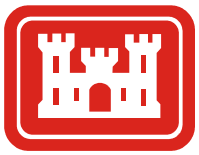
FINAL PROGRAMMATIC ENVIRONMENTAL ASSESSMENT
CIVIL WORKS
MINOR SECTION 408 NEPA COMPLIANCE
United States Army Corps of Engineers Fort Worth District, Texas



Prepared by

US Army Corps of Engineers
Fort Worth District

April 11, 2011

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1.0 INTRODUCTION

The United States Army Corps of Engineers (USACE), Fort Worth District and associated non-federal sponsors have constructed numerous public works projects within the USACE Fort Worth District Civil Works boundaries in the State of Texas. Typically, USACE Public Works projects encompass large areas located within watersheds in increasing urban environments. The completed public works projects are operated and maintained by the non-federal sponsors; however, USACE is responsible for ensuring the integrity and primary functions of these public works projects are maintained at all times. Exhibits depicting the USACE Fort Worth District Civil Works Boundary and completed USACE Fort Worth District Public Works are provided in Appendix A, Exhibits 1 and 2a - b, respectively.

There have been an increasing number of requests by non-federal entities to alter existing USACE Public Works projects. These alterations require USACE approval. The authority for USACE approval of alterations to public works projects operated and maintained by non-Federal sponsors is 33 USC Section 408. Specifically, 33 USC Section 408 states:

> *"It shall not be lawful for any person or persons to take possession of or make use of for any purpose, or build upon, alter, deface, destroy, move, injure, obstruct by fastening vessels thereto or otherwise, or in any manner whatever impair the usefulness of any sea wall, bulkhead, jetty, dike, levee, wharf, pier, or other work built by the United States, or any piece of plant, floating or otherwise, used in the construction of such work under the control of the United States, in whole or in part, for the preservation and improvement of any of its navigable waters or to prevent floods, or as boundary marks, tide gauges, surveying stations, buoys, or other established marks, nor remove for ballast or other purposes any stone or other material composing such works: Provided, That the Secretary of the Army may, on the recommendation of the Chief of Engineers, grant permission for the temporary occupation or use of any of the aforementioned public works when in his judgment such occupation or use will not be injurious to the public interest: Provided further, That the Secretary may, on the recommendation of the Chief of Engineers, grant permission for the alteration or permanent occupation or use of any of the aforementioned public works when in the judgment of the Secretary such occupation or use will not be injurious to the public interest and will not impair the usefulness of such work."*

In accordance with 33 USC Section 408, any alteration of a USACE Public Works project USACE review and approval to ensure that the alteration does not adversely impact the USACE

Public Works. In accordance with 33 CFR Section 230, Procedures for Implementing NEPA (Engineering Regulation 200-2-2), a National Environmental Policy Act (NEPA) document must be prepared to address the impacts to the environment as a result of the Federal action. All requests for alterations to a USACE Public Works project are submitted by the non-Federal sponsor.

There are two types of Section 408 Requests, Minor Section 408 Requests that can be approved by the Fort Worth District Engineer and Major Section 408 Requests that are approved by the USACE Director of Civil Works in Washington, D.C. The Fort Worth District Engineer determines if a proposed alteration to a USACE Public Works project is a Minor or a Major Section 408 Request.

Due to the increase in the number of proposed requests by non-Federal entities to alter USACE Public Works projects, USACE has found it necessary to consider a Programmatic Environmental Assessment (PEA) to address NEPA compliance for Minor Section 408 Requests on completed USACE Public Works projects to expedite the Federal review and approval process. It is not the intent of this PEA to address Major Section 408 Requests, nor is it the intent of the PEA to define a Major versus Minor Section 408 Request.

This PEA identifies proposed known and future individual alterations that USACE has determined are Minor Section 408 Requests being planned by various public and private entities within completed USACE Public Works projects. This PEA assesses the direct and cumulative impacts from these Proposed Actions on the human and natural environment.

A PEA assesses the overall environmental effects of Federal programs that involve multiple individual projects, a large geographical area, or a chain of proposed projects. Because the Proposed Action covers a large geographic area and includes multiple proposed alterations and potential future alterations of USACE Public Works projects within the USACE Fort Worth District Civil Works boundaries, a PEA is appropriate. Because it is broad in scope, a PEA may not treat in sufficient detail all significant issues encompassed by the program (the proposed action) it evaluates. Therefore, individual actions may subsequently require additional environmental impact analysis, e.g., a separate Environmental Assessment (EA) or Environmental Impact Statement (EIS). However, a subsequent EA or EIS can be tiered to the PEA and need only summarize relevant issues and reference the PEA, allowing the EA or EIS to concentrate on the specific action that is its focus. Thus, this PEA can be used to simplify and supplement future EA's or EIS's that could be required for certain individual projects included within the program of the proposed action.

1.1 PURPOSE AND NEED

There are numerous proposed alterations being planned by public and private entities that are proposed to cross or alter USACE Public Works projects within the USACE Fort Worth District Civil Works Boundaries. The types of alterations proposed by public and private entities are primarily roadways or utility lines including gas, water, power, or storm drains, but could include other activities determined to be a Minor Section 408. These projects are needed to provide basic services to customers on both sides of a USACE Public Works project. Therefore, the

question becomes, can they cross the USACE Public Works project or do they have to go around? Since USACE Public Works projects bisect large urban areas within the State of Texas with numerous, large scale projects encompassing large tracts of lands within floodplain drainages, it is not practicable to require the expenditure of additional funds to relocate utilities or roadways around the USACE Public Works project unless it would affect the functioning of the project and then there is no choice but to require the proposed alteration to go around the USACE Public Works project. Due to increasing development, population growth, and USACE Public Works project locations, the types and numbers of requests from entities to modify (Minor Section 408 Requests) USACE Public Works projects has increased substantially and put pressure on USACE to determine more effective ways to comply with NEPA to reduce paperwork and save funds. Though this document addresses environmental impacts for Minor Section 408 Requests through the NEPA process, it does not circumvent the USACE Fort Worth District review process to determine whether a proposed alteration is a Minor Section 408 Request subject to approval.

1.2 SCOPE

The scope of this PEA is to evaluate the Section 408 Request for approval or denial. Therefore, this PEA only addresses the impacts of the alternatives within the USACE Public Works project limits as described in Section 3.1 of this document.

Facilities that are currently owned and operated by USACE, such as lake projects, are not within the scope of this document. There are established processes for NEPA compliance for these facilities. Furthermore, normally operations and maintenance of the completed USACE Public Works projects are generally covered under existing categorical exclusions and are not covered under this PEA. In the event that NEPA documents are needed for those actions, they would undergo a separate NEPA analysis.

2.0 DESCRIPTION OF ALTERNATIVES

NEPA regulations indicate to some extent the scope of alternatives to be considered in all EA's and EIS's. These include the Proposed Action, the No-Action alternative, and other "reasonable" alternatives to the proposed action. These regulations also generally set the scope for a PEA by directing agencies to group activities together. For the purposes of this PEA, only two reasonable alternatives, either the No-Action or Proposed Action, were considered, since the only viable options are to either approve Minor Section 408 Requests causing no significant adverse environmental impacts or not approve them.

2.1 ALTERNATIVE 1 NO ACTION

The "No Action" alternative would not approve the proposed alterations of USACE Public Works projects within the USACE Fort Worth District Civil Works Boundaries. This would most likely result in the proposed alteration not being constructed or would require the proposed alteration to be located outside of the limits of the USACE Public Works project (i.e. it would

have to go around). While this alternative could be physically possible, it is not normally practical due to the fact that the majority of the USACE Public Works projects bisect large areas within increasingly crowded urban footprints, adding additional costs, potential for reduced operational function of the proposed individual actions, and potential property relocations. If the project was located outside of the limits of a USACE Public Works project, Section 408 would not apply and no NEPA documentation would be necessary. However, it may require other Federal actions at that point such as Section 404 of the Clean Water Act. Those impacts would have to be addressed separately. Under the No Action alternative there would be no significant impacts to the environment of the USACE Public Works project.

2.2 ALTERNATIVE 2 ALLOW MINOR 408 REQUESTS (PROPOSED ACTION)

The Proposed Action would approve Minor Section 408 Requests after USACE has determined that the alterations would not adversely affect the function or alter the purpose of the USACE Public Works project. In addition, the requests to alter the USACE Public Works project would not have a significant adverse environmental impact. If the impacts are significant and the alteration is necessary, a separate or supplemental NEPA document would be required in addition to this PEA.

This PEA addresses two types of Minor Section 408 Requests. The first type is currently known Minor Section 408 Requests. There are twenty (20) currently known Minor Section 408 Requests that are being proposed and that this PEA is addressing and they are listed below. In addition, this PEA would cover future actions that meet certain criteria as described below.

Exhibits in Appendix B depict the currently known proposed Minor 408 Requests located within USACE Public Works projects. Within each exhibit, proposed Minor 408 Requests are color coded to depict the type of construction to be used to implement the action. A red alignment indicates boring or horizontal drilling, green alignments indicate open cutting or trenching, and purple alignments indicate overhead or aerial spans.

