmental Quality (CEQ) regulations found in 40 Code of Federal Regulations (CFR) Parts 1500-1508, and USACE regulations found in 33 CFR Part 230. This EA describes the potential environmental consequences resulting from implementation of proposed improvements to the Able Pumping Plant in the City of Dallas, Texas.

1.2 PROJECT AREA

The City of Dallas is located adjacent to the Trinity River, just downstream of the confluence of the West and Elm Forks of the Trinity River. The Able Pumping Plant is part of the East and West Levee Interior Drainage Systems (EWLIDS), which currently includes six pumping plants, associated sumps, seven pressure sewers, and numerous gravity sluices that, in total, serve much of the City of Dallas metropolitan area (Figure 1-1). The EWLIDS are discrete stormwater flood risk management systems separated by geography. The Able Pumping Plant facilities are located to the south of the Dallas Central Business District, with the sump stretching from Reunion Boulevard on the north to the Dallas Area Rapid Transit (DART) Rail Bridge on the south. The Able Pumping Plant includes two pump stations fed from water collected in nine sump ponds; the pump stations share a single outfall that discharges stormwater to the Trinity River. The two existing pump stations are located on the west side of the sump, adjacent to the East Levee, between the Houston Street Viaduct and the Jefferson Boulevard Viaduct (Figure 1-2).

The approximately 2,685-acre Able Basin defines the project area; however, with the exception of flood extent, no impact associated with the Proposed Action would extend beyond the construction area. Thus, this EA focuses on the approximately 13.4-acre potentially disturbed area associated with proposed improvements at the Able Pumping Plant.

1.3 BACKGROUND

1.3.1 Dallas Floodway and Stormwater Drainage Systems

The Trinity River was vital to the early development of the City of Dallas. However, numerous large floods, including the catastrophic flood of 1908, led the City of Dallas to seek protection from Trinity River floodwaters. Between 1928 and 1931, the Dallas County Levee Improvement District (DCLID) constructed levees to protect the City of Dallas from riverine flooding. The DCLID relocated the confluence of the West and Elm Forks, and filled the remnant channel or set it aside for sump storage. In 1932, the DCLID had completed construction of the original components of the EWLIDS.

In the mid-1940s, major storms, combined with continued urbanization in the watershed, resulted in severe flooding in the project area. To reduce flooding within the City of Dallas area, Congress authorized the flood control project termed the “Dallas Floodway” in 1945 and again in 1950. The USACE completed building the authorized Dallas Floodway project in 1958, which included substantial improvements to the levees and the EWLIDS.

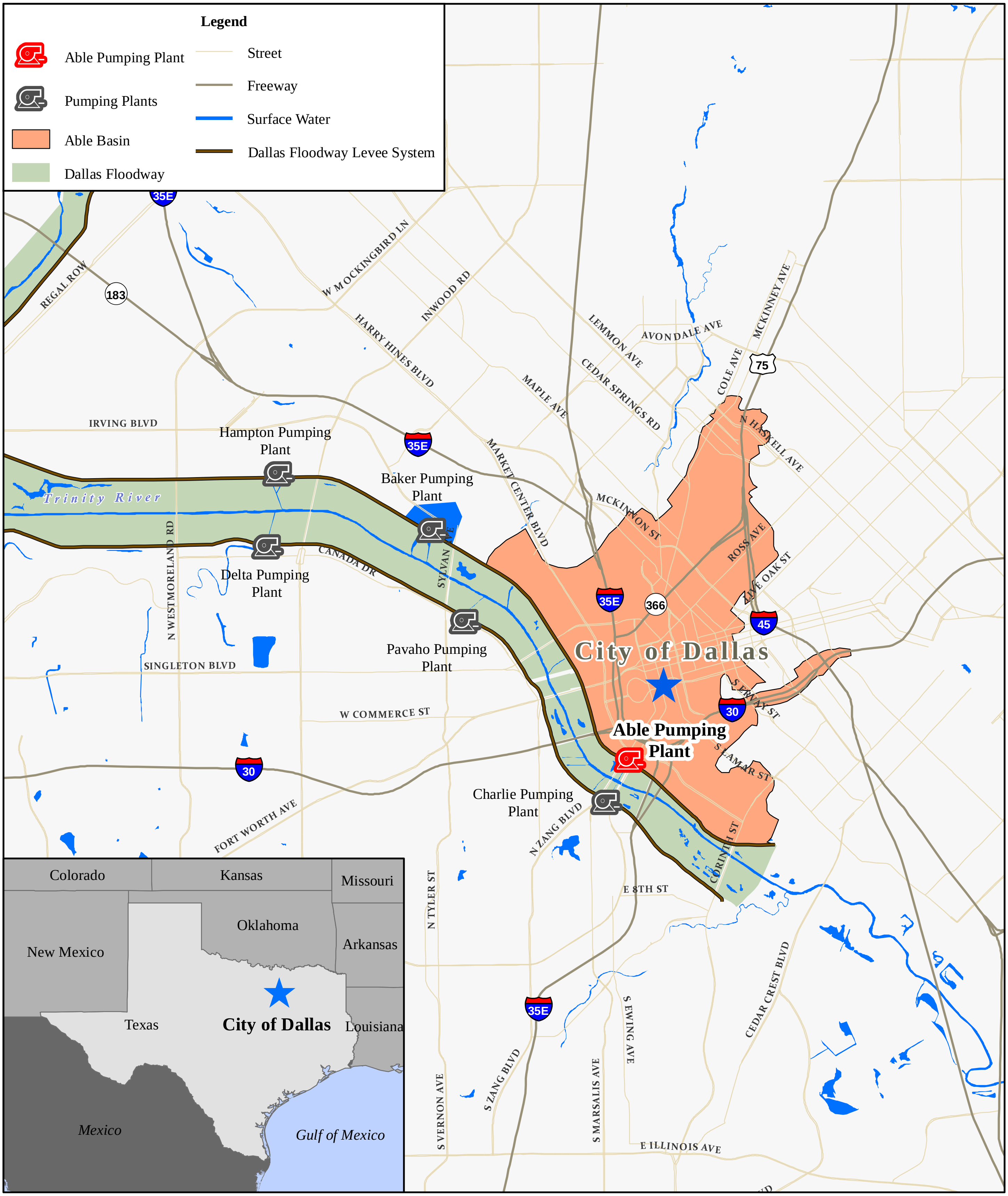


Figure 1-1
Regional Vicinity Map

Sources: City of Dallas 2006, 2009d; NCTCG 2008

Figure 1-2
Existing Able Pumping Plant and Sump

The same levees that protect the City of Dallas from Trinity River flooding also block local stormwater runoff from the interior (developed) side of the levee from reaching the Trinity River. This stormwater runoff on the developed side of the levee is referred to as “interior drainage.” Thus, the City of Dallas manages interior drainage by allowing the stormwater runoff to pool in sumps (low areas) in interior areas before pumping or gravity feeding it into the Trinity River within the Dallas Floodway. For the last 75 years, the City of Dallas (in cooperation with the USACE) has employed this strategy for managing stormwater in the EWLIDS.

The City of Dallas Trinity River Flood Control District (TRFCD) operates and maintains the Dallas Floodway and EWLIDS under the regulatory control of the USACE (City of Dallas 2006). The City of Dallas TRFCD uses a sophisticated Supervisory Control and Data Acquisition (SCADA) system to control and monitor the operation of the pumping plants. As part of the system, the City of Dallas TRFCD incorporates a network of closed-circuit television cameras and an Automated Local Evaluation in Real Time reporting system that provides real-time measurements of precipitation and stream and sump levels throughout the watershed.

In March 2006, the need for improving the EWLIDS was demonstrated when a significant local storm caused widespread stormwater flooding in the City of Dallas, resulting in one fatality and substantial property damage. During this storm, City of Dallas Police and Fire-Rescue Departments responded to hundreds of emergency rescue calls from stranded motorists and residents. The R. L. Thornton Freeway, a stretch of Interstate Highway (IH) 30 that serves the central business district and is drained by the Able Pump Station, was closed with floodwaters as deep as three feet (City of Dallas 2009a).

1.3.2 Storm Terminology

This document describes storms by their intensity and associated ability to affect the project area. By understanding the range of reasonably foreseeable floods and associated flood water levels that could affect the project area, responsible authorities can plan, design, and construct appropriately sized infrastructure to reduce the potential for injury and/or damage from flooding.

Using historical storm data, hydrologists describe the range of potential storm intensities and durations that could reasonably affect an area. This range or “recurrence interval,” is the probability that a given storm will be equaled or exceeded in any given year. Thus, a storm event with a recurrence interval of 2 years would have a 50 percent chance of occurring in any year; a storm event with a recurrence interval of 500 years would have a 0.2 percent chance of occurring in any year. In this document, the storm used for modeling and engineering purposes in the project area is the “100-year, 24-hour storm event.” This storm corresponds to the estimated amount of rain that would fall within a 24-hour period that has a 1 percent chance of occurring in any given year in the project area.

As a point of comparison, rainfall data collected in the EWLIDS basin during the March 2006 storm revealed the storm had an estimated recurrence interval of 40 years (2.5 percent chance of occurring in any given year) (City of Dallas 2009a).

1.4 ABLE PUMPING PLANT

1.4.1 Able Sump Ponds

The Able Pumping Plant drains an area of approximately 2,685 acres. Sump storage for the Able Basin consists of nine ponds which were originally the old Trinity River channel and levee borrow ditches generally located between the intersection of Riverfront Boulevard and Rock Island Street along the levee to the eastern terminus of Riverfront Boulevard. The ponds are divided by streets, highways, and the Belleview Pressure Sewer. The sump ponds are generally connected to each other by reinforced box culverts (RBCs) (refer to Figure 1-2; Table 1-1).

Table 1-1. Able Sump Pond Connections

Connected Ponds	Type of Connection
Pond 1 to 2	2, 6-foot x 8-foot RBCs
Pond 2 to 3	1, 10-foot x 10-foot RBC
Pond 3 to 4	1, 9-foot x 8-foot RBC
Pond 4 to 5	2, 6-foot x 6-foot RBCs
Pond 4 to 7	1, 36-inch diameter reinforced concrete sewer pipe (RCP)
Pond 5 to 6	None, overflow the Belleview Pressure Sewer
Pond 6 to 7	1, 6-foot x 6-foot RBC
Pond 7 to 8	1, 8-foot x 9-foot RBC
Pond 8 to 9	1, 48-inch diameter RCP
Pond 9 to 6	1, 42-inch RCP

Under current conditions, most of the existing connections do not have adequate conveyance for the system to function at design levels. The Belleview Pressure Sewer creates a boundary that isolates Ponds 1 through 5 from Ponds 6 through 9. Until early 2014, when the City of Dallas located and cleared the existing 36-inch diameter reinforced concrete pipe between Ponds 4 and 7, it was not functional (i.e. plugged with silt and debris) and did not allow the southern end of the site to drain back to the pump station in Pond 1.

1.4.2 Able Pump Stations

The Able Pumping Plant originally consisted of a single pump house that was constructed in 1932 as part of the DCLID. The original pump station, Small Able, consists of two, 40,000-gallons per minute (gpm) pumps. In 1953, the City of Dallas constructed another pump station at Able Pumping Plant (Large Able) consisting of three, 46,667-gpm pumps, and one, 6,000-gpm pump. When the Trinity River stage is low, stormwater flow gravitates via concrete sluices beneath the East Levee into the Trinity River. When the Trinity River rises, the City of Dallas closes the sluice gates and pumps the stormwater into the Trinity River. The Able Pumping Plant outfall is located in the Dallas Floodway.

1.4.3 Storm Event Water Levels and Associated Potential Flooding Risk

This section presents the predicted 100-year, 24-hour storm event water levels; the City of Dallas design 100-year, 24-hour storm event water levels; and the number, type, and value of structures potentially subject to flooding impacts in the Able Basin as modeled in the Phase 1 Interior Drainage Study: East Levee. These model predictions and the subsequent comparison to existing conditions identified problems in the existing Able Pumping Plant system and aided in the development of potential measures to address stormwater-flooding concerns (City of Dallas 2006, 2009a).

1.4.3.1 Predicted and Design 100-year, 24-hour Storm Event Water Levels

The predicted and design 100-year, 24-hour storm event water levels for the Able Sump are 399.2 feet and 392.5 feet, respectively. The design water level corresponds to original (1960s and 1970s-era) 100-year, 24-hour storm events, which reflected stormwater basin conditions at that time. Primarily due to changes in the stormwater basins, the design storm event water level no longer reflects current stormwater basin conditions (City of Dallas 2006, 2009a). As the predicted 100-year, 24-hour storm event water levels are greater than the original design storm event water levels, the Able Pumping Plant is undersized to handle the predicted volume of stormwater, and flooding in areas adjacent to the Able Sumps is likely.

1.4.3.2 Predicted Flooding Risk

A 2006 survey predicted that 208 structures are potentially affected by a 100-year, 24-hour storm event in the Able Basin; of those, 131 structures are potentially flooded by stormwater (City of Dallas 2006). Potentially affected structures are any structures touched by the inundation area. Potentially flooded structures are those structures touched by the inundation area that have finished floor elevations below the predicted water surface elevation. The flooding of the Able Sumps in 2006 demonstrated that the Able Pumping Plant does not have sufficient capacity to dewater the sumps in a timely manner.

Figure 1-3 depicts the predicted flood inundation area and the potentially affected structures during a modeled 100-year, 24-hour storm event in the Able Basin, based on current conditions. As a point of comparison, the 100-year, 24-hour storm event has the potential to affect 1,644 structures in the entire EWLIDS (City of Dallas 2009a).

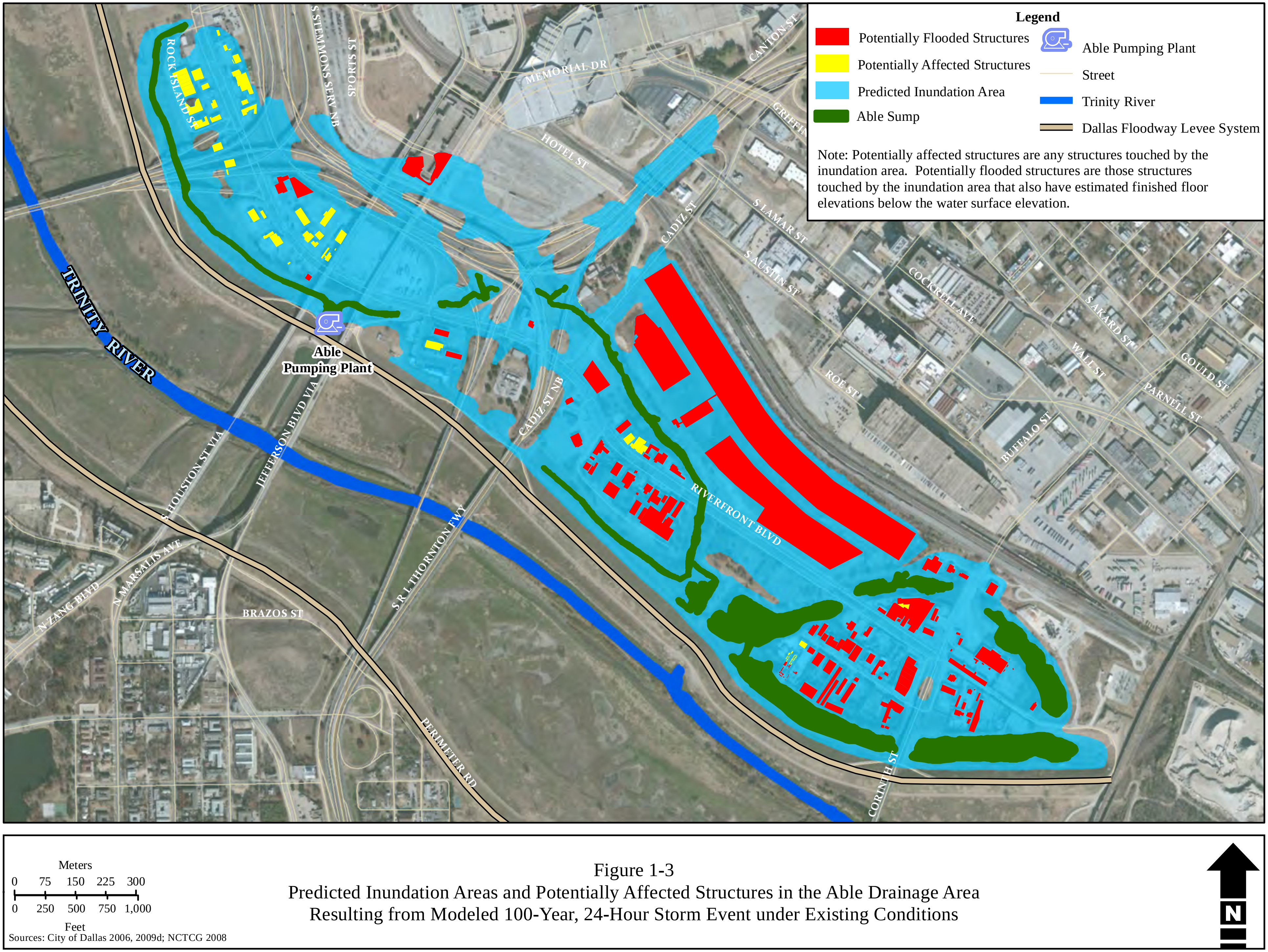
1.5 PURPOSE OF AND NEED FOR THE PROPOSED ACTION

Currently, flooding from the 100-year, 24-hour storm event damages property within the Able Drainage Basin. This flooding also presents a substantial risk to public safety beyond the basin, as it forces closure of major transportation arterials and thus interferes with the efficient movement of emergency vehicles. Thus, the City of Dallas needs to implement improved flood risk management to people and property in the Able Basin by constructing a new Able Pumping Plant with larger pumping capacity and demolishing the existing insufficient Able Pumping Plant. The purpose of the Proposed Action is to provide improved 100-year, 24-hour storm event flood risk management for the area served by the Able Pumping Plant.

1.6 PROJECT AUTHORITY

Section 5141 of the Water Resources Development Act of 2007 (Public Law 110-114; 121 Stat.1041) provides authorization for improvements to interior drainage for the Dallas Floodway. As part of this authorization, proposed improvements to the Able Pumping Plant were initially included as part of the on-going Dallas Floodway Project EIS, which includes proposed improvements to the entire EWLIDS. However, due to pressing safety concerns as identified in Section 1.4.3, most notably potential flooding impacts within the Able Basin compromising emergency vehicle access through major transit routes, the proposed improvements to the Able Pumping Plant have been extracted from the Dallas Floodway Project EIS in order to expedite the analysis of proposed stormwater flood risk management actions in the Able Basin.

The proposed improvements to the Able Pumping Plant would be implemented in compliance with 33 USC § 408. The City of Dallas is the proponent for the Proposed Action. The federal interests in property are currently owned and maintained by the City of Dallas as part of the Dallas Floodway. As the lead agency for this NEPA document, the USACE Fort Worth District must determine the technical soundness and environmental acceptability of the proposed project, as documented in this EA. This analysis takes into consideration the potential environmental aspects of the action alternatives. The information will be made available to the public before reaching a decision, pursuant to CEQ requirements for public involvement (40 CFR § 1506.6).



Sources: City of Dallas 2006, 2009d; NCTCG 2008

Figure 1-3
Predicted Inundation Areas and Potentially Affected Structures in the Able Drainage Area
Resulting from Modeled 100-Year, 24-Hour Storm Event under Existing Conditions

1.6.1 2006 City of Dallas Bond Program

The interior drainage system's most recent set of major improvements occurred during the mid-1970s, during which the capacity of some of the pump stations was increased and some gravity sluices were constructed to permit the gravity discharge of stormwater in the sumps without needing to operate the pumping units. When evaluated prior to the 2006 Bond Program, the interior drainage system was considered inadequate in several locations since drainage and stormwater management had lagged behind development in the city.

To address these inadequacies, City of Dallas staff conducted a needs survey of flood control drainage improvements, and erosion control projects required to raise the level of protection to current standards. The study identified over $900 million in needed projects and the citizens of Dallas passed a bond program in 2006 that approved funds for about one third of the projects.

Improvements to the Able Sump and stormwater pump station were part of the Bond Program that includes funds for the design and construction of a new Able Pumping Plant. Improvements to the sumps are included under other projects and therefore are not evaluated in this document.

1.7 USACE ENVIRONMENTAL OPERATING PRINCIPLES

The USACE has identified core "Environmental Operating Principles" that guide the USACE in its planning, coordination, and project implementation efforts. These core Environmental Operating Principles are:

- Foster sustainability as a way of life throughout the organization.
- Proactively consider environmental consequences of all Corps activities and act accordingly.
- Create mutually supporting economic and environmentally sustainable solutions.
- Continue to meet our corporate responsibility and accountability under the law for activities undertaken by the Corps, which may impact human and natural environments.
- Consider the environment in employing a risk management and systems approach throughout the life cycles of projects and programs.
- Leverage scientific, economic and social knowledge to understand the environmental context and effects of Corps actions in a collaborative manner.
- Employ an open, transparent process that respects views of individuals and groups interested in Corps activities.

The USACE strives to incorporate these principles into their projects when applicable. In doing so, the USACE and project stakeholders can work together to ensure proposed projects maximize the "public good" and minimize recognized negative impacts. The USACE has incorporated these Environmental Operating Principles into this NEPA document.

1.8 AGENCY COORDINATION AND PUBLIC INVOLVEMENT

As part of the NEPA process, the USACE has reached out to government agencies and the public in an attempt to solicit input on the Proposed Action. The following paragraphs describe how the USACE has coordinated with government agencies and involved the public.

1.8.1 Agency Coordination

On June 13, 2013, the USACE mailed letters to five federal and state agencies notifying them of the USACE's intent to prepare an EA for proposed improvements to the Able Pumping Plant (Appendix A).

1.8.2 Public Involvement

A public scoping meeting for the Dallas Floodway Project Environmental Impact Statement (EIS) was held on November 17, 2009, that included information on the proposed changes to the Able Pumping Plant. None of the comments received during and after the meeting was relevant to the proposed improvements to the Able Pumping Plant.

On June 24, 2014, the USACE made copies of the EA and draft FONSI available to the public for review at the Dallas Public Library, the Oak Lawn Branch Library, and online at http://www.swf.usace.army.mil/Missions/WaterSustainment/DallasFloodway.aspx. The USACE published a Notice of Availability (NOA) in the *Dallas Morning News* from June 24, 2014 through June 26, 2014; in the *Dallas Weekly* the week of June 30, 2014; and in the June 28, 2014 edition of the weekly Spanish publication, *Al Día*. The USACE also mailed copies of the NOA to over 350 agencies, officials, and individuals on the USACE mailing list. The EA review period will end on July 24, 2014.

1.9 IMPACT ANALYSIS CRITERIA

The USACE has identified a broad spectrum of general and project-specific criteria with which to analyze the potential effects of the action alternatives and will use these "impact analysis criteria," to assess the potential impacts stemming from implementation of the action alternatives. The following criteria serve as the basis for the impact analysis presented in Chapter 4:

- Institutional Criteria
- Public Criteria
- Technical Criteria
- Scientific Criteria

1.9.1 Institutional Criteria

Institutional Criteria include those criteria required by NEPA for federal agencies to take into consideration when assessing the potential environmental consequences of a proposed action in their decision-making process. Additionally, the NEPA assessment process is iterative in nature, and if potential impacts are deemed "significant" (as defined at 40 CFR § 1508.27), then the level of analysis may be heightened and an EIS, rather than an EA would be prepared. The intent of NEPA is to protect, restore, or enhance the environment through well-informed federal decisions. The USACE has prepared this EA in accordance with the requirements as outlined in the following sections.

- NEPA (42 USC §§ 4321, et seq.)
- CEQ Regulations (40 CFR Parts 1500-1508)
- USACE Engineering Regulation 200-2-2, Environmental Quality, Procedures for Implementing NEPA (33 CFR Part 230)
- National Historic Preservation Act (NHPA)
- Clean Air Act (CAA)
- Endangered Species Act
- Clean Water Act (CWA)

- Migratory Bird Treaty Act
- Safe Drinking Water Act
- Native American Graves Protection and Repatriation Act
- Resource Conservation and Recovery Act
- Comprehensive Environmental Response, Compensation, and Liability Act
- Historic Sites Act of 1935
- Rivers and Harbors Act of 1899
- Noise Control Act (NCA) of 1972 (42 USC §§ 4901-4918)
- Executive Order (EO) 11988 - Floodplain Management
- EO 11990 - Protection of Wetlands
- EO 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations
- EO 13045 - Protection of Children from Environmental Health Risks and Safety Risks
- EO 13148 - Greening the Government through Leadership in Environmental Management
- EO 13175 - Consultation and Coordination with Indian Tribal Governments
- EO 13186 - Responsibilities of Federal Agencies to Protect Migratory Birds

1.9.2 Public Criteria

Public Criteria include those criteria deemed important by the public. These criteria include things such as flood protection, visual/aesthetic corridors, and recreational opportunities. As part of the public involvement process, the USACE shall solicit input from the public during the EA public review period.

1.9.3 Technical Criteria

Technical Criteria include those criteria that demonstrate consistency with the technical aspects of the USACE mission, namely, flood risk management. These criteria assist in determining the "technical soundness" of the project. These criteria include:

- Levee Stability
- Operational Costs
- Hydrologic Impacts
- Structure Stability

These criteria are reflected in the Trinity River and Tributaries Regional Environmental Impact Statement (TREIS) and associated Record of Decision. The USACE Fort Worth District prepared the TREIS to address the proposed increases in floodplain development occurring in the upper Trinity River basin during the Dallas-Fort Worth Metroplex development boom in the mid-1980s (USACE 1988). Two major conclusions were drawn from the TREIS:

1. A widespread lack of Standard Project Flood (SPF) protection existed.
2. Different USACE and local community permitting strategies have a significant impact on the extent of increase of this lack of SPF protection (USACE 1988).

The Record of Decision (ROD) prepared for the TREIS specified criteria that the USACE would use to evaluate future permit applications in the Trinity River Basin; specifically, projects located within the SPF floodplain of the Elm Fork, the West Fork, and the main stem of the Trinity River. The TREIS ROD established criteria for actions that require a USACE permit to address hydrologic and hydraulic impacts and mitigation of habitat losses (USACE 1988). The Able Pumping Plant is within the SPF floodplain of the main stem, and thus the following specific design criteria apply:

1. No rise in the 100-year or SPF elevation for the proposed condition will be allowed.
2. The maximum allowable loss in storage capacity for 100-year and SPF discharges will be 0 percent and 5 percent, respectively.
3. Alterations of the floodplain may not create or increase an erosive water velocity on- or off-site.
4. The floodplain may be altered only to the extent permitted by equal conveyance reduction on both sides of the channel.

1.9.4 Scientific Criteria

Scientific Criteria include those criteria that represent the recognized scientific or environmental qualities specific to the project area that would assist in determining the “environmental acceptability” of the project. These include criteria that are important to local and state interests.

- Texas Endangered Species
- North Central Texas Council of Governments Certification
- Section 26 of the Texas Water Code
- State of Texas Water Quality Certification
- No Net Negative Impact to Fish and Wildlife
- Acceptable Environmental Cost/Benefit Ratio
- Environmental Value
- Global System
- Environmental Stewardship
- Green Design

1.10 DOCUMENT FRAMEWORK

The organization of this EA is as follows:

- Chapter 1 defines the purpose of and need for the Proposed Action
- Chapter 2 describes the action alternatives
- Chapter 3 presents a discussion of existing conditions and potential environmental consequences for each resource area
- Chapter 4 presents an analysis of the potential cumulative effects of the Proposed Action
- Chapter 5 provides a summary of impacts
- Chapter 6 addresses various other considerations required by NEPA
- Chapter 7 contains all references cited in the EA
- Chapter 8 provides the list of preparers

In addition, there are three appendices:

- Appendix A presents the letters used to notify federal and state agencies of the USACE’s intent to prepare and EA
- Appendix B includes the Clean Water Act § 404(b)(1) analysis of impacts to jurisdictional waters of the United States (U.S.)

