FINAL

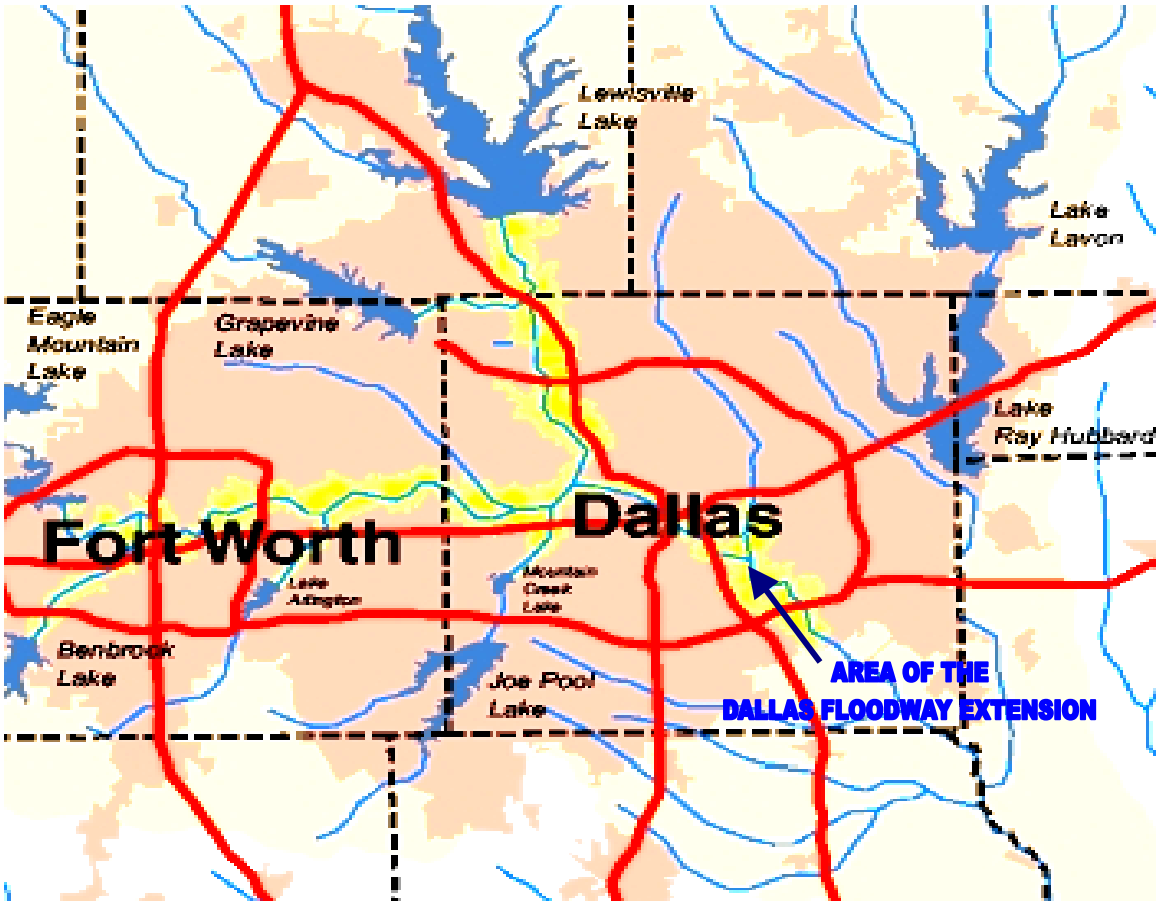
Supplement No. 1

to the

Environmental Impact Statement

for the

Dallas Floodway Extension
Trinity River, Texas



US Army Corps
of Engineers
Fort Worth District

April 2003

FINAL
SUPPLEMENT I to the ENVIRONMENTAL IMPACT STATEMENT
DALLAS FLOODWAY EXTENSION,
TRINITY RIVER BASIN, TEXAS

COVER SHEET

Lead Agency:	U.S. Army Corps of Engineers, Fort Worth District
Cooperating Agencies:	N/A
Title of Proposed Action:	Supplement 1 to the Environmental Impact Statement
Affected Jurisdiction:	Upper Trinity River Basin, Trinity River, Texas