CURRENTLY KNOWN MINOR SECTION 408 REQUESTS:

I. FORT WORTH FLOODWAY
   a. TMGS Natural Gas Pipeline Bore beneath West Fork Levee Loop Harman Park, Lower West Fork Trinity River (Exhibit A)
   b. TMGS Natural Gas Pipeline Bores beneath Ham Branch Levee, Lower West Fork Trinity River (Exhibit B)
   c. TMGS Natural Gas Pipeline Bore beneath West Fork Levee Loop, Lower West Fork Trinity River (Exhibit C)
   d. TMGS Natural Gas Pipeline Bore beneath Brookside Levee Sump 12, Upper West Fork Trinity River (Exhibits D1, D2, and D3)
   e. TMGS Natural Gas Pipeline Open Cut Backside of Brookside Levee, Blackstone Drive, Upper West Fork Trinity River (Exhibits E1 and E2)
   f. TMGS Natural Gas Pipeline Bore and Open Cut Backside of Brookside Levee, Isbell Road, Upper West Fork Trinity River (Exhibit F)
   g. TMGS Natural Gas Pipeline Bore beneath Brookside Levee between Church Hill

Road and Isbell Road, Upper West Fork Trinity River (Exhibits G1 and G2)

h. TMGS Kite Natural Gas Pipeline Bore beneath White Settlement Levee, Upstream of the Upper White Settlement Road River Bridge, Upper West Fork Trinity River (Exhibits H1 and H2)
i. TMGS Lowe Natural Gas Pipeline Bore beneath White Settlement Levee Upstream of the Lower White Settlement Road River Bridge, Upper West Fork Trinity River (Exhibits I1 and I2)
j. City of Fort Worth M-210 Relief Sanitary Sewer Siphon Upstream of University Drive, Clear Fork Trinity River (Exhibit J)
k. City of Fort Worth Storm Drain, Forest Park Boulevard (Parkview Drive), Clear Fork Trinity River (Exhibit K)
l. Barnett Gathering Pipeline Bore beneath the Clear Fork Trinity River Upstream of Bryant Irvin Road (Exhibit L)
m. AT&T Fiber Line Installation along Forest Park Boulevard, Clear Fork Trinity River (Exhibit M)
n. City of Fort Worth Scott-Sunset Storm Drain, Nursery Lane, Upper West Fork Trinity River (Exhibit N)
o. Atmos Energy Gas Line Relocation Project for Proposed Reconstruction of West 7th Street River Bridge, Clear Fork Trinity River (Exhibit O)
p. TMGS Colonial Extension Natural Gas Pipeline Route adjacent to the Clear Fork Trinity River within the Union Pacific Rail Road Yard (Exhibit P)

II. DALLAS FLOODWAY

a. Dallas Water Utilities (DWU) Water Main Replacements (Exhibits Q1, Q2, Q3, and Q4)
b. Atmos Gas Line Relocation at Baker Pump Station (Exhibit R)

FUTURE MINOR SECTION 408 REQUESTS:

Future "Minor" Section 408 Requests adhering to the below criteria would also be covered by this PEA:

a) Primary vegetative impacts must consist of grasslands with no riparian bottomland forest impacted.

b) No impacts to federal mitigation areas and/or lands specified as ecosystem restoration.

c) Impacts to waters of the United States would have to meet the requirements of a Nationwide or Regional General Permit.

d) No significant impacts to threatened or endangered species will be allowed to ensure Endangered Species Act (ESA) compliance.

e) No significant impacts to cultural resources will be allowed.

If the proposed Minor Section 408 Request does not meet the above criteria, then a standalone or supplemental EA or EIS would be required.

3.0 AFFECTED ENVIRONMENT

In order to assess the environmental consequences of alternatives, the existing conditions or affected environment of the proposed study area must be known. Due to the broad nature of this PEA and the large span of completed USACE Public Works projects within the USACE Fort Worth District Civil Works Boundary, the affected environment resources are addressed collectively by two means: individually by the USACE Public Works project (primarily flora description and layout) and regionally by biological resources (primarily fauna and threatened and endangered species), air quality, climate, and cultural resources.

3.1 SETTING

***Beals Creek**:*
Type: Beals Creek Flood Control Project, Big Spring, Texas.

Location: The project is located in Howard County, Texas, on Beals Creek. The project begins just downstream of the Benton Street bridge and extends upstream to a drop structure at Onemile Lake within the city limits of Big Spring, Texas.

Existing Conditions: The project includes approximately 7,558 feet of grass-lined channel and appurtenant features. The project features an improved channel that is trapezoidal in cross section, with a bottom width of 20 feet and side slopes of one vertical on three horizontal (1:3). Included in the project is a new 100-foot long by 40-foot wide reinforced concrete drop structure and a new vehicular bridge which provides access to the Union Pacific Railroad (UPRR) train refueling station. The drop structure or spillway consists of cast-in-place reinforced concrete base slab and cantilever walls, with an upstream weir to provide a controlled change of grade between Onemile Lake and the new channel. Riprap armored spur dikes tie the drop structure walls into natural ground. Additional features in this project include miscellaneous surface drainage structures, the concrete channel lining downstream of the drop structure, and the concrete channel lining beneath the Greg Street Bridge.

The Beals Creek flood control project is primarily grasslands and limited shrublands located outside of the channel and concrete lined portions of the project area. The project is surrounded by railroad and residential development to the south and residential and commercial development to the north. Aquatic resources are limited to the highly disturbed Beals Creek and potential emergent wetlands adjacent to the stream. The project area is located within the Ogallala aquifer (Hayes 2009), and located in the Colorado River Basin and Beals Sub-basin (Hayes 2004).

***Big Fossil Creek**:*
Type: Channel Improvements, Big Fossil Creek, Richland Hills, Texas.

Location: The Big Fossil Creek channel improvement project is located between river mile 3.6 of Big Fossil Creek and its confluence with the West Fork Trinity River in Richland Hills, Tarrant County, Texas.

Existing Conditions: The project includes enlargement and realignment of the Big Fossil Creek channel between approximate river miles 1.5 and 3.6 within a grass lined channel protected by 18 inch rip rap. The existing channel downstream was cleared from mile 1.5 to the mouth of Big Fossil Creek. The project also includes approximately one mile of levee construction along the left bank of the channel. Additional construction features include construction of appurtenant interior drainage facilities consisting of a 1,980 foot interceptor storm sewer system, pumping plant facilities, permanent sump storage facilities and gate controlled gravity sluices through the levee. The Chicago, Rock Island and Pacific Railroad Bridges located at mile 1.95 on Big Fossil Creek were extended, as well as relocation and alteration of various urban utilities and oil, gas, and power lines of private companies. Acquisition of rights-of-way, consist of about 147 acres of land in fee simple for the construction of the enlarged channel, levee, and the permanent sump area, and about 35 acres of land in permanent easements for clearing and maintaining the natural channel within the lower reaches of Big Fossil Creek. The channel bottom width is 150 feet with side slopes of one vertical on three horizontal (1:3).

The Big Fossil Creek channel improvement project is primarily grasslands and bottomland hardwood forest in the northwest and southeast portions of the project, respectively. The proposed project area has been significantly disturbed by past residential, commercial/industrial, and transportation development, as well as the Federal Project construction. Aquatic resources within the project area include Big Fossil Creek. The greatest potential for wetlands will be in the southern portions of the site. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

Boggy Creek*:*
Type: Boggy Creek Channel Improvement Project, Boggy Creek, Austin, Texas.

Location: The location of the project is in Travis County, Texas, on Boggy Creek. The project extends from about 40 feet below the southbound lane of Bluestein Boulevard and ends approximately 220 feet upstream of the drop structure and stilling basin located to the north of Webberville Road.

Existing Conditions: The project includes a combination grass, gabion, and concrete lined channel with varying side slopes of one vertical on one and a half horizontal (1:1.5) to one vertical on three horizontal (1:3) and 65 to 90 foot bottom widths, which includes the existing concrete and grass lined transition portions of the channel. Some portions narrow to 50 feet in

width at the drop structures. The channel is approximately 15,475 feet in length. Additional project features include construction of five ramps, drop structures and energy dissipaters, and surface drainage inlets. The project includes approximately 50 acres of mitigation within the eastern portions of the project area on the north side of the channel.

The Boggy Creek channel improvement project is primarily limited grasslands bounded by residential development, commercial development, maintenance roads, and parks. Limited riparian bottomland forest is located in the eastern portion of the project area and within the park areas. The proposed project area is encompassed by residential, commercial, recreational, and transportation development. Aquatic resources within the project area include Boggy Creek, tributaries meeting their confluence with Boggy creek, and potential emergent wetlands adjacent to the channel. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Colorado River Basin and Austin-Travis Lakes Sub-basin (Hayes 2004).

***Calloway Branch**:*
Type: Flood Protection Project, Calloway Branch, Hurst, Texas.

Location: The project is located in Tarrant County, Texas, on Calloway Branch. The project extends from about 500 feet below Arcadia Street upstream to Highway Loop 820 near Hurst, Texas.

Existing Conditions: The project includes approximately 2,167 feet of channel with one vertical on one and a half horizontal (1:1.5) paved side slopes and 60 to 70 foot bottom widths, lined with natural rock from the area. The improvement begins about 500 feet downstream of the Arcadia Street bridge crossing and continues to the upstream side of the northbound frontage road of Highway Loop 820.

The Calloway Branch flood control project is primarily limited grassland bounded by the concrete channel and residential development. A limited forested area is located on the south side of the channel within a park-like setting. Disturbances within the project vicinity include past residential, recreational, and transportation development, as well as the Federal Project construction. Aquatic resources within the project area are limited to the highly disturbed concrete and rock lined Calloway Branch and potential emergent wetlands throughout the project area. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

Cat Claw Creek:
Type: Channel Improvement Project at Cat Claw Creek, Abilene, Texas.

Location: The project is located along Cat Claw Creek in the City of Abilene, Taylor County, Texas. The project extends north-south from North 18th Street to North 15th Street within a residential subdivision.

Existing Conditions: The project includes approximately 1,183 feet of concrete lined side slopes and riprap channel bottom. A new concrete pilot channel was also added under the 18th Street Bridge. The improved channel has one vertical on one horizontal (1:1) side slopes and 18 inches of riprap on the channel bottom with a 22 foot bottom channel width.

The Cat Claw Creek channel improvement project is primarily grassland located outside of the concrete lining bounded by two access roads on the west and east sides. Aquatic resources within the project area are limited to the highly disturbed rip-rap filled Cat Claw Creek, which extends north-south between the concrete slopes and grassed buffers. The project area is surrounded by the Edwards – Trinity Plateau (outcrop), Seymour, and Trinity (outcrop) aquifers (Hayes 2009), and located in the Brazos River Basin and Upper Clear Fork Brazos Sub-basin (Hayes 2004).

***Dallas Floodway**:*
Type: Flood Control Project, Trinity River, West Fork Trinity River, and Elm Fork Trinity River, Dallas, Texas.

Location: The completed flood control works are located in Dallas County, Texas, along the Trinity River upstream from river mile 497.37 to the confluence of West Fork and Elm Fork at river mile 505.5, then upstream along the West Fork approximately two miles and upstream along the Elm Fork approximately four miles.

Existing Conditions: The project includes channel improvements, clearing of the floodway, strengthening of 22 miles of levees, installation and modification of drainage structures, construction of pressure sewers, alteration of railroad bridges, construction and installation of pump stations, construction and modification of sump areas, and sodding and seeding of embankment slopes adjacent to areas along the above described portion of the Trinity River and tributaries.