- Appendix C includes the data analysis associated with air quality review, and the associated Record of Non-Applicability (RONA)

Lastly, this analysis relies on the studies and project descriptions included in the full permit package submitted by the City of Dallas to the USACE as required under 33 USC § 408 (the "408 Package"). The 408 Package is incorporated into this analysis by reference.

CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

2.1 PROPOSED ACTION

The Proposed Action is to provide improved flood risk management for the predicted 100-year, 24 hour storm event that can occur within the Able Basin. The existing Able Pumping Plant does not efficiently provide flood risk management to people and property in the Able Basin during significant storm events. Courses of action taken to develop alternatives for improvement of flood risk management are discussed below.

2.2 ALTERNATIVE DEVELOPMENT

In order to identify action alternatives to carry forward for analysis to satisfy the purpose and need, the City of Dallas followed a "courses of action" development approach for screening alternatives to address existing stormwater flooding concerns in Able Basin. The City of Dallas reviewed recently completed engineering studies that identified potential courses of action as well as needs surveys conducted under the 2006 City of Dallas Bond Program. Those courses of action that were deemed feasible and warranted further screening were included for additional assessment in this EA (City of Dallas 2006).

2.2.1 Potential Courses of Action

The City of Dallas identified the following potential courses of action to address existing stormwater flooding concerns in the area served by the Able Pumping Plant:

- Increased Pump Capacity
- Increased Sump Capacity
- Improvement of Sump Pond Culvert System
- Construct Pressure Sewers
- Inverted Siphon

These potential courses of action could work independently, or in combination with one or more other courses of action, to address existing stormwater flooding concerns in the Able Basin (City of Dallas 2006). In addition, the City of Dallas identified the following associated actions that do not provide additional stormwater flood protection, but are nonetheless associated with the Proposed Action and therefore are included for consideration. A description of each of these potential courses of action follows.

2.2.1.1 Increased Pump Capacity

Increasing the capacity of the pumping plant to handle stormwater is possible through rehabilitating existing pump stations, constructing new pump stations at existing pumping plants, and/or constructing new pumping plants.

The required additional pumping capacity for Able Sump depends upon other improvements made in the sump. The recommended pump station improvements would be part of a combination of elements to manage stormwater. The existing Able pump stations were evaluated for potential rehabilitation and improvements to increase pump capacity. Both Small and Large Able would require electrical system and structural rehabilitation before either could be evaluated for increased pumping capacity capability (City of Dallas 2006).

If no additional improvements are made to Able Sump, an additional pump station of at least 704,000-gpm capacity would be required to work in conjunction with Small and Large Able to limit the computed 100-year, 24-hour storm peak sump stage to the 100-year design elevation (City of Dallas 2006).

2.2.1.2 Increased Sump Capacity

A potential approach to managing stormwater is to increase the size of the retention basins, or sumps. When land is readily available, agencies can consider increasing the size of sumps to increase the amount of available volume for stormwater storage; as the size of the sump increases, the required pumping capacity decreases.

Any enhancement to sump capacity would need to be made in Ponds 1 through 5 to achieve a reduction in peak stages. However, effective increase to sump capacity is not feasible. The biggest incremental improvement to capacity would require expansion of the storage capacity of Pond 1. The western side of Pond 1 is confined by the interior toe of the East Levee. At the same time, the eastern side of Pond 1 is confined by development. Therefore, it is not practicable to expand Pond 1. Ponds 2 through 5 are similarly confined by existing development (City of Dallas 2006).

In the project area, the City of Dallas would have to acquire substantial amounts of developed, private property to augment existing sump storage capacity, and displacing residents and/or businesses is not a desired approach (City of Dallas 2006). Therefore, the City of Dallas eliminated the Increase Sump Storage Capacity course of action from further analysis.

2.2.1.3 Improvement of Sump Pond Culvert System

Able Sump operation could be improved if conveyance between sump ponds were enhanced. This could be done by improving existing culvert connections or by adding additional connections between ponds. Two different types of culvert alternatives were developed: addition of a new culvert connecting Ponds 1 and 5 or replacement of existing culverts.

Addition of a box culvert connecting Pond 1 and Pond 5 would allow excess water in Pond 1 to back up directly into Pond 5 during storm peaks, more efficiently utilizing the existing storage in Pond 5. This new culvert would run parallel to the interior toe of the East Levee. However, excavation along the levee toe could potentially interfere with levee stability. Because of the geotechnical hazards associated with excavation along the interior toe of the levee, the construction of the Pond 1 to Pond 5 connecting culvert was eliminated (City of Dallas 2006).

Undersized culverts contribute to the high sump stages (exceeding the 100-year design elevation) during significant storm events. Reductions in peak sump stages may be possible by improving the culverts between Ponds 1 and 2, Ponds 2 and 3, Ponds 3 and 4, and Ponds 4 and 5. These proposed culvert improvements alone would not be sufficient to reduce the computed 100-year, 24-hour storm peak sump stage to the design elevation. As summarized in Table 2-1, these connection improvements have been incorporated into other current and future vicinity projects. Reductions in peak sump stages by improving the culverts connecting Ponds 6 through 9 would only be possible with improved connectivity across the Belleview Pressure Sewer to allow these to effectively drain into Ponds 1 through 5 and the pump stations (City of Dallas 2006). Because the sump improvements have been incorporated into other proposed projects, they have been eliminated from further alternative analysis here. Additional information may be found in Chapter 4, Cumulative Effects.

Table 2-1. Able Sump Pond Connections Planned Improvements

Connected Ponds	Type of Connection (Existing)	Type of Connection (Proposed)	Project Implementing Improvement
Pond 1 to 2	2, 6-foot x 8-foot RBCs	4, 10-foot x 6-foot RBCs Demolish existing RBCs	Riverfront Boulevard Project (City of Dallas)
Pond 2 to 3	1, 10-foot x 10-foot RBC	3, 9-foot x 8-foot RBCs Demolish existing RBCs	The Horseshoe Project (Texas Department of Transportation [TxDOT])
Pond 3 to 4	1, 9-foot x 8-foot RBC	Replace RBCs with a bridge	Cadiz Street Bridge Improvements (City of Dallas)
Pond 4 to 5	2, 6-foot x 6-foot RBCs	Replace RBCs with a bridge	Riverfront Boulevard Project (City of Dallas)
Pond 4 to 7	1, 36-inch diameter RCP	No change	Not Applicable
Pond 5 to 6	None, overflow the Belleview Pressure Sewer	No change	Not Applicable
Pond 6 to 7	1, 6-foot x 6-foot RBC	Replace RBCs with a bridge	Riverfront Boulevard Project (City of Dallas)
Pond 7 to 8	1 8-foot x 9-foot RBC	No change	Not Applicable
Pond 8 to 9	1, 48-inch diameter RCP	No change	Not Applicable
Pond 9 to 6	1, 42-inch RCP	No change	Not Applicable

2.2.1.4 Construct Pressure Sewers

Constructing new pressure sewers to collect and convey stormwater to the Dallas Floodway is possible under certain conditions: a potential pressure sewer basin must be capable of generating enough hydraulic head to generate sufficient pressure, and the drainage area must be large enough to contribute a significant amount of flow to the sump to make the system economically viable.

The City of Dallas investigated potential areas, but did not identify any areas that could provide enough hydraulic head and area to contribute a sufficient amount of flow at a reasonable cost (City of Dallas 2006). Therefore, the City of Dallas eliminated the Pressure Sewer Construction course of action from further analysis.

2.2.1.5 Inverted Siphon

The Belleview Pressure Sewer effectively isolates Ponds 1 through 5 from Ponds 6 through 9 until the weir is overtopped, and thus the volume in Ponds 6 through 9 is currently ineffective except in storing the local runoff. The City of Dallas has evaluated creating a connection under the Belleview Pressure Sewer between Ponds 5 and 6. While such a connection would not be effective in reducing peak sump stages, it would aid in allowing Ponds 6 through 9 to drain towards Able Pumping Plant after the peak of a storm event and would thus minimize stagnant standing water in Ponds 6 through 9 (City of Dallas 2006). Because the construction of an inverted siphon would not reduce peak sump stage and thus reduce flood risk, the City of Dallas eliminated the Inverted Siphon course of action from further analysis.

2.2.2 Potential Courses of Action Summary

As shown in Table 2-2, the City of Dallas has determined that a combination of actions, to include increasing the pumping capacity, improved sump connection, and constructing an inverted siphon within the Able Pumping Plant is the selected course of action for addressing existing stormwater flooding concerns in the Able Basin. In addition, as required by CEQ regulations, the No Action Alternative is also a potential course of action. The other potential courses of action have been eliminated from further analysis in this EA, as discussed above. Section 2.3 presents a discussion of the development, and identification of the measures associated with the selected course of action.

Table 2-2. Potential Courses of Action Summary

Potential Course of Action	Eliminated	Included
Increase Sump Storage Capacity	✓	
Improvement of Sump Pond Culvert System	✓	
Increase Pumping Capacity		✓
Construct Pressure Sewers	✓	
Inverted Siphon	✓	

2.3 ALTERNATIVES CONSIDERED

2.3.1 Proposed Action

2.3.1.1 Overview

Implementation of the Proposed Action would reduce predicted 100-year, 24-hour storm event water levels to heights in the Able Basin at or below the established City of Dallas water levels, resulting in a potential total elimination of potentially flooded structures, and the substantial reduction in the number of potentially affected structures in the Able Basin. This would serve to reduce potential stormwater flooding risk to people and property in the City of Dallas. Proposed construction activities would last approximately 30 months. Figure 2-1 depicts the location of the Proposed Action components. The limit of construction associated with the Proposed Action covers 13.4 acres. The following paragraphs provide detailed descriptions of these components.

2.3.1.2 Able Pump Station and Outfall

Under the Proposed Action, the City of Dallas would construct a new pump station (Able No. 3) along Riverfront Boulevard, on the north side of the sump basin. Two new service driveway access points would connect the east and west sides of the station site from Riverfront Boulevard and pass beneath the Jefferson Boulevard and Houston Street Viaducts. The new pump station would house four concrete volute pumps (CVPs), each rated at 218,750 gpm, and two low flow pumps, each rated at 6,000 gpm. The four CVPs would have formed suction inlets to improve hydraulic performance and reduce the lower pump setting elevation. Nominal pumping capacity would be 876,000 gpm, with discharge pipes directed beneath the sump, over the levee, and into the new stilling basin and discharge channel in the Dallas Floodway. The discharge pipes from each pump would be 108-inches in diameter and would be welded steel pipe that is supported on drilled shafts when crossing the sump area or when in areas of deep fill. A 4:1 earthen berm would span through both the upstream and downstream bridges for an approximate longitudinal length of 350 feet and would provide cover for the new Able Pump Station discharge pipes.

Electrical power to the pump station would be supplied by Oncor by way of three different and independent primary circuits. The pump station would have the ability to be fully operational using any two of the three feeders. To accommodate the discharge piping crossing the levee, a 138-kilovolt (kV) Oncor transmission tower would be relocated.

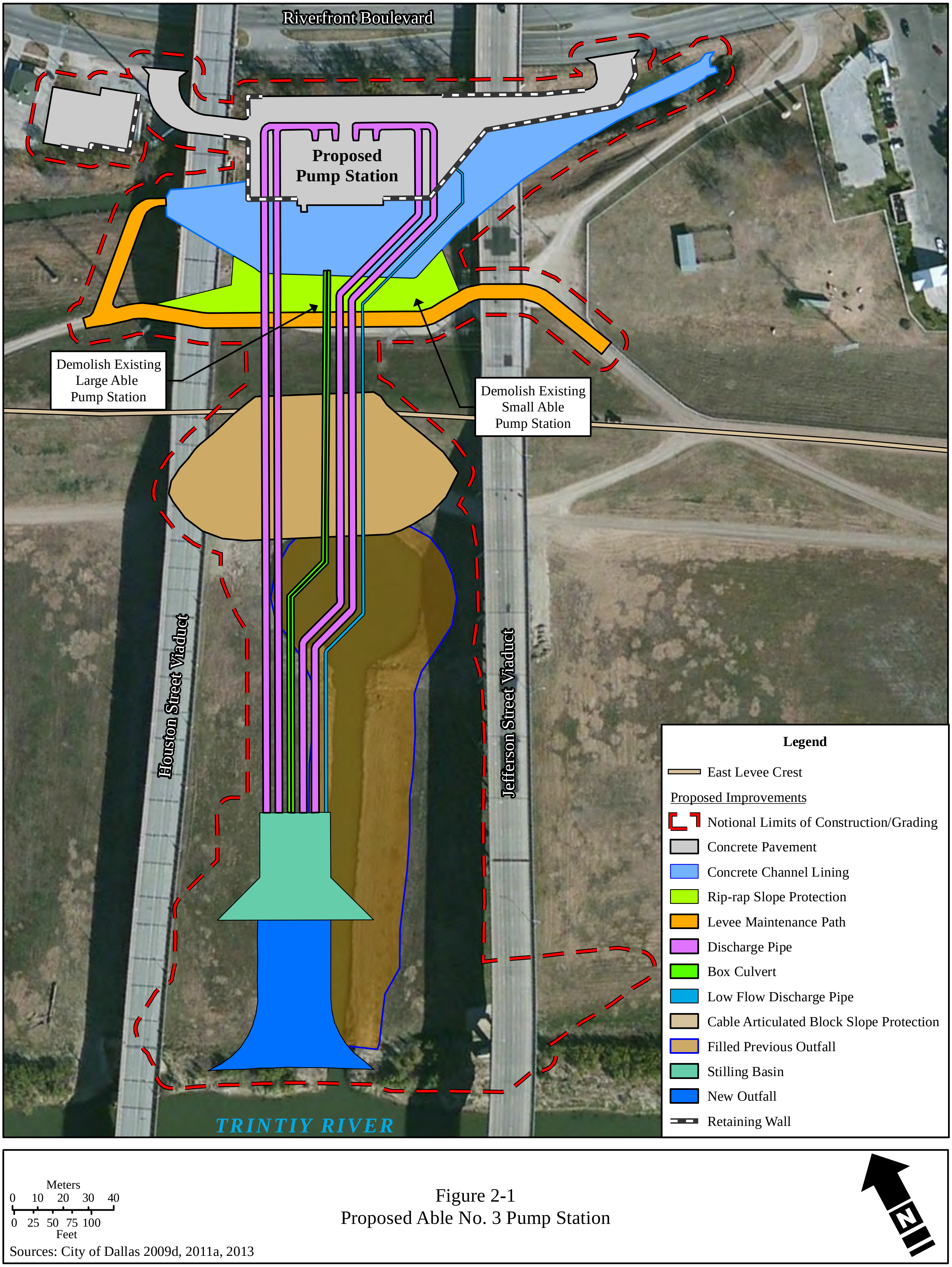


Figure 2-1
Proposed Able No. 3 Pump Station

Sources: City of Dallas 2009d, 2011a, 2013

Demolition of the existing Small and Large Able Pump stations would consist of initial removal of pumping, electrical and mechanical equipment followed by demolition of both housing structures. The existing discharge pipes would be filled and sealed as part of the pump station demolition. The Able No. 3 Pump Station and associated elements are displayed on Figure 2-1.

2.3.1.3 Construction Phasing

The Able No. 3 Pump Station would be constructed to an approximate 50 percent functional capacity of total design, i.e. two of the new pumps, providing 440,000 gpm of capacity. At his point, the Able No. 3 Pump Station would be tested and approved (pursuant to successful testing) by the City of Dallas.

Upon Able No. 3 50 percent capacity approval, the proposed demolition of the Large Able and Small Able pump stations, which have a combined capacity of 221,000 gpm, would begin. After the Large and Small Able pump stations are demolished and their discharge pipes filled and sealed, the remainder of the Able No. 3 Pump Station would be completed. This split approach would ensure continuity of flood protection throughout the construction period. Work would begin in late 2014 and last approximately 30 months.

2.3.1.4 Resource Conservation Measures

The City of Dallas would implement the following Resource Conservation Measures as part of the Proposed Action to avoid or minimize potential effects to environmental resources:

1. All disturbed soils would be immediately stabilized following the completion of work and be re-planted with native grass and shrub species. Before approval of the final design, the contractor would obtain City of Dallas approval of a soil layering plan, seed mixes, planting/seeding, and monitoring methods proposed for use in revegetation. Noxious weeds would be controlled by hand weeding or herbicide application.
2. Before the start of construction, the project boundary (i.e., limit of construction) would be clearly marked with flagging, fencing, stakes, or lath.
3. The Proposed Action shall comply with Section 4(b) of the NCA of 1972 (42 USC §§ 4901-4918), which directs federal agencies to comply with applicable federal, state and local noise requirements with respect to the control and abatement of environmental noise.
4. Construction activities in proximity to residential areas shall comply with The City of Dallas noise ordinance (i.e., Dallas City Code: Volume II, Chapter 30), which limits activities to between the hours of 7:00 a.m. and 6:00 p.m. on weekdays, except in the case of urgent necessity in the interest of public safety.
5. Erosion and sedimentation controls would be monitored and maintained during construction and for 12 months thereafter to ensure site stabilization. An Erosion Control Plan would be prepared and implemented. The Erosion Control Plan would include best management practices (BMPs) that could include rock stabilization at the construction site entrance, inlet protection barriers at the Able Pumping Plant inlet, and the use of rock filter dams within the sump. The contractor would also be required to use silt fences throughout the construction area wherever there is the potential for erosion. The City of Dallas would finalize the Erosion Control Plan upon final design approval of the proposed improvements, and all erosion control measures would be field adjusted for site conditions.

6. Fugitive dust controls would be monitored and maintained during construction. A Fugitive Dust Control Plan would be prepared and implemented. The Fugitive Dust Control Plan would include BMPs that could include watering exposed soils, soil stockpiling, and soil stabilization. The City of Dallas would finalize the Fugitive Dust Control Plan in concert with the Erosion Control Plan upon final design approval of the proposed improvements, and all dust control measures would be field adjusted for site conditions.

7. The construction contractor shall implement the provisions contained in the Traffic Control Plan to be prepared as part of the Proposed Action, in accordance with City of Dallas requirements. Contractors shall be responsible for providing and maintaining all barricades, warning signs, flashing lights and traffic control devices in conformance with Part VI of the Texas Manual on Uniform Traffic Control Devices (Texas Department of Transportation [TxDOT] 2012a). Once complete, the contractor shall restore all items not specifically included in street reconstruction that are disturbed during installation of temporary traffic control, to original or better condition. Closure of traffic lanes and sidewalks along any public roadway shall be restricted to the hours of 8:30 a.m. to 3:30 p.m. workdays to minimize the impact on traffic flows, unless approved otherwise by the City of Dallas.

8. The Proposed Action would permanently impact 3.0 acres of jurisdictional waters of the U.S., and temporarily impact 0.7 acre of jurisdictional waters of the U.S. The Proposed Action has been determined to fall under CWA Section 404, and specifically Regional General Permit (RGP)-12. The Texas Council on Environmental Quality (TCEQ) water quality permit process could be combined with the RGP-12 compliance for water quality permitting processes. The contractor would implement any measures to minimize and/or mitigate impacts as required by RGP-12. The completed RGP-12 compliance discussion, including plans to use mitigation banking, is included in the § 404(b)(1) analysis, Appendix B.

9. The construction contractor would survey for all pre-existing utilities in the area to avoid and/or minimize any temporary interruption of utility service(s).

10. Hazardous wastes would be handled in accordance with applicable federal, state, and local regulations. If an unknown or unidentified waste is encountered during construction, the City of Dallas personnel would be notified and all construction in the area would stop until the hazardous situation is remedied. Chapters 9 and 10 of Army Regulation (AR) 200-1, Environmental Protection and Enhancement (2007), outline USACE policy for hazardous materials and waste management. In addition, Engineering Regulation (ER) 1165-2-132, Hazardous, Toxic, and Radioactive Waste (HTRW) Guidance for Civil Works Projects provides guidance for consideration of issues and problems associated with HTRW which may be located within project boundaries or may affect or be affected by USACE Civil Works projects. The guidance is intended to provide information on how these considerations are to be factored into project planning and implementation. A Contingency Action Plan reflecting the guidance of AR 200-1 and ER 1165-2-132 would be prepared before implementing the Proposed Action. The City of Dallas would finalize the Contingency Action Plan upon final design approval of the proposed improvements, and all hazardous material control measures would be field adjusted for site conditions.

11. Drainage elements to allow the rapid percolation of water away from the structural elements of the Proposed Action would be incorporated into construction designs. These elements include, at a minimum:
    a. Constructing drains behind the retaining walls beneath the foundation mat adjacent to the gravity drainage structure proposed at the pump station.
    b. Constructing drains beneath the proposed concrete sump liner adjacent to the proposed Able No. 3 Pump Stations.
    c. The Proposed Action would require excavation below the access road and levee slope as part of the drainage construction. Such an excavation may result in the need for temporary riverside levee protection augmentation during excavation into the landside levee slope and drain construction.

    The functionality of these drainage measures will be monitored to determine their success.

2.3.2 No Action Alternative

Under the No Action Alternative, no improvements would be made to the Able Pumping Plant. Existing public safety and property concerns in the Able Basin would persist. The No Action Alternative is not a reasonable action alternative because it does not meet the purpose and need for the Proposed Action. However, as required under CEQ regulations (40 CFR § 1502.14[d]), it does provide a meaningful measure of baseline conditions against which the impacts of the action alternatives can be compared, as well as describe potential future conditions in the absence of the Proposed Action. In this EA, the No Action Alternative represents the baseline conditions described in Chapter 3, Affected Environment.

2.4 PROJECT PLANNING TIMELINE

To address existing 100-year, 24-hour stormwater flood risk management concerns in the Able Basin, the City of Dallas is proactively moving forward in their planning and analysis of proposed Able Pumping Plant improvements. Proposed improvements to the Able Pumping Plant were initially included as part of the on-going Dallas Floodway Project EIS, which includes proposed improvements to the entire EWLIDS. However, due to pressing safety concerns as identified in Section 1.4.3, most notably potential flooding impacts within the Able Basin, the proposed improvements to the Able Pumping Plant have been extracted from the Dallas Floodway Project EIS in order to expedite the analysis of proposed stormwater flood risk management actions in the Able Basin. The on-going Dallas Floodway Project EIS will include an analysis of the proposed Able Pumping Plant improvements in the cumulative impact section.

CHAPTER 3
AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 APPROACH TO ANALYSIS

The affected environment discussion below provides a description of the existing conditions for each of the following resource areas deemed pertinent to the Proposed Action: land use, noise, geology and soils, water resources, biological resources, cultural resources, visual resources, socioeconomics and environmental justice, air quality, utilities, hazardous materials and wastes, transportation, and public safety. In this EA, the No Action Alternative represents the baseline conditions described in the Existing Conditions discussion. The environmental consequences discussion below describes the potential impacts the action alternative would have on each environmental resource area.

3.2 LAND USE

3.2.1 Existing Conditions

The Trinity River Corridor Comprehensive Land Use Plan (TRCCLUP) defines the region including the Able Basin as the Downtown-Lakes; the basin includes the City of Dallas' Central Business District (City of Dallas 2005a). The Able Pump Stations are located in a Planned Development zoning district (PD-784) described as the "Trinity River Corridor Special Purpose District" and combines uses permitted under Industrial Manufacturing, Commercial Service, Central Area District, and Mixed Use zoning districts (City of Dallas 2012a). While new development within the Trinity River Corridor Special Purpose District may be a variety of uses, the zoning does requirement a certain consistency in appearance of development and pedestrian-friendly amenities. Construction requirements for new buildings within PD-784 include:

- landscaping strip five feet wide between the sidewalk and street curb;
- 10-foot wide sidewalk;
- six feet of landscape area after the sidewalk;
- the building façade must be seven feet from the right-of-way (i.e. a seven-foot build-to line); and
- 50 percent of the building frontage must feature pedestrian-oriented uses (retail, lodging, etc.).

While much of the Able Pumping Plant is used as flood control, the lands surrounding the plant are a combination of Undeveloped, Commercial, and Industrial uses (32, 19, and 16 percent of the basin, respectively). In this instance, much of the Undeveloped land is developed as parking, rather than being truly vacant (City of Dallas 2011a). The Small and Large Able pump stations are considered "utility" uses under the City of Dallas zoning code.

In 2009, the USACE and City of Dallas developed a protocol for reviewing construction projects with the potential to encroach upon the levees. Any construction projects within 250 feet of the levee toe trigger a heightened review and permitting process by the City of Dallas Development Services. A building applicant must submit full site plans, technical specifications, and a geotechnical report of the proposed site to Development Services and to the USACE for review and consultation. Development Services requires proof of consultation from the applicant before issuing a permit (City of Dallas 2010).

3.2.2 Environmental Consequences

3.2.2.1 Proposed Action

Initial design of the proposed Able No. 3 pump station had to be revised to be consistent with the construction requirements of PD-784. Initially, the proposed Able No. 3 Pump Station would require a minimum setback of 40 feet from back of curb. This setback included 5.5 feet of one-way cycle track, and 6.5 feet due to the pedestrian oriented use requirement. However, following design and needs reviews within the City of Dallas, the City has allowed for a variance from the setback requirements of PD-784. The final proposed setback has been reduced to 28.5 feet from back of curb. In addition, the City of Dallas review removed the pedestrian-oriented use requirement, which would have potentially adversely impacted the storage volume of the sump.

With the revised setback requirements, implementation of the Proposed Action would be consistent with the existing zoning and land use designations. The Proposed Action does not represent any intensification of use, but only a change in the existing authorized use. In addition, the Proposed Action would be implemented in accordance with any measures identified as part of the review and permitting process by the City of Dallas Development Services. Furthermore, by designing the discharge such that it would travel over the East Levee, the Proposed Action would avoid any unique or special design challenges associated with construction adjacent or through the East Levee. Further, demolition of the existing Small and Large Able Pump Stations would also not change or modify land use, as Able No. 3 would resume flood risk management from that location. Therefore, implementation of the Proposed Action would result in no impacts to land use.

3.2.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.2.1 would remain unchanged. Therefore, implementation of the No Action Alternative would result in no impacts to land use.

3.3 NOISE

3.3.1 Existing Conditions

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts normal activities. The human environment is generally characterized by a certain consistent noise level that varies by area. This is called ambient, or background noise. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced by the type of noise, perceived importance of the noise and its appropriateness in the setting, time of day and type of activity during which the noise occurs, and sensitivity of the individual.

Sound is a physical phenomenon consisting of minute vibrations that travel through a medium, such as air, and that are sensed by the human ear. Sound is generally characterized by several variables, including frequency and intensity. Frequency describes the sound’s pitch and is measured in cycles per second, or hertz (Hz). Intensity describes the sound’s loudness and is measured in decibels (dB). Decibels are measured using a logarithmic scale; thus, the average person perceives a change in sound level of about 10 dB as a doubling (or halving) of the sound’s intensity. This relation holds true for sounds of any intensity or volume.

The normal human ear can detect sounds that range in frequency from about 20 Hz to 20,000 Hz. However, not all sounds in this wide range of frequencies are heard equally well by the human ear, which is most sensitive to frequencies in the range of 1,000 Hz to 4,000 Hz. This frequency dependence can be taken into account by applying a correction to each frequency range to approximate the human ear's sensitivity within each range. This is called A-weighting and is commonly used in measurements of community environmental noise. The A-weighted sound pressure level (abbreviated as dBA) is the sound level with the "A-weighting" frequency correction.

Typical noise levels range from approximately 40 dBA for a quiet urban setting to approximately 100 dBA for loud power equipment at close range. Normal speech registers at approximately 60 dBA. At a constant level of 70 dBA, noise can be irritating and disruptive to speech; at louder levels, hearing loss can occur. Noise from a point source attenuates (declines) over distance at a rate of six dBA for each doubling of distance between the noise receptor and the source. Thus, a noise level of 85 dBA at 50 feet would be measured as 79 dBA at 100 feet and 73 dBA at 200 feet from the source (Caltrans 2009)[1].