ABSTRACT: This document supplements the information presented in the General Reevaluation Report and Integrated Environmental Impact Statement (GRR/EIS) for the Dallas Floodway Extension (DFE) dated February 1999. The Deputy Commander for Civil Works signed the Record of Decision for that document on 1 December 1999. In May 2000, various groups opposed to the DFE project filed a motion to prevent construction. On April 10, 2002, the U.S. District Court for the Northern District of Texas ruled in favor of the Corps of Engineers on three of four counts in the lawsuit. On one count the Court ruled in favor of the plaintiffs and remanded the matter to the Corps of Engineers "for further consideration of the cumulative impacts of other similar, reasonably foreseeable future projects in the same geographical area as the DFE project." The purpose of this Supplement to the EIS is to provide more detailed information on cumulative impacts of alternatives considered in the GRR/EIS relative to similar reasonably foreseeable actions within the geographic area, which may occur and may have a bearing on selection of a plan for the DFE. The authorized DFE project is located along the Trinity River in the Southeast quadrant of Dallas, Texas, and consists of an off-channel flood damage reduction feature incorporating environmental restoration in the form of a chain of wetlands, levees on both sides of the river, recreation facilities, and acquisition and management of open space lands in the floodplain for mitigation of habitat losses. A Scoping Meeting for this Supplement was held on July 16, 2002 and letters were sent to all known agencies and organizations that might be involved in related activities, including various cities, Dallas County, State and Federal Highway departments, airports, resource agencies, and others. Potential activities of other entities are grouped into the categories of Transportation, Flood Damage Reduction, Recreation, Ecosystem Restoration and Preservation, and a broad category of Fills, Permits, Utilities, and Other Activities. Many of these reasonably foreseeable activities were previously addressed in the Programmatic Environmental Impact Statement for the Upper Trinity River Basin dated June 2000, but additional potential activities were identified as well. The Notice of Availability of the Draft Supplement to the EIS for the DFE appeared in the Federal Register on December 6, 2002. A Public Meeting on the draft Supplement was held on January 8, 2003, and written comments were accepted through February 4, 2003. This Supplement to the EIS for the DFE incorporates both the GRR/EIS and 2000 Programmatic EIS (PEIS) largely by reference but some specific information from those documents has been brought forward into the Final SEIS. The cumulative effects assessment in this Supplement does not indicate significant adverse cumulative effects to any of resources and nothing in the analysis indicates the Recommended Plan for the DFE should be changed.

The review period extends for 30 days after publication of the Notice of Availability in the Federal Register. If you would like further information about this document, please contact:

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FINAL
SUPPLEMENT I to the ENVIRONMENTAL IMPACT STATEMENT

DALLAS FLOODWAY EXTENSION
TRINITY RIVER BASIN, TEXAS

SUMMARY

( ) Draft (X) Final

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Fort Worth District
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Type of Action: (X) Administrative
( ) Legislative

Project Description: A detailed description of the Dallas Floodway Extension (DFE) project is contained in the General Reevaluation Report and Integrated Environmental Impact Statement (GRR/EIS) dated February1999. That document may be referenced for additional information not presented herein. In summary, the DFE project is located within the Standard Project Flood (SPF) floodplain of the Trinity River in Southeast Dallas and consists of five pertinent project features depicted on Figure S-1. Those project features are a “Chain of Wetlands” for flood damage reduction and ecosystem restoration, levees along Lamar Street and in the Cadillac Heights neighborhood for flood damage reduction, acquisition and management of lands in the “Great Trinity Forest” for mitigation of habitat losses, recreational (trail) facilities, and realignment at Interstate Highway 45 (IH 45) to prevent damage to the overpass. Features of the Recommended and Authorized DFE project are summarized as follows:

The chain of wetlands feature of the DFE project consists of an upper wetland chain, with four separate wetland cells, and a lower wetland chain, with three separate cells, each of various lengths and shapes. During flooding, the upper and lower chains would act as flood conveyance to outfalls. The total length of the wetland cells would be about 3.8 miles with average width of about 500 feet, average depth of about 1.5 feet, and maximum depth of 7 feet. The chain of wetlands will be located in the floodplain as far west of the river as practical to avoid the most pristine bottomland hardwood areas closer to the river and includes 123 acres of emergent wetland vegetative plantings as environmental restoration. The Dallas City Council formally adopted the Chain of Wetlands on August 28, 1996, with the caveat that the addition of levees to the plan would be further investigated.