The Dallas Floodway flood control project includes grasslands, wetlands, and riparian bottomland hardwoods, which are located primarily along the river channels, located throughout the project area. The project area includes significant disturbances by past residential, commercial, and industrial development, as well as the Federal Project construction. The project levees, located along the majority of the project, are bounded by extensive urban development. Aquatic resources within the project area include the Trinity River, West Fork Trinity River, Elm Fork Trinity River, numerous tributaries meeting their confluence with the rivers, ponds, and

potential emergent and forested wetlands located throughout the site. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Upper Trinity Sub-basin (Hayes 2004).

***Delaware Creek**:*
Type: Flood Control Project, Delaware Creek, Irving, Texas.

Location: The project is located in Dallas County, Texas, on Delaware Creek. The project extends upstream and downstream of Nursery Road within the city limits of Irving, Texas.

Existing Conditions: The project includes construction of approximately 3,600 feet of grass-lined channel, of which the lower 2,600 feet is a high flow diversion channel. Normal stream flows are allowed to continue down Delaware Creek through a box culvert, while high flows are diverted by a levee and diversion channel toward a shorter route to the West Fork of the Trinity River. The project also includes the replacement of Nursery Road Bridge. The bottom width of the channel varies from 15 to 110 feet with one vertical to three horizontal (1:3) side slopes.

The Delaware Creek flood control project is primarily grasslands on the side slopes bounded by residential and commercial development, with riparian bottomland hardwoods located in the southeast portions of the project area. The proposed project area has been significantly disturbed by past residential and commercial/industrial development, as well as the Federal Project construction. Aquatic resources within the project area include Delaware Creek and potential emergent and forested wetlands located adjacent to the stream channel. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

Dry Branch
Type: Channel Improvement Project at Dry Branch, Grand Prairie, Texas.

Location: The project is located in Grand Prairie, Dallas County, Texas on Dry Branch. The project begins approximately 400 feet south of Sherwood Drive and extends northward to approximately 650 feet north of Oakwood Drive west of South Beltline Road.

Existing Conditions: The project includes approximately 2,700 feet of concrete lined channel with a 15 foot bottom width. The side slopes are one vertical on two horizontal (1:2). Variations to these dimensions allow the channel to fit through three existing bridge overpasses and a narrow strip through a commercial and residential development. The upstream end of the project includes a concrete trapezoidal drop structure with 24 inch riprap placed on the side slopes.

The Dry Branch channel improvement project is primarily limited grasslands located outside of the concrete lining bounded by primarily residential development and commercial development to the west and east, respectively. Major disturbances within the project area include past residential, commercial, and transportation development, as well as the Federal Project construction. Aquatic resources within the project area are limited to the disturbed concrete-lined Dry Branch, which extends north-south between the concrete slopes and grassed buffers. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

***Duck Creek**:*
Type: Duck Creek Flood Control Project, Garland, Texas.

Location: The project is located in Dallas County, on Duck Creek. The project begins 740 feet south of Centerville Road and extends upstream to Walnut Road, within the city limits of Garland, Texas.

Existing Conditions: The project includes approximately 15,400 feet, including Reaches 3, 4A, 5A, and 5B, of construction of a one-sided, grass-lined channel and appurtenant features. The project includes channel widening by alternating excavation of one side of the existing natural channel to a slope of one vertical to three horizontal (1:3). The improved channel has a bottom width which varies from 60 feet wide along the reach between Kingsley and Briarwood Roads (Reach 4A) and between Miller Road and Walnut (Reaches 5A and 5B) to 80 feet wide from below Centerville Road to Kingsley Road (Reach 3). The project also includes approximately 635 feet of paved channel slope within Reach 4A, having a side slope of one vertical to one and a half horizontal (1:1.5). Replacement of the Avenue F bridge and widening of the South Garland Avenue bridge was required to facilitate construction of the widened channel. Additionally, three mitigation areas, a total of approximately 20 acres, are included with the Federal Project, which included grassland conversion to riparian bottomland hardwoods and riparian bottomland hardwood preservation.

The Duck Creek flood control project is primarily grasslands and riparian bottomland hardwoods located throughout the project area. The project area is bound by residential, commercial, and recreational properties on either side. Riparian bottomland hardwood mitigation and preservation sites for the project are located intermittently along the channel near Centerville Road, Walnut Road, and Oates Road. The proposed project area has been disturbed by past residential, commercial, and transportation development, as well as the Federal Project construction. Aquatic resources within the project area include Duck Creek, potential emergent and forested wetlands, and numerous tributaries flowing into the project area. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and East Fork Trinity Sub-basin (Hayes 2004).

East Fork Floodway:
Type: Flood Protection Project, East Fork of Trinity River, Kaufman County, Texas.

Location: The project is located in Kaufman County, Texas, on the East Fork of the Trinity River. The project extends from the confluence with the Trinity River upstream to the crossing of U.S. Highway 175 near Crandall, Texas.

Existing Conditions: The project is designated as East Fork Increment I. The project includes approximately ten miles of channel enlargement and straightening, approximately 20 miles of existing levee raising, and two new drainage structures through the levees within the limits of the Kaufman County Levee Improvement District Number 5 and Kaufman County Municipal Utility District Number One. The channel has a uniform bottom width of 80 feet with one vertical on three horizontal (1:3) side slopes. Two concrete chutes have been constructed on the left (east) bank and right (west) bank. Generally, the levees include a top width of 15 feet with one vertical on three horizontal (1:3) side slopes, an average height between 12 and 18 feet, and are grass-lined. East Fork Increment 2 was not constructed.

The East Fork Floodway flood protection project is primarily limited grassland, some shrublands, and abundant bottomland hardwood forests paralleling the East Fork Trinity River. Limited grasslands are located immediately adjacent to the channel and within the northern portions of the project area. The Federal Project is surrounded by rural development, pastureland, and agricultural properties. Aquatic resources within the project area include the East Fork Trinity River, numerous streams, which meet their confluence with the river, adjacent and on-channel ponds and oxbows, and multiple potential forested and emergent wetlands located throughout the entire project area. The project area is located between the Trinity (subcrop) and Carrizo-Wilcox (outcrop) aquifers (Hayes 2009), and located in the Trinity River Basin and East Fork Trinity Sub-basin (Hayes 2004).

Fort Worth Floodway
Type: Flood Control Project, Clear Fork Trinity River and West Fork Trinity River, Fort Worth, Texas.

Location: The project is located on the Clear Fork and West Fork of the Trinity River in Fort Worth, Tarrant County, Texas.

Existing Conditions: The project spans between river mile 551.45 and 570.40 on the West Fork Trinity River and river mile 0.00 and 7.57 on the Clear Fork Trinity River. Channel improvements along the West Fork Trinity River include cleaning; excavation of a realigned channel; construction of new levees; sodding and seeding of all new slopes; alteration or construction of bridges, railroad, and highway; alteration or construction of drainage structures;

and construction of emergency control structures. Channel improvements on the Clear Fork Trinity River include cleaning, excavation, and realignment; sodding and seeding of all new slopes; alteration or construction of bridges; and construction of emergency control structures.

The project includes 57,300 feet of levee improvements to establish Standard Project Flood (SPF) protection on the West Fork and Clear Fork Trinity Rivers, and 49,700 feet of new levee construction on both channels. Additionally, local interests constructed a new levee on the Clear Fork immediately upstream from the existing Water Work levee.

The Fort Worth Floodway flood control project includes numerous vegetation types, consisting of primarily grasslands located throughout the project area, some shrublands, and limited bottomland hardwood forests located primarily along the West Fork channel in the eastern portions of the project area and along both the West and Clear Fork channels in the western portions. All portions of the project area are bound by residential, commercial, and industrial developments. Aquatic resources within the project area include the Clear Fork Trinity River, West Fork Trinity River, numerous streams, which meet their confluence with the rivers, and potential forested and emergent wetlands. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

Irving Levee*:*
Type: Northwest Levee, Dallas Floodway, Irving, Texas.

Location: The project is located in Irving, Dallas County, Texas west of the Elm Fork Trinity River. The project begins near Tom Braniff Drive on the north and extends southward in a semi-circular fashion to Proctor Street, located south of State Highway183.

Existing Conditions: The project includes approximately three miles of grass-lined levee. Generally, the side slopes are constructed at a one vertical on three horizontal (1:3) slope. The Irving Levee is constructed in a similar nature as the aforementioned Dallas Floodway levees.

The Irving Levee flood control project is primarily grasslands on the levee and levee slopes bounded by commercial developments to the west and potential wetlands and bottomland hardwood forests to the east. The proposed project area has been significantly disturbed by past commercial and industrial development, as well as the Federal Project construction. Aquatic resources within the project area include tributaries of the river and potential emergent and forested wetlands located immediately adjacent to the levee. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Upper Trinity Sub-basin (Hayes 2004).

***Johnson Creek (Grand Prairie)**:*
Type: Channel Improvement Project, Johnson Creek, Grand Prairie, Texas.

Location: The project is located in Grand Prairie, Dallas County, Texas, on Johnson Creek. The project extends from Carrier Parkway towards Duncan Perry Road.

Existing Conditions: The project includes approximately 4,950 feet of channelization, primarily gabion-lined. The project also includes a high-flow bypass, approximately 900 feet in length, and 12 acres of tree and shrub plantings to be maintained for the life of the project. A disposal site is located at the upstream end and adjacent to the project to protect residential structures from overbank floodwater on the north side of project. An additional disposal site is located about two miles north of the project west of Roy Orr Boulevard. Bottom channel width is 30 feet with one vertical to three horizontal (1:3) side slopes.

The Johnson Creek channel improvement project is primarily grasslands located outside of the gabions bounded by residential development. Riparian bottomland hardwoods and an emergent wetland exist in the southern (upstream) portions of the project area as mitigation for the federal project. Additional bottomland hardwoods are sparsely scattered along the east bank, as well as scattered potential wetlands within the project area. Major disturbances in the vicinity include past residential and transportation development, as well as the Federal Project construction. Aquatic resources within the project area include Johnson Creek and emergent and potential forested wetlands. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

***Long Branch**:*
Type: Channel Improvement, Long Branch Creek, Greenville, Texas.

Location: The project is located in Greenville, Hunt County, Texas. The project extends from O'Neal Street in the downtown southwest part of the City of Greenville, Texas, to a point 4,000 feet east of Interstate Highway 30, which is approximately 1,000 feet southwest of the City of Greenville sewage disposal plant.