Noise sensitive receptors are buildings or parks where quiet forms a basic element of their purpose; residences and buildings where people normally sleep (e.g., homes, hotels, hospitals), where nighttime noise is most annoying; and institutional land uses (e.g., schools, libraries, parks, churches) with primarily daytime and evening use. Because noise levels at sensitive receptors are reduced by obstructions (such as sound walls) lying between them and the noise source, special emphasis is placed on sensitive receptors having a direct line of sight to noise sources.

Section 4(b) of the NCA of 1972 (42 USC §§ 4901-4918) directs federal agencies to comply with applicable federal, state and local noise requirements with respect to the control and abatement of environmental noise. Congress defined environmental noise in the NCA to include the intensity, duration, and character of sounds from all sources. Applicable federal guidelines for noise regulations are derived from the U.S. Department of Transportation or, more specifically, the Federal Transit Administration and the Federal Highway Administration.

Neither the State of Texas nor the Texas Commission on Environmental Quality has adopted any noise regulations. The City of Dallas, however, does have a local noise ordinance (Dallas City Code: Volume II, Chapter 30). This ordinance contains time restrictions on specific types of noise producing activities, such as construction, and aims to protect citizens from offensively loud noise and vibration.

The primary source of ambient noise in the vicinity of proposed improvements is vehicular traffic on nearby segments of Houston Street, Jefferson Boulevard, and Riverfront Boulevard. In addition, when the trash screens are operating at the existing pump station, these activities represent a minor temporary contributor to the local noise environment immediately adjacent to the pumping plant.

On September 14-16, 2009, baseline noise levels were recorded over a 5-minute period throughout the Dallas Floodway and the Interior Drainage System to characterize baseline noise conditions (Cardno TEC 2009). Ambient noise was measured at a distance of 30 feet from the existing Able Pumping Plant when the trash screens were in operation. Ambient noise measurements under these conditions ranged from

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[1] The reduction in sound by 6 dBA per doubling of distance is referred to as the "inverse square law," which is denoted as $dBA_2 = dBA_1 + 20\log_{10}(D1/D2)$; where dBA_1 is the noise level at distance D_1, dBA_2 is the noise level at distance D_2, and $\log_{10}$ is the base-10 logarithm.

66.3 dBA to 73.1 dBA. There are no identified sensitive noise receptors within the Able Pump Station region of influence (ROI); the area surrounding the proposed pump station consists of a mixture of commercial and industrial uses.

3.3.2 Environmental Consequences

3.3.2.1 Proposed Action

Under the Proposed Action, construction and ground-disturbing activities would create localized, temporary noise impacts from construction equipment/vehicles, the demolition of the existing Small and Large Able Pump Stations, and the construction of the proposed Able No. 3 Pump Station.

Construction vehicles and equipment can typically generate noise levels of approximately 80 to 85 dBA at approximately 50 feet (U.S. Environmental Protection Agency [USEPA] 1974). These noise levels would be substantially higher than the ambient noise measurement at the existing Able Pumping Plant. However, given that the land uses surrounding the existing pumping plant and the proposed pumping plant are commercial and industrial, no sensitive receptors would be exposed to a substantial increase in noise. Therefore, no significant noise impact would result from construction activities at this location.

Prior to implementation of the Proposed Action, the City of Dallas would notify nearby property owners of the construction schedule. In addition, all construction activities would occur between the hours of 7:00 A.M. and 6:00 P.M. on weekdays per Dallas City Code Section 30-2.8. Because noise increases would be temporary, the construction would occur in an industrial area, and construction would not take place during early morning, night, or weekend hours, the impact would be less than significant.

Once operational, the Able Pumping Plant would use trash screens and stormwater pumps during storm events. Operation of trash screens and stormwater pumps would be an occasional occurrence, and would cease after stormwater levels subside. These activities are consistent with those at the existing Able Pumping Plant. Because of the addition of more pumps in the same location, noise levels potentially could be marginally higher, but because the pumps would be housed inside a building, and pump and trash screen activity occur infrequently and for short periods of time, implementation of the Proposed Action would not have a substantial effect on the overall noise environment. Therefore, construction and implementation of the Proposed Action would result in less than significant impacts with respect to noise.

3.3.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.3.1 would remain unchanged. Therefore, implementation of the No Action Alternative would result in no noise impacts.

3.4 GEOLOGY AND SOILS

3.4.1 Existing Conditions

The Able Pumping Plant is situated in Quaternary-age alluvial soils and terrace alluvial soils overlying gray shale of the Cretaceous Eagle Ford formation. The alluvial deposits typically consist of soft to very stiff clays, and loose to medium dense sands with some gravel and silt content. More specifically, the site soils are of the Trinity-Urban land complex. These soils are deep, nearly level soils found in floodplains and Urban land; they are moderately alkaline, somewhat poorly drained, and have very high shrink-swell potentials and very slow permeability (U.S. Department of Agriculture [USDA] 1980, City of Dallas 2013). The weathering profile over the shale includes weathered shale and residual clays. The unweathered bedrock consists of gray to dark gray shale. The upper gray shale is weaker than the deeper shale because of weathering. North-central Texas is located in an area of low seismic activity (City of Dallas 2013). No unique geologic features or geologic hazards are present within the proposed project area.

The City of Dallas completed field geotechnical investigations to determine the structural soundness of the construction of the Able No. 3 Pumping Plant; the report resulting from this analysis is included in the § 408 Package as the Appendix 5 series of the Design Development Report. This analysis included reviewing the subsurface conditions in test borings at selected locations and developing geotechnical recommendations for design and construction of the proposed pump station structure, retaining walls, discharge pipes, and associated facilities. The analysis measured the bedrock's compressive strength (i.e., the amount of stress the bedrock can absorb without breaking) and its depth of weathering. The soils in the vicinity of the Able Pumping Plant include levee fill, alluvial and terrace clays and sands, weathered shale, and gray shale. Present soils at the site are unsuitable for support and backfill of the proposed Able Pumping Plant base slab (City of Dallas 2012b).

The soils were measured for moisture content, dry unit weight, liquid and plastic limit, to determine soil strength. The conditions of the sump soils were also analyzed. The analysis included seepage and slope stability evaluations for landside levee and sump slopes to assess performance of levee and sump slopes to demonstrate whether existing landside levee and sump slopes meet seepage and slope stability performance criteria, and, if not, to develop conceptual mitigation measures that would satisfy these criteria (City of Dallas 2012b). For additional detail, please refer to the Geotechnical Data Report and the Foundation Design Analysis found in the § 408 Package.

3.4.2 Environmental Consequences

3.4.2.1 Proposed Action

Soils would be disturbed during grading activities associated with the proposed construction. In addition, planned construction activities would minimally increase impervious surfaces, which would increase stormwater runoff and erosion rates. However, these relatively minor increases would be minimized through engineering measures during construction activities and using BMPs as outlined in the Erosion Control Plan and Stormwater Pollution Prevention Plan (SWPPP) included as part of the Proposed Action.

BMPs may include schedules of activities, prohibitions of practices, maintenance procedures, structural controls, local ordinances, and other management practices to prevent or reduce the discharge of pollutants. BMPs may also include treatment requirements, operating procedures, and practices to control construction site runoff, spills or leaks, waste disposal, or drainage from raw material storage areas

(TCEQ 2013). The use of BMPs such as silt fencing and sediment traps, the application of water sprays, and the prompt revegetation of disturbed areas would reduce potential impacts. Implementation of sediment and erosion controls during construction activities would maintain runoff water quality at levels comparable to existing conditions. Site-specific BMPs would be identified in the Erosion Control Plan.

A soil analysis was conducted as part of the § 408 Package. The soil analysis indicated that the soils are unsuitable in their present condition for support of the Able No. 3 Pump Station base slab. Further, a foundation design analysis was conducted based on results from the geotechnical report. The design analysis evaluated the subsurface conditions in the exploration borings from selected locations. From this analysis, geotechnical recommendations were developed for design and construction of the proposed Able No. 3 pumping station, related structures and associated site development. Drilled shaft foundations anchored to the shale bedrock would provide uniform foundation support for the entire pump station structure, to resist sliding or uplift forces, but not necessarily for foundation support. Therefore, to improve stability of the proposed features, unsuitable alluvial clays and sands beneath the base slab to the top of the gray weathered shale would be excavated and replaced with well-compacted, cement-treated, crushed concrete fill.

Retaining walls would be added to prevent erosion and protect the sides of the proposed Able No. 3 Pump Station. As no unique geologic features or geologic hazards are located within the proposed project area, no impact to these geological resources would occur. Therefore, implementation of the Proposed Action would result in less than significant impacts to geology and soils.

3.4.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.4.1 would remain unchanged. Therefore, implementation of the No Action Alternative would result in no impacts to geology and soils.

3.5 WATER RESOURCES

3.5.1 Existing Conditions

The majority of surface water features in the Dallas Floodway have been substantially modified from their natural conditions. These changes began in the late 1920s when the City of Dallas began a major effort to control flooding of the Trinity River in and around the downtown area. The most substantial change involved the diversion of the Trinity River (old river channel) to its current location within the Dallas Floodway. The Able Sump storage was created from the old Trinity River channel prior to channelization (City of Dallas 2006).

The drainage area feeding into the Able Sumps is approximately 2,685 acres of developed land, including the Central Business District (City of Dallas 2013). Water resources specific to the project area include the Trinity River drainage, the Able Sump, and the 100-year floodplain (Figure 3-1). For additional detail regarding Able Pumping Plant function, refer to Section 3.11, Utilities.

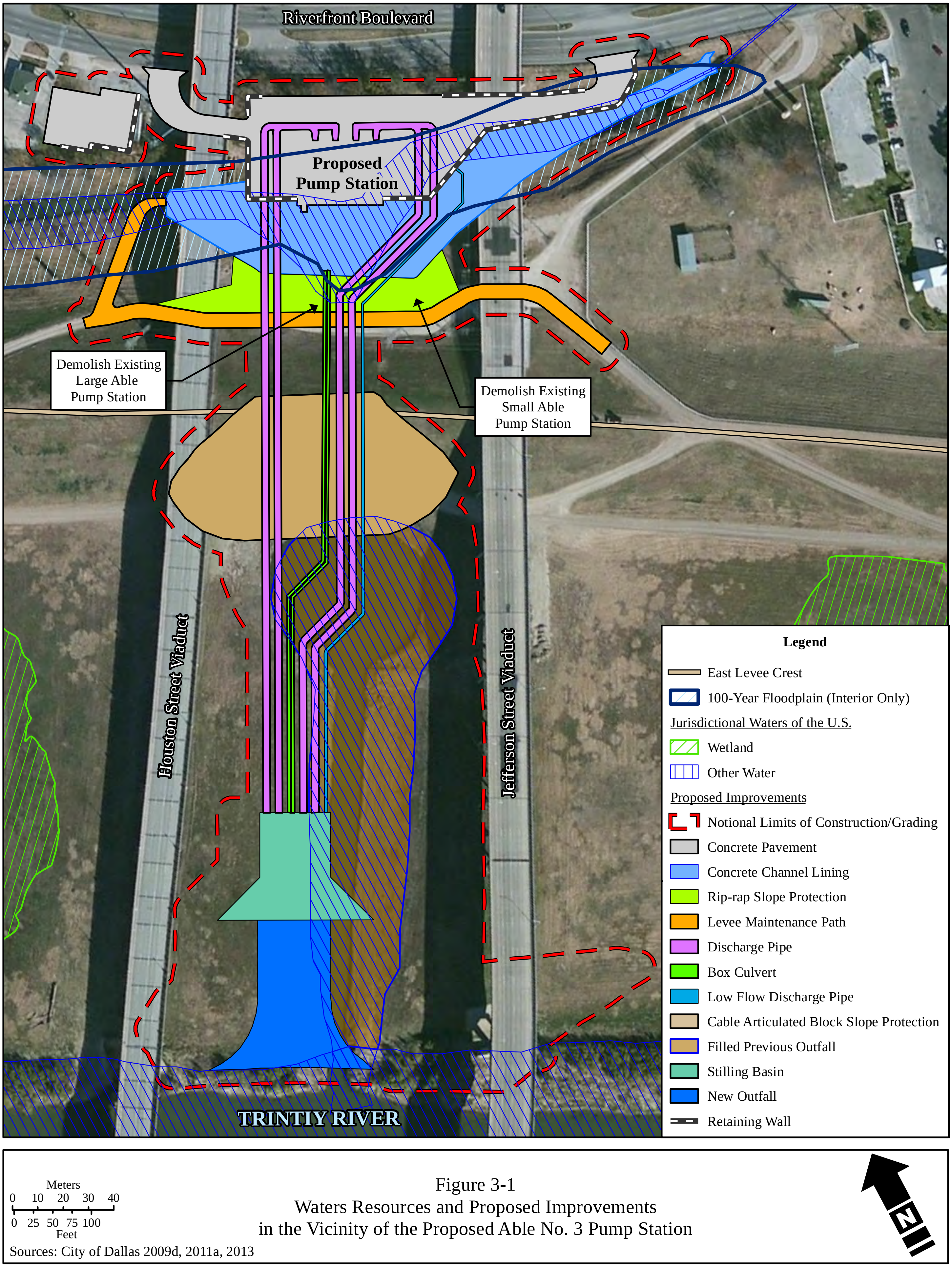


Figure 3-1
Waters Resources and Proposed Improvements
in the Vicinity of the Proposed Able No. 3 Pump Station

Sources: City of Dallas 2009d, 2011a, 2013

As shown on Figure 3-1, jurisdictional waters (as defined by the CWA) occur within the project area and include the outfall drainage within the Floodway, as well as the Able Sump (City of Dallas 2011b). For a detailed discussion of jurisdictional waters within the project area and an analysis of impacts to those waters, please refer to Section 3.6, Biological Resources.

Because the study area is highly urbanized, the stormwater runoff quality is poor. Urban stormwater carries pollutants, including oil and grease, heavy metals, chemicals, toxic substances, solid waste (trash and debris), wastewater, effluence, bacteria, erosion, and other waste streams. The amounts of pollutants and chemicals in stormwater can vary depending on factors such as surrounding land use (commercial vs. residential), frequency of rain events and the intensity of rain events. Land use within and around the project area are industrial, including a fuel station, a refinery, and several scrap metal yards. When land used for industrial purposes is flooded, there is a greater risk of impacts to water quality, as flood waters may mobilize heavy metals, oil-based pollutants, and chemicals into area waters.

3.5.2 Environmental Consequences

3.5.2.1 Proposed Action

Implementation of the Proposed Action would greatly increase the ability of the Able Pumping Plant to draw down stormwater levels within the sumps, and thus reduce the risk of stormwater flooding. EO 11988 requires agencies to minimize impacts to the natural values of floodplains and to ensure that proposed activities within the 100-year floodplain would not increase the risk to human safety from flooding. USACE ER 1165-2-26 contains the USACE's policy and guidance for implementing EO 11988, and details factors to be considered when evaluating practicability. The factors are the same as those resources analyzed under NEPA, and serve to ensure full analysis of floodplain resources in the event a detailed EA or EIS is not required. The implementation of the Proposed Action would result in water surfaces of the 100-year event that would be contained within the Able Sump ponds and decrease the risk to human safety from flooding. Potential impacts to jurisdictional waters and to the natural values of floodplains are discussed in Section 3.6, Biological Resources.

Soils would be disturbed during grading activities associated with proposed construction activities. In addition, planned construction activities would minimally increase impervious surfaces, which would increase stormwater runoff and erosion rates. However, these relatively minor increases would be minimized through engineering measures during construction activities and using BMPs as outlined in the Erosion Control Plan and SWPPP included as part of the Proposed Action. For a discussion of the types of BMPs often included in the Erosion Control Plan and SWPPP, refer to Section 3.4, Geology and Soils.

Upon completion, the Able Sump would contain the lower profile of a 100-year storm event. As a result, there would be a decreased frequency of flooding of the industrial uses within the project area. The reduction in risk to flooding of the scrap metal yards, refinery, and similar uses within the project area may result in a reduction in metals, chemicals, and toxins mobilizing into the sump drainage. Thus, stormwater quality would be improved. Therefore, implementation of the Proposed Action would result in beneficial, but less than significant impacts to water resources.

The hydrologic and hydraulic evaluation of the potential impacts of the Able Pumping Plant improvements is incorporated in the detailed hydrologic analysis for the Dallas Floodway Project Feasibility Report. Based on that analysis, implementation of the proposed action meets the TREIS 1988 ROD criteria for water surface rise and valley storage.

3.5.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.5.1 would remain unchanged. Therefore, implementation of the No Action Alternative would result in no impacts to water resources.

3.6 BIOLOGICAL RESOURCES

3.6.1 Existing Conditions

For the purpose of this EA, biological resources are divided into three categories: (1) habitat types including aquatic and terrestrial vegetation; (2) fish and wildlife including migratory birds; and (3) special status species including state and federally listed species, candidate species, and other species of local or regional concern listed by the Texas Parks and Wildlife Department (TPWD). The ROI for biological resources corresponds to the approximately 13.4-acre limit of construction associated with the proposed Able Pumping Plant improvements.

3.6.1.1 Habitat Types

The existing Small and Large Able Pumping Plant is located in a developed (urban) area consisting of the pump stations, utility lines, sump ponds, drainage channels, and a dirt road surrounded by mowed short grassland (Figure 3-2). The vegetation at the sump ponds, drainage/discharge channel, and outfall channel consists of aquatic habitat surrounded by non-native mowed grasslands. The sump ponds were along the historic Trinity River channel but they are no longer directly connected to the river. They are used for flood control purposes and are not meant to provide wetland habitat. Similarly, the channels draining to the sump area were developed for flood control purposes. Figure 3-2 presents the habitat types and developed (urban) areas within the project area. Text descriptions of the habitat types are included below. Table 3-1 presents acreages for each habitat type and developed (urban) areas (USACE 2007, City of Dallas 2011b).

Table 3-1. Habitat Types and Associated Acreages in the Project Area

Habitat Type	Acres
Aquatic Riverine[1]	
Jurisdictional Waters of the U.S.	3.7
Terrestrial	
Grassland	5.6
Urban	4.1
Total	**13.4**

Note: [1]All aquatic riverine habitat within the project area is jurisdictional.
Sources: USACE 2007, City of Dallas 2011b.

<u>Aquatic Riverine</u>

Jurisdictional Waters of the U.S. The sump ponds and outfall drainage are considered jurisdictional. Of these waters, 3.7 acres of jurisdictional waters of the U.S. are within the project area (City of Dallas 2011b). There are no jurisdictional wetlands within the project area.

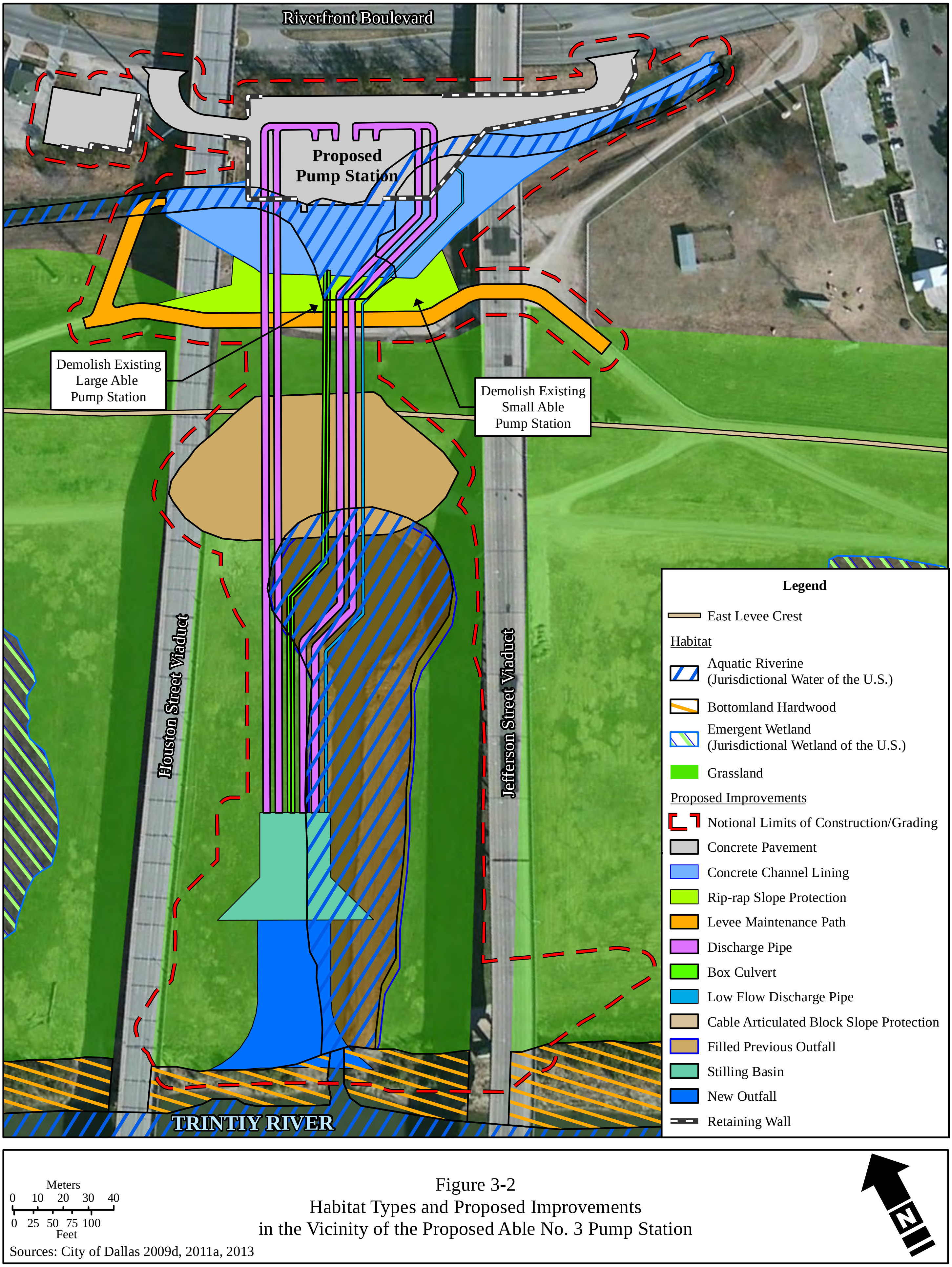


Figure 3-2
Habitat Types and Proposed Improvements
in the Vicinity of the Proposed Able No. 3 Pump Station

Sources: City of Dallas 2009d, 2011a, 2013

<u>Terrestrial</u>

Grassland. There are approximately 5.6 acres of mowed grasslands dominated by Bermuda grass (*Cynodon dactylon*), perennial ryegrass (*Festuca perennis*), johnsongrass (*Sorghum halepense*), Queen Anne's lace (*Daucus carota*), and southern dewberry (*Rubus trivialis*) in the ROI (USACE 2007).

Urban. There are approximately 4.1 acres of urban areas including the existing Large and Small Able Pumping Plants, roads, and disturbed areas devoid of vegetation in the ROI (USACE 2007). Fish and Wildlife

The area surrounding the existing Large and Small Able Pumping Plants and proposed new pumping plant consists of urban areas, disturbed areas, and maintained grasslands that provide poor habitat for wildlife. The utility lines are used as perches by birds. Common wildlife species are expected within the proposed project area. Common mammals that may occur in the project area include Virginia opossum (*Didelphis virginiana*), swamp rabbit (*Sylvilagus aquaticus*), raccoon (*Procyon lotor*), eastern wood rat (*Neotoma floridana)*, hispid cotton rat (*Sigmodon hispidus)*, white-footed mouse *(Peromyscus leucopus)*, and hispid pocket mouse (*Peromyscus penicillatus*) (Davis and Schmidly 2013).

Common reptiles that may occur in the project area include northern green anole (*Anolis carolinensis carolinensis)*, ground skink (*Leiolopisma laterale)*, broad-headed skink (*Eumeces laticeps)*, cottonmouth (*Agkistrodon piscivorus)*, eastern hognose snake (*Heterodon platyrhinos)*, ringneck snake (*Diadophis punctatus arnyi*), copperhead (*Agkistrodon contortrix)*, and Texas rat snake (*Elaphe obsolete lindheimeri)*. Common amphibians that may occur in the project area include American bullfrog (*Lithobates catesbeianus*), western chorus frog (*Pseudacris triseriata*), cricket frog (*Acris crepitans*), and southern leopard frog (*Rana sphenocephala*) (National Audubon Society 1998, Stebbins 2003, City of Dallas 2008, Texas A&M University 2009).

Common birds likely to use and transit the area include Mourning dove (*Zenaida macroura*), common grackle (*Quiscalus quiscula*), northern mockingbird (*Mimus polyglottos*), house sparrow (*Passer domesticus*), European starling (*Sturnus vulgaris)*, and American crow (*Corvus brachyrhynchos*). Common waterbirds likely to use the sump ponds include great blue heron (*Ardea herodias*), little blue heron (*Egretta caerulea*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), cattle egret (*Bubulcus ibis*), and killdeer (*Charadrius vociferous*). Turtles including red-eared slider (*Trachemys scripta elegans*), river cooter (*Pseudemys texana*), and spiny soft shell turtle (*Apalone spinifera*) are likely to occur in the drainage channel and sump ponds. Common fish and other aquatic wildlife also have the potential to occur within the sump ponds and drainage channels.

3.6.1.2 Special Status Species

Federal- and state-listed threatened and endangered species that potentially occur in Dallas County are included in Table 3-2. There are 10 listed bird species in Dallas County; 5 are federally listed as endangered; 3 were previously federally listed, and although delisted at the federal level, they remain state listed; and 2 additional state-listed species. There is one federal candidate bird species. There are no state or federally listed mammals in Dallas County. The state lists three threatened mollusks and three threatened reptiles in Dallas County. State-listed and Dallas County Species of Concern mollusks occur in the Trinity River downstream of the project area. Listed species are not likely to occur in the ROI due to lack of suitable habitat (TPWD 2013).

Table 3-2. Federal and State Threatened and Endangered Species Potentially Found in Dallas County

Species	Habitat	Federal Status	State Status
BIRDS			
American Peregrine Falcon *(Falco peregrinus anatum)*	Nests in the Trans-Pecos region of West Texas; nests on high cliffs and structures, often near water where prey species are most common.	D	E
Arctic Peregrine Falcon *(Falco peregrinus tundrius)*	Nests in tundra regions; migrates through Texas; winters along gulf coast in open areas, usually near water.	D	T
Bald Eagle *(Haliaeetus leucocephalus)*	Nests and winters near rivers and large lakes; nests in tall trees or on cliffs near large bodies of water; all reservoirs in north central Texas are considered potential nesting habitat.	D	T
Black-capped Vireo *(Vireo atricapilla)*	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces.	E	E
Golden-cheeked Warbler *(Dendroica chrysoparia)*	Oak-juniper woodlands; dependent on mature Ashe juniper (cedar) for long fine bark strips from mature trees in nest construction; nests in various other trees; forages for insects in broad-leaved trees and shrubs.	E	E
Interior Least Tern *(Sternula antillarum athalassos)*	Nests along sand and gravel bars within braided streams and rivers; also known to nest on man-made structures near water.	E	E
Piping Plover (*Charadrius melodus)*	Wintering migrant along the Texas Gulf coast; prefers beaches and bayside mud or salt flats.	T	T
Sprague's Pipit (*Anthus spraueii)*	Occurs in Texas during migration and winter, mid-September to early April. Strongly tied to native upland prairie.	C	-
White-Faced Ibis *(Plegadis chihi)*	Freshwater marshes, sloughs, and irrigated rice fields; nests in marshes, in low trees, in bulrushes or reeds, or on floating mats.	-	T
Whooping Crane (*Grus americana*)	Potential migrant via plains throughout most of the state; winters in Texas coastal marshes in Aransas, Calhoun, and Refugio counties.	E	E
Wood stork (*Mycteria americana*)	Forages in prairie ponds; flooded pastures or fields, ditches, and other shallow standing water; usually roosts in tall snags.	-	T
MOLLUSKS			
Texas pigtoe (*Fusconaia askewi)*	Rivers, usually flowing water on substrates of mud, sand, and gravel; in Texas, Sabine, and Neches rivers. Also occurs in Louisiana and Mississippi.	-	T
Louisiana pigtoe (*Pleurobema riddellii)*	Streams and moderate-size rivers, usually flowing water on substrates of mud, sand, and gravel; Sabine, Neches, and Trinity (historic) River basins.	-	T
Texas heelsplitter (*Potamilus amphichaenus)*	Quiet waters in mud or sand and also in reservoirs. Sabine, Neches, and Trinity River basins.	-	T
REPTILES			
Alligator Snapping Turtle *(Macrochelys temminckii)*	Perennial water bodies; deep water of rivers, canals, lakes, and oxbows; also swamps and ponds near deep running water.	-	T
Texas Horned Lizard *(Phrynosoma cornutum)*	Open, arid, and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush, or scrubby trees.	-	T
Timber Rattlesnake *(Crotalus horridus)*	Swamps, floodplains, upland pine and deciduous woodlands, riparian zones, abandoned farmland, limestone bluffs, sandy soil or black clay. Prefers dense ground cover, i.e. grapevines or palmetto.	-	T

Notes: E = Endangered, T = Threatened, C = Candidate, D = Delisted.
Source: TPWD 2013.