Two earthen levees are to be constructed as part of the Recommended DFE project. The Lamar Levee would have total length of 16,419 feet. The average height of the levee would be 17.6 feet, with a maximum height of 31.0 feet and a 20-foot crown width. The Cadillac Heights Levee would have a total length of 11,891 feet, with an average height of 14.9 feet, a maximum height of 25.75 feet, and crown width of 20 feet. Both levees are designed to provide SPF level of protection (estimated at about 800-year frequency of occurrence) to the adjacent neighborhoods. The existing Dallas Floodway upstream of the DFE currently provides an estimated 300-year frequency level of protection to the Central Business District. Implementation of the Recommended DFE would restore SPF level of protection to the Central Business District. The Dallas City Council formally supported the Chain of Wetlands plus the SPF levees on March 26, 1997.

In order to protect the integrity of the IH-45 overpass, the channel alignment of the Trinity River will be realigned to be centered between the nearest 320-foot span of the IH-45 bridge, resulting in the channel being moved laterally a distance of about 350 feet. The existing channel would be filled to

prevent further collection of debris. A portion of the old channel downstream of the IH-45 bridge would remain unfilled to provide a slack water area for use as a possible river access point, and to provide some habitat diversity near the river.

An environmental mitigation plan for the approved DFE project provides for acquisition of 1,179 acres in additional project lands within what is referred to as the "Great Trinity Forest". The mitigation plan includes acquisition, improvement and management of 926 acres of bottomland hardwood, and acquisition of 253 acres of mixed grassland/forbland, of which 223 acres would be converted (planted and managed) to bottomland hardwood forest. The remaining 30 acres would be managed as grassland. The mitigation plan also provides for compatible low-density recreation.

The recreation plan for the DFE would create linkages between existing recreational areas and public open space areas and would include 18 miles of 10-foot wide concrete trail, 8.5 miles of natural surface equestrian trails, and 5 miles of natural surface nature trails. A total of seven access areas are planned.

Summary of Major Environmental Effects: This Supplement to the EIS for the DFE project focuses on the cumulative impacts of reasonably foreseeable similar proposed actions in the same geographical area as the DFE project in response to the April 10, 2002, order of the U.S. District Court for Northern District of Texas in Fort Worth. An analysis of cumulative impacts of various past, present, and reasonably foreseeable future Corps of Engineers projects and projects of other entities was conducted in combination with the plan for the DFE project as recommended and approved in the GRR/EIS, along with the final array of alternatives in that document.

There are two studies of potential future Corps of Engineers projects in the Dallas study area that are currently being conducted under specific Congressional authorization as part of the Upper Trinity Basin Feasibility Study. They are the Stemmons North Industrial District along the Elm Fork of the Trinity River in northwest Dallas and the existing Dallas Floodway. Both areas are being investigated for flood damage reduction, ecosystem restoration, and recreation needs and opportunities. Based on studies of Stemmons North Industrial District to date, it does not appear that there is a Federal interest in Corps of Engineers involvement in a project in that area. There are no projects formally approved by the City Council or proposed by the City of Dallas for the Elm Fork that can be considered as reasonable foreseeable, and no related activities have been identified that would have significant cumulative effect on study area resources.