Existing Conditions: The project includes approximately 18,086 feet of channel realignment (straighten) to increase the water carrying capacity of Long Branch Creek. The channel has a bottom elevation of 529.50 m.s.l. near O'Neal Street and a bottom elevation of 490.45 m.s.l. in the southeastern portion of the project area. Reinforced concrete drop structures are installed at O'Neal Street and at King Street. The project also includes berm drains, a concrete chute, surface inlets, riprap protection and turfing installed to handle surface drainage and prevent erosion throughout the project. The bottom width of the channel varies from 25 to 50 feet.

The Long Branch channel improvement project is primarily grasslands on the side slopes bounded by rural residential and commercial development, with riparian bottomland hardwoods located in the northwest and southeast portions of the project area. Aquatic resources within the project area include Long Branch and potential emergent and forested wetlands located adjacent to the stream channel primarily in the northwestern and southeastern areas of the project. The project area is located between the Trinity (subcrop) and Carrizo-Wilcox (outcrop) aquifers (Hayes 2009), and located in the Sabine River Basin and Upper Sabine Sub-basin (Hayes 2004).

***Lorean Branch**:*
Type: Channel Improvement Project, Lorean Branch, Hurst, Texas.

Location: The project is located in Tarrant County, Texas, on Lorean Branch. The project extends from below the CRI&P (MKT) Railroad just upstream of Cannon Drive in Hurst, Texas.

Existing Conditions: The project includes four separate reaches of improved channel. Reach Number One includes a grass-lined channel with side slopes of one vertical on three horizontal (1:3) and a 40 to 80-foot bottom width. Transition areas are concrete and riprap lined with side slopes varying from one vertical on one and a half horizontal (1:1.5) to one vertical on three horizontal (1:3). Reach Number Four includes new concrete lined portions of channel interfacing with existing concrete lining with side slopes varying from one vertical on one and a half horizontal (1:1.5) to one vertical on two horizontal (1:2) and a 16 to 30-foot bottom width. Reach Number Five includes a combination of grassed, concrete and riprap lined channel with side slopes of one vertical on three horizontal (1:3) and a 40-foot bottom width. Reach Number Seven consists of grass-lined channel with side slopes of one vertical on three horizontal (1:3) and a 20-foot bottom width. The transition areas adjacent to drop structures and chutes are lined with riprap and have variable slopes and bottom width.

The Lorean Branch channel improvement project is primarily limited grassland bounded by portions of concrete channel, residential homes, and commercial development. A limited riparian bottomland forest is located in the southern reaches of the project area. The proposed project area has been significantly disturbed by past residential, and commercial development, as well as the Federal Project construction. Aquatic resources within the project area are limited to the highly disturbed Lorean Branch, smaller tributaries meeting their confluence with Lorean Branch, and potential adjacent emergent wetlands within the far northern and southern portions of the project area. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

***Munday Floodway**:*
Type: Channel Improvement Project, Munday, Texas.

Location: The project is located in Munday, Knox County, Texas, approximately 77 miles north of Abilene, Texas.

Existing Conditions: The project includes enlargement of approximately four miles of existing channel south of the city. The project also includes construction of a reinforced concrete structure for the outfall channel for approximately 850 feet, consisting of concrete lined trapezoidal walls including two transition sections, a 60 foot "U" structure stilling basin containing baffle blocks, and a three foot sill form at the downstream end of the structural work. The project includes construction of four reinforced concrete inlet chutes, and construction of approximately 87 feet of channel and slope paving. The project required acquisition of an additional 59 acres in perpetual easement right-of-way and spoil areas. Channel bottom width varies between 20 and 40 feet, while the grass-lined slopes are one vertical to two and a half horizontal (1:2.5).

The unnamed tributary of Lake Creek channel improvement project is primarily grasslands located on the channel slopes. Past disturbances within the project area include past residential development of the roads and housing, particularly north of the project, and the Federal Project construction. Significant agricultural and crop production is located immediately south of the project. Aquatic resources within the project area are limited to the unnamed tributary of Lake Creek, which extends east-west between grassed buffers, and potential emergent wetlands located adjacent to the stream channel. The project area is located in the Seymour aquifer (Hayes 2009), and located in the Brazos River Basin and Middle Brazos-Millers Sub-basin (Hayes 2004).

Pleasanton Floodway*:*
Type: Floodway Project, Atascosa River, Pleasanton, Texas.

Location: The project is located on the Atascosa River and Bonita Creek in Pleasanton, Atascosa County, Texas, about 33 highway miles south of San Antonio, Texas.

Existing Conditions: The project includes improvement of portions of the Atascosa River and Bonita Creek in the vicinity of Pleasanton, Texas. Improvement on the Atascosa River includes clearing from mile 53.0 to mile 57.1, channel excavation from mile 54.5 to mile 57.1, removal of the Adams Street low water crossing and the Hunt Street Bridge, and providing scour protection at railroad and highway bridges. Improvement on Bonita Creek includes approximately 3,900 linear feet of channel excavation, construction of 1,970 linear feet of levee, and a drainage structure. Typical grass lined channel sections at Atascosa River have one vertical on two horizontal side slopes (1:2) with a bottom width between 20 to 50 feet. Typical channel sections at Bonita Creek have one vertical on two horizontal (1:2) grass-lined side slopes with a bottom width of 15 feet. The section along the drainage structure has dumped riprap.

The Pleasanton Floodway project is primarily grasslands and riparian bottomland hardwoods. The project is bound by riparian bottomland forest along the majority of the eastern portions of the project, while the western and northern portions primarily consist of grasslands. The proposed project vicinity consists of residential and commercial developments within the City of Pleasanton to the west and rural, primarily open pastureland to the east. Aquatic resources within the project area include the Atascosa River, Bonita Creek, small tributaries meeting their confluence within the project area, and potential emergent and forested wetlands located adjacent to the channels. The project area is located in the Carrizo-Wilcox (subcrop) aquifer (Hayes 2009), and located in the Nueces River Basin and Atascosa Sub-basin (Hayes 2004).

***Poteet Floodway**:*
Type: Poteet Channel Improvement, Poteet, Texas.

Location: The project is located on the Rutledge Hollow Creek in Atascosa County about 29 miles south of San Antonio, Texas.

Existing Conditions: The project includes approximately 5,400 feet of grass-lined channel with a bottom width of approximately 50 feet and side slopes of one vertical on two and a half horizontal (1:2.5). The project includes construction of channel improvements for flood protection of the City of Poteet, channel enlargement for a length of approximately one mile, construction of two grade transfer structures, bank building on improved channel, construction of four low water crossings, and slope protection.

The Poteet channel improvement project includes primarily grasslands bounded by residential and commercial development within the northern portions of the project area. The project is bound by riparian bottomland forest along the far southern portions of the project. The proposed project vicinity consists of residential, commercial, and transportation developments within the City of Poteet. Aquatic resources within the project area include Rutledge Hollow Creek, small tributaries meeting their confluence within the project area, and potential emergent and forested wetlands located adjacent to the channel. The project area is located in the Carrizo-Wilcox (subcrop) aquifer (Hayes 2009), and located in the Nueces River Basin and Atascosa Sub-basin (Hayes 2004).

***Rush Creek**:*
Type: Channel Improvement Project, Rush Creek, Arlington, Texas.

Location: The project is located in Tarrant County, Texas, on Rush Creek. The project extends north of West Division Street within the city limits of Arlington, Texas.

Existing Conditions: The project includes an interlocking concrete block lined channel approximately 1,323 feet long extending downstream from the West Division Street Bridge, a concrete drop structure, and a grass lined channel approximately 772 feet long downstream of the drop structure. The concrete block channel has a bottom width of 30 feet, with side slopes of one vertical on two horizontal (1:2). The drop structure has a vertical drop of approximately seven feet and extends 40 feet downstream. The grass lined channel has a bottom width of 25 feet, with side slopes of one vertical on three horizontal (1:3).

The Rush Creek channel improvement project is primarily limited grassland and bottomland hardwoods bounded by residential and commercial development to the east and west, respectively. A limited riparian bottomland forest is located in the northern reaches of the project area, while the southern portions primarily consist of grasslands. The proposed project area has been significantly disturbed by past residential, and commercial development, as well as the Federal Project construction. Aquatic resources within the project area include Rush Creek and potential emergent wetlands and forested wetlands throughout the project area. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

San Antonio Floodway*:*
Type: San Antonio Channel Improvement, San Antonio, Texas.

Location: The project is located on the San Antonio River and its tributaries in San Antonio, Bexar County, Texas.

Existing Conditions: The project includes channel improvements, installation and modification of drainage structures, clearing, widening, straightening, deepening, modification of highway and railroad bridges, road relocations, and sodding and seeding of embankment and channel slopes on the San Antonio River, Alazan Creek, Apache Creek, Martinez Creek, San Pedro Creek, and Six Mile Creek, which equates to approximately 22 miles of flood control improvement. Additional project features include the construction of concrete and steel piling floodwalls and culverts and two deep tunnel systems beneath the downtown San Antonio area. The tunnels are located under San Pedro Creek and under the San Antonio River.

The San Antonio Floodway channel improvement project is primarily grasslands bounded by dense residential, industrial, recreational, and commercial development with some portions bound completely by concrete and development. Limited areas of bottomland hardwood forests exist intermittently along the project primarily to the northwest and within recreational properties. The proposed project vicinity consists of densely populated residential, commercial, and transportation developments within the City of San Antonio. Aquatic resources within the project area include the San Antonio River, Alazan Creek, Apache Creek, Martinez Creek, San

Pedro Creek, and Six Mile Creek, tributaries meeting their confluence within the project area, and potential emergent and forested wetlands located adjacent to the channel. The project area is located in the Carrizo-Wilcox (subcrop) aquifer (Hayes 2009), and located in the San Antonio River Basin and Upper San Antonio Sub-basin (Hayes 2004).

***Singing Hills Creek**:*
Type: Channel Improvement Project, Singing Hills Creek, Watauga, Texas.

Location: The project is located in Tarrant County, Texas, on Singing Hills Creek. The project extends north and south of Watauga Road within the city limits of Watauga, Texas.