Eleven TPWD species of concern that occur in Dallas County are listed in Table 3-3 and include 2 birds, 1 insect, 2 mammals, 3 mollusks, 1 reptile, and 2 plants (TPWD 2013). No TPWD species of concern are known or likely to occur in the ROI due to lack of suitable habitat.

Table 3-3. TPWD Species of Concern Potentially Found in Dallas County

Species	Habitat
BIRDS	
Henslow's Sparrow (*Ammodramus henslowii)*	Wintering individuals (not flocks) found in weedy fields or cut-over areas where lots of bunch grasses occur along with vines and brambles; key component is bare ground.
Western Burrowing Owl (*Athene cunicularia hypugaea)*	Open grasslands, especially prairie, plains, and savanna, sometimes in open areas such as vacant lots near human habitation or airports; nests and roosts in abandoned burrows.
INSECTS	
Black Lordithon rove beetle (*Lordithon niger)*	Hardwood forest.
MAMMALS	
Cave myotis bat (*Myotis velifer)*	Colonial and cave-dwelling; also roosts in rock crevices, old buildings, carports, under bridges, and in abandoned Cliff Swallow (*Hirundo pyrrhonota*) nests; roosts in clusters of up to thousands of individuals.
Plains spotted skunk (*Spilogale putorius interrupta)*	Catholic; open fields, prairies, croplands, fence rows, farmyards, forest edges, and woodlands; prefers wooded, brushy areas and tallgrass prairie.
MOLLUSKS	
Fawnsfoot (*Truncilla donaciformis)*	Small and large rivers especially on sand, mud, rocky mud, and sand and gravel, also silt and cobble bottoms in still to swiftly flowing waters; Red (historic), Cypress (historic), Sabine (historic), Neches, Trinity, and San Jacinto River basins.
Little spectaclecase (*Villosa lienosa)*	Creeks, rivers, and reservoirs, sandy substrates in slight to moderate current, usually along the banks in slower currents; east Texas, Cypress through San Jacinto River basins.
Wabash pigtoe (*Fusconaia flava)*	Creeks to large rivers on mud, sand, and gravel from all habitats except deep shifting sand; found in moderate to swift current velocities; east Texas River basins, Red through San Jacinto River basins; elsewhere occurs in reservoirs and lakes with no flow.
REPTILES	
Texas garter snake (*Thamnophis sirtalis annectens*)	Wet or moist microhabitats are conducive to the species occurrence, but is not necessarily restricted to them; hibernates underground or in or under surface cover; breeds March-August.
PLANTS	
Glen Rose yucca (*Yucca necopina)*	Grasslands on sandy soils and limestone outcrops.
Warnock's coral root (*Hexalectris warnockii)*	Leaf litter and humus in oak-juniper woodlands on shaded slopes and intermittent, rocky creekbeds in canyons.

Source: TPWD 2013.

3.6.2 Environmental Consequences

3.6.2.1 Proposed Action

<u>Habitat Types</u>

Implementation of the Proposed Action would temporarily impact up to 0.7 acre of jurisdictional waters of the U.S. and 4.8 acres of grasslands (Table 3-4). Implementation of the Proposed Action would permanently impact up to 0.8 acre of grassland habitat and 3.0 acres of jurisdictional waters of the U.S. Impacts to jurisdictional waters of the U.S. would be minimized to the maximum extent possible. The aquatic habitats are likewise part of the 100-year floodplain. Under the CWA § 404(b)(1), activities involving excavation or filling of jurisdictional waters may only occur if the USACE determines that there is no practicable alternative to the activity, and that the activity includes all practical measures to minimize damage to the wetlands. As the Proposed Action is a floodplain improvement, there is no practicable alternative to its current site within the floodplain.

Table 3-4. Permanent and Temporary Impacts to Habitat Types in the Region of Influence

Habitat Type	Temporary Impacts (Acres)	Permanent Impacts (Acres)	Total Impact (Acres)
Aquatic Riverine			
Jurisdictional Waters of the U.S.	0.7	3.0	3.7
Terrestrial			
Grassland	4.8	0.8	5.6
Urban	1.4	2.7	4.1
Total	**6.9**	**6.5**	**13.4**

Sources: USACE 2007, City of Dallas 2011b.

The Proposed Action would be implemented under RGP-12, issued February 24, 2010. The construction contractor would implement any measures to minimize and/or mitigate impacts to waters and wetlands as required and described in Appendix A of RGP-12. Thus, the resource conservation measures required under the permit would meet the requirements of CWA § 404(b)(1). Therefore, with the conservation and compensation measures required under RGP-12, implementation of the Proposed Action would result in less than significant impacts to aquatic and terrestrial habitats. The complete § 404(b)(1) analysis is available in Appendix B.

<u>Fish and Wildlife</u>

Implementation of the Proposed Action would disturb or displace common fish and wildlife from the project area during construction and demolition. The proposed location for the Able Pumping Plant is within a developed area. The Large Able and Small Able pumping plants would be demolished after the completion of the Able No. 3 Pumping Plant. The overall impact on wildlife populations from the Proposed Action would be relatively small, proportional to the relatively small areas of habitat affected and lack of suitable habitat in general. In areas temporarily impacted, wildlife species would re-colonize available habitat area after construction. No long-term impacts to wildlife populations are likely. If an active bird nest were encountered during the implementation of the Proposed Action, it would be avoided. The Large and Small Able pumping plants would be demolished in the non-breeding season or surveyed for bird nests prior to demolition. Due to the low quality of the habitat surrounding the majority of proposed project area and the small area of impact, the impacts to wildlife, including migratory birds, would be minor. Most fish and aquatic wildlife would likely move downstream during construction. A small number of common fish and aquatic wildlife may perish during construction. Due to the small aquatic impact area, no affects to overall populations of fish or aquatic wildlife are expected. Therefore, implementation of the Proposed Action would result in less than significant impacts to fish and wildlife.

<u>Special Status Species</u>

No state or federally listed or TPWD species of concern are likely to reside in the ROI. Resource conservation measures, as identified in Section 2.4.1.5, would be integrated into construction planning to address any special status species that may be encountered in the course of project implementation. Therefore, the implementation of the Proposed Action is not expected to have any impact to special status species.

3.6.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.6.1 would remain unchanged. Therefore, implementation of the No Action Alternative would result in no impacts to biological resources.

3.7 CULTURAL RESOURCES

3.7.1 Existing Conditions

3.7.1.1 Able Pumping Plant

The Small Able Pump Station is located downstream of the Houston Street Viaduct and was constructed in the early 1930s as part of the original levee construction. This station consists of two, 20,000-gpm pumps. The Large Able Pump Station was built in the 1950s by the City of Dallas and consists of three, 46,667-gpm pumps. The two 20,000-gpm pumps were replaced in 1967 with two, 40,000-gpm pumps. Additionally, a 6,000-gpm pump was added to the Large Able Pump Station by the City of Dallas in 1979.

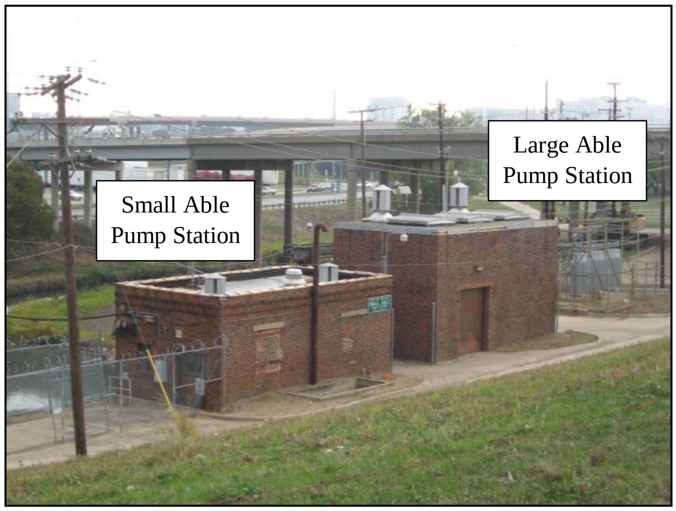


Figure 3-3 Small and Large Able Pump Stations

The Small Able Pump Station is a one-story, rectangular building clad in variegated red-brick masonry, with a flat, parapet roof, and a concrete foundation (Figure 3-3). The roof is covered in rolled asphalt with a course of tile covering the parapet cap. The tile includes the inscription *W.S. Dickey Texarkana*, possibly indicting where the tile was manufactured. The parapet is distinguished by a course of vertical stretcher-bond brick framed by a single band of protruding horizontal brick course around all four sides of the building. The building retains its original multi-light windows, with concrete sills and lintels. The building's south façade contains two windows with concrete lintels that are filled in with brick. The west façade contains one four-light window on the northern bay of the façade, and a metal overhead, rolling garage door on the southern bay; both have metal lintels. This pump house contains two axial flow pumps manufactured by Fairbanks Morse and Company, a 36-inch gate valve and a 36-inch check valve, two 4x4-foot sluice gates, and two 3x3-foot sluice gates.

The Large Able Pump Station is a one-and-one-half story, rectangular structure clad in variegated, rough red brick with a flat roof (Figure 3-3). The south façade contains a one-bay overhead garage door with a metal lintel. The east façade contains a set of metal double-doors in its northern bay with a plaque stating "Addition to Pumping Plant 'A' Dallas Floodway Project, Constructed by Corps of Engineers, U.S. Army in Cooperation with Dallas County Flood Control District, 1953." This pump house contains three axial flow pumps manufactured by the Peerless Pump Division, Food Machinery & Chemical Corporation out of Los Angeles, California. Additionally, the pump house holds three lubricating oil reservoirs and oil lines, an 8-ton trolley-type, spur-geared hoist with bridge manufactured by Robbins & Myers, Inc. from Springfield, Ohio; two water level recorders manufactured by Leupold & Stevens Instruments, Inc. from

Portland, Oregon; a water level control manufactured by Healy Ruff Company; and an air compressor manufactured by Binks Manufacturing Company from Chicago, Illinois.

3.7.1.2 Historical Review and Designation

A search of the USACE files and the Texas Archaeological Sites Atlas Databases in support of the Dallas Floodway Project EIS identified archaeological sites and architectural resources located within and near the project area. The project area and search parameters encompassed the immediate vicinity of the Able Pumping Plant. Results of the file search identified 15 previously undertaken cultural resource surveys that involved the Dallas Floodway, of which the project area is a part (USACE 2010a). Based on the results of this review, one cultural resource was identified within the project area—the Able Pump Stations, which are part of the Dallas Floodway.

Section 405(a) of the 2010 Supplemental Disaster Relief and Summer Jobs Act (Public Law 111-000) states that the Army is not required to make determinations under NHPA for the Dallas Floodway Project, including interior drainage improvements. USACE Implementation Guidance dated October 19, 2010 directed the Fort Worth District not to make a determination under NHPA and instead to examine the Dallas Floodway Project as an engineering system with a discussion of the cultural resource's significance without making explicit references to NHPA's eligibility criteria. A November 2010 Intensive Engineering Survey conducted by the USACE determined that the Dallas Floodway is a historic and cultural resource with locally significant historical associations with flood control/city planning/community development and is a significant statewide example of an engineering system designed for flood control and community development . The essential physical features of the Dallas Floodway include the levees, pump stations, diversion channels, and overbank. The Dallas Floodway, including the Able Pump Station meets the NEPA definition of a significant historic and cultural resource that must be considered in assessment of environmental impacts as required under CEQ regulations Part 1502.16.

3.7.2 Environmental Consequences

3.7.2.1 Proposed Action

Implementation of the Proposed Action would impact two properties within the project area, the Small Able Pump Station and the Large Able Pump Station. The implementation of the Proposed Action would construct a new Able Pump Station (Able No. 3). Once the new Able No. 3 Pump Station was operational, the Small and Large Able pump stations would be demolished.

In compliance with Public Law 111-000 and the October 9, 2010 USACE Implementation Guidance, impacts to a historic and cultural resource were evaluated under NEPA requirements. Implementation of the Proposed Action will have an adverse impact to cultural resources under CEQ regulations Part 1502.16 due to the demolition of the pump stations. USACE has determined the mitigation for the significant impact of the demolition will be black and white digital images and a written narrative to the standards of HABS Level II, distributed to stakeholders, local libraries and the Texas Historical Commission. Once the mitigation is completed, the impacts of the Proposed Action on a historic and cultural resource would be adverse, but less than significant. Identification of cultural and historic properties, determination of impacts and appropriate mitigative actions satisfies USACE requirements under NEPA in regards to cultural resources. The City of Dallas must meet its own regulatory requirements.

If Native American human remains and/or objects subject to the Native American Graves Protection and Repatriation Act (25 USC §§ 3001 et seq.) are encountered during proposed construction activities, the

City of Dallas would immediately notify the USACE and consult with appropriate federally recognized Tribe(s) to determine appropriate treatment measures.

3.7.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.7.1 would remain unchanged. Therefore, implementation of the No Action Alternative would result in no impacts to cultural resources.

3.8 VISUAL RESOURCES

3.8.1 Existing Conditions

The Able Pumping Plant is located adjacent to the East Levee, between the Houston Viaduct and Jefferson Boulevard bridges. As shown in Figure 2-1, the Able Pumping Plant consists of two existing stormwater pump stations – Small Able Pump Station and Large Able Pump Station, and nine ponds that form the Able Sump. Adjacent to both pump station structures are utility poles/lines that run adjacent to and serve the pumping plant. The Able Pumping Plant is located within the Trinity Industrial District viewshed, which is characterized by generally large, non-descript buildings without any unique visual characteristics. The pumping plant is consistent with the visual character of the surrounding area. The visual quality is generally low, as vividness, intactness, and unity are low. Given the nearby bridges and Trinity Levee Trail provide direct views of the Able Pumping Plant, the viewshed has a moderately high level of visual sensitivity. There are no key observation points located near the pumping plant.

3.8.2 Environmental Consequences

3.8.2.1 Proposed Action

Proposed construction activities would result in short-term impacts to visual resources due to the presence of construction equipment, vehicles, and building activities. Because the Able Pumping Plant is so visible by the public, the proposed design of the proposed Able No. 3 Pump Station would have a clean, modern sculptural design defined by shape and materials that suggest an organic formation, drawn from the design cue of the overall Balanced Vision Plan (City of Dallas 2004) and the design requirements of PD-784. The pump station would invite public interest into the function of the building with graphic and narrative information. Specifically, clean, bright (most often white) materials with soft, modern lines would be the common design elements (City of Dallas 2013). The aesthetic improvements to the proposed Able No. 3 Pump Station under the Proposed Action would improve the existing visual environment. Thus, implementation of the Proposed Action would result in beneficial impacts to visual resources.

3.8.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.8.1 would remain unchanged. Therefore, implementation of the No Action Alternative would result in no impacts to visual resources.

3.9 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

3.9.1 Existing Conditions

In 1994, EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was issued to focus the attention of federal agencies on human health and environmental conditions in minority and low-income communities. In addition, EO 12898 aims to ensure that any potential disproportionately high and adverse human health or environmental effects on these communities are identified and addressed. Because children may suffer disproportionately from environmental health and safety risks, EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was introduced to help ensure that federal agencies' policies, programs, activities, and standards address environmental health and safety risks to children.

The neighborhood surrounding the Able Pumping Plant is largely industrial. Residential uses are not permitted in the project area or immediate vicinity, and thus there is no resident minority, low-income, or child population. The development within the predicted 100-year, 24-hour storm event inundation area includes industrial, commercial, and undeveloped land uses. These businesses are generally small and locally owned, and participate in industrial activities, such as scrap metal recycling and oil refining. The Buckley Oil Company, employing 36 people, is the largest employer within the predicted inundation area (Business Review USA 2011).

3.9.2 Environmental Consequences

Currently, 131 buildings within the predicted inundation area of a 100-year, 24-hour storm event are at risk of structural flooding. The damage resulting from such a storm could result in an appraised real property value loss of $35,550,895; loss from personal property would make the value substantially higher (City of Dallas 2008).

3.9.2.1 Proposed Action

Construction activities associated with the Proposed Action are removed from residential land uses and other land uses associate with the presence of children. Upon completion of construction, a fence would enclose the Able Pumping Plant, thereby restricting unauthorized access. Therefore, implementation of the Proposed Action would not have disproportionate impact to minority populations or the health and safety of children.

Implementation of the Proposed Action would result in a minor, temporary increase in jobs for the region. Following construction, no new jobs would be created and no change to the existing economic condition would occur. Following construction, the Able No. 3 Pump Station would provide improved flood risk management for its service area. Local flooding, and associated property damage and disruption of work within the service area would decrease in both frequency and magnitude. Therefore, implementation of the Proposed Action would result in beneficial impacts to socioeconomics. Further, implementation of the Proposed Action would decrease the flood risk posed to a region of locally owned small businesses within the City of Dallas. Therefore, implementation of the Proposed Action would result in a beneficial impact to socioeconomics.

3.9.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.9.1 would remain unchanged. Existing stormwater flooding risks for locally owned small businesses would continue and potentially affected structures would continue to be subject to economic damages. Employment data for these businesses is not currently available; however, it may be inferred that the economic impacts of localized flooding within the project area would reach beyond the Able Basin, as damage would result in loss of wages to employees and economic contributions to the community. Therefore, implementation of the No Action Alternative would result in continued adverse, but less than significant impacts to socioeconomics. Given the lack of residential uses within the inundation area, potential inundation associated with the No Action Alternative would have no disproportional impact to environmental justice.

3.10 AIR QUALITY

3.10.1 Existing Conditions

3.10.1.1 Attainment Status

The study area is located in Dallas County, and is included within the Metropolitan Dallas Fort Worth Air Quality Control Region (AQCR) 215. The TCEQ regulates the Metropolitan Dallas Fort Worth AQCR, by authority of the USEPA (Region 6), and promulgated in the TCEQ's State Implementation Plan (SIP). The Dallas-Fort Worth Ozone Non-Attainment Area consists of the following ten counties: Collin, Dallas, Denton, Ellis, Johnson, Kaufman, Parker, Rockwall, Tarrant, and Wise (USEPA 2012, TCEQ 2012).

The Dallas-Fort Worth Ozone Non-Attainment Area is in "moderate" nonattainment for the 2008 federal ozone (O_3) standard (effective July 20, 2012), and is in "serious" nonattainment of the 1997 federal standard (effective January 19, 2011) (USEPA 2012, TCEQ 2012). Dallas-Fort Worth did not attain the 1997 eight-hour ozone standard by its deadline of June 15, 2010. As a result, the area was reclassified from moderate to serious, with a new attainment deadline of June 15, 2013, and the state is required to submit new attainment demonstration and reasonable further progress SIP revisions for the area and implement the previously adopted contingency measures for the area (TCEQ 2012). The attainment deadline for the moderate nonattainment of the 2008 O_3 standard is December 31, 2018 (TCEQ 2012). The applicable criteria pollutant *de minimis* levels are 50 tons/year for volatile organic compounds (VOCs) and nitrogen oxides (NO_x); VOCs and NO_x are precursors to the formation of O_3.

3.10.1.2 Baseline Emissions

Emissions in the study area come from a variety of stationary and mobile sources. Emission sources include vehicles, aircraft, industrial operations, and on-going construction activities. For example, there are several industrial facilities along and near the Trinity River that contribute to the ambient air quality of the region. These facilities include, but are not limited to, chemical plants, cement plants, semi-conductor facilities, printing operations, and oil and gas facilities.

The Able Pumping Plants within the City of Dallas interior drainage system are electrically powered; thus, the plant does not directly contribute significant emissions to the study area (City of Dallas 2009b).

Approximately 70 percent of the Dallas-Fort Worth region's air pollution comes from mobile sources such as cars, trucks, airplanes, construction equipment, and lawn equipment. The majority of pollutants emitted from motor vehicles include VOCs, NO_x, carbon monoxide (CO), particulate matter less than 10 microns in diameter (PM_{10}), and particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). The City of Dallas is implementing several initiatives to improve air quality and reduce ozone levels, including green fleet/vehicles, ordinances, commute solutions, and outreach programs. The Dallas-Fort Worth region has experienced a steady decline in ozone levels measured across the study area, most notably from reductions in emissions from stationary sources (stack) emissions, cleaner cars and construction equipment, and cleaner fuels (Green Dallas 2012).

3.10.2 Environmental Consequences

Emission thresholds associated with federal CAA conformity requirements are the primary means of assessing the significance of potential air quality impacts associated with implementation of a proposed action under NEPA. On March 24, 2010, the USEPA revised the General Conformity regulations. These rules implement CAA provisions prohibiting federal agencies from taking actions that may cause or contribute to violations of the National Ambient Air Quality Standards (NAAQS). A formal conformity determination is required for federal actions occurring in nonattainment or maintenance areas when the total direct and indirect stationary and mobile source emissions of nonattainment pollutants or their precursors exceed *de minimis* thresholds. As discussed above, the applicable criteria pollutant *de minimis* levels are 50 tons/year for VOCs and NO_x; VOCs and NO_x are precursors to the formation of O_3. The project area is in attainment of the NAAQS for all other criteria pollutants (*de minimis* thresholds are only applicable for nonattainment pollutants).

There are no final guidelines for discussing the potential greenhouse gases (GHG) impacts in environmental impact analysis process documents. CEQ proposed draft guidance for public comment and review on February 18, 2010, but this draft has never been formally adopted by CEQ. The potential effects of GHG emissions from the Proposed Action are by nature global and cumulative. Given the global nature of climate change and the current state of the science, it is not useful at this time to attempt to link the emissions quantified for local actions to any specific climatological change or resulting environmental impact. Nonetheless, the project emissions of the GHG compounds: carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O) have been quantified to the extent feasible in Appendix C for informational purposes.

3.10.2.1 Proposed Action

Air quality impacts would occur from the use of equipment during construction activities, other project-related vehicles, and worker commuting trips. Estimated emissions calculations resulting from project activities, assumptions, and a RONA for CAA Conformity are presented in Appendix C.

In addition, proposed improvements would replace the current Small and Large Able pump stations with a single modernized station (Able No. 3); Small Able and Large Able pump stations would be demolished. It was assumed that construction would take 30 months and would begin in late 2014 and end in early 2017. Implementation of the Proposed Action would result in temporary increases in criteria pollutant emissions associated with construction activities (Table 3-5).

Table 3-5. Estimated Emissions Resulting from Implementation of the Proposed Action

Project Emissions Tons Per Year	Pollutant Emissions Tons per Year					
	VOCs[1]	NO_x[1]	CO[2]	SO_x[2]	PM_{10}[2]	$PM_{2.5}$[2]
2014 Emissions	0.34	2.32	1.19	0.01	1.83	0.41
2015 Emissions	1.08	7.45	3.93	0.03	1.17	0.51
2016 Emissions	1.62	10.66	5.45	0.03	0.53	0.47
2017 Emissions	0.09	0.34	0.29	0.00	0.03	0.02
de minimis threshold	50	50	100	100	100	100
Exceeds *de minimis* threshold?	No	No	No	No	No	No

Notes: [1] The Metropolitan Dallas Fort Worth AQCR is in "serious" nonattainment for the federal O_3 standard; VOCs and NO_x are precursors to the formation of O_3; and is in attainment of all other federal standards.
[2] *De minimis* thresholds are not applicable to NAAQS attainment areas; however, estimated average annual emissions have been compared with moderate nonattainment *de minimis* thresholds for planning purposes only.

Emissions associated with construction-related vehicles and equipment would be minor, as most vehicles would be driven to and kept at the site until project activities are complete. There would be no long-term increase in mobile or stationary source emissions in the region and no emergency generators would be installed.

Fugitive dust (i.e., PM_{10} and $PM_{2.5}$) would increase (because of surface disturbances associated with construction activities) and would temporarily impact local air quality. However, fugitive dust generated by proposed construction activities would be temporary and short-term; no long-term increases in fugitive dust would occur following the completion of construction activities. In addition, increases in PM_{10} and $PM_{2.5}$ would be moderated through BMPs (i.e., watering exposed soils, soil stockpiling, and soil stabilization), thereby limiting the total quantity of fugitive dust emitted during project implementation.

Estimated emissions would be below *de minimis* levels for conformity. Therefore, implementation of the Proposed Action would not trigger a formal conformity determination under Section 176(c) of the CAA, and less than significant impacts to air quality would occur.

3.10.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.10.1 would remain unchanged. Therefore, implementation of the No Action Alternative would result in no impacts to air quality.

3.11 UTILITIES

3.11.1 Existing Conditions

The Able Pumping Plant is powered by an overhead electrical line. There are several existing and future public water, wastewater, and storm sewer utilities running along Riverfront Blvd. The exact location of every utility line is not always certain; thus, construction managers must call utility companies prior to any major underground construction within the study area to locate utilities infrastructure and to avoid disturbing existing utility lines. Currently, overhead utility lines are strung over the Able Pumping Plant such that roof access and maintenance activities are constricted. The electrical lines constitute a safety hazard precluding use of cranes or other vertical equipment in the immediate vicinity of the pumping plant.

The watershed for the entire Able Basin is approximately 2,685 acres of developed land in the city, including portions of the Central Business District, the Cedars, and Uptown. Stormwater runoff from Able Basin flows through various stormwater runoff control system components to the Able Sump. The Able Pumping Plant conveys runoff from the Able Sump to the Floodway. The Able Sump consists of a series of nine separate ponds divided by streets, highways and the Belleview Pressure Sewer. The sump ponds are connected via reinforced box culverts for flow conveyance (City of Dallas 2006).

The Able Pumping Plant consists of two separate pump stations known as Small Able Pump Station and Large Able Pump Station. The Small Able Pump Station has two, 40,000-gpm pumps. The Large Able Pump Station is comprised of three, 46,667-gpm pumps and one, 6,000-gpm sump pump (City of Dallas 2006). When water levels in the Able Sumps reach preprogrammed elevations, the pumps transfer water via pipes under the East Levee and into the Trinity River. After being pumped or drained to the Floodway, stormwater is conveyed to the Trinity River through a channel aligned perpendicular to the East Levee and the Trinity River channel (City of Dallas 2006).