Alternatives being considered by the Corps of Engineers and the City of Dallas in the area of the existing Dallas Floodway include a plan that would optimize flood damage reduction and protection to the Central Business District and West Dallas, and an Environmental Quality or "EQ" plan. The "EQ" plan would have beneficial cumulative impact, along with the DFE project, in terms of forested resources, floodplain recreation, natural floodplain values, and aesthetic outputs, but without appropriate hydraulic mitigation would have the effect of increasing the flood risk for upstream floodplain areas not protected by the Dallas Floodway levees. The plan that would seek to optimize flood damage reduction would be essentially neutral in terms of impacts on other resources, unless significant ecosystem restoration and recreation features were to be included. At the current time, investigations under the Interim Feasibility Study of the Dallas Floodway being held in abeyance awaiting selection of a preferred alignment for the Trinity Parkway by the Federal Highway Administration, North Texas Tollway Authority, and the City of Dallas. Depending on the parkway or tollway alignment ultimately selected, it is very possible that a multi-objective plan could be formulated for the existing Dallas Floodway which would include flood damage reduction, ecosystem restoration, and recreation measures which would have a net positive contribution to cumulative effects with the DFE on forested resources and recreation with essentially neutral effects on hydraulics and water quality.

In addition to the above activities, the Corps of Engineers, along with the City of Dallas and Dallas County, are currently conducting two small ecosystem restoration studies under the Corps of Engineers Continuing Authority Program.

FIGURE S–1 Recommended Plan for the Dallas Floodway Extension

Those projects are the Old Trinity River project adjacent to the existing West Levee of the Dallas Floodway and the Joppa Preserve adjacent to Lemmon Lake, downstream of the DFE project. It is anticipated that both will proceed to implementation within the reasonably foreseeable future. If implemented, these projects will contribute positively to cumulative effects on bottomland hardwoods, wetlands, water quality, aesthetics, and recreation within the immediate study area for the DFE.

Reasonably foreseeable projects proposed by other entities have been included in these analyses. The major potential action potentially effecting the study area environment would be the proposed Trinity Parkway, which could impact resources within the area of the existing Dallas Floodway. The Federal Highway Administration with support of the North Texas Tollway Authority, and the City of Dallas issued a Notice of Intent to prepare an Environmental Impact Statement on the Trinity Parkway on June 17, 1999. The EIS is to address five alternative alignments for the Trinity Parkway which include: 1) combined parkway constructed on the East levee of the Dallas Floodway, 2) split parkway constructed on the riverside slopes of the Dallas Floodway East and West Levees, 3) split parkway constructed on the landside slopes of the Dallas Floodway East and West Levees, 4) modifying or reconstructing the existing Industrial Boulevard at grade, or 5) above grade to accommodate increased traffic load. The EIS for the Trinity Parkway is currently in working draft with public release of the Draft EIS scheduled later in 2003 and a Final EIS to follow in 2004. It is anticipated that all of the Trinity Parkway alternatives would have varying degrees of cumulative impact associated with the DFE project, depending on the resource considered. Alternative alignments outside the existing Dallas Floodway levee system would have minimal cumulative impact on hydraulics and biotic resources. All of the Parkway alternatives would have slightly negative to no effect (with substantial plantings) on forested resources, slightly negative effects on environmental justice issues and community structure, with an essentially neutral effect on hydraulics. Alignments inside the existing Dallas Floodway levees would require special consideration to assure minimal negative impact to hydraulics, water quality, recreation, noise, and aesthetics. Any alternative associated with the existing levees would require the “borrow” or excavation of material from between the levees to raise the Parkway to an elevation at least above the 100-year flood elevation. That excavated area between the levees would create an opportunity for a lake or lakes, consistent with the City of Dallas’ Trinity River Corridor Master Implementation Plan.

The City of Dallas’ Trinity River Corridor Master Implementation Plan provides for a series of lakes, a split river channel, constructed wetlands, recreation trails, parklands, grasslands, and pedestrian bridges. The Trinity River Corridor Master Implementation Plan also proposes upgrading of several bridges that cross the Dallas Floodway slated for replacement to attain “signature” or renowned architectural status. These bridges were not evaluated in this Supplement to the DFE EIS because their designs have not been sufficiently developed for evaluation. A “Lakes Only” Plan in the existing Dallas Floodway, if implemented by the City of Dallas, would have a slight negative cumulative effect on forested resources of the geographic area of the DFE project, or minimal effect with substantial plantings. It is anticipated that a “Lakes Only” plan would be beneficial in terms of recreation and aesthetics.