Existing Conditions: The project includes a combination of concrete-lined trapezoidal-shaped and U-frame channel segments that are generally 30 feet wide, with a stilling basin on the downstream end. The project is divided into two reaches. The lower reach is approximately 2,711 feet in length and extends from approximately 400 feet south of the southern city limits of Watauga to approximately 650 feet downstream of Watauga Road. The upper reach is approximately 2,600 feet in length and extends from approximately 250 feet upstream of Watauga Road to just downstream of Chapman Road.

The Singing Hills Creek channel improvement project is primarily limited grasslands bound by the concrete channel and residential and commercial development throughout the project area. The proposed project area has been significantly disturbed by past residential and transportation development, including the Federal Project construction. Aquatic resources within the project area are limited to the disturbed concrete lined Singing Hills Creek and potential adjacent emergent wetlands located in the far northern and southern portions of the project area. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

***Sulphur Branch**:*
Type: Flood Control Project, Sulphur Branch, Euless, Texas.

Location: The project is located in Tarrant County, Texas, on Sulphur Branch. The project begins approximately 800 feet south of State Highway 10 and extends upstream to just north of Pipeline Road in Euless, Texas.

Existing Conditions: The project includes a 25-foot bottom width, concrete-lined, trapezoidal channel with side slopes of one vertical on one and a half horizontal (1:1.5). The total project length, including riprap and channel transitions, is approximately 4,000 feet. A ribbed concrete stilling basin is located at the downstream end of the project area. The project includes the replacement of the Woodvine Drive Bridge, removal of existing concrete-lined pilot channel

between Woodvine Drive and Pipeline Road, channel modification and clearing south of State Highway 10, and construction of a 300-foot long floodwater collection/diversion wall extending west along the southern side of Pipeline Road. The project includes mitigation features, including the conversion of 3 acres of grasslands to riparian habitat within the southern portions of the project area. The project also includes approximately 450 feet of riprap-lined channel in the downstream portions of the site.

The Sulphur Branch flood control project is primarily limited grassland bounded by residential development and the concrete lined channel to the east and west throughout the majority of the central portions of the project area. Riparian bottomland forest, including the designated mitigation for the federal project, is located in the southern portions of the project area. Some riparian bottomland habitat is located at the far northern terminus of the project as well. The proposed project area is encompassed by residential, recreational, and transportation development. Aquatic resources within the project area include Sulphur Branch and potential emergent wetlands and forested wetlands located at the northern and southern termini of the project. The project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Lower West Fork Trinity Sub-basin (Hayes 2004).

***Ten Mile Creek**:*
Type: Flood Control Project, Ten Mile Creek, Desoto, Texas.

Location: The project is located in Dallas County, Texas, on Ten Mile Creek. The project extends approximately 700 feet east of Hampton Road and proceeds to approximately 4,000 feet southeast of Westmoreland Road within the city limits of Desoto, Texas.

Existing Conditions: The project includes approximately 4,200 feet of channel improvements generally along the right (north) side of the creek, with several gabion features on the opposite bank. The grass-lined channel includes the excavation of a 50-foot wide terrace on the north bank, approximately five feet above the invert of the creek, and transitions into one vertical on three horizontal (1:3) side slopes. Recreational facilities include a linear trail system along the north bank of Ten Mile Creek within the flood control project boundaries. The project also provides mitigation features, including reforestation of 16 acres of city-owned property and preservation credit for six additional acres of city-owned property.

The Ten Mile Creek flood control project is grasslands and riparian bottomland hardwoods located throughout the project area. Riparian bottomland hardwood mitigation and preservation sites for the project are located intermittently along the channel. The proposed project area has been disturbed by past residential and commercial development, as well as the Federal Project construction. Aquatic resources within the project area include Ten Mile Creek, potential emergent and forested wetlands, and numerous tributaries flowing into the project area. The

project area is located within the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Upper Trinity Sub-basin (Hayes 2004).

***Walnut Branch**:*
Type: Walnut Branch Channel Improvement Project, Parts I & II, Seguin, Texas.

Location: The project is located in Guadalupe County, Seguin, Texas. The project begins approximately 300 feet upstream of the Williams Street crossing and extends upstream of the Southern Pacific Railroad crossing.

Existing Conditions: The project includes a 10-year frequency grass-lined channel, which is approximately 1.3 miles in length. The channel has varying bottom widths of 70, 65 and 50 feet with one vertical on three horizontal (1:3) side slopes and two riprap transitions. The drainage system involves a series of four v-ditches with type "A" chutes.

The Walnut Branch channel improvement project includes primarily grasslands bounded by residential and commercial development along the northwest portions of the project area. The southeast portions of the project area are bounded by bottomland hardwood forests. The proposed project vicinity consists of residential, commercial, and transportation developments within the City of Sequin. Aquatic resources within the project area include Walnut Branch and potential emergent and forested wetlands located adjacent to the channel. The project area is located in the Carrizo-Wilcox (outcrop) aquifer (Hayes 2009), and located in the Guadalupe River Basin and Middle Guadalupe Sub-basin (Hayes 2004).

***Wheeler Creek**:*
Type: Channel Improvements, Wheeler Creek, Gainesville, Texas.

Location: The project is located in Gainesville, Cooke County, Texas along Wheeler Creek. The project begins approximately 2,500 feet north of Farm to Market (FM) 678 and 4,000 feet east of the City of Gainesville, ending at a point 1,300 feet south of FM 678 and 1,500 feet east of the city.

Existing Conditions: The project includes approximately 5,050 feet of channel realignment and tree and brush clearing from the side slopes to increase the water carrying capacity of Wheeler Creek. The project also includes an earthen plug installed above the existing concrete weir, herbicidal treatment of stumps, and turfing where necessary to handle surface drainage and prevent erosion. The bottom of the channel has a width of approximately 20 feet.

The Wheeler Creek channel improvement project is primarily grasslands and riparian bottomland hardwoods. Riparian bottomland forest is located along the majority of the stream; however, the

denser areas of forest are located in the southern half of the project area. The proposed project vicinity consists of residential and commercial developments within the City of Gainesville to the west and rural pastureland to the east. Aquatic resources within the project area include Wheeler Creek, small tributaries meeting their confluence with the stream, and potential emergent and forested wetlands located adjacent to the stream. The project area is located in the Trinity (subcrop) aquifer (Hayes 2009), and located in the Trinity River Basin and Elm Fork Trinity Sub-basin (Hayes 2004).

***Zacate Creek**:*
Type: Zacate Creek Channel Improvement, Laredo, Texas.

Location: The project is located in Laredo, Webb County, Texas. The project extends from Washington Street, located in the downtown southern part of the City of Laredo, Texas, upstream to the north side of Canal Street.

Existing Conditions: The project includes approximately 37,245 feet of channel realignment within varying widths to increase the water carrying capacity of Zacate Creek. The project consists of a channel with a bottom elevation of 411.64 feet m.s.l. near Canal Street to a bottom elevation of 383.77 feet m.s.l. near Washington Street. The project includes riprap, turfing, and thirteen concrete chutes constructed to handle surface drainage and prevent erosion. The channel side slopes are one vertical on three horizontal (1:3).

The Zacate Creek channel improvement project is primarily limited grasslands located outside of the concrete lining bounded by residential and commercial development. Major disturbances within the project area consist of past residential, commercial, and transportation development, as well as the Federal Project construction. Aquatic resources within the project area are limited to the highly disturbed Zacate Creek, tributaries meeting their confluence with the creek and potential emergent wetlands adjacent to the channel. The project area is located within the Carrizo-Wilcox (subcrop) aquifer (Hayes 2009), and located in the Rio Grande River Basin and San Ambrosia-Santa Isabel Sub-basin (Hayes 2004).

3.2 BIOLOGICAL RESOURCES

3.2.1 Fish and Wildlife Species

Wildlife within the USACE Public Works project areas include a wide variety of year-around resident and migratory land and shore birds as well as mammals, reptiles, amphibians, and invertebrates adapted to urban environments throughout the State of Texas. Common mammal species include coyotes (*Canis latrans*), bobcats (*Lynx rufus*), raccoons (*Procyon lotor*), opossums (*Didelphis virginiana*), eastern cottontails (*Sylvilagus floridanus*), beaver (*Castor canadensis*), stripped skunks (*Mephitis mephitis*), and various rodent species. Aquatic species vary more depending on where the USACE Public Works project is located within the state and available water, but generally include a mix of native and exotic fish species such as largemouth

bass (*Micropterus salmoides*), sunfish species (*Lepomis sp*.), channel catfish (*Ictalurus punctatus*), common carp (*Cyprinus carpio*), red shiner (*Cyprinella lutrensis*), golden shiner (*Notemigonus crysoleucas*), fathead minnow (*Pimephales promelas*), topminnow species (*Fundulus sp*.), and tilapia (*Oreochromis aureus)*.

3.2.2 Threatened and Endangered Species

A complete listing of all the United States Fish and Wildlife Service (USFWS) listed species for each of the thirteen counties is included in Appendix C. Each county table includes the listed species per county, a summary of preferred habitat, and current status within each county.

Designated critical habitat was not present for any of the Federally listed threatened or endangered species within the completed USACE Public Works project areas. Since the completed USACE Public Works projects are within areas previously investigated and are primarily located within highly urbanized and disturbed areas (mainly grasslands), additional investigations for threatened or endangered species are not necessary for this PEA. For each Minor Section 408 Request, Endangered Species Act (ESA) Review would be required to ensure compliance.

3.3 AIR QUALITY

The General Conformity Rule (GCR) was promulgated by the U.S. Environmental Protection Agency (EPA). The GCR rule mandates that the Federal government not engage in, support, or provide financial assistance for licensing or permitting, or approving any activity not conforming to an approved State Implementation Plan. In Texas, the applicable plan is the Texas State Implementation Plan (SIP), an EPA-approved plan for the regulation and enforcement of the National Ambient Air Quality Standards (NAAQS) in each air quality region within the state (TCEQ 2010). The General Conformity Rule is applicable only to non-attainment and maintenance areas (TCEQ 2010).

A nine-county Dallas/Fort Worth (DFW) area was originally designated a moderate non-attainment area under the 1997 eight-hour ozone NAAQS and was subsequently reclassified as a serious nonattainment area in January 2011. Counties included are Dallas, Denton, Collin, Ellis, Johnson, Kaufman, Parker, Rockwall, and Tarrant. Based on monitoring data from 2007 through 2009, DFW did not attain the 1997 eight-hour ozone standard by its deadline of June 15, 2010. As a result, the DFW 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. Texas Commission on Environmental Quality (TCEQ) staff has begun working on these SIP revisions.