The 100-year floodplain exceeds that of the Able Sump ponds in a number of locations. During intense rain events, flooding can overwhelm stormwater drainage control measures and threaten structures, people, and water quality in the Able Basin. This is due in part to Able Pump Station being undersized and the connections between the Able Sump ponds being inadequate. Stormwater flow quickly overwhelms the pump capacity and the connections' ability to pass the flow through the system (City of

Dallas 2013). Flooding occurs most often in the floodplains adjacent to sump ponds. The predicted and design 100-year, 24-hour storm event water levels for the Able Sump is 392.5 feet. (City of Dallas 2006, 2009a). The modeled 100-year peak elevation is 399.2 feet. Consequently, flooding associated with the modeled 100-year, 24-hour storm event has the potential to affect 208 structures within the Able Basin. A "potentially affected structure" is any structure touched by the predicted inundation area. Thus, of these 208 structures, 131 are subject to flooding (City of Dallas 2008).

3.11.2 Environmental Consequences

3.11.2.1 Proposed Action

Prior to implementation of the Proposed Action, construction managers would ensure that construction would not damage infrastructure (e.g., buried pipes or power lines) by contacting utility companies to locate utilities infrastructure and by identifying utility crossings. Power poles would be relocated to accommodate construction of a concrete access drive connecting the Able No. 3 building to Riverfront Boulevard. In addition, removal of several power poles near the existing pump station buildings would be part of the levee maintenance path improvements proposed, and to allow for safe operation of equipment in the course of construction.

The proposed Able No. 3 Pump Station would be built on undeveloped land, east of the existing Able Pump Stations, between Houston Street Viaduct and Jefferson Boulevard. A 138 kV transmission tower owned by Oncor would be relocated prior to construction of the discharge piping for pumps 7000 and 8000. Power for Able No. 3 would be provided at 13.2 kV from three substations; the Wall Street Substation, the Dealey Substation, and the planned East Levee (Dragon Street) Substation. Each 13.2 kV feeder would connect to a city owned 13.2 kV – 4,160 kV pad-mounted substation style transformer. Two of the three feeders would be required for Able No. 3 to be capable of operation at full capacity. The overhead power lines that run along Levee Road would provide service to the Able Pumping Plant. Water and wastewater would be extended from the adjacent Riverfront Boulevard. The majority of the site would be designed to drain stormwater directly into the existing sump areas via sheet flow. Aside from the transmission tower, there are no anticipated relocations; however, if any existing utilities (e.g., fire hydrants, gas meters, etc.) were found to be in conflict with the design plan, they would be relocated.

As shown in Table 3-6, even with the demolition of the existing pump stations and fill and sealing of their discharge pipes, the Proposed Action would increase the pump capacity of the Able Pumping Plant by 655,000-gpm. Subsequently, the greater pumping capacity of the pump station would increase stormwater conveyance to the Dallas Floodway. With the implementation of the proposed improvements, the Able Pumping Plant's predicted 100-year, 24-hour storm event elevations would be the same as the design elevation (392.5 feet), resulting in a substantial reduction in the number of structures potentially affected by flooding from the predicted 100-year, 24-hour storm event. The flood risk management within the Able Sump would improve, resulting in a decrease of the stormwater flood risk. Therefore, implementation of the Proposed Action would result in beneficial impacts to utilities.

Table 3-6. Pumping Capacity of Existing and Proposed Facilities at Able Pumping Plant

Pump Station	Current Capacity	Proposed Capacity	Net Change
Small Able Pump Station	80,000 gpm	0 gpm	-80,000 gpm
Large Able Pump Station	140,000 gpm	0 gpm	-140,000 gpm
Proposed Able No. 3 Pump Station	Not Applicable	875,000 gpm	+875,000 gpm
Total Able Pumping Plant	220,000 gpm	875,000 gpm	+655,000 gpm

Source: City of Dallas 2006.

3.11.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.11.1 would remain unchanged. Existing stormwater flood risk management concerns would continue. Therefore, implementation of the No Action Alternative would result in adverse, but less than significant impacts to utilities.

3.12 HAZARDOUS MATERIALS AND WASTE

3.12.1 Existing Conditions

On February 19, 2010, an environmental records/database review of all applicable federal, state, local, and tribal records was prepared in support of the on-going Dallas Floodway Project EIS (USACE 2010b). A total of 77 federal, state, local and tribal databases were reviewed. The search identified 963 known hazardous/toxic sites within the boundary search area (a subset of the study area associated with the Dallas Floodway Project EIS). One site, Site #764, is located 0.15 miles south of the Able Pumping Plant. Site #764 is located at 801 S. Industrial Boulevard, Dallas. The Fuel City II site is a gas service station listed on the Facility Index System and underground storage tanks (USTs) databases. Currently, the site houses several active USTs used to store gasoline and diesel. No associated leaks have been reported, case closed (Environmental Data Resource [EDR] 2010).

Buildings constructed between 1945 and 1978 commonly include asbestos containing materials (ACM) that include friable asbestos. Renovation of such buildings increases the risk of exposure to asbestos fibers and the potential for exposed persons to develop asbestosis and/or mesothelioma (USEPA 2010a). The Texas Department of State Health Services (DSHS) regulates asbestos remediation and management, and has codified requirements in the *Texas Asbestos Health Protection Rules*. The State rules adopt existing Occupational Safety and Health Administration (OSHA) and USEPA regulations and apply them to all public facilities in which activities involving the disturbance or removal of ACM may occur. The regulations also address remediation worker certification, training, notification and recordkeeping.

Through the 1940s, paint manufacturers frequently used lead as a primary ingredient in many oil-based interior and exterior house paints. Usage gradually decreased through the 1950s and 1960s as titanium dioxide replaced lead and as latex paints became more widely available. Lead exposure through lead-based paint (LBP) has been demonstrated to have significant adverse health effects, most notably nervous system and cognitive function damage. The USEPA maintains guidance on management inspection of facilities that may have LBP (USEPA 2010b). The DSHS regulates LBP inspection, remediation and management. The state rules adopt existing OSHA and USEPA regulations and apply them to all public facilities in which activities involving the disturbance or removal of LBP may occur. The regulations also address remediation worker certification, training, notification and recordkeeping.

3.12.2 Environmental Consequences

3.12.2.1 Proposed Action

The results of the 2010 EDR report indicated the presence of one hazardous materials/waste site located 0.15 miles south of the Able Pumping Plant (EDR 2010). The hazardous material/waste site is a gas service station that does not have any reported leaks from USTs. Therefore, it is unlikely that proposed ground disturbing activities associated with the Proposed Action would expose workers, nearby residents, or the environment to hazardous materials/contaminants or waste. A Contingency Action Plan reflecting the guidance of AR 200-1 and ER 1165-2-132 would be prepared to ensure familiarity with reporting and communication protocols in the event hazard materials are encountered in the course of Proposed Action implementation. If during construction or ground disturbing activities any potential hazardous materials/contaminants or waste are discovered, work would cease immediately and the proper personnel would be contacted for further assessment. Workers would follow standard BMPs and industry-wide protocols to minimize the potential for fuel, oil, and/or lubricant spills.

Before initiating demolition activities, the construction contractor would have a DSHS-licensed inspector inspect the building for ACM and LBP. If the inspection would reveal the presence of ACM and/or LBP, the construction contractor would be required to submit the necessary notifications and abate the hazards in accordance with applicable federal, state, and local regulations. If contract workers would discover any potentially hazardous materials or generate any regulated wastes (e.g., ACM or LBP-containing demolition debris) during construction activities, work would cease immediately pending further assessment by City of Dallas. Any ACM would be handled and disposed of in accordance with OSHA (29 CFR § 1910.1001) and USEPA (40 CFR § 61 Subpart M) regulations. Any LBP would be handled and disposed of in accordance with OSHA (29 CFR § 1926.62) and USEPA (40 CFR §745 and 40 CFR § 261.4(b)(1)) regulations.

After implementation of the Proposed Action, the proposed pumping plant would not be a user or generator of any hazardous materials/wastes, except oils, solvents, paints, etc. to properly operate and maintain the pumping systems within the pumping station and other associated features. These products would be properly used and stored in accordance with all applicable local, state, and federal regulations. Therefore, implementation of the Proposed Action would not result in significant impacts to hazardous materials and waste.

3.12.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.12.1 would remain unchanged. Therefore, implementation of the No Action Alternative would result in no impacts to hazardous materials and waste.

3.13 TRANSPORTATION

3.13.1 Existing Conditions

Within the Able Basin, 34 streets are potentially subject to flooding during the 100-year, 24-hour storm event, including the Mixmaster interchange. Streets that are classified by the City of Dallas as freeways (i.e., Street Class 5) and as thoroughfares (Street Class 4) in the Able Basin, and their baseline average daily traffic (ADT) values are presented in Table 3-7. The ADT volumes are representative of the roadways near a major intersection within or adjacent to the predicted flood area.

As stated earlier, the March 2006 storm event flooded the R. L. Thornton Freeway to depths of three feet (City of Dallas 2009a). The R.L.Thronton Freeway, and the other Class 4 and 5 roads identified in Table 3-7 are major conduits serving the central business district of the City of Dallas. Closure from flooding events presents a substantial hazard in that the populace is unable to move from business centers to residential areas; at the same time, emergency services are not able to use the main roads to access those in danger. Stranded motorists on these flooded roadways also place demands on emergency services.

Table 3-7. Able Basin Class 4 and 5 Roads Potentially Subject to Flooding

Road	Street Class	ADT
Corinth Street	4	13,763
Riverfront Boulevard	4	29,498
Spur 366 Eastbound	5	79,333
IH-35E Eastbound and Westbound	5	230,166
East Jefferson Boulevard Viaduct	4	8,334
North Houston Street Viaduct	3	6,080
IH-30 (R.L. Thornton Freeway)	5	149,542

Sources: North Central Texas Council of Governments 2012.

3.13.2 Environmental Consequences

3.13.2.1 Proposed Action

Proposed construction activities would result in short-term traffic impacts due to possible traffic stoppages to allow construction vehicle access. Increases in daily traffic volumes associated with proposed construction activities would be temporary. Once completed, the Proposed Action would include two new driveway access points to and from Riverfront Boulevard (refer to Figure 2-1).

During construction, contractors would implement the provisions contained in the Traffic Control Plan to be prepared as part of the Proposed Action. Contractors would be responsible for providing and maintaining all barricades, warning signs, flashing lights and traffic control devices in conformance with Part VI of the *Texas Manual on Uniform Traffic Control Devices*. Once complete, the contractor would restore all items that are disturbed during installation of temporary traffic control, to original or better condition. Closure of traffic lanes and sidewalks along any public roadway would be restricted to the hours of 8:30 a.m. to 3:30 p.m. on workdays to minimize the impact on traffic flows, unless approved otherwise by the City of Dallas.

Upon completion of the Proposed Action, the new Able No. 3 Pumping Plant would be better equipped to manage stormwater in the Able Basin. As a result, the roads identified as being potentially subject to flooding would have a reduced risk of flooding-related closure. Therefore, while the construction period would have a temporary less than significant impact on transportation, the implementation of the Proposed Action would result in beneficial impacts to transportation overall.

3.13.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.13.1 would remain unchanged. Frequent flooding of roadways would continue and impede traffic flow and constitute a safety hazard. Therefore, implementation of the No Action Alternative would result in adverse impacts to transportation.

3.14 PUBLIC SAFETY

3.14.1 Existing Conditions

The Able Pumping Plant drains an industrially developed section of the City of Dallas. As discussed in Section 1.4.3.2, spatial analysis indicates that flooding associated with the modeled 100-year, 24-hour storm event has the potential to affect 208 structures within the Able Basin. Of these 208 structures, 131 are subject to flooding (refer to Figure 1-3) (City of Dallas 2008).

During large flooding events in the Able Basin, emergency responders (e.g., fire, police, and medical) respond to flood-related emergencies. As discussed in Section 3.13, flooding of the Able Sumps also floods several major roadways serving the central business district. Frequent flooding of these roadways both increases demand on emergency services from stranded motorists, while also impeding emergency service mobility beyond the Able Basin, as the main roadways are not available.

A 2007 USACE inspection identified several deficiencies at the Able Pumping Plant. Significant deficiencies noted included damage to the outlet gates, failed drainage at the trash racks, and a hole in the pavement at the pumping plant. Minor deficiencies noted include damage to the service bridge, misaligned joints within the retaining walls, trash accumulation in the sump, and minor structural deficiencies. The deficiencies observed at the Able Pumping Plant have the potential to affect operations and maintenance, which in turn, can compromise the effectiveness of the Able Pumping Plant (USACE 2009).

3.14.2 Environmental Consequences

3.14.2.1 Proposed Action

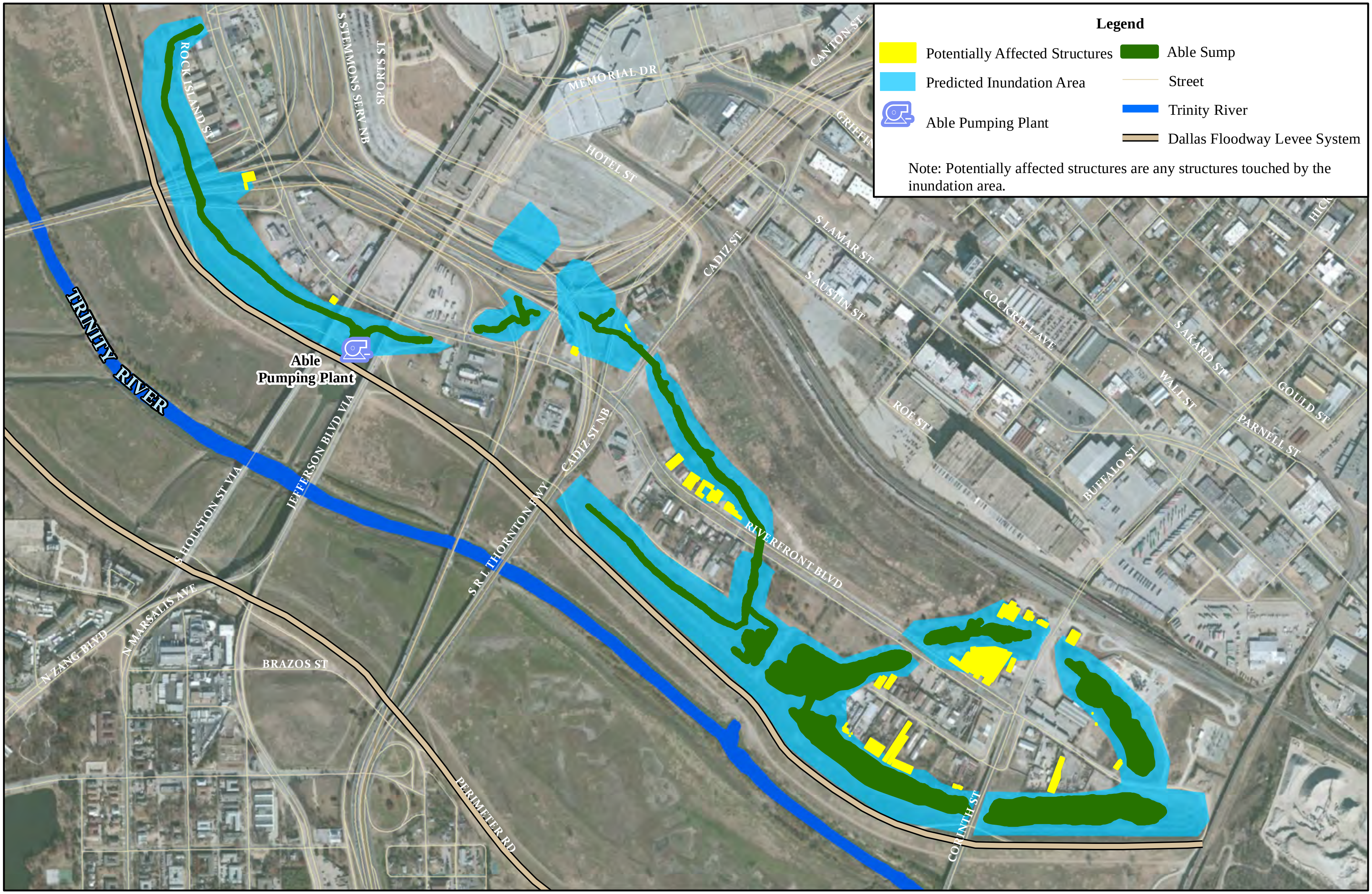
During the project construction, the construction contractor would be responsible for the preparation and submittal of a flood emergency action plan to the USACE and TRFCD for their approval. The flood emergency action plan would be implemented in the event of imminent flooding during construction and would address actions to be implemented during above normal river stages for the duration of the construction activities.

The Proposed Action would reduce the stormwater flood risk associated with the 100-year, 24-hour storm event. With the implementation of proposed improvements, the predicted Able Pumping Plant 100-year, 24-hour storm event elevation (399.2 feet) would be reduced to the original design elevation (392.5 feet), resulting in a potential total elimination of structures potentially flooded from the 100-year, 24-hour storm event (Figure 3-4).

Overall, the Proposed Action would result in a dramatically lower flood risk for persons and property in the Able Basin. At the same time, the improved flood control would reduce the frequency with which the area roadways would flood. Correspondingly, there would be a lower demand for flood-related emergency services, while there would also be an improvement in the mobility for emergency services to access those in need. Therefore, implementation of the Proposed Action would result in beneficial impacts to public safety.

3.14.2.2 No Action Alternative

Under the No Action Alternative, existing conditions as described in Section 3.14.1 would remain unchanged. Flood risk would continue at the current levels, with 208 structures potentially affected from inundation, and 131 structures potentially subject to flooding associated with the predicted 100-year, 24-hour storm event. Existing public safety and associated emergency response concerns would continue. Furthermore, existing deficiencies at the Able Pumping Plant, as noted in the USACE inspection report, would continue. Therefore, implementation of the No Action Alternative would result in significant impacts to public safety.



Meters
0 75 150 225 300
0 250 500 750 1,000
Feet
Sources: City of Dallas 2006, 2009d; NCTCG 2008

Figure 3-4
Predicted Inundation Areas and Potentially Affected Structures in the Able Drainage Area Resulting from Modeled 100-Year, 24-Hour Storm Event with Able No. 3 Online

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CHAPTER 4
CUMULATIVE EFFECTS

4.1 CUMULATIVE IMPACTS

Cumulative impacts are defined as the "impacts on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions (40 CFR 1508.7)." Currently, the USACE is analyzing the potential environmental impacts of several proposed actions within the Trinity River Corridor. The USACE is in the process of analyzing these proposed actions in the Dallas Floodway Project Feasibility Study/EIS; the Dallas Floodway Project Draft EIS was made available for public review and comment on April 18, 2014.

4.1.1 Overview

The proposed construction of Able No. 3 and demolition of the existing Able Pump Stations are localized actions and represent a relatively small action in an extensive area subject to on-going planning for large-scale activities. The comprehensive cumulative impact analysis included as part of the on-going Dallas Floodway Project EIS includes an analysis of the proposed Able Pumping Plant improvements. The impact from the implementation of proposed Able Pumping Plant improvements would not be a significant contribution to impacts associated with the Dallas Floodway Project EIS.

4.1.2 Identified Cumulative Projects

The following projects are part of the Dallas Floodway Project EIS Proposed Action and are located in the vicinity of the Proposed Action (Figure 4-1). These projects will not be addressed in further detail in this EA:

- **Charlie Pumping Plant:** Under the Proposed Action, the City of Dallas would demolish the existing Charlie Pump Station and replace it with a new pump station at the same location, within the existing footprint. The pump station would include a new outfall travelling over the levee rather than through the levee. On the sump side, a new intake would be installed and portions of the existing sump channel would be lined (City of Dallas 2009c).
- **Ecosystem Restoration and Recreation Features:** These elements include ecosystem restoration and recreation features defined in *"The Balanced Vision Plan (BVP) for the Trinity River Corridor, Dallas, TX"* dated December 2003, and amended in March 2004 and include the flex fields, the Trinity River meanders, trails, the gateway parks, and lakes. These features would also modify the outfalls of the pump stations and pressure sewers draining into the floodway—including that to be constructed under the current Proposed Action—to maintain discharge into the Trinity River channel (City of Dallas 2004).
- **Flood Risk Management Features:** As part of the Balanced Vision Plan, the City of Dallas and the USACE propose to raise the entire Dallas Floodway levee system to contain the standard project flood (277,000 cubic feet per second). In addition to the levee raise, the levees would be widened to have a 4:1 slope (that is, 1 foot rise for every 4 feet across) on the riverside of the entire length of the levee system.

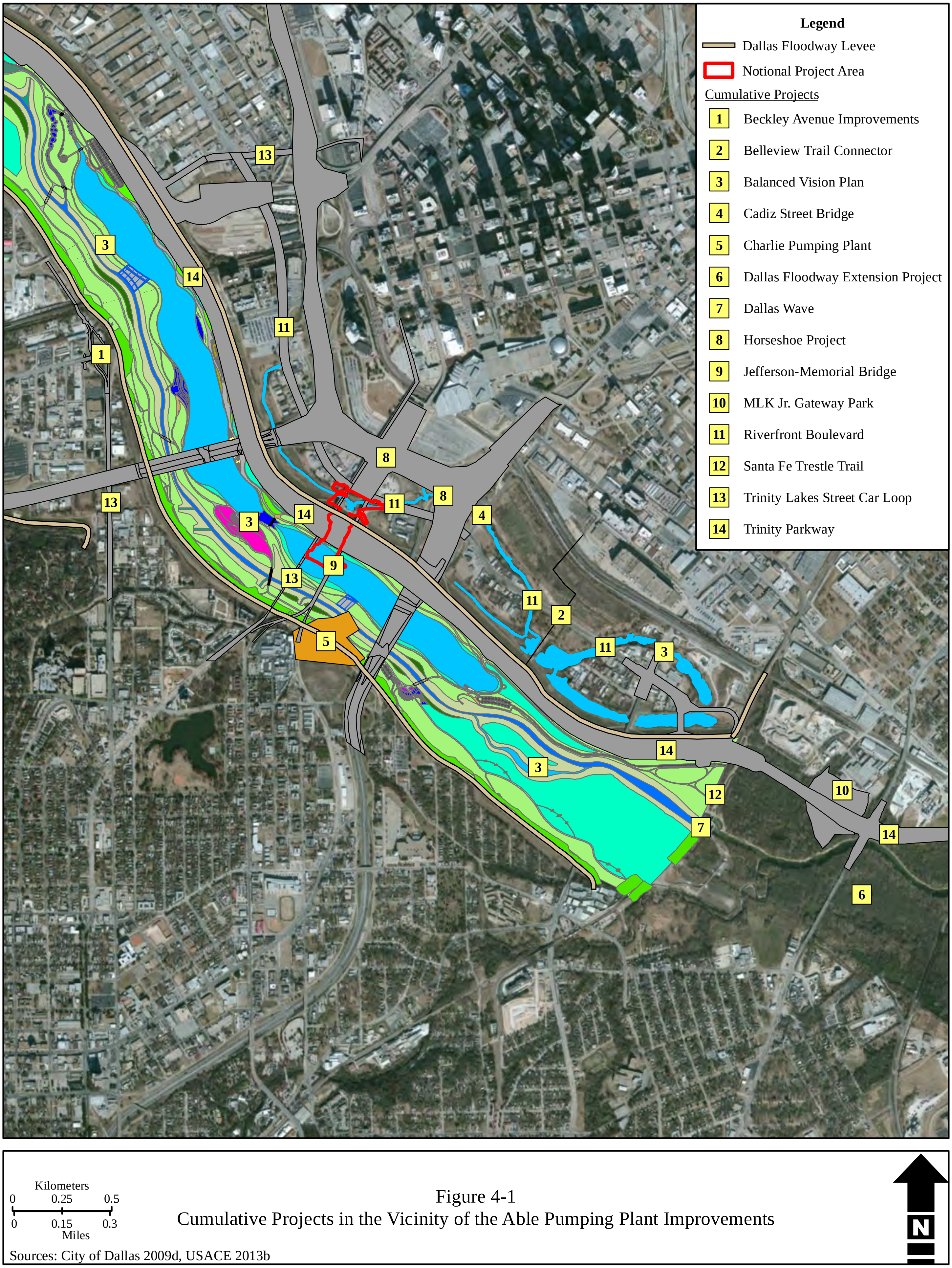

Figure 4-1
Cumulative Projects in the Vicinity of the Able Pumping Plant Improvements

Sources: City of Dallas 2009d, USACE 2013b

There are several projects not part of the Dallas Floodway Project EIS Proposed Action that are located in the vicinity of the Proposed Action (refer to Figure 4-1). Projects of note include:

- Past Actions
    - **Dallas Floodway Extension Project:** The DFE project consists of the following major components: construction of the Chain of Wetlands, the Cadillac Heights and Rochester Park Levees, and ecosystem and recreation features in the Great Trinity Forest immediately downstream of the existing Dallas Floodway Levee System. The project area covers approximately 9,500 acres. Construction of the DFE Project is on-going (USACE 2012). The DFE Project contributes to beneficial impacts to water resources, biological resources, visual resources, and air quality.
    - **Dallas Wave:** This project includes the construction of an in-stream standing wave for recreational use, and covers approximately nine acres. In addition to the in-stream component, the standing wave includes a shore component consisting of a canoe launch, trails, a parking area, and ingress/egress points (launch and take-out) supported by retaining walls. The initial construction was completed in 2012; additional improvements are under design consideration (City of Dallas 2012c). The Dallas Wave contributes to a cumulative impact to geology and water resources, in that it is a localized change in water flow and riverbank structure. The Dallas Wave also contributes to a potential adverse effect to public safety, as it cannot currently be used as designed in a safe manner. The site access is currently closed, and this cumulative risk to safety is less than significant.
    - **Santa Fe Trestle Trail:** The Santa Fe Trestle Trail is a hike and bike trail providing access to Moore Park, located off East 8th Street south of downtown Dallas. It covers approximately 10 acres and crosses the Trinity River via the abandoned Atchison, Topeka, and Santa Fe Railroad Bridge and portions of the old railroad trestle, and ends as an access road at the north Trinity River levee near downtown Dallas. Construction began July 2010 and was completed in 2012 (City of Dallas 2012d). The Santa Fe Trestle Trail contributes to a socioeconomic and transportation benefit as a recreational amenity that improves pedestrian access to the Floodway.
- Reasonably Foreseeable Future Actions
    - **Beckley Avenue Improvements:** The City of Dallas plans to improve Beckley Avenue at Commerce Street by adding four new vehicle lanes, reinforced concrete sidewalks, a new major drainage system, and upgraded water and wastewater mains. The project area will cover approximately three acres. Construction is estimated to conclude in fall 2014 (City of Dallas 2012e).
    - **Belleview Trail Connector:** The City of Dallas proposes to construct a trail connecting development, entertainment, and art districts via mass transit in the Cedars District. The trail would be slightly less than one acre and would connect the proposed Trinity Park to the DART Cedars Station. This project does not currently have an estimated start date (City of Dallas 2012d).
    - **Cadiz Street Bridge:** The City of Dallas plans to improve Cadiz Street between Riverfront Boulevard and Lamar Street to allow for better traffic flow from the improved Riverfront Boulevard. Improvements include adding a barrier separating north and south, adding designated turn lanes, reinforced concrete sidewalks, improved drainage, and replacing the

RBC connections between Able Sump Pond 3 and 4 with a bridge. Construction is estimated to conclude in late 2016 (USACE 2013a).