A Programmatic EIS for the Upper Trinity River Basin, completed in June 2000, addressed the cumulative impacts of all reasonably foreseeable activities of the Corps of Engineers and others, along the DFE project, within the entire upper Trinity River watershed that were known as of June 2000. Data and other information contained in that document have been incorporated by reference throughout this Supplement to the DFE EIS. Every effort was also made in preparation of this Supplement to analyze the cumulative effects of potential actions of the Corps of Engineers and others that have been proposed since finalization of the PEIS and its Record of Decision.

Areas of Controversy: Throughout the planning and NEPA process for the DFE project, concerns have been raised regarding the number and scope of potential projects (both by Corps of Engineers and by others), being proposed for implementation. The potential for resultant adverse impacts created the need to address the environmental consequences of the reasonably foreseeable proposed actions. The cumulative effects of numerous and various projects on flood damages and natural floodplain functions are considered to be controversial. Structural measures implemented to

reduce flood damages often adversely impact natural flood plain values. Thus, selected interests have expressed concerns the use of flood plains for purposes contrary to their natural function to be controversial. These areas of concern, collectively, provided additional impetus for preparation of the June 2000 PEIS addressing the Upper Trinity River Basin Feasibility Study.

Issues identified early in the public involvement process for the DFE project as controversial have continued so throughout the review of the Draft and Final GRR/EIS and in scoping for this Supplement to the EIS. The primary objectives of the evaluations in this Supplement to the DFE EIS has focused on identifying and summarizing the cumulative impacts of reasonably foreseeable projects of the Corps of Engineers and others within the study area with emphasis on hydraulic and floodplain environmental features. A further purpose has been to disclose cumulative impacts of those actions relative to the DFE project. Foremost among controversial issues is the proposal to place transportation features laterally within the floodplain of the existing Dallas Floodway and the perception that the Dallas Floodway Extension project was being constructed in order to accommodate roadways between the existing levees. Other issues identified as controversial in the plaintiff's motion to stop construction of the DFE project concerned the hydraulic modeling analysis, the level of protection of the existing Dallas Floodway afforded to the Central Business District, and the relationship of various projects to one another. Determination of reasonably foreseeable future actions within the Dallas Floodway has not been clarified during the development of this Final Supplement.

In March 2003, City of Dallas Council members were briefed on another conceptual proposal for the existing Dallas Floodway, which was developed by a team of private urban designers and landscape architects for the Dallas Plan. While this new proposal contains many of the features presently proposed in prior plans, it deviates in that more emphasis is placed on recreation and ecosystem amenities and less on transportation features. Preliminary evaluations of the impacts associated with this new proposal are described herein in a very general manner. More detailed engineering design, cost estimates, and feasibility analyses are planned in future months. Council member approval would be required prior to adoption of any of the latest proposals.

Public Involvement: A Notice of Intent (NOI) to prepare Supplement 1 to the EIS for the Dallas Floodway Extension project was published in the *Federal Register* on June 28, 2002. The NOI provided background information related to the DFE project, the Summary Judgment ruling of the Northern District, status of ongoing studies and the rationale for preparing the Supplement to the EIS. Notice of a Public Scoping Meeting was published in the *Federal Register* notice and also mailed to all known interested parties on July 3, 2002. A notice was also placed in the Dallas Morning News on July 14, 2002 providing the location, date, and time of the scoping meeting. A public scoping meeting was held on July 16, 2002 in Dallas, Texas. The meeting was held at the Ramada Plaza Hotel with approximately 45 individuals in attendance.

Scoping meeting participants were afforded an opportunity to review a variety of displays documenting the location of known proposed projects in the geographic area. The public was also encouraged to provide comments and information on these projects, other projects known to them that they believed should be considered, and the types of impacts and resources that should be considered in the supplemental EIS. Notebooks were available at each display for the public to list other projects or items that should be considered. A Court Reporter present at the scoping meeting recorded oral statements. Written statements were accepted at the meeting and afterward,. The scoping period remaining open until August 31, 2002.