USACE Public Works projects located within the DFW area are located within the DFW non-attainment area (that is now classified as “serious” nonattainment area under the 8-hour ozone standard). In the new “serious” ozone nonattainment area, a General Conformity Determination would be required if emissions exceed the threshold level of 50 tons per year (tpy) for either NOx or VOC for the project.

Other nonattainment areas mandating the General Conformity Rule within the State of Texas are located outside of the USACE Fort Worth District Civil Works boundaries and will not be discussed further in this PEA.

In the November 22, 2010, *Federal Register*, the EPA published a determination that an area in Collin County, Texas surrounding Exide Technologies battery recycling plant was not meeting the 2008 lead standard. Texas is required to submit a lead attainment demonstration SIP revision by June 30, 2012, and Collin County must attain the lead standard before the December 31, 2015, attainment date.

Additionally, further pending designations may impact the non-attainment status of the DFW area. On March 27, 2008, the U.S. EPA lowered the primary and secondary eight-hour ozone standard to 0.075 parts per million (73 FR 16436). On March 10, 2009, the governor recommended to the EPA that Collin, Dallas, Denton, Ellis, Hood (new addition), Johnson, Kaufman, Parker, Rockwall, and Tarrant Counties be designated nonattainment for the 2008 eight-hour ozone standard. In 2009, the EPA decided to reconsider the 2008 standard, and on January 19, 2010, it issued a new proposal to lower the primary ozone standard to a range of 0.060–0.070 ppm, and to create a separate secondary standard based on cumulative seasonal average ozone concentrations. Since designations for the 2008 standard would have been due in March 2010, the EPA also extended by one year the deadline for promulgating initial area designations for the 0.075 ppm standard while the new proposal is under consideration. The new deadline for 2008 standard designations, which would take effect if the 2010 standard proposal is not finalized, is March 12, 2011 (75 FR 2936).

Under the current 1997 standards, the Northeast Texas area (Gregg, Rusk, Smith, Upshur, and Harrison Counties), the Austin-Round Rock area (Travis, Williamson, Bastrop, Hays, and Caldwell Counties), and the San Antonio area (Bexar, Comal, Guadalupe, and Wilson Counties) are currently unclassified or in attainment of the NAAQS for all six criteria air pollutants (TCEQ 2010). Further pending designations may impact the attainment status for these areas within the USACE Fort Worth District Civil Works Boundary for primary and secondary eight-hour ozone standards as aforementioned in the above paragraph. The proposed non-attainment areas under the new standards are Northeast Texas (Gregg, Rusk, and Smith Counties), Austin-Round Rock (Travis, County), and San Antonio (Bexar County) (TCEQ 2010).

3.4 CLIMATE

Texas climate varies widely, from arid in the west to humid in the east. There are several distinct regions within the state which have varying climates. Generally, the eastern half of Texas is humid subtropical, while the western half is semi-arid (with some arid regions). Texas lies within both cool and warm parts of the Temperate Zone of the Northern Hemisphere. Texas has three major climatic types which are classified as Continental, Mountain, and Modified Marine (Larkin and Bomar 1983).

A Continental Steppe climate is prevalent in the Texas High Plains (Larkin and Bomar 1983). This climate type is typical of interiors of continents and is characterized by large variations in

the magnitude of ranges of daily temperature extremes, low relative humidity, and irregularly spaced rainfall of moderate amounts. The main feature of this climate in Texas is semi-arid with mild winters. Most of the state, climatologically, has a Modified Marine climate which is classified and named "Subtropical" (Larkin and Bomar 1983). A marine climate is caused by the predominant onshore flow of tropical maritime air from the Gulf of Mexico. The onshore flow is modified by a decrease in moisture content from east to west and by intermittent seasonal intrusions of continental air. Typical conditions within the USACE Fort Worth District Civil Works boundary are as follows: the eastern third of Texas has a Subtropical Humid climate that is most noted for warm summers, the central third of Texas has a Subtropical Subhumid climate characterized by hot summers and dry winters, and the broad swath of Texas from the mid-Rio Grande Valley to the Pecos Valley has a Subtropical Steppe climate and is typified by semi-arid to arid conditions.

3.5 CULTURAL RESOURCES

The National Historic Preservation Act (NHPA) establishes the Federal government's policy to provide leadership in the preservation of historic properties and to administer federally owned or controlled historic properties in a spirit of stewardship. Section 106 of the NHPA requires Federal Agencies to identify and assess the effects of their actions on cultural resources. The Federal Government must consult with appropriate state and local officials, Native American tribes, and members of the public to consider their views and concerns about historic preservation issues when making final project decisions. The historic preservation review process mandated by Section 106 is outlined in the Code of Federal Regulations 36 CFR Part 800, which became effective January 11, 2001. Several other important pieces of legislation mandate how cultural resources are to be treated. Among them are the Native American Graves Protection and Repatriation Act (NAGPRA), along with Executive Order (EO) 13007 and EO 13175.

For the Dallas Floodway Flood Control Project, Section 405 (a) of the FY2010 Supplemental Disaster Relief and Summer Jobs Act (Public Law 111-212) states, "The Secretary of the Army shall not be required to make a determination under the National Historical Preservation Act of 1966 (16 U.S.C. 470, et seq.) for the project for flood control, Trinity River and tributaries, Texas, authorized by section 2 of the Act entitled 'An Act authorizing the construction, repair, and preservation of certain public works on rivers and harbors, and for other purposes', approved March 2, 1945 [59 Stat. 18], as modified by section 5141 of the Water Resources Development Act of 2007 [121 Stat. 1253]." Additionally, per the 19 October 2010 *Implementation Guidance for Section 405(a) of the FY2010 Supplemental Disaster Relief and Summer Jobs Act (Public Law 111-212)* Memorandum (Appendix D), no determinations will be made by USACE under the NHPA in accordance with Section 405(a) of Public Law 111-212.

Prehistoric occupation in the United States is generally divided into three major periods that vary regionally: the Paleo-Indian Period, the Archaic Period, and the Late Prehistoric Period. These

periods are commonly subdivided into smaller temporal phases based on particular characteristics of the artifact assemblages encountered in each of the archeological regions of the U.S. The prehistoric periods and corresponding phases are defined by the presence of particular diagnostic artifacts such as projectile points, certain types of pottery, and occasionally, particular site locations. For the Historic Period, documentary information more often is used to distinguish certain phases. The prehistory and history of Texas is vast and varied. For each specific Minor 408 Request, the regional prehistory and history would be reviewed as part of the Section 106 process.

4.0 ENVIRONMENTAL CONSEQUENCES

This section describes the environmental consequences of each alternative that is considered under this PEA.

4.1 AQUATIC RESOURCES

4.1.1 Surface Water

4.1.1.1 *No Action*

No impacts to surface waters located within the listed USACE Public Works projects would occur as a result of implementing the No Action alternative. The USACE Public Works project would not be allowed to be altered and the proposed alteration would either be relocated outside of the USACE Public Works project or not be built. Although outside the scope of this PEA, it is likely that implementing the No Action alternative could result in surface water impacts due to having to relocate around the USACE Public Works project and those may require a separate individual NEPA document.

4.1.1.2 *Proposed Action*

The Proposed Action would typically consist of allowing boring, open-cutting, and overhead utility construction activities. Boring activities would not result in impacts to surface water features as the proposed and future Minor 408 Requests would pass under surface water features located within the USACE Public Works project boundaries. Only open-cutting construction activities resulting in minimal adverse impacts to surface waters would be allowed within the USACE Public Works project boundaries. Surface waters shall be spanned by overhead utilities resulting in no impacts to surface waters. Best management practices such as silt fences, hay bales, and other methods would be utilized to avoid soil erosion, degradation, and siltation into adjacent waters; therefore, the proposed alteration would not result in adverse impacts to the surface waters located within the USACE Public Works project boundaries. If it is determined that significant surface water impacts would occur, a standalone or supplemental NEPA document would be required for the specific Minor 408 Request. *See Section 4.1.3 for Wetlands and Waters of the U.S.*

4.1.2 Ground water

4.1.2.1 *No Action*
No impacts to the local aquifers and ground water resources within the USACE Public Works project boundaries would occur from implementing the No Action because no construction would occur within the USACE Public Works project boundaries.

4.1.2.2 *Proposed Action*
Even though there is proposed horizontal drilling, impacts would be minimal, if any, to local aquifers and ground water resources. This is due to the small size in scope of the Minor Section 408 Request footprint. These requests are usually no more than a few hundred yards in length. These generally include boring completely under the USACE Public Works project with bore pits located off of the USACE Public Works project boundary. In the case that bore pits are located within the USACE Public Works project, they would not be permitted within the footprint of the levee. In addition, sewer and water projects are required to have emergency shut off values and hazard plans in case of a broken pipeline or spillage.

4.1.3 Wetlands and Waters of the U.S.

4.1.3.1 *No Action*
No impacts to wetlands or waters of the U.S. located within USACE Public Works project boundaries would occur under the No Action alternative, as the proposed Minor 408 Requests would be located outside of the USACE Public Works project boundaries. It is unknown if any wetlands or other waters of the U.S. would be impacted due to the alteration being located outside of the USACE Public Works project and would require Section 404 compliance.

4.1.3.2 *Proposed Action*
The Proposed Action would include boring, open-cutting, and overhead utility construction activities, which would cause minimal to no impacts to wetlands and waters of the U.S., under jurisdiction of Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act of 1899 (Section 10), located within the USACE Public Works project boundaries. Boring activities would traverse under waters of the U.S., which would avoid direct impacts. In the event that there are open-cutting activities within waters of the U.S., USACE would ensure that impacts would be kept to the minimum necessary and would be required to fall within a Nationwide or Regional General Permit Conditions. If a proposed Minor 408 Request does not fall within the scope of a Nationwide or Regional General Permit, then a supplemental NEPA document could be required. Since it has been determined that Nationwide Permits have minimal individual and cumulative adverse environmental affects, the proposed action would not result in significant adverse impacts to waters of the U.S.

If a Section 10 permit is required, the Section 10 permit may be obtained without additional NEPA analysis as long as all other Section 404 conditions are met.