- **Horseshoe Project:** A subset of the larger Project Pegasus, the Horseshoe Project would replace two key bridges and connecting roadways crossing the Trinity River at IH-30 and IH-35, as well as upgrade outdated roadway geometry, improve safety and increase capacity and mobility. In addition, improvements to the connection between Ponds 2 and 3 in the Able Basin would occur under this project. The project would begin at Sylvan Avenue on IH-30, extend to the IH-30/IH-35 interchange (commonly referred to as the Mixmaster) and head south on IH-35 to cross the Trinity River, ending just south of Colorado Boulevard. The project started construction in 2013 and is schedule to be completed by late 2017 (TxDOT 2012c).
- **Jefferson-Memorial Bridge:** The Jefferson-Memorial Bridge would replace the existing Jefferson Street Bridge; the project is currently in the planning stage at TxDOT. The new bridge would provide direct connects to and from IH-35E (TxDOT 2012b).
- **Martin Luther King (MLK), Jr. Gateway Park:** The City of Dallas proposes to improve the existing MLK, Jr. Bridge across the Trinity River to accommodate pedestrians and bicyclists. There would also be parking added to the west side of the bridge, and access to a trail that would wind its way past the Upper Chain of Wetlands to Moore Park and the Santa Fe Trestle Trail. This project is under design (Trinity River Corridor Project 2013).
- **Riverfront Boulevard Improvements:** This 27-acre project involves converting Riverfront Boulevard (formerly Industrial Boulevard) to a 1.5-mile, eight-lane thoroughfare with a 150-foot wide right of way. Riverfront Boulevard would become a "complete street" and include landscape zones, bicycle lanes, and pedestrian sidewalks. The project would also include an upgrade of the drainage system and replacement/upgrade of existing water and wastewater transmission and distribution lines. These improvements would apply to connections between Ponds 3 and 4 as well as Ponds 6 and 7 of the Able Basin. Construction is ongoing (City of Dallas 2012d).
- **Trinity Lakes Street Car Loop:** The proposed Trinity Lake Streetcar Loop would better connect Oak Cliff and West Dallas to downtown. The approximately 5-mile long route would zigzag from the convention center hotel, down the east-west commercial district, and up to the Arts District. It would create economic development opportunities for downtown along with West Dallas, the Design District, and Oak Cliff (DART 2012).
- **Trinity Parkway:** The Trinity Parkway is a proposed 9-mile toll road that would extend from the State Highway-183/IH-35E juncture to US-175/Spur 310. The Federal Highway Administration is analyzing action alternatives in their NEPA process (Federal Highway Administration 2009).

4.1.3 Cumulative Impact Analysis

4.1.3.1 Land Use

The Proposed Action would result in less than significant impacts to land use. The projects identified in the cumulative effects region would be implemented in accordance with all applicable land use regulations. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in less than significant cumulative impacts to land use. The projects identified within the cumulative effects region are also anticipated by the TRCCLUP, and implementation of these projects furthers the goals of the comprehensive plan. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in beneficial cumulative impacts to land use.

4.1.3.2 Noise

The Proposed Action would result in less than significant impacts to noise. The other projects in the cumulative effects region would likely result in minor localized changes in ambient existing noise levels, and would thus incorporate any necessary design or mitigation measures to minimize noise impacts to any sensitive noise receptors during construction and/or operation. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in less than significant cumulative impacts to noise.

4.1.3.3 Geology and Soils

The Proposed Action would result in less than significant impacts to geology and soils. The preparation and implementation of a SWPPP and Erosion Control Plan would minimize the potential for erosion during construction. The identified cumulative projects would be required to develop SWPPPs as well for any construction efforts, thus preventing any potential negative impact to the soils in the vicinity of the Proposed Action. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in less than significant cumulative impacts to geology and soils.

4.1.3.4 Water Resources

The Proposed Action would result in less than significant impacts to water resources. All other projects identified in the cumulative effects region would not affect area water resources, with the exception of the Horseshoe Project and Riverfront Boulevard Improvements Project. The proposed Horseshoe Project would place fill material within the existing Able Sump ponds 2 and 3 for a proposed ramp and collector distributor road. In order to compensate for the reduction in storage capacity and impact to hydraulics, a 12-foot reinforced concrete pipe would be constructed between Able Sump ponds 2 and 3, as part of the Horseshoe Project. Under the Riverfront Boulevard Improvements Project, a new bridge on Riverfront Boulevard and a new bridge on Cadiz Street, respectively would replace the existing connections between Ponds 4 and 5 and Ponds 3 and 4. This action would provide a significant increase in the available flow conveyance between the ponds. The Dallas Floodway Project anticipates temporary, adverse impacts to water resources within the Floodway during the construction of the project. However, the long-term operational impacts of the Dallas Floodway Project would be beneficial. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in significant cumulative impacts to water resources during construction. However, the Able Pump Station improvements would not contribute significantly to those impacts.

4.1.3.5 Biological Resources

The Proposed Action would result in less than significant impacts to biological resources. The potential permanent impact to jurisdictional waters of the U.S. would be authorized under the requirements of RGP-12. There are no known special status species within the project area. Other projects identified in the cumulative effects region would result in minor changes to habitat types and an overall net benefit to wetland habitat and floodplains. The DFE Project would result in significant beneficial impacts to biological resources; however, the Proposed Action does not substantially contribute to that impact. The Dallas Floodway Project anticipates temporary, adverse impacts to biological resources within the Floodway during the construction of the project. However, the long-term operational impacts of the Dallas Floodway Project would be beneficial. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in significant cumulative impacts to biological resources. However, the Able Pump Station improvements would not contribute significantly to those impacts.

4.1.3.6 Cultural Resources

Implementation of the Proposed Action would be completed upon the completion of mitigation for the loss of the Small and Large Able Pump Stations. Any potentially adverse effects from any of the identified cumulative projects would be mitigated as necessary. Appropriate mitigation for this project includes high quality digital photography of the Small and Large Able Pump Stations, and the development of a HABS/HAER Level II written documentation package. Therefore, the Proposed Action, in conjunction with identified cumulative projects and implementation of any applicable mitigation, would result in less than significant cumulative impacts to cultural resources.

4.1.3.7 Visual Resources

The Proposed Action would result in less than significant impacts to visual resources. The proposed Able No. 3 Pump Station would be visually consistent with the Balanced Vision Plan and surrounding area. The identified cumulative projects would strive for visual consistency throughout the ROI, and could potentially include design features to soften any potential visual impacts. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in less than significant cumulative impacts to visual resources.

4.1.3.8 Socioeconomics and Environmental Justice

The Proposed Action would result in beneficial impacts to socioeconomics and no disproportionate impact to minority populations or the health and safety of children. The identified cumulative projects would result in a beneficial impact to socioeconomics by improving connectivity between economic centers of the City of Dallas and more economically depressed residential areas and potentially increase tourism. In addition, construction of the identified cumulative projects would result in a temporary increase in construction-related spending in the local economy. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in beneficial cumulative impacts to socioeconomics. There would be no cumulative disproportionate impact to minority populations or the health and safety of children.

4.1.3.9 Air Quality

The Proposed Action would result in less than significant impacts to air quality. The transportation-related cumulative projects would result in a beneficial long-term impact to air quality by improving regional transportation and thus reducing trip times and associated emissions, despite an initial adverse impact resulting from construction-related emissions. The DFE Project and similar recreational improvements incorporate habitat improvements that also benefit air quality. The Dallas Floodway Project anticipates temporary, adverse impacts to air quality within the Floodway during the construction of the project. However, the long-term operational impacts of the Dallas Floodway Project would be beneficial. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in less than significant impacts to air quality. However, the Able Pump Station improvements would not contribute significantly to those impacts.

4.1.3.10 Utilities

The Proposed Action would have a beneficial impact to utilities by improving stormwater conveyance and increasing stormwater flood risk management. The proposed new Able No.3 Pumping Plant would improve stormwater flood risk management in the Able Basin. The other identified cumulative projects would be implemented following coordination with regional utility companies to minimize the potential for impacts to utilities. Therefore, the Proposed Action, in conjunction with the identified cumulative projects, would result in beneficial cumulative impacts to utilities.

4.1.3.11 Hazardous Materials and Waste

The Proposed Action would result in less than significant impacts to hazardous materials and waste. Any contamination discovered would be addressed and managed on a project-specific basis to minimize potential impacts from hazardous materials. All potentially hazardous wastes would be transported, stored, and disposed of in accordance with all applicable regulations. Therefore, the Proposed Action, in conjunction with the identified cumulative projects, would result in less than significant cumulative impacts to hazardous materials and waste.

4.1.3.12 Transportation

The preparation and implementation of the traffic control plan during construction would minimize the impact of local, temporary transportation delays. Upon the completion of construction, there would be a slight benefit to local and regional transportation as there would be a reduced risk of stormwater flooding closing area roadways in the Able Basin. Following construction, the identified cumulative projects would result in an overall adverse impacts to regional transportation resulting from increased traffic during construction of the Dallas Floodway Project and the Trinity Parkway. Long term adverse impacts to transportation are anticipated resulting from projected population growth throughout the Dallas metropolitan area. Therefore, the Proposed Action, in conjunction with identified cumulative projects, would result in adverse cumulative impacts to transportation. However, the Able Pump Station improvements would not contribute significantly to those impacts.

4.1.3.13 Public Safety

The Proposed Action would have a beneficial impact to public safety by reducing the stormwater flood risk and through implementation of an emergency action plan during high-water events. These reductions would be consistent with the stated purpose of EO 11988 to minimize the risk to human safety from flooding. The identified cumulative projects would benefit public safety by improving transportation and therefore regional access for emergency response services and would include any necessary safety measures to reduce potential health and safety risks to the public. Therefore, the Proposed Action, in conjunction with the identified cumulative projects, would result in beneficial cumulative impacts to public safety.

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CHAPTER 5
SUMMARY OF IMPACTS

5.1 SUMMARY OF IMPACTS

In accordance with NEPA, the USACE performed a focused analysis of the following resource areas: land use, noise, geology and soils, water resources, biological resources, cultural resources, visual resources, socioeconomics and environmental justice, air quality, utilities, hazardous materials and wastes, transportation, and public safety. Table 5-1 presents a summary of the impacts to all resource areas under the Proposed Action and No Action Alternatives, and the potential impacts of the Proposed Action in conjunction with the identified cumulative projects.

Table 5-1. Summary of Environmental Consequences

Resource Area	Proposed Action	No Action	Cumulative Impacts[1]
Land Use	-	-	+
Noise	○	-	○
Geology and Soils	○	-	○
Water Resources	+	-	
Biological Resources	○	-	○
Cultural Resources	*	-	*
Visual Resources	+	-	○
Socioeconomics and Environmental Justice	+	○	+
Air Quality	○	-	○
Utilities	+	○	+
Hazardous Materials and Wastes	○	-	○
Transportation	+	○	▲
Public Safety	+	▲	+

Notes: + = Beneficial impacts
- = No impacts
○ = Less than significant impacts
* = With mitigation, less than significant impacts
▲ = Significant impacts

[1]Based on the operational environment of cumulative project, not during construction.

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CHAPTER 6
OTHER CONSIDERATIONS REQUIRED BY NEPA

6.1 IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF NATURAL OR FINITE RESOURCES

Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-term or permanent basis. This includes the use of non-renewable resources such as metal and fuel. These resources are irretrievable in that they would be used for a project when they could have been used for other purposes. Human labor is also considered an irretrievable resource. In addition, the unavoidable destruction of natural resources that could limit the range of potential uses of that particular environment is also considered an irreversible commitment of resources.

Implementation of the Proposed Action would require the consumption of materials typically associated with construction activities (e.g. concrete). In addition, the use of vehicles and construction equipment would result in the consumption of fuel, oil, and lubricants. An undetermined amount of human energy for construction would also be expended and irreversibly lost. However, the amount of these resources used would be relatively minor and these resources are readily available in large quantities. Therefore, implementation of the Proposed Action would not result in significant irreversible or irretrievable commitment of resources.

6.2 RELATIONSHIP BETWEEN LOCAL SHORT-TERM USE OF THE HUMAN ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM NATURAL RESOURCE PRODUCTIVITY

NEPA requires an analysis of the relationship between a project’s short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. Impacts that narrow the range of beneficial uses of the environment are of particular concern. This refers to the possibility that choosing one development option reduces future flexibility in pursuing other options, or that giving over a parcel of land or other resource to a certain use often eliminates the possibility of other uses being performed at that site.

Under the Proposed Action, short-term effects would be primarily related to construction activities and the use of associated vehicles and equipment that could be used for other purposes. In the long-term, the proposed construction would provide an important increase in flood risk management capability. With implementation of BMPs and mitigation measures, the Proposed Action would not result in any impacts that would reduce environmental productivity or narrow the range of beneficial uses of the environment.

6.3 MEANS TO MITIGATE AND/OR MONITOR ADVERSE ENVIRONMENTAL IMPACTS

With the implementation of Resource Conservation Measures as presented in Section 2.4.1.5 into the project design, the Proposed Action would not result in significant environmental impacts.

6.4 CLIMATE CHANGE

GHGs are gases that trap heat in the atmosphere. These emissions occur from natural processes and human activities. The accumulation of GHGs in the atmosphere can influence the earth's temperature. Predictions of long-term environmental impacts due to global climate change include sea level rise, changing weather patterns with increases in the severity of storms and droughts, changes to local and regional ecosystems including the potential loss of species, and a significant reduction in winter snow pack. In Texas, predictions of these effects include exacerbation of air quality problems, increased storm frequency, and drastic impacts from sea level rise (USEPA 2012).

Federal agencies are, on a national scale, addressing emissions of GHGs by reductions mandated in federal laws and EOs, most recently, EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*. Several states have promulgated laws as a means to reduce statewide levels of GHG emissions. In particular, Senate Bill 184 (September 1, 2009), requires the State Comptroller to develop strategies to reduce GHG emissions, and the Texas Emission Reductions Plan, established in 2001, provides incentives to reduce emissions and improve and maintain air quality in Texas (Texas Comptroller of Public Accounts 2012). In addition, the City of Dallas initiated the "Green Dallas" program in 2005 designed to reduce GHG emissions from both municipal and private sectors of the City of Dallas (City of Dallas 2005b).

In 2010, the estimated GHG emissions from the City of Dallas operations were 402,560 metric tons (Green Dallas 2012). This amount is approximately 33 percent less than 1990 GHG emissions (Green Dallas 2012). The City of Dallas has already attained the 7 percent GHG emissions reduction for the period between 1990 and 2012. The main factors that may have helped Dallas obtain this goal are (1) the purchase of renewable energy sources (at 40 percent) for the City's electricity consumption, and (2) the energy efficiency improvements in the power generation sector (Green Dallas 2012).

GHG emissions associated with The Proposed Action construction and operation activities would not significantly contribute to global climate change.

CHAPTER 7
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CHAPTER 8
LIST OF PREPARERS

This EA was prepared for, and under the direction of, the USACE Fort Worth District by the following Cardno TEC Inc. staff:

Project Management

Ryan Pingree, Project Director, 17 years' experience
M.S., Environmental Science and Management

Erica Boulanger, Project Manager, Land Use**,** Public Safety, Socioeconomics and Environmental Justice, 9 years' experience
B.S. Environmental Science

Quality Assurance

Jason Strayer, Quality Assurance/Quality Control, 23 years' experience
M.S. Biology

Technical Analysts

Scott Barker, Noise, Transportation, 21 years' experience
M.S., Civil Engineering, M.C.P (Master of City Planning)

Ian Todd, Geology, Water Resources, Visual Resources, Utilities, Hazardous Materials and Wastes, 3 years' experience
B.A., Environmental Studies

Melissa Tu, Biological Resources, 15 years' experience
B.A., Environmental Biology

Jennifer Bryant, Cultural Resources, 8 years' experience
M.A., History/Public History

Christine Davis, Air Quality, 14 years' experience
M.S., Environmental Management

Shannon Brown, GIS Specialist, 6 years' experience
B.S., Environmental and Resource Science

Document Production

Claudia Tan, Production Manager, Technical Editor, 12 years' experience
A.A., Liberal Arts and Sciences

Jackie Brownlow, Production Assistant, Graphics Support, 5 years' experience
B.S., Business Administration

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Appendix A

Agency Notification

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DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF: June 13, 2013

Planning, Environmental and Regulatory Division

Ms. Kathy Boydston
Wildlife Habitat Assessment Program
Texas Parks and Wildlife Department
4200 Smith School Road
Austin, TX 78744

Dear Ms. Boydston:

This letter is to notify you that the U.S. Army Corps of Engineers (USACE), Fort Worth District, in partnership with the City of Dallas, is preparing an Environmental Assessment (EA), pursuant to Section 102 of the National Environmental Policy Act and USACE Engineering Regulation 200-2-2, for proposed improvements to the Able Pumping Plant located adjacent to the East Levee, between the Houston Street and Jefferson Boulevard Viaducts, in Dallas, Texas.

The Proposed Action consists of constructing a new 875,000-gallon per minute capacity pump station and outfall, and decommissioning and removing the existing Small Able and Large Able pump stations. In addition, the Proposed Action includes implementing stormwater conveyance improvements in the Able Sump ponds. The EA will describe the action alternatives and affected environment, and will analyze the potential environmental effects of the action alternatives.

Our office will send you additional correspondence soliciting your input as we progress through the NEPA process. We look forward to receiving your comments as we move forward. Thank you for your cooperation.

Sincerely,

E. W. Verw

Eric W. Verwers
Chief, Planning, Environmental, and
Regulatory Division

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF:

June 13, 2013

Planning, Environmental and Regulatory Division

Mr. Sean Edwards
Federal Projects Coordinator
U.S. Fish and Wildlife Service, Ecological Services
2005 NE Green Oaks Blvd., Suite 140
Arlington, TX 76006

Dear Mr. Edwards:

This letter is to notify you that the U.S. Army Corps of Engineers (USACE), Fort Worth District, in partnership with the City of Dallas, is preparing an Environmental Assessment (EA), pursuant to Section 102 of the National Environmental Policy Act and USACE Engineering Regulation 200-2-2, for proposed improvements to the Able Pumping Plant located adjacent to the East Levee, between the Houston Street and Jefferson Boulevard Viaducts, in Dallas, Texas.

The Proposed Action consists of constructing a new 875,000-gallon per minute capacity pump station and outfall, and decommissioning and removing the existing Small Able and Large Able pump stations. In addition, the Proposed Action includes implementing stormwater conveyance improvements in the Able Sump ponds. The EA will describe the action alternatives and affected environment, and will analyze the potential environmental effects of the action alternatives.

Our office will send you additional correspondence soliciting your input as we progress through the NEPA process. We look forward to receiving your comments as we move forward. Thank you for your cooperation.

Sincerely,

Eric W. Verwers
Chief, Planning, Environmental, and
Regulatory Division

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF:

June 13, 2013

Planning, Environmental and Regulatory Division

Mr. Michael Jansky
Office of Planning and Coordination
U.S. Environmental Protection Agency, Region 6
1445 Ross Avenue, Mail Stop 6ENXP
Dallas, TX 75202

Dear Mr. Jansky:

This letter is to notify you that the U.S. Army Corps of Engineers (USACE), Fort Worth District, in partnership with the City of Dallas, is preparing an Environmental Assessment (EA), pursuant to Section 102 of the National Environmental Policy Act and USACE Engineering Regulation 200-2-2, for proposed improvements to the Able Pumping Plant located adjacent to the East Levee, between the Houston Street and Jefferson Boulevard Viaducts, in Dallas, Texas.

The Proposed Action consists of constructing a new 875,000-gallon per minute capacity pump station and outfall, and decommissioning and removing the existing Small Able and Large Able pump stations. In addition, the Proposed Action includes implementing stormwater conveyance improvements in the Able Sump ponds. The EA will describe the action alternatives and affected environment, and will analyze the potential environmental effects of the action alternatives.

Our office will send you additional correspondence soliciting your input as we progress through the NEPA process. We look forward to receiving your comments as we move forward. Thank you for your cooperation.

Sincerely,

Eric W. Verwers
Chief, Planning, Environmental, and
Regulatory Division

DEPARTMENT OF THE ARMY
FORT WORTH DISTRICT, CORPS OF ENGINEERS
P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF: June 13, 2013

Planning, Environmental and Regulatory Division

Mr. Mark Wolfe
Executive Director
Texas Historical Commission
1511 Colorado
Austin, TX 78701

Dear Mr. Wolfe:

This letter is to notify you that the U.S. Army Corps of Engineers (USACE), Fort Worth District, in partnership with the City of Dallas, is preparing an Environmental Assessment (EA), pursuant to Section 102 of the National Environmental Policy Act and USACE Engineering Regulation 200-2-2, for proposed improvements to the Able Pumping Plant located adjacent to the East Levee, between the Houston Street and Jefferson Boulevard Viaducts, in Dallas, Texas.

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P. O. BOX 17300
FORT WORTH, TEXAS 76102-0300

REPLY TO
ATTENTION OF:

June 13, 2013

Planning, Environmental and Regulatory Division

Mr. David W. Galindo
Director, Water Quality Division
12100 Park Circle 35, Building F
Austin, TX 78711

Dear Mr. Galindo:

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Appendix B

Clean Water Act § 404(B)(1) Analysis

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Section 404 (b)(1) Analysis
Proposed Able Pumping Plant Improvements, City of Dallas, Texas

I. PROJECT DESCRIPTION

a. Location

The City of Dallas is located adjacent to the Trinity River, just downstream of the confluence of the West and Elm Forks of the Trinity River. The Able Pumping Plant is part of the East and West Levee Interior Drainage Systems (EWLIDS) of the Dallas Floodway. The Able Pumping Plant facilities are located to the south of the Dallas Central Business District, with the sump area stretching from Reunion Boulevard on the north to the Dallas Area Rapid Transit (DART) Rail Bridge on the south (Figure 1-1). The two existing pump stations are located on the west side of the sump, adjacent to the East Levee, between the Houston Street Viaduct and the Jefferson Boulevard Viaduct.

b. General Description

The Able Pumping Plant originally consisted of a single pump house that was construction in 1932 as part of the Dallas County Levee Improvement District (DCLID). The original pump station, Small Able (Able Pump Station No. 1), consists of two, 40,000-gallons per minute (gpm) pumps. In 1953, the City of Dallas constructed another pump station at the Able Pumping Plant (Large Able or Able Pump Station No. 2), consisting of three, 46,667-gpm pumps, and one, 6,000-gpm pump. When the Trinity River stage is low, stormwater flow gravitates via concrete sluices beneath the East Levee into the Trinity River. When the Trinity River rises, the City of Dallas closes the sluice gates and pumps the stormwater into the Trinity River through the Able Pimping Plant outfall located in the Dallas Floodway.

The Able Pumping Plant drains an area of approximately 2,685 acres. Sump storage consists of nine ponds, which were originally the old Trinity River channel and levee borrow ditches generally located between the intersection of Riverfront Boulevard and Rock Island Street along the levee to the eastern terminus of Riverfront Boulevard. The ponds, which are divided by streets, highways, and the Belleview Pressure Sewer, are generally connected to each other by reinforced box culverts.

In March 2006, the need for improving the EWLIDS was demonstrated when a significant local storm caused widespread stormwater flooding in the City of Dallas, resulting in one fatality and substantial property damage. During this storm, City of Dallas Police and Fire-Rescue Departments responded to hundreds of emergency rescue calls from stranded motorists and residents. The R. L. Thornton Freeway, a stretch of Interstate Highway (IH) 30 that serves the central business district and is drained by the Able Pump Station, was closed with floodwaters as deep as three feet (City of Dallas 2009a). The flooding of the Able Sumps in 2006 demonstrated that the Able Pumping Plant does not have sufficient capacity to dewater the sumps in a timely manner.

In order to reduce flood risk in the Able Basin, a new Able pump station, Able Storm Water Pump Station No. 3, is proposed to be constructed. The new pump station is designed to have a total pump station capacity of 876,000 gpm with four pumps, each rated at 219,000 gpm. After testing and approval of the 50% pumping capacity for Able No. 3, Large Able and Small Able pump stations would be demolished and the remainder of the Able No. 3 Pump Station would be completed. Construction and implementation of the discharge piping from the new pump station to the Trinity River will be completed in two phases.

During Phase I, the Able No. 3 Pump Station would be constructed to an approximate 50% functional capacity; that is two of the new pumps, providing 440,000-gpm of capacity. Initially, the flow from these pipes would be diverted into the old discharge channel. Part of the completion of this remaining work would be the excavation of a new parallel hardened stilling basin and discharge channel that would accommodate flow from all four of the outlet pipes running from the new pumping plant.

c. Purpose and Authority
The purpose of the proposed project is to provide improved flood risk management for the 100-year, 24-hour storm event within the Able Basin. The City of Dallas needs to construct a new and more efficient pump station (Able No. 3) at Able Pumping Plant with larger pumping capacity in order to reduce flood risk to people and property in the Able drainage basin that is not efficiently controlled by the existing Able Pumping Plant.

Section 5141 of the Water Resources Development Act of 2007 (Public Law 110-114; 121 Stat.1041) provides authorization for improvements to interior drainage for the Dallas Floodway. The proposed improvements to the Able Pumping Plant would be implemented in compliance with 33 USC § 408. As the lead agency for this NEPA document, the USACE Fort Worth District must determine the technical soundness and environmental acceptability of this Water Resources Development Act -authorized project, as documented in the EA. This analysis takes into consideration the potential environmental aspects of the action alternatives. The information will be made available to the public before reaching a decision, pursuant to CEQ requirements for public involvement (40 CFR § 1506.6).

The City of Dallas, the action proponent, has approved the proposed improvements to the Able Pumping Plant with the passing of the 2006 Bond Program in an election held on November 7, 2006. The bond program included funds for both design and construction of the Able No. 3 Pump Station. The Environmental Assessment (EA), to which this Section 404(b)(1) analysis is appended, was prepared by USACE Fort Worth District to determine the technical soundness and environmental acceptability of the proposed project and to disclose any potential impacts associated with project implementation.

d. General Description of Dredged or Fill Material

(1) General Characteristics of Material
Results of field geotechnical investigations undertaken during the design phase of the proposed project indicate that the soils found in the Dallas Floodway in the vicinity of the Able Pumping Plant include levee fill, alluvial and terrace clays and sands, weathered

shale, and gray shale. Soils present at the site are unsuitable for support and backfill of the proposed Able Pumping Plant base slab (City of Dallas 2012b), but would be suitable for backfill of the current discharge channel. For additional detail, please refer to Appendix C, the Geotechnical Data Report, of the § 408 package.

(2) Quantity of Material
Approximately 26,000 cubic yards of soil will be placed in the sump area to provide a suitable base-layer for reinforced concrete overlay. The capacity of the sump will remain approximately the same from pre- to post-construction conditions since existing unsuitable material will be excavated prior to the placement of the base fill and concrete overlay and the footprint of the sump will be expanded to accommodate the encroachment of the new pumping station building and associated features and the paving overlay.

(3) Source of Material
The material to be used as the base-layer for the new pump station's concrete floor and to support the concreting lining in the sump will have to be brought in from outside the floodway as the existing material is unsuitable to use as base fill in either of these applications. This fill material will be well-compacted, cement-treated crushed aggregate or improved soils or otherwise acceptable materials overlain with reinforced concrete. Paving of the sump apron in this area is anticipated to improve the efficiency of and reduce costs associated with long-term O&M activities.

Under Phase I, the relocated discharge channel would be excavated (roughly parallel to the existing channel) within the same floodplain sediments as the existing channel. It is anticipated that this cut soil would be used for fill of the existing channel; thereby minimizing impacts to soils.

e. Description of the Proposed Discharge Site(s)

(1) Location
The discharge sites include the existing sump and existing stilling basin and discharge channel. Surplus and/or unsuitable material would be removed from the project area and deposited into a disposal site that would not impact waters of the United States. It is anticipated that during construction, existing flows and standing water would be diverted and construction would occur under dry conditions.

(2) Size
While the surface area of the Able Basin is approximately 2,685 acres, this 404(b)(1) focuses on the approximately 13.4 acre area that would be potentially disturbed by construction activities associated with the proposed action.

(3) Type of Site
The disposal sites for this proposed action include two areas of jurisdictional open waters, and existing sump and discharge channel. Disposal material would not be placed in open water, but would be conducted in the dry with any standing water in the sump and old

discharge channel being drained prior to fill being placed. The sump will be compacted and lined with concrete while the new drainage channel will be excavated, compacted, and stabilized with vegetation, probably turf grasses to allow for expedited vegetation covering.