4.2 BIOLOGICAL RESOURCES

4.2.1 Vegetation

4.2.1.1 *No Action*

No impacts to significant vegetation within USACE Public Works project boundaries would occur under the No Action alternative, as the proposed Minor 408 Requests would be located outside of USACE Public Works project boundaries. Unknown vegetation impacts would occur outside of the USACE Public Works project boundaries.

4.2.1.2 *Proposed Action*

The Proposed Action would only have temporal impacts to grasslands. None of the currently known Minor Section 408 Requests or future Section 408 Requests would have impacts to riparian bottomland hardwood forests associated with the USACE Public Works project. Future Minor Section 408 Requests would only be approved if they did not adversely impact riparian bottomland hardwood forests. Once construction has been completed, disturbed grassland areas would be returned to preconstruction contours and restored to previously present vegetative communities dependent upon site conditions.

Minor 408 Requets would impact grassland vegetation only. The Chief, Environmental Resources Branch, of Planning, Environmental, and Regulatory Division, Fort Worth District or his representative would review each Minor Section 408 Request before it could be approved to ensure it falls within the purview of this PEA.

4.2.2 Fish and Wildlife Species

4.2.2.1 *No Action*

The No Action alternative would not impact any fish and wildlife species within the USACE Public Works project boundaries because no construction activities would occur on the USACE Public Works project.

4.2.2.2 *Proposed Action*

The majority of the Minor Section 408 Requests under the Proposed Action are located within urban environments with typical fish and wildlife species adapted to urban activities and surroundings. Since the fish and wildlife have adapted to the present conditions and the proposed alteration would not significantly alter that condition, any impacts to wildlife and their habitats would be temporary in nature and limited to the construction phase. Any impacts to grassland and aquatic ecosystem habitats would be restored after completion of construction.

4.2.3 Threatened and Endangered Species

4.2.3.1 *No Action*

No impacts to threatened or endangered species would occur under the No Action Alternative as there would be no Minor 408 Requests constructed within the USACE Public Works project boundaries. However, unknown impacts would occur outside of the USACE Public Works project boundaries if the alteration is relocated around the USACE Public Works project.

4.2.3.2 *Proposed Action*
Due to the urban locations, previous disturbance, fragmented and altered habitat, and small footprint of the USACE Public Works project, generally no significant adverse impacts to threatened or endangered species are expected as a result of the Proposed Action.

Each proposed future Minor Section 408 Request would be evaluated for potential impacts under the ESA. If there is the potential to affect a listed species, then a supplemental NEPA document would be required.

4.3 AIR QUALITY

4.3.1 *No Action*
There would either be no impacts to air quality as a result of implementing the No Action Alternative because no construction would occur, or there would be impacts to air quality that would more than likely fall below the thresholds as a result of relocating around the USACE Public Works project.

4.3.2 *Proposed Action*
Due to the restricted size of the Proposed Minor 408 Request (Only the boundaries of the USACE Public Works project), impacts to regional air quality resulting from construction activities as a result of implementing the Proposed Action, such as dust and exhaust from construction equipment, would be temporary, minimal, considered deminimus, and not require a General Conformity Analysis. General construction activities would generally occur during an approximate week long time frame utilizing one to two commercial or personal vehicles, and one or two larger pieces of construction equipment, such as an excavator and/or a drilling rig.

4.4 CULTURAL RESOURCES

4.4.1 *No Action*
Under the No Action alternative, any cultural resources that may be present in the proposed alteration area would remain in place subject to both the protective effects of no ground disturbing activity, as well as the potential negative effects that occur through natural and biological actions such as erosion, scouring, or rodent and tree root activity. No additional impacts to cultural resources would result from the No Action Alternative.

4.4.2 *Proposed Action*
For each Proposed Action, with the exception of the Dallas Floodway Flood Control Project, a survey and/or records search would be conducted to determine the presence of potentially significant cultural resources within the proposed alteration area. If such resources are present, the impacts of the proposed alteration would be assessed and any negative impacts would be mitigated prior to implementation of the Proposed Action. All determinations of significance, impacts and mitigation plans would be coordinated with the Texas State Historic Preservation Office, appropriate Native American Indian tribes, and other interested parties in accordance with 36 CFR Part 800.

Future Minor 408 Requests would also undergo the aforementioned process regarding Cultural Resources.

5.0 MITIGATION

5.1 Section 404

Adverse impacts to waters of the U.S. would be avoided and minimized to the extent practicable, and preconstruction waters of the U.S. contours would be restored. The need for compensatory mitigation for adverse impacts to waters of the U.S. is not anticipated; however, mitigation will be required if needed. Clearing of vegetation would be avoided and minimized where practical, including no impacts to bottomland hardwood forests.

5.2 Vegetation Mitigation

A mitigation plan was not developed, as the only allowed impacts to vegetation by Minor 408 Requests would be to grasslands and grassland impacts would be restored onsite after construction.

6.0 CUMULATIVE IMPACTS

Past, Present, and Reasonably Foreseeable Projects

Past actions at the USACE Public Works project sites include the original construction of the USACE Public Works project. In addition, many residential subdivisions and commercial properties have been constructed adjacent to and around government properties across the USACE Fort Worth District Civil Works boundaries.

Present actions at the USACE Public Works project sites include the current operation and maintenance by the Non-federal sponsors of all facilities and utilization of all the recreational areas.

Future actions at the USACE Public Works project sites would be future Minor 408 Requests, in addition to possible future residential and commercial developments. Due to the urban nature of many of the USACE Public Works projects, it is reasonable to anticipate common urbanization activities, such as building reconstruction or demolition, transportation improvements, and urban expansion.

Since there are no direct or indirect impacts to groundwater and threatened or endangered species, there would also be no cumulative impacts from implementing the Proposed Action. In addition, since there would only be a slight disturbance to surface water and wetlands/waters of the U.S. during construction and impacts to waters of the U.S. would fall within the limits of Nationwide and Regional General Permits, which have been determined to have minimal

individual and cumulative adverse impacts, there would be no significant impacts to these resources as well.

6.1 BIOLOGICAL RESOURCES

Due to the fact that most of the USACE Public Works projects are comprised of grasslands and that all impacts would be restored to the extent practicable, there would be no cumulative impacts to biological resources.

6.2 AIR QUALITY

The incremental piece of construction of the Proposed Action would not be enough to trigger significant cumulative impacts to Air Quality. This is due to the very limited scope of the Proposed Action being the USACE Public Works project boundaries.

6.3 CULTURAL RESOURCES

Cumulative impacts to cultural resources depend upon the presence of significant resources within the USACE Public Works project areas. While no direct impacts to cultural resources are foreseeable, any ground disturbing action not subject to the National Historic Preservation Act (i.e. one that does not include federal funding or a require a federal permit) has the potential to destroy irreplaceable resources. In addition, natural processes, such as animal burrowing and erosion would continue to degrade exiting resources. All present and future actions funded and/or permitted by the Federal government would appropriately mitigate the impacts to reduce these cumulative impacts and to recover the data these resources have to offer.

7.0 FINDINGS AND CONCLUSIONS

The proposed alternatives for the Minor 408 Requests have been evaluated in this PEA. No significant impacts to the human environment are identified from the implementation of the Proposed Action. Vegetation impacts would be to grasslands only, which would be restored onsite. There are no anticipated impacts to habitat for threatened or endangered species, and all impacts to wetlands and waters of the U.S. would be minimal and fall within the limits of a Nationwide or Regional General Permit Conditions.

Taking into account the findings of this section, an EIS would not be necessary. Accordingly, a Finding of No Significant Impact (FONSI) was prepared for the selected action. Submitted Minor Section 408 Requests shall be tiered to this PEA by preparing a Decision Document for approval or denial by USACE. If approved, a FONSI (tiered to this PEA) for each Minor Section 408 Request shall be prepared for incorporation into the approval documentation.

8.0 PUBLIC INVOLVEMENT

8.1 AGENCY COORDINATION

This section discusses consultation and coordination that will occur during preparation of this document. This includes contacts made during development of the proposed action, other alternatives considered, and writing of the PEA. Copies of agency coordination letters are presented in Appendix E. Formal and informal coordination would be conducted with the following agencies:

- U.S. Army Corps of Engineers (USACE, Fort Worth District),
- State Historic Preservation Office,
- U.S. Fish and Wildlife Service,
- Environmental Protection Agency, Region 6 Office
- Texas Parks and Wildlife Department,
- Texas Commission on Environmental Quality, and
- Fort Worth District USACE Public Works Projects Non-federal Sponsors

No agency coordination replies were received during the public comment period.

8.2 PUBLIC INFORMATION AND REVIEW

In accordance with NEPA, a 30-day review period of the previous draft PEA was provided via a Notice of Availability on the Fort Worth District Website and a local mailing (Appendix F). No comments by the general public were received during the public comment period.

9.0 REFERENCES

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Appendix A

Appendix B

Appendix C

TARRANT COUNTY			
USACE Public Works Projects in County: Fort Worth Floodway, Singing Hills Creek Channel Improvement, Big Fossil Creek Channel Improvement, Callaway Branch Flood Protection, Lorean Branch Channel Improvement, Rush Creek Channel Improvement, Sulphur Branch Flood Control			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Interior Least Tern	*Sterna antillarum*	nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony	Endangered
Whooping Crane	*Grus americana*	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	Endangered
[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011). [2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).			

TAYLOR COUNTY			
USACE Public Works Projects in County: Cat Claw Creek Channel Improvement			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Black-capped Vireo	*Vireo atricapilla*	oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer	Endangered
[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011). [2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).			

DALLAS COUNTY			
USACE Public Works Projects in County: Dry Branch Cannel Improvement, Johnson Creek Channel Improvement, Dallas Floodway, Irving Levee, Delaware Creek Flood Control, Ten Mile Creek Flood Control, Duck Creek Flood Control			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Black-capped Vireo	*Vireo atricapilla*	oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-	Endangered

		leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer	
Golden-cheeked Warbler	*Dendroica chrysoparia*	juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer	Endangered
Interior Least Tern	*Sterna antillarum*	nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony	Endangered
Piping Plover	*Charadrius melodus*	wintering migrant along the Texas Gulf Coast; beaches and bayside mud or salt flats	Threatened
Whooping Crane	*Grus americana*	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	Endangered

[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011).
[2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).