(4) Type(s) of Habitat
The existing Small and Large Able Pumping Plant is located in a developed (urban) area consisting of the pump stations, utility lines, sump pond, and a dirt road surrounded by mowed short grassland. The vegetation at the sump pond, drainage/discharge channel, and outfall channel consists of aquatic habitat surrounded by non-native mowed grasslands.

Waters/Wetlands. While the sump ponds associated with the Able Pumping Plant were, in general, once part of the Trinity River, they are no longer directly connected to the river and are used for flood control purposes, not to provide wetland habitat. Similarly, the channels draining to the sump area were developed for flood control purposes. However, all of the waters within the footprint of the proposed action are considered jurisdictional based on the current Approved Jurisdictional Determination. These 3.7 acres of jurisdictional waters are considered open waters and there are no wetlands.

Grassland. There are approximately 5.6 acres of mowed grasslands dominated by Bermuda grass (*Cynodon dactylon*), perennial ryegrass (*Lolium perenne*), johnsongrass (*Sorghum halepense*), Queen Anne's lace (*Daucus carota*), and southern dewberry (*Rubus trivialis*) in the footprint of the proposed action.

Urban. There are approximately 4.1 acres of urban areas including the existing Large and Small Able Pumping Plants, roads, and disturbed areas devoid of vegetation in the proposed project footprint.

(5) Timing and Duration of Discharge
Discharges would occur over the entire construction period which is estimated to be 30 to 36 months. It is anticipated that once the project begins, there would continual construction until completion.

f. Description of Disposal Method
Equipment used to excavate and to backfill the sump and discharge channel could include, but not be limited to front end loaders, grade-alls, possibly with rippers, other heavy excavation equipment including bulldozers and dump trucks.

II. FACTUAL DETERMINATIONS

a. Physical Substrate Determinations

(1) Substrate Elevation and Slope

The existing substrate elevation for Sump Pond 1 is approximately 376 feet above mean sea level (msl) with an average side slope of roughly 0.4%. The elevation and slope of the sump area would remain the same under the proposed action. The elevation of the stilling basin ranges from 371 msl to 380 msl with a slope of roughly 0.4% and would generally remain the same following implementation of the project. The elevation of the existing discharge channel is the roughly 376 msl with a slope of 0.3% and would again generally remain the same under the Phase I construction.

(2) Sediment Type

The sediment in the existing Able sump, stilling basin, and discharge channel is silty clay. Implementation of the proposed action would include paving the bottom and sides of the sump in front of and around the new pump station with concrete to eliminate erosion in the area and increase the efficiency and reduce costs of long-term maintenance. In addition, under Phase I of the proposed project, the existing stilling basin and discharge channel will be relocated and the existing channel will be filled, regraded and vegetated to stabilize the disturbed soils. In addition, the base of the stilling basin will be hardened by placing either articulated concrete block or concrete paving to reduce erosion as the result the increased flow velocities of the discharges from the new pumping plant.

(3) Dredged/Fill Material Movement

Since the sump and stilling basin will be lined with concrete or articulated concrete block as part of the proposed project construction, no movement of dredge or fill material is anticipated once construction is complete. For the new discharge channel and other areas disturbed by construction activities, the material would be compacted and stabilized by planting of grasses. Only minor movement of fill material would occur after stabilization.

(4) Physical Effects on Benthos

The existing benthos would be permanently impacted in the sump and old discharge channel, since the sump would be lined with concrete to increase the efficiency and reduce costs associated with long-term maintenance activities and the old discharge channel would be filled in, graded to match the surrounding terrain and vegetated to stabilize the soil. It would be assumed that benthos would be expected to quickly colonize the sediments of the new discharge channel via its connection with the upstream grass-lined sump ponds and the Trinity River; thereby lessening impacts to benthos from filling in of the existing discharge channel. During construction, erosion and sedimentation Best Management Practices (BMPs) would be utilized to minimize impacts to benthos downstream of the proposed project area.

(5) Other Effects

Implementation of the proposed action would impact two potentially historic properties, the Small and Large Able Pump Stations. Since the proposed action would include constructing a new Able pump station (Able No. 3) and subsequent demolition of the Small and Large Able pump stations, it may constitute an adverse effect under 36 CFR

800.5(i) (stating that physical destruction of or damage to all or part of the property is an example of an adverse effect). Therefore, the City of Dallas may be required to mitigate the demolition to minimize the impacts of the proposed action. Appropriate mitigation will include high quality digital photography and the development of HABS/HAER Level II written documentation for the resources. Once the mitigation is completed the impacts of the proposed action on a historic property would be adverse, but less than significant.

(6) Actions Taken to Minimize Impacts
The City of Dallas conducted preliminary surveys and engineering studies to identify potential courses of action to address existing stormwater flooding concerns in the area served by the Able Pumping Plant. These included:

- Increased Pump Capacity
- Increased Sump Capacity
- Improvement of Sump Pond Culvert System
- Construct Pressure Sewers
- Inverted Siphon

The existing Able pump stations were analyzed for potential rehabilitation and improvements to **increase pump capacity**. Both Small and Large Able would require significant electrical system and structural rehabilitation before either could even be considered for increased pumping capacity capability (City of Dallas 2006), then there would have to be major reconstruction done to the buildings to accommodate more and/or larger pumps, which would cause disruption of flood risk protection to the area served by the Able Basin during construction. For this reason, it was determined that rehab of the existing pump stations was not a feasible alternative to further pursue.

It was determined that any enhancement to **sump capacity** would need to be made in Ponds 1 through 5 to achieve a reduction in peak stages with the biggest incremental improvement to capacity requiring expansion of the storage capacity of Pond 1. Pond 1 is long and linear with the western side confined by the interior toe of the East Levee of the Dallas Floodway and the eastern side confined by development. Similarly, Ponds 2 through 5 are confined by existing development (City of Dallas 2006). Selection of this alternative as a stand-alone measure for reducing flood risk would not contain the computed 100-year, 24 hour storm peak, and would have to be combined with some increase in pumping capacity, which was already determine not to be viable at the existing pump stations. The combined costs of a new pump station along with the required acquisition of substantial amounts of developed, private property to augment existing sump storage capacity caused this potential alternative to be removed from further analysis.

Able Sump operation could be improved if conveyance between sump ponds were enhanced. This could be done by **improving existing culvert connections** or by adding additional connections between ponds. Two different types of culvert alternatives were developed: addition of a new culvert connecting Ponds 1 and 5 or replacement of existing culverts. Addition of a box culvert connecting Pond 1 and Pond 5 would allow excess water in Pond 1 to back up directly into Pond 5 during storm peaks, more efficiently utilizing the existing storage in Pond 5. However, this new culvert would run parallel to the interior toe of the East Levee and excavation along the levee toe could potentially interfere with levee stability. Because of the geotechnical hazards associated with excavation along the interior toe of the levee, the construction of the Pond 1 to Pond 5 connecting culvert was eliminated from further consideration (City of Dallas 2006). In addition, while undersized culverts contribute to the high sump stages (exceeding the 100-year design elevation) during significant storm events and reductions in peak sump stages may be possible by improving the culverts between the ponds 1 and 5, these proposed improvements alone would not be sufficient to reduce the computed 100-year, 24 hour storm peak sump stage to the design elevation, but would have to be combined with some other measure.

It should be noted that a couple of these pond connection are now being facilitated as part of the Dallas Horseshoe project. Essentially, these connections will help improve conveyance between the ponds in question, but at the expense of the Texas Department of Transportation (TXDOT) and Federal Highway Administration (FHWA).

Constructing new pressure sewers to collect and convey stormwater to the Dallas Floodway is possible under the condition that a potential pressure sewer basin with a drainage area large enough to contribute a significant amount of flow could be found in an area that is capable of generating enough hydraulic head to generate sufficient pressure. The City of Dallas investigated potential areas, but did not identify any sites that could provide enough hydraulic head and area to contribute a sufficient amount of flow at a reasonable cost (City of Dallas 2006). Therefore, the City of Dallas eliminated the Pressure Sewer Construction course of action from further analysis.

Finally, the City of Dallas evaluated creating a connection under the Belleview Pressure Sewer between Ponds 5 and 6. However, it was determined that while such a connection would aid in allowing Ponds 6 through 9 to drain towards Able Pumping Plant after the peak of a storm event, thus minimizing stagnant standing water in Ponds 6 through 9, it would not be effective in reducing peak sump stages. Because the construction of an inverted siphon would not reduce peak sump stage and thus reduce flood risk, the City of Dallas eliminated the Inverted Siphon alternative from further analysis.

In the final analysis, the only potential alternative determined to be viable to meet the project purpose of providing improved flood risk management for the 100-year, 24-hour storm event within the Able Basin was for the City of Dallas to construct a new and more efficient pump station (Able No. 3) at the Able Pumping Plant with larger pumping capacity to reduce flood risk to people and property in the Able drainage basin. In the course of the proposed action design, the footprint of the new building was reduced to minimize impacts to the WOUS in the area of sump pond 1. Additionally, the city is seeking a variance to zoning requirements to further minimize impacts to WOUS. Projects in this area normally require a 75 foot buffer from the existing roadway to allow for safe pedestrian and bicycle traffic, but the city is seeking a variance to reduce it a 40 foot buffer. It could not be reduced further than 40 foot or it would restrict safe transportation connectivity past the Able Pump Station. Reducing the buffer saved an additional 35 foot of encroachment into the sump. However, constraints are caused by: 1) the location of the Able Pump Station within a confined space between the Houston Street and the Jefferson Boulevard Viaducts; 2) the need to provide for continuous flood protection for the Able Basin service area during construction; 3) the need to comply with levee safety concerns identified by USACE to reduce the load on the existing levee structure in the project area by realigning the piping crossing the levee and placing it on drilled shafts; and 4) the need to accommodate implementation of future reasonably foreseeable actions for the Trinity Parkway and the City of Dallas' BVP limited further reduction to impacts to WOUS within the Dallas Floodway.

The remaining permanent impacts to WOUS that could not be avoided or reduced, 3.0 acres of permanent impacts to open water habitats, will be mitigated by purchasing open water credits from an approved mitigation bank in the Dallas/Fort Worth Metroplex region. Mitigation credit calculations will have to be approved and verified by USACE Regulatory personnel and banking credits purchased prior to any work activities being initiated within the project area.

b. Water Circulation. Fluctuation and Salinity Determinations

(1) Water, Consider effects on:

(a) Salinity
The project would not impact salinity of the Trinity River.

(b) Water Chemistry (pH.etc.)
The project would not impact water chemistry of the Trinity River.

(c) Clarity
Temporary disruption to water clarity is expected during construction. After the sump is lined with concrete, the new discharge channel excavated and stabilized, and all disturbed areas revegetated, water clarity would be the same as it is currently.

(d) Color
No changes in color are anticipated following construction.

(e) Odor
No changes in odor would occur following construction

(f) Taste
The sump and open water channel are not used as a potable water source within any portion of the area that would be impacted by the project.

(g) Dissolved Gas Levels
No change in dissolved gas levels would occur following construction.

(h) Nutrients
No change in nutrient levels would occur following construction.

(i) Eutrophication
No changes as a result of implementation of the proposed project would impact eutrophication of the aquatic system of the Trinity River.

(2) Current Patterns and Circulation

Flow and Water Circulation

(a) Current Patterns and Flow
The Trinity River in the region flows through mostly urban environments and is heavily influenced by stormwater runoff magnified by the relatively high impervious cover in the watershed. Patterns of flow are dependent on the distribution and intensity of rainfall over this area. The normal patterns of precipitation result in minor fluctuations of flow intensity through the system. Heavy thunderstorms can induce large flows and higher water surface elevations. Circulation basically does not change as the proposed project does not have any features that would alter circulation in the system. The project as proposed would alter flood flows within the Able Basin by more efficiently handling peak storm runoff; however, that would not contribute substantially to the flows within the Trinity River itself, either during flood stage or under average flows.

(b) Velocity
The proposed project would potentially increase flow velocities at the outfall into the Trinity River during a 100-year storm event since pumping capacity with implementation of the new Able Pumping Station would increase from the current maximum of roughly 220,000 gpm to 876,000 gpm, which equates to a velocity increase from approximately 490 cubic feet per second (cfs) to 1,974 cfs. Flow velocities in the Trinity River is 400 to 500 cfs under normal conditions and approximately 120,000 cfs for a 100-year storm event, so the localized potential velocity increase in the proposed project area would have very little impact on the Trinity River except where the outfall dumps into the river, where the bank would be need to be protected with suitable erosion control techniques.

(c) Stratification
Stratification in the project area does not occur now nor would it occur following project implementation.

(d) Hydrologic Regime
Under the current hydrologic regime existing conditions peak flows for the Trinity River are approximately 26,485 cfs for a 2-year event and 120,000 cfs for the 100-year event.

(3) Normal Water Level Fluctuations
The normal water level fluctuations in the Trinity River vary approximately 1 to 2 feet.

(4) Salinity Gradients
No changes to salinity gradient would occur.

(5) Actions That Will Be Taken to Minimize Impacts
Appropriate BMPs will be utilized to minimize erosion and sedimentation during construction. Vegetation will be reestablished to help stabilize the ground disturbed by construction activities.

e. Suspended Particulate/Turbidity Determinations

(1) Expected Changes in Suspended Particulates and Turbidity Levels in Vicinity of Disposal Site
Only temporary increases in suspended particulates and turbidity levels would occur during construction. Most fill would occur in dry conditions. There would be some movement of these materials downstream of the construction zone when the new discharge channel is connected with the Trinity River and if high flow events occur prior to soil stabilization and/or revegetation.

(2) Effects (degree and duration) on Chemical and Physical Properties of the Water Column

(a) Light Penetration
Changes to light penetration would occur during construction associated with minor turbidity increases. Appropriate erosion and sedimentation controls would be implemented to reduce impacts to downstream waters. After project completion and stabilization, the clarity of the stream would return to preconstruction levels.

(b) Dissolved Oxygen
Temporary lowering of dissolved oxygen could occur during construction, but would be very temporary in both time and extent.

(c) Toxic Metals and Organics
No water testing was conducted in the immediate proposed project area and no data was identified to provide information on water quality measures. The proposed project would not result in the introduction of additional toxicants into the Trinity River over those that currently exist in the stormwater discharge resulting from runoff of impervious surfaces within the Able Basin, which includes the City of Dallas Central Business District. The watershed is primarily urban with most of the run-off coming from industrial, commercial, and residential areas. The project sponsor would be responsible to ensure the site is not contaminated prior to construction and would be responsible for reclamation, if necessary.

(**d) Pathogens**
No pathogens would be added to the water column as a result of this project.

(e) Aesthetics

Implementation of the proposed project would have no effect on the natural aesthetics in the area.

(f) Others as Appropriate
No other effects to water column are anticipated

(3) Effects on Biota
Displacement of local biota would occur during construction as mobile species would emigrate to adjacent habitats. Although sessile species would be impacted during construction activities, over time and upon project completion, it is anticipated that biota will recolonize the project site at the same diversity and density as currently present under pre-project conditions.

(a) Primary Production, Photosynthesis The vegetation at the sump pond, drainage/discharge channel, and outfall channel consists of limited aquatic vegetation surrounded by non-native mowed grasslands. As a result, little aquatic vegetation would be lost from the project site during implementation of the proposed project, but there will be removal of some trees in the area of the new pumping plant. Tree loss will be minimized to the extent possible by using BMPs and placing protect around remaining trees to protect them during construction activities. Also additional trees will be planted in the area following project construction. While there will be a net loss of primary producers as a result of project implementation, the loss is considered less than significant.

(b) Suspension/Filter Feeders
The presence of suspension/ filter feeders in either the sump pond or the stilling basin and discharge channel are limited as the pond is known to dry out and the stilling basin and channel contain very limited aquatic vegetation and benthos to support suspension/filter feeders. Therefore, there would be limited impact to suspension/filter feeders as a result of implementation of the proposed project within the project area and very limited to no impacts to the Trinity River itself. Any suspension/filter feeders that are located in the pond would simply disperse to undisturbed areas of the pond. BMPs would be established to control erosion and sedimentation downstream that may otherwise impact filter feeders. Once the relocated discharge channel is constructed, suspension and filter feeders would repopulate to the current level. There would be very limited loss of suspension/filter feeders as a result of project construction, but the loss would be less than significant.

(c) Sight Feeders
Sight feeders would be temporarily displaced during construction activities. BMPs would be established to control erosion and sedimentation downstream that may otherwise impact sight feeders. Once the construction is complete, sight feeders would repopulate to the current extent. No net loss of sight feeders is anticipated as the result of the proposed action.

(4) Actions taken to Minimize Impacts

BMPs will be established to control erosion and sedimentation to minimize impacts to biota in the sump pond and in the Trinity River.

d. Contaminant Determinations

The results of a 2010 Environmental Data Resource (EDR) report indicated the presence of one hazardous materials/waste site located 0.15 miles south of the Able Pumping Plant (EDR 2010). The hazardous material/waste site is a gas service station that does not have any reported leaks from USTs. Therefore, it is unlikely that proposed ground disturbing activities associated with the proposed action would expose workers, nearby residents, or the environment to hazardous materials/contaminants or waste. A Contingency Action Plan reflecting the guidance of AR 200-1 and ER 1165-2-132 would be prepared to ensure familiarity with reporting and communication protocols in the event hazard materials are encountered in the course of proposed action implementation. The proposed project would not result in the exposure of toxicants to the biota of the project area or the Trinity River.

e. Aquatic Ecosystem and Organism Determinations

(1) Effects on Plankton and Nekton

Plankton and nekton that current occupy the sediments and water columns in the existing stilling basins and discharge channel would be adversely impacted by fill activities, but it is anticipated that it will not take too long for these species to recolonize in the new relocated discharge channel and as they should be able to recolonize from either overbanking of the Trinity River during a flood event or by passing through the sumps and pump station to be dropped into the new stilling basin and discharge channel as part of routine operations of the Able pump station following a rainfall event. Therefore, no net loss of plankton and nekton is anticipated.

(2) Effects on Benthos. No additional effects other than those previously discussed were identified.

(3) Effects on Aquatic Food Web

Temporary disruptions to the food web would occur during construction. However, following construction it is anticipated that limited species at all levels of the food web will return to the same level as currently exists. Therefore, no net loss of species or negative impacts to trophic levels are anticipated as the result of the proposed action.

(4) Effects on Special Aquatic Sites.

(a) Sanctuaries and Refuges

No fish and wildlife sanctuaries or refuges occur within the project area.

(b) Wetlands

While the sump ponds associated with the Able Pumping Plant were, in general, once part of the Trinity River, they are no longer directly connected to the river and are used for flood control purposes, not to provide wetland habitat. Similarly, the channels draining to the sump area were developed for flood control purposes. However, all of the waters within the footprint of the proposed action are considered jurisdictional based on the current Approved Jurisdictional Determination. These 3.7 acres of jurisdictional waters are considered open waters and there are no wetlands. The loss of these WOUS acres would be mitigated by the City of Dallas' purchasing equitable open water credits at an approved mitigation bank in the Dallas/Fort Worth Metroplex region.

(c) Mud Flats
Some of the ponds associated with the Able Basin function as temporary mud flats following rain and runoff events before they dry out, but implementation of the proposed project will not impact mud flats in the project area.

(d) Vegetated Shallows
No vegetated shallows were observed in the area to be impacted by the project.

(e) Coral Reefs
No coral reefs occur within the project area.

(f) Riffle and Pool Complexes.
No riffle and pool complexes occur within the project area.

(5) Threatened and Endangered Species
The project would not affect any federally listed threatened or endangered species.

(6) Other Wildlife
Wildlife inhabiting the aquatic and riparian habitats within the project reach would be temporarily displaced during construction of the proposed channel. Mobile species would emigrate to adjacent habitats. Although sessile species would be impacted during construction activities, they would be expected to return to suitable habitat areas following construction.

(7) Actions to Minimize Impacts
BMPs will be established to control erosion and sedimentation to minimize impacts to biota downstream.

f. Proposed Disposal Site Determinations.

(1) Mixing Zone Determination
Most fill would occur within areas of the channel while in a dry state and only minimal mixing would occur unless a large storm event occurs during project construction. BMPs, such as silt curtains, will be implemented to lower impacts. Disposal of surplus material would occur at an offsite location that is not within waters of the United States.

(2) **Determination of Compliance with Applicable Water Quality Standards**
The State of Texas List of Impaired Water Bodies, also known as the CWA Section 303(d) List, identifies: 1) water bodies that do not meet the standards set for their use; 2)

which pollutants are responsible for the failure of the water body to meet standards; and 3) water bodies that are targeted for clean-up activities within the next two state fiscal years. The Trinity River reach located adjacent to the Able Pumping Plant facilities within the Dallas Floodway is a TCEQ classified State Stream Segment, Upper Trinity River-0805. This stream segment is further subcategorized into Assessment Units (AUs). In accordance with Section 303(d) of the CWA, which requires the TCEQ to identify water bodies for which effluent limitations are not stringent enough to implement water quality standards, Stream Segments 0805 has been listed in the 2012 Texas 303(d) List. Table A-1, which has been added as an addendum to this 404(b)(1) analysis provides the level of use and support for designated uses and presents the reason for listing (parameter) and pollutant source from the 2012 Texas Integrated Report of Surface Water Quality for Clean Water Act Sections 305(b) and 303(d) associated with each AU for Stream Segments 0805. As demonstrated in the Table A-1, both the AUs are listed as "Not Supporting" one or more designated uses (recreation and fish consumption uses) by one or more pollutants. These AUs have a TCEQ designation as either "Category 4a" streams where a TMDL study has been completed and approved by the USEPA or "Category 5a" streams where a TMDL study is either underway, scheduled, or will be scheduled.

(**3) Potential Effects on Human Use Characteristic**

(a) Municipal and Private Water Supply

Municipal and private water supplies in the action area rely on surface water from area reservoirs. While the project area is not located in the vicinity of any of these reservoirs, there are downstream reservoirs on the Trinity River that serve as water supply for downstream communities. However, implementation of the proposed project would have no impact on the local water supply.

(b) Recreational and Commercial Fisheries

Recreational fishing opportunities are currently limited by the current Advisory Against Fish Consumption that is in effect in the for the Trinity River in the vicinity of the project area. No commercial fisheries were identified within the project area. Implementation of the propose project would have no effect on recreational and commercial fisheries.

(c) Water Related Recreation

No additional effects to water related recreation are anticipated

(d) Aesthetics

The proposed project would have only temporary adverse effect on the aesthetics of the area during construction. For some individuals, the design of the new pumping plant would probably be considered an improvement to the aesthetics of the current buildings; otherwise project implementation is not expected to have any impact on aesthetics.

(e) Parks, National and Historical Monuments, National Seashores, Wilderness Areas, Research Sites, and Similar Preserves

No parks, monuments, seashores, wilderness areas, research sites, or preserves occur in the project area.

g. Determination of Cumulative Effects on the Aquatic Ecosystem

The cumulative impacts on the aquatic ecosystem were analyzed in the comprehensive analysis of the Dallas Floodway Project Environmental Impact Statement that is out for public review. Based on the results of that analysis, the proposed project will not have any significant adverse or cumulative impacts on the aquatic environment within the Dallas Floodway.

h. Determination of Secondary Effects on the Aquatic Ecosystem

No secondary effects on the aquatic ecosystem were identified

i. Summary of Section 404(b)(1) Analysis

Five measures for addressing flood risk management in the Able Basin were investigated. The measures differed primarily in the methodology and extent to which they would reduce the flood risks within the area served by the Able Basin for the 24-hour, 100-year storm event. Final alternatives evaluated included only the proposed action and no action alternatives. The proposed action alternative has been determined to be the least environmentally damaging alternative that would meet the project purpose. In addition, based on hydrologic and hydraulic (H&H) evaluations conducted by the non-Federal sponsor and reviewed and approved by USACE H&H personnel, implementation of the proposed action meets the criteria of 1988 Record of Decision criteria for water surface rise and valley storage.

While implementation of the proposed action plan does include the placement of fill material within the project footprint and would lead to the permanent loss of 3.0 acres of WOUS, this disposal would not violate established State water quality standards for the Dallas Floodway or the Toxic Effluent Standards of Section 307 of the Clean Water Act, nor harm any endangered species or their critical habitat. Implementation of the proposed action would not result in significant adverse effects on human health and welfare, including municipal and private water supplies, recreation and commercial fishing, plankton, fish, shellfish, wildlife, and special aquatic sites. Appropriate steps to minimize potential adverse impacts of discharge in aquatic systems include use of suitable erosion control technologies including the implementation of procedures to protect against erosion and sedimentation during and after construction.

Finally, the permanent loss of the 3.0 acres of WOUS would be mitigated by the City of Dallas' purchasing equitable open water credits at an approved mitigation bank in the Dallas/Fort Worth Metroplex region. Mitigation credit calculations will have to be approved and verified by USACE Regulatory personnel and banking credits purchased prior to any work activities being initiated within the project area.

ADDENDUM A

Table A-1. 2012 Level of Use and Support for Designated Uses and Assessment Unit Category and Status on 2012 303(d) List

Stream Segment (AU)	***Level of Use and Support for Designated Uses***					***Status on 2012 303(d) List***		
	Aquatic Life Use	*Recreation Use*	*General Use*	*Fish Consumption Use*	*Public Water Supply Use*	*Parameter*	*Potential Pollution Source*	*AU Category*[1]
0805 (Upper Trinity River)								
03	Fully Supporting or No Concern	Not Supporting	Concern[2]	Not Supporting	Not Assessed[3]	dioxin in edible tissue	Point/Nonpoint	5a
						PCBs in edible tissue	Point/Nonpoint	5a
						bacteria	Point/Nonpoint	4a
04	Fully Supporting or No Concern	Not Supporting	Concern[2]	Not Supporting	Not Assessed[3]	dioxin in edible tissue	Point/Nonpoint	5a
						PCBs in edible tissue	Point/Nonpoint	5a
						bacteria	Point/Nonpoint	4a

Notes: [1]Dependent on the categories of all the AUs that are a part of it. Individual AUs are assigned to categories and based on parameters. Determinations are then used to assign a category to the entire Stream Segment.
[2]Concern for screening levels for one or more measured parameters.
[3]These stream segments were not assessed because they are not used for public water supply.
PCBs = polychlorinated biphenyls.
Category 4a: TMDL has been completed and approved by USEPA.
Category 5a: A TMDL study is underway, scheduled, or will be scheduled.

Appendix C

Record of Non-Applicability (Rona) and Air Quality Data

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RECORD OF NON-APPLICABILITY (RONA) FOR THE PROPOSED ABLE PUMPING STATION IMPROVEMENTS DALLAS, TEXAS

CLEAN AIR ACT CONFORMITY METROPOLITAN DALLAS FORT WORTH AIR QUALITY CONTROL REGION (AQCR)

INTRODUCTION

The U.S. Environmental Protection Agency (USEPA) published *Determining Conformity of General Federal Actions to State or Federal Implementation Plans; Final Rule* in the 30 November 1993, Federal Register (40 Code of Federal Regulations [CFR] Parts 6, 51, and 93). This publication provides implementing guidance to document Clean Air Act Conformity Determination requirements.

Federal regulations state that no department, agency, or instrumentality of the Federal Government shall engage in, support in any way or provide financial assistance for, license to permit, or approve any activity that does not conform to an applicable implementation plan. It is the responsibility of the Federal agency to determine whether a Federal action conforms to the applicable implementation plan, before the action is taken (40 CFR Part 1 51.850[a]).

The general conformity rule applies to federal actions proposed within areas which are designated as either nonattainment or maintenance areas for a National Ambient Air Quality Standards (NAAQS) for any of the criteria pollutants. Former nonattainment areas that have attained a NAAQS are designated as maintenance areas. Emissions of pollutants for which an area is in attainment are exempt from conformity analyses.

The Proposed Action would occur within the Metropolitan Dallas Fort Worth AQCR, which is currently in "serious" nonattainment of the 8-hour ozone (O_3) NAAQS, and attains the NAAQS for all other criteria pollutants. Therefore, only project emissions of O_3 precursors (volatile organic compounds [VOCs] and oxides of nitrogen [NO_x]) are analyzed for conformity rule applicability.