KNOX COUNTY			
USACE Public Works Projects in County: Munday Floodway Channel Improvement			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Whooping Crane	*Grus americana*	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	Endangered
Sharpnose Shiner	*Notropis oxyrhynchus*	endemic to Brazos River drainage; also, apparently introduced into adjacent Colorado River drainage; large turbid river, with bottom a combination of sand, gravel, and clay-mud	Candidate
Smalleye Shiner	*Notropis buccula*	endemic to upper Brazos River system and its tributaries (Clear Fork and Bosque); apparently introduced into adjacent Colorado River drainage; medium to large prairie streams with sandy substrate and turbid to clear warm water; presumably eats small aquatic invertebrates	Candidate

[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011).
[2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).

COOKE COUNTY			
USACE Public Works Projects in County: Wheeler Creek Channel Improvement			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Black-capped Vireo	*Vireo atricapilla*	oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer	Endangered
Interior Least Tern	*Sterna antillarum*	nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony	Endangered
Whooping Crane	*Grus americana*	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	Endangered
[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011). [2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).			

KAUFMAN COUNTY			
USACE Public Works Projects in County: East Fork Floodway			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Interior Least Tern	*Sterna antillarum*	nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony	Endangered
[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011). [2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).			

TRAVIS COUNTY			
USACE Public Works Projects in County: Boggy Creek Channel Improvement			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Austin blind	*Eurycea*	mostly restricted to subterranean cavities of the	Candidate

salamander	*waterlooensis*	Edwards Aquifer; dependent upon water flow/quality from the Barton Springs segment of the Edwards Aquifer; only known from the outlets of Barton Springs (Sunken Gardens (Old Mill) Spring, Eliza Spring, and Parthenia (Main) Spring which forms Barton Springs Pool); feeds on amphipods, ostracods, copepods, plant material, and (in captivity) a wide variety of small aquatic invertebrates	
Barton Springs salamander	*Eurycea sosorum*	dependent upon water flow/quality from the Barton Springs pool of the Edwards Aquifer; known from the outlets of Barton Springs and subterranean water-filled caverns; found under rocks, in gravel, or among aquatic vascular plants and algae, as available; feeds primarily on amphipods	Endangered
Jollyville Plateau salamander	*Eurycea tonkawae*	known from springs and waters of some caves north of the Colorado River	Candidate
Bee Creek Cave Harvestman	*Texella reddelli*	small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties	Endangered
Bone Cave harvestman	*Texella reyesi*	small, blind, cave-adapted harvestman endemic to a few caves in Travis and Williamson counties; weakly differentiated from *Texella reddelli*	Endangered
Tooth Cave pseudoscorpion	*Tartarocreagris texana*	small, cave-adapted pseudoscorpion known from small limestone caves of the Edwards Plateau	Endangered
Tooth Cave spider	*Leptoneta myopica*	very small, cave-adapted, sedentary spider	Endangered
Warton's cave meshweaver	*Cicurina wartoni*	very small, cave-adapted spider	Candidate
Black-capped Vireo	*Vireo atricapilla*	oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late summer	Endangered
Golden-cheeked Warbler	*Dendroica chrysoparia*	juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer	Endangered
Whooping Crane	*Grus americana*	potential migrant via plains throughout most of state to coast; winters in coastal marshes of	Endangered

		Aransas, Calhoun, and Refugio counties	
Kretschmarr Cave Mold Beetle	*Texamaurops reddelli*	small, cave-adapted beetle found under rocks buried in silt; small, Edwards Limestone caves in of the Jollyville Plateau, a division of the Edwards Plateau	Endangered
Tooth Cave Ground Beetle	*Rhadine persephone*	resident, small, cave-adapted beetle found in small Edwards Limestone caves in Travis and Williamson counties	Endangered

[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011).
[2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).

ATASCOSA COUNTY			
USACE Public Works Projects in County: Pleasanton Floodway, Poteet Channel Improvement			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Gulf Coast Jaguarundi	*Herpailurus yagouaroundi cacomitli*	thick brushlands, near water favored; 60 to 75 day gestation, young born sometimes twice per year in March and August, elsewhere the beginning of the rainy season and end of the dry season	Endangered
Ocelot	*Leopardus pardalis*	dense chaparral thickets; mesquite-thorn scrub and live oak mottes; avoids open areas; breeds and raises young June-November	Endangered
Whooping Crane	*Grus americana*	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	Endangered

[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011).
[2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).

BEXAR COUNTY			
USACE Public Works Projects in County: San Antonio Floodway			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Unnamed Ground Beetle	*Rhadine infernalis*	small, essentially eyeless ground beetle; karst features in north and northwest Bexar County	Endangered
Unnamed Ground Beetle	*Rhadine exilis*	small, essentially eyeless ground beetle; karst features in north and northwest Bexar County	Endangered
Braken Bat Cave Meshweaver	*Cicurina venii*	small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County	Endangered
Cokendolpher Cave Harvestmen	*Texella cokendolpheri*	small, eyeless harvestman; karst features in north and northwest Bexar County	Endangered
Comal Springs Dryopid Beetle	*Stygoparnus comalensis*	aquatic beetle has only been collected in several outlets of Comal Springs which forms the headwaters of the Comal River; unknown whether the center of the population resides further	Endangered

		underground in the aquifer, or just below the surface	
Comal Springs Riffle Beetle	*Heterelmis comalensis*	inhabits the gravel substrates and shallow riffles in spring runs; found in headwater springs on hard-packed gravel substrate	Endangered
Fountain Darter	*Etheostoma fonticola*	inhabits springs and spring-fed streams in dense beds of aquatic plants (particularly filamentous algae) growing close to bottom, which is normally mucky; it prefers clear, quiet, warm backwaters	Endangered
Government Canyon Bat Cave Meshweaver	*Cicurina vespera*	small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County	Endangered
Government Canyon Bat Cave Spider	*Neoleptoneta microps*	small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County	Endangered
Helotes Mold Beetle	*Batrisodes venyivi*	small, eyeless mold beetle; karst features in northwestern Bexar County and northeastern Medina County	Endangered
Madla's Cave Meshweaver	*Cicurina madla*	small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County	Endangered
Peck's Cave Amphipod	*Stygobromus pecki*	inhabits subterranean springs	Endangered
Robber Baron Cave Meshweaver	*Cicurina baronia*	small, eyeless, or essentially eyeless spider; karst features in north and northwest Bexar County	Endangered
San Marcos Gambusia	*Gambusia georgei*	shallow, quiet, mud-bottomed, shoreline areas without dense vegetation in the thermally constant main channel; formerly common under shade of bridges; primary habitat requirements appear to be clean, clear water of a relatively stable temperature	Endangered
San Marcos Salamander	*Eurycea nana*	shallow alkaline springs carved out of limestone, with sand and gravel substrate; associated with water plants and algal mat covering spring pool	Threatened
Texas Blind Salamander	*Typhlomolge rathbuni*	water-filled subterranean caverns; in some sites, known only from individuals washed out of artesian wells	Endangered
Texas Wild-rice	*Zizania texana*	clear, flowing waters of spring origin with a relatively constant year-round temperature of 21-25 degress C; the plants grow in gravelly, sandy to silty clays in relatively shallow water (<2 m deep)	Endangered
Black-capped Vireo	*Vireo atricapilla*	oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nesting season March-late	Endangered

		summer	
Golden-cheeked Warbler	*Dendroica chrysoparia*	juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests are placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nesting late March-early summer	Endangered
Whooping Crane	*Grus americana*	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	Endangered

[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011).
[2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).

GUADALUPE COUNTY			
USACE Public Works Projects in County: Walnut Branch Channel Improvement			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Whooping Crane	*Grus americana*	potential migrant via plains throughout most of state to coast; winters in coastal marshes of Aransas, Calhoun, and Refugio counties	Endangered

[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011).
[2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).

WEBB COUNTY			
USACE Public Works Projects in County: Zacate Creek Channel Improvement			
Common Name	**Scientific Name**	**Habitat[2]**	**Federal Status[1]**
Gulf Coast Jaguarundi	*Herpailurus yagouaroundi cacomitli*	thick brushlands, near water favored; 60 to 75 day gestation, young born sometimes twice per year in March and August, elsewhere the beginning of the rainy season and end of the dry season	Endangered
Ocelot	*Leopardus pardalis*	dense chaparral thickets; mesquite-thorn scrub and live oak mottes; avoids open areas; breeds and raises young June-November	Endangered
Ashy Dogwood	*Thymophylla tephroleuca*	Texas endemic; grasslands with scattered shrubs; most sites on sands or sandy loams on level or very gently rolling topography over Eocene strata of the Laredo Formation; flowering March-May depending to some extent on rainfall	Endangered
Johnston's Frankenia	*Frankenia johnstonii*	dwarf shrublands on strongly saline, highly alkaline, calcareous or gypseous, clayey to sandy soils of valley flats or rocky slopes; mapped soils at many sites are of the Catarina and/or Maverick	Endangered

		Series, other mapped soils include Copita, Brennan, Zapata, and Montell series; most sites are underlain by Eocene sandstones and clays of the Jackson Group or the Yegua and Laredo formations; a few are underlain by El Pico clay or the Catahoula and Frio formations shrublands; flowering throughout the growing season depending upon rainfall	
Interior Least Tern	*Sterna antillarum*	nests along sand and gravel bars within braided streams, rivers; also know to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans, when breeding forages within a few hundred feet of colony	Endangered
Texas Hornshell	*Popenaias popei*	both ends of narrow shallow runs over bedrock, in areas where small-grained materials collect in crevices, along river banks, and at the base of boulders; not known from impoundments; Rio Grande Basin and several rivers in Mexico	Candidate
[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011). [2] Information obtained from the TPWD at http://www.tpwd.state.tx.us/landwater/land/maps/gis/ris/endangered_species/ (February 9, 2011).			

HOWARD COUNTY
USACE Public Works Projects in County: **Beals Creek Flood Control**
No species listed for Howard County.
[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011).

HUNT COUNTY
USACE Public Works Projects in County: **Long Branch Channel Improvement**
No species listed for Hunt County.
[1]Information obtained from the USFWS at http://www.fws.gov/southwest/es/EndangeredSpecies/lists/ListSpecies.cfm (February 7, 2011).

Appendix D

Appendix E

Appendix F