The annual *de minimis* levels for this region are 50 tons of VOC and NO_x, as listed in Table 1. Federal actions may be exempt from conformity determinations if they do not exceed designated *de minimis* levels (40 CFR Part 1, Section 51.853[b]).

Table 1. Conformity *de minimis* Levels for Criteria Pollutants in the Metropolitan Dallas Fort Worth AQCR

Criteria Pollutant	*De minimis* Level (tons/year)
Volatile Organic Compounds (VOC)	50
Oxides of Nitrogen (NO_x)	50

PROPOSED ACTION

Action Proponent: USACE

Location: City of Dallas, Texas

Proposed Action Name: Proposed Able Pumping Station Improvements, Dallas, Texas.

Proposed Action Summary: Implementation of the Proposed Action would reduce predicted 100-year, 24-hour storm event water levels to elevations at or below the established City of Dallas design water levels, reducing the potential flooding impacts to people and property in the Able Basin. In addition, proposed improvements would replace the current Small and Large Able pump stations with a single modernized station (Able No. 3); Small Able and Large Able pump stations would be demolished.

Air Emissions Summary: It was assumed that construction would take 30 months and would begin in late 2014 and end in early 2017. Estimated construction emissions due to implementation of the Proposed Action are shown in Table 2. Based on the air quality analysis for the Proposed Action, the maximum estimated emissions would be below conformity *de minimis* levels and would not be significant.

Table 2. Estimated Emissions Resulting from Implementation of the Proposed Action

Project Emissions Tons Per Year	Pollutant Emissions (tons/year)					
	VOCs[1]	NO_x[1]	CO[2]	SO_x[2]	PM_{10}[2]	$PM_{2.5}$[2]
2014 Emissions	0.34	2.32	1.19	0.01	1.83	0.41
2015 Emissions	1.08	7.45	3.93	0.03	1.17	0.51
2016 Emissions	1.62	10.66	5.45	0.03	0.53	0.47
2017 Emissions	0.09	0.34	0.29	0.00	0.03	0.02
de minimis threshold	50	50	100	100	100	100
Exceeds *de minimis* threshold?	No	No	No	No	No	No

Notes: [1] The Metropolitan Dallas Fort Worth AQCR is in "serious" nonattainment for the federal O_3 standard; VOCs and NO_x are precursors to the formation of O_3; and is in attainment of all other federal standards.
[2] *De minimis* thresholds are not applicable to NAAQS attainment areas; however, estimated average annual emissions have been compared with moderate nonattainment *de minimis* thresholds for planning purposes only.

Affected Air Basin: Metropolitan Dallas Fort Worth

Date RONA Prepared: 18 April 2014

RONA Prepared By: USACE with direct support from Cardno TEC

EMISSIONS EVALUATION AND CONCLUSION

Emissions associated with the Proposed Action were calculated using data presented in Chapter 2 of the Environmental Assessment (EA), general air quality assumptions, and standard emission factors. The USACE concludes that *de minimis* thresholds for applicable criteria pollutants would not be exceeded as a result of implementation of the Proposed Action. The emissions data supporting that conclusion is shown in Table 2, which is a summary of the calculations, methodology, and data included in this Appendix of the Able Pumping Station EA. Therefore, the USACE concludes that further formal Conformity Determination procedures are not required, resulting in this RONA.

Construction Emissions Summary

Able Pump Station	Emission (tons total)								
	VOCs	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O
2014 Emissions	0.34	1.19	2.32	0.01	1.83	0.41	1219.56	0.05	0.22
2015 Emissions	1.08	3.93	7.45	0.03	1.17	0.51	1698.56	0.13	0.71
2016 Emissions	1.62	5.45	10.66	0.03	0.53	0.47	1962.62	0.14	1.01
2017 Emissions	0.09	0.29	0.34	0.00	0.03	0.02	115.50	0.01	0.03

Heavy Construction Emissions

Equipment and Activity	Emission Factors (lbs/hr)												No of Equipment	Hrs/Day	Days in Service	Emissions (lbs/day)									Emission (tons total)								
	FUEL	HP	Load Factor	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O				VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O	VOC	CO	NOx	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O
2014 Emissions (3 Months Duration)																																	
Earthwork																																	
Excavator	DIESEL	157	0.57	0.1052	0.6653	0.7408	0.0013	0.0405	0.0360	112.2	0.0095	0.0704	1	8	66	0.84	5.32	5.93	0.01	0.32	0.29	897.77	0.08	0.56	0.028	0.176	0.196	0.000	0.011	0.010	30	0.003	0.019
CAT 416 Rubber Tire Backhoe/Loader	DIESEL	87	0.55	0.0577	0.3480	0.3870	0.0006	0.0293	0.026108385	51.7	0.0052	0.0368	1	8	66	0.46	2.78	3.10	0.00	0.23	0.21	413.82	0.04	0.29	0.015	0.092	0.102	0.000	0.008	0.007	14	0.001	0.010
Dump Truck	DIESEL	381	0.57	0.1960	0.5949	1.4165	0.0027	0.0505	0.0449	272.3	0.0177	0.1346	4	8	66	6.27	19.04	45.33	0.09	1.62	1.44	8714.68	0.57	4.31	0.207	0.628	1.496	0.003	0.053	0.047	288	0.019	0.142
4000 Gallon Water Truck	DIESEL	235	0.57	0.1252	0.3702	0.9818	0.0019	0.0328	0.0292	166.5	0.0113	0.0933	1	8	66	1.00	2.96	7.85	0.01	0.26	0.23	1332.36	0.09	0.75	0.033	0.098	0.259	0.000	0.009	0.008	44	0.003	0.025
Grader	DIESEL	162	0.61	0.1299	0.7319	0.9534	0.0014	0.0526	0.0468	123.9	0.0117	0.0906	1	8	66	1.04	5.86	7.63	0.01	0.42	0.37	991.37	0.09	0.72	0.034	0.193	0.252	0.000	0.014	0.012	33	0.003	0.024
2014 Subtotal Emissions																**9.61**	**35.96**	**69.83**	**0.13**	**2.86**	**2.54**	**12350.02**	**0.87**	**6.63**	**0.32**	**1.19**	**2.30**	**0.00**	**0.09**	**0.08**	**407.55**	**0.03**	**0.22**
2015 Emissions (12 Months Duration)																																	
Soil Improvements																																	
Roller Compactor	DIESEL	84	0.56	0.0857	0.4000	0.5498	0.0007	0.0454	0.0404	59.0	0.0077	0.0522	2	8	125	1.37	6.40	8.80	0.01	0.73	0.65	943.82	0.12	0.84	0.086	0.400	0.550	0.001	0.045	0.040	59	0.008	0.052
Paving																																	
CAT 416 Rubber Tire Backhoe/Loader	DIESEL	87	0.55	0.0577	0.3480	0.3870	0.0006	0.0293	0.026108385	51.7	0.0052	0.0368	1	8	66	0.46	2.78	3.10	0.00	0.23	0.21	413.82	0.04	0.29	0.015	0.092	0.102	0.000	0.008	0.007	14	0.001	0.010
Concrete Truck	DIESEL	235	0.57	0.1252	0.3702	0.9818	0.0019	0.0328	0.0292	166.5	0.0113	0.0933	2	8	66	2.00	5.92	15.71	0.03	0.52	0.47	2664.73	0.18	1.49	0.066	0.195	0.518	0.001	0.017	0.015	88	0.006	0.049
Paver	DIESEL	89	0.62	0.1235	0.4969	0.7477	0.0008	0.0636	0.0566	69.2	0.0111	0.0710	1	8	66	0.99	3.97	5.98	0.01	0.51	0.45	553.57	0.09	0.57	0.033	0.131	0.197	0.000	0.017	0.015	18	0.003	0.019
Discharge Piping to Phase 1 Stilling Basin																																	
Excavator	DIESEL	157	0.57	0.1052	0.6653	0.7408	0.0013	0.0405	0.0360	112.2	0.0095	0.0704	1	8	66	0.84	5.32	5.93	0.01	0.32	0.29	897.77	0.08	0.56	0.028	0.176	0.196	0.000	0.011	0.010	30	0.003	0.019
Trencher	DIESEL	69	0.75	0.1144	0.4600	0.7060	0.0008	0.0590	0.0525	64.9	0.0103	0.0671	1	8	66	0.92	3.68	5.65	0.01	0.47	0.42	519.16	0.08	0.54	0.030	0.121	0.186	0.000	0.016	0.014	17	0.003	0.018
CAT 416 Rubber Tire Backhoe/Loader	DIESEL	87	0.55	0.0577	0.3480	0.3870	0.0006	0.0293	0.026108385	51.7	0.0052	0.0368	1	8	66	0.46	2.78	3.10	0.00	0.23	0.21	413.82	0.04	0.29	0.015	0.092	0.102	0.000	0.008	0.007	14	0.001	0.010
Hand-Held Compactor	DIESEL	8	0.5	0.0050	0.0263	0.0314	0.0001	0.0012	0.0011	4.3	0.0005	0.0030	1	8	66	0.04	0.21	0.25	0.00	0.01	0.01	34.51	0.00	0.02	0.001	0.007	0.008	0.000	0.000	0.000	1	0.000	0.001
Sanitary Sewer and Water																																	
Trencher	DIESEL	69	0.75	0.1144	0.4600	0.7060	0.0008	0.0590	0.0525	64.9	0.0103	0.0671	1	8	66	0.92	3.68	5.65	0.01	0.47	0.42	519.16	0.08	0.54	0.030	0.121	0.186	0.000	0.016	0.014	17	0.003	0.018
Skid Steer Loader	DIESEL	37	0.55	0.0378	0.2138	0.2052	0.0003	0.0113	0.0101	25.5	0.0034	0.0195	1	8	66	0.30	1.71	1.64	0.00	0.09	0.08	204.15	0.03	0.16	0.010	0.056	0.054	0.000	0.003	0.003	7	0.001	0.005
Hand-Held Compactor	DIESEL	8	0.5	0.0050	0.0263	0.0314	0.0001	0.0012	0.0011	4.3	0.0005	0.0030	1	8	66	0.04	0.21	0.25	0.00	0.01	0.01	34.51	0.00	0.02	0.001	0.007	0.008	0.000	0.000	0.000	1	0.000	0.001
Pump Station, Stilling Basin, Generator Pad, Transformer Pad																																	
CAT 416 Rubber Tire Backhoe/Loader	DIESEL	87	0.55	0.0577	0.3480	0.3870	0.0006	0.0293	0.026108385	51.7	0.0052	0.0368	1	8	250	0.46	2.78	3.10	0.00	0.23	0.21	413.82	0.04	0.29	0.058	0.348	0.387	0.001	0.029	0.026	52	0.005	0.037
Concrete Truck	DIESEL	235	0.57	0.1252	0.3702	0.9818	0.0019	0.0328	0.0292	166.5	0.0113	0.0933	2	8	250	2.00	5.92	15.71	0.03	0.52	0.47	2664.73	0.18	1.49	0.250	0.740	1.964	0.004	0.066	0.058	333	0.023	0.187
Roller Compactor	DIESEL	84	0.56	0.0857	0.4000	0.5498	0.0007	0.0454	0.0404	59.0	0.0077	0.0522	1	8	250	0.69	3.20	4.40	0.01	0.36	0.32	471.91	0.06	0.42	0.086	0.400	0.550	0.001	0.045	0.040	59	0.008	0.052
Bore/Drill Rig	DIESEL	82	0.75	0.0376	0.4676	0.3736	0.0009	0.0160	0.0143	77.1	0.0034	0.0355	1	8	250	0.30	3.74	2.99	0.01	0.13	0.11	616.97	0.03	0.28									
Crane	DIESEL	208	0.43	0.0925	0.2713	0.8284	0.0013	0.0286	0.0255	112.2	0.0083	0.0787	2	8	250	1.48	4.34	13.25	0.02	0.46	0.41	1794.54	0.13	1.26	0.185	0.543	1.657	0.003	0.057	0.051	224	0.017	0.157
Paver	DIESEL	89	0.62	0.1235	0.4969	0.7477	0.0008	0.0636	0.0566	69.2	0.0111	0.0710	1	8	250	0.99	3.97	5.98	0.01	0.51	0.45	553.57	0.09	0.57	0.124	0.497	0.748	0.001	0.064	0.057	69	0.011	0.071
2015 Subtotal Emissions																**14.26**	**60.64**	**101.47**	**0.16**	**5.83**	**5.18**	**13714.58**	**1.29**	**9.64**	**1.02**	**3.93**	**7.41**	**0.01**	**0.40**	**0.36**	**1002.73**	**0.09**	**0.70**
2016 Emissions (12 Months Duration)																																	
Demolition																																	
Rubber Tired Dozer	DIESEL	358	0.59	0.2932	1.2456	2.3951	0.0026	0.0985	0.0877	264.9	0.0265	0.2275	1	8	125	2.35	9.97	19.16	0.02	0.79	0.70	2118.98	0.21	1.82	0.147	0.623	1.198	0.001	0.049	0.044	132	0.013	0.114
CAT 416 Rubber Tire Backhoe/Loader	DIESEL	87	0.55	0.0577	0.3480	0.3870	0.0006	0.0293	0.026108385	51.7	0.0052	0.0368	1	8	125	0.46	2.78	3.10	0.00	0.23	0.21	413.82	0.04	0.29	0.029	0.174	0.194	0.000	0.015	0.013	26	0.003	0.018
Dump Truck	DIESEL	381	0.57	0.1960	0.5949	1.4165	0.0027	0.0505	0.0449	272.3	0.0177	0.1346	4	8	125	6.27	19.04	45.33	0.09	1.62	1.44	8714.68	0.57	4.31	0.392	1.190	2.833	0.005	0.101	0.090	545	0.035	0.269
Sanitary Sewer and Water																																	
Trencher	DIESEL	69	0.75	0.1144	0.4600	0.7060	0.0008	0.0590	0.0525	64.9	0.0103	0.0671	1	8	66	0.92	3.68	5.65	0.01	0.47	0.42	519.16	0.08	0.54	0.030	0.121	0.186	0.000	0.016	0.014	17	0.003	0.018
Skid Steer Loader	DIESEL	37	0.55	0.0378	0.2138	0.2052	0.0003	0.0113	0.0101	25.5	0.0034	0.0195	1	8	66	0.30	1.71	1.64	0.00	0.09	0.08	204.15	0.03	0.16	0.010	0.056	0.054	0.000	0.003	0.003	7	0.001	0.005
Hand-Held Compactor	DIESEL	8	0.5	0.0050	0.0263	0.0314	0.0001	0.0012	0.0011	4.3	0.0005	0.0030	1	8	66	0.04	0.21	0.25	0.00	0.01	0.01	34.51	0.00	0.02	0.001	0.007	0.008	0.000	0.000	0.000	1	0.000	0.001
Pump Station, Stilling Basin, Generator Pad, Transformer Pad																																	
CAT 416 Rubber Tire Backhoe/Loader	DIESEL	87	0.55	0.0577	0.3480	0.3870	0.0006	0.0293	0.026108385	51.7	0.0052	0.0368	1	8	250	0.46	2.78	3.10	0.00	0.23	0.21	413.82	0.04	0.29	0.058	0.348	0.387	0.001	0.029	0.026	52	0.005	0.037
Skid Steer Loader	DIESEL	37	0.55	0.0378	0.2138	0.2052	0.0003	0.0113	0.0101	25.5	0.0034	0.0195	2	8	250	0.61	3.42	3.28	0.01	0.18	0.16	408.31	0.05	0.31	0.076	0.428	0.410	0.001	0.023	0.020	51	0.007	0.039
Air Compressor	DIESEL	78	0.48	0.0691	0.3182	0.4334	0.0006	0.0375	0.0334	47.0	0.0062	0.0412	1	8	250	0.55	2.55	3.47	0.00	0.30	0.27	375.60	0.05	0.33	0.069	0.318	0.433	0.001	0.037	0.033	47	0.006	0.041
Concrete Truck	DIESEL	235	0.57	0.1252	0.3702	0.9818	0.0019	0.0328	0.0292	166.5	0.0113	0.0933	2	8	250	2.00	5.92	15.71	0.03	0.52	0.47	2664.73	0.18	1.49	0.250	0.740	1.964	0.004	0.066	0.058	333	0.023	0.187
Roller Compactor	DIESEL	84	0.56	0.0857	0.4000	0.5498	0.0007	0.0454	0.0404	59.0	0.0077	0.0522	1	8	250	0.69	3.20	4.40	0.01	0.36	0.32	471.91	0.06	0.42	0.086	0.400	0.550	0.001	0.045	0.040	59	0.008	0.052
Bore/Drill Rig	DIESEL	82	0.75	0.0376	0.4676	0.3736	0.0009	0.0160	0.0143	77.1	0.0034	0.0355	1	8	250	0.30	3.74	2.99	0.01	0.13	0.11	616.97	0.03	0.28									
Crane	DIESEL	208	0.43	0.0925	0.2713	0.8284	0.0013	0.0286	0.0255	112.2	0.0083	0.0787	2	8	250	1.48	4.34	13.25	0.02	0.46	0.41	1794.54	0.13	1.26	0.185	0.543	1.657	0.003	0.057	0.051	224	0.017	0.157
Paver	DIESEL	89	0.62	0.1235	0.4969	0.7477	0.0008	0.0636	0.0566	69.2	0.0111	0.0710	1	8	250	0.99	3.97	5.98	0.01	0.51	0.45	553.57	0.09	0.57	0.124	0.497	0.748	0.001	0.064	0.057	69	0.011	0.071
2016 Subtotal Emissions																**17.41**	**67.32**	**127.30**	**0.20**	**5.91**	**5.26**	**19304.77**	**1.57**	**12.09**	**1.46**	**5.45**	**10.62**	**0.02**	**0.51**	**0.45**	**1563.29**	**0.13**	**1.01**
2017 Emissions (3 Months Duration)																																	
Pump Station, Stilling Basin, Generator Pad, Transformer Pad																																	
CAT 416 Rubber Tire Backhoe/Loader	DIESEL	87	0.55	0.0577	0.3480	0.3870	0.0006	0.0293	0.026108385	51.7	0.0052	0.0368	1	8	66	0.46	2.78	3.10	0.00	0.23	0.21	413.82	0.04	0.29	0.015	0.092	0.102	0.000	0.008	0.007	14	0.001	0.010
Skid Steer Loader	DIESEL	37	0.55	0.0378	0.2138	0.2052	0.0003	0.0113	0.0101	25.5	0.0034	0.0195	2	8	66	0.61	3.42	3.28	0.01	0.18	0.16	408.31	0.05	0.31	0.020	0.113	0.108	0.000	0.006	0.005	13	0.002	0.010
Air Compressor	DIESEL	78	0.48	0.0691	0.3182	0.4334	0.0006	0.0375	0.0334	47.0	0.0062	0.0412	1	8	66	0.55	2.55	3.47	0.00	0.30	0.27	375.60	0.05	0.33	0.018	0.084	0.114	0.000	0.010	0.009	12	0.002	0.011
2017 Subtotal Emissions																**1.62**	**8.75**	**9.85**	**0.01**	**0.72**	**0.64**	**1197.73**	**0.15**	**0.94**	**0.05**	**0.29**	**0.32**	**0.00**	**0.02**	**0.02**	**39.53**	**0.00**	**0.03**

Worker Vehicle Emissions

Construction Phase	Vehicle Class	No. of Daily Workers	Speed (mph)	VMT (vehicle miles per day)	CO	NOx	VOC					SOx	PM_{10}			$PM_{2.5}$			CO_2	CH_4	N_2O
					Running Exhaust (g/mi)	Running Exhaust (g/mi)	Running Exhaust (g/mi)	Hot-Soak (g/trip)	Resting Loss (g/hr)	Running Evaporative (g/mi)	Diurnal Evaporative (g/hr)	Running Exhaust (g/mi)	Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Running Exhaust (g/mi)	Running Exhaust (g/mi)
2014 Emissions	Light-Duty Truck, catalyst	16	35	80	3.43522	0.558174	0.00506	0.084	0.049	0.071	0.021	0.005579	0.01282	0.008	0.0125	0.011825	0.002	0.0053	448.93156	0.033	0.004137
2015 Emissions	Light-Duty Truck, catalyst	42	35	80	3.43522	0.558174	0.00506	0.084	0.049	0.071	0.021	0.005579	0.01282	0.008	0.0125	0.011825	0.002	0.0053	448.93156	0.033	0.004137
2016 Emissions	Light-Duty Truck, catalyst	40	35	80	3.27995	0.515311	0.13246	0.079	0.045	0.069	0.02	0.005612	0.01254	0.008	0.0125	0.011566	0.002	0.0053	452.8343	0.0047915	0.0037706
2017 Emissions	Light-Duty Truck, catalyst	8	35	80	3.14385	0.478425	0.12271	0.075	0.041	0.068	0.018	0.005307	0.0123	0.008	0.0125	0.011328	0.002	0.0053	430.74764	0.0045426	0.0034544

Construction Phase	Emissions, lbs/day								
	CO	NOx	VOCs	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O
2014 Emissions Total	9.69	1.58	0.16	0.02	0.09	0.05	1266.85	0.09	0.01
2015 Emissions Total	25.45	4.13	0.42	0.04	0.25	0.14	3325.49	0.24	0.03
2016 Emissions Total	23.14	3.64	1.28	0.04	0.23	0.13	3194.67	0.03	0.03
2017 Emissions Total	4.44	0.68	0.24	0.01	0.05	0.03	607.77	0.01	0.00

Construction Phase	Construction Days	Total Emissions, tons								
		CO	NOx	VOCs	SOx	PM_{10}	$PM_{2.5}$	CO_2	CH_4	N_2O
2014 Emissions Total	250	1.21	0.20	0.01995	1.97E-03	0.01175	0.00675	158	0.01164	0.00146
2015 Emissions Total	250	3.18	0.52	0.05236	5.17E-03	0.03085	0.01771	416	0.03056	0.00383
2016 Emissions Total	250	2.89	0.45	0.16051	4.95E-03	0.02914	0.01664	399	0.00423	0.00333
2017 Emissions Total	250	0.55	0.08	0.03011	9.36E-04	0.00579	0.00329	76	0.00080	0.00061

Construction Truck Emissions

Construction Phase	Vehicle Class	Trucks/ day	Speed (mph)	VMT (vehicle miles per day)	CO	NO_X	VOC	SOx	PM_{10}			$PM_{2.5}$			CO_2	CH_4	N_2O
					Running Exhaust (g/mi)	Running Exhaust (g/mi)	Running Exhaust (g/mi)	Running Exhaust (g/mi)	Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Tire Wear (g/mi)	Brake Wear (g/mi)	Running Exhaust (g/mi)	Running Exhaust (g/mi)	Running Exhaust (g/mi)
2014 Emissions	Heavy Duty Truck, Diesel	14	35	80	1.828973286	6.760657704	0.34412371	0.01510495	0.3578864	0.036	0.0125	0.34727139	0.009	0.0053	2117.790543	0.04174186	0.00194197
2015 Emissions	Heavy Duty Truck, Diesel	14	35	80	1.828973286	6.760657704	0.34412371	0.01510495	0.3578864	0.036	0.0125	0.34727139	0.009	0.0053	2117.790543	0.04174186	0.00194197
2016 Emissions	Heavy Duty Truck, Diesel	18	35	80	1.828973286	6.760657704	0.34412371	0.01510495	0.3578864	0.036	0.0125	0.34727139	0.009	0.0053	2117.790543	0.04174186	0.00194197
2017 Emissions	Heavy Duty Truck, Diesel	6	35	80	1.828973286	6.760657704	0.34412371	0.01510495	0.3578864	0.036	0.0125	0.34727139	0.009	0.0053	2117.790543	0.04174186	0.00194197

Constuction Phase	Emissions, lbs/day												
	CO	NOx	VOCs	SOx	PM_{10}	$PM_{2.5}$	Paved Road Fugitive Dust PM_{10}	Paved Road Fugitive Dust $PM_{2.5}$	Unpaved Road Fugitive Dust PM_{10}	Unpaved Road Fugitive Dust $PM_{2.5}$	CO_2	CH_4	N_2O
2014 Emissions	4.52	16.69	0.85	0.04	1.00	0.89	10.77	2.26	2.90	0.29	5229.23	0.10	0.00
2015 Emissions	4.52	16.69	0.85	0.04	1.00	0.89	10.77	2.26	2.90	0.29	5229.23	0.10	0.00
2016 Emissions	5.81	21.46	1.09	0.05	1.29	1.15	13.85	2.91	3.73	0.37	6723.29	0.13	0.01
2017 Emissions	1.94	7.15	0.36	0.02	0.43	0.38	4.62	0.97	1.24	0.12	2241.10	0.04	0.00

Construction Phase	Construction Days/Total Deliveries	Total Emissions, tons												
		CO	NOx	VOCs	SOx	PM_{10}	$PM_{2.5}$	Paved Road Fugitive Dust PM_{10}	Paved Road Fugitive Dust $PM_{2.5}$	Unpaved Road Fugitive Dust PM_{10}	Unpaved Road Fugitive Dust $PM_{2.5}$	CO_2	CH_4	N_2O
2014 Emissions	250	0.04	0.15	0.01	0.00	0.01	0.00	1.34620	0.28270	0.36301	0.03630	654	0.01288	0.00060
2015 Emissions	250	0.04	0.15	0.01	0.00	0.01	0.00	1.34620	0.28270	0.36301	0.03630	654	0.01288	0.00060
2016 Emissions	250	0.04	0.15	0.01	0.00	0.01	0.00	1.73082	0.36347	0.46673	0.04667	840	0.01656	0.00077
2017 Emissions	250	0.04	0.15	0.01	0.00	0.01	0.00	0.57694	0.12116	0.15558	0.01556	280	0.00552	0.00026

MOVES 2010 Emission Factors, Dallas County

Paved Road Fugitive Dust
Assume silt loading for 10,000 ADT roadways = 0.03 g/m3

Assume 6 miles in addition for track-out for PM10
Emission Factors

PM10, LDT	9.81231E-05
PM10, MDT	0.008944829

Fugitive Dust Emissions
Activity Assumptions for Fugitive Dust Sources

Site Work	**cubic yards**		
Structural Excavation and Disposal	9000		
Structural Backfill	7500		
Total Haul Trucks	900		
Fugitive Dust emissions			
from WRAP Fugitive Dust Handbook, 2006			
Transfer operations (drop operation)			
E = k x (0.0032) x (U/5)^1.3/(M/2)^1.4	0.000208165	PM10	
Assume U - wind speed = 12 mph	4.37146E-05	PM2.5	
Assume M - moisture content = 15%			
k = .35 for PM10			
Assume PM2.5 is 21% of PM10			
Assume material is 1.35 tons/cy (approximate)			
Assume 4 drops per truckload (pile, pickup, drop off, pile)		**Total**	
PM10 Emissions, total	18.55		18.55
PM10 Emissions, lbs/day (max, assume 5x average)	0.37		0.37
PM2.5 Emissions, total	3.89		3.89
PM2.5 Emissions, lbs/day	0.08		0.08

For all other construction activities - assume grading is required, total disturbance per activity is 2 acres/day

Total Acreage of Disturbance	
Amount per day	2
Emission Factor (uncontrolled), lbs/acre-day	20
PM10 Emissions, uncontrolled, lbs/day	40
Control Efficiency	0.61
PM10 Emissions, controlled, lbs/day	15.6
PM10 Emissions, uncontrolled, tons/year	1.26
Control Efficiency	0.61
PM10 Emissions, controlled, tons/year	0.4914
Assume PM2.5 is 21% of PM10	
PM2.5 Emissions, uncontrolled, lbs/day	8.4
Control Efficiency	0.61
PM2.5 Emissions, controlled, lbs/day	3.276
PM2.5 Emissions, uncontrolled, tons/year	0.2646
Control Efficiency	0.61
PM2.5 Emissions, controlled, tons/year	0.103194