A Notice of Availability for the Draft Supplement 1 to the EIS for the Dallas Floodway Extension was published in the Federal Register on December 6, 2002. A Public meeting was held on January 8, 2003, and the comment period was extended until February 4, 2003, following public request. A public review period of at least 30 days will be provided for interested parties to examine this Final Supplement 1 to the EIS.

Conclusions and Recommendations: Based upon analyses and findings developed as a result of preparation of this Supplement 1 to the EIS for the Dallas Floodway Extension project, it is believed that any of the projects being considered by the Corps of Engineers and other entities could be implemented with varying degrees of appropriate mitigative measures. Higher Corps of Engineers authorities will continue to review the various proposals as they progress and will have final policy approval of any proposed Corps of Engineers projects or permit actions. The cumulative impacts of any or all of the projects identified as reasonably foreseeable in this Supplement would need to be carefully planned and designed to avoid, minimize, and mitigate identified adverse environmental effects.

Other than the Dallas Floodway Extension project, none of the projects addressed in this Supplement, Federal or otherwise, have been developed in sufficient detail that this document could represent a final decision document under the National Environmental Policy Act (NEPA). Further, any project in the study area that is carried forward will need to be reviewed under a Corridor Development Certificate process, adopted by local area study participants, and will likely require individual permitting and public interest review under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act. In the event that a new suite of potential projects emerges and/or that have not been foreseen during the preparation of this Supplement to the GRR/EIS or the PEIS for the Upper Trinity River Basin, there will likely be a need to supplement the PEIS in the future to undertake another programmatic review at that time.

Regardless of which set reasonable foreseeable future actions by the Corps or others may occur in the geographic area of the proposed DFE project, the cumulative effects assessment in this Supplement does not indicate significant adverse cumulative effects to any of the resources considered. Nothing in the analysis indicates the Recommended Plan should be changed from the plan addressed in the 1 December 1999 Record of Decision.

FINAL
SUPPLEMENT I to the ENVIRONMENTAL IMPACT STATEMENT
DALLAS FLOODWAY EXTENSION,
TRINITY RIVER BASIN, TEXAS

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LIST OF ACRONYMS

AAHU	Average Annual Habitat Units
ACE	Annual Chance of Exceedance
AQCR	Air Quality Control Region
CDC	Corridor Development Certificate
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
COE	Corps of Engineers
CWWTP	Central Wastewater Treatment Plant
DART	Dallas Area Rapid Transit
DFE	Dallas Floodway Extension
EA	Environmental Assessment
EIS	Environmental Impact Statement
ENRAC	Environmental and Recreation Assistance Committee
EO	Executive Order
EPA	Environmental Protection Agency
EQ	Environmental Quality
ER	Engineer Regulation
FCSA	Federal Cost Sharing Agreement
FDR	Flood Damage Reduction
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FPMP	Floodplain Management Plan
GDM	General Design Memorandum
GI	General Investigation
GRR/EIS	General Reevaluation Report & Integrated Environmental Impact Statement
IET	Interagency Executive Team
LPP	Locally Preferred Plan
MIS	Major Investment Study
MTIS	Major Transportation Investment Study
NA	No Action
NCTCOG	North Central Texas Council of Governments
NED	National Economic Development (Plan)
NEPA	National Environmental Policy Act
NRHP	National Register or Historic Places
NTTA	North Texas Tollroad Authority
PEIS	Programmatic Environmental Impact Statement
ROD	Record of Decision
SHPO	State Historic Preservation Office
SPF	Standard Project Flood
SPOT	Satellite Pour l'Observation de la Terre
SWD	Southwest Division of Corps of Engineers
SWF	Fort Worth District of Corps of Engineers
TNRCC	Texas Natural Resources Conservation Commission
TORP	Texas Outdoor Recreation Plan
TPWD	Texas Parks and Wildlife Department
TRCCC	Trinity River Corridor Citizens Committee
TREIS	Trinity Regional Environmental Impact Statement
TSWQS	Texas Surface Water Quality Standards
TxDOT	Texas Department of Transportation
UFORE	Urban Forest Effects
USC	United States Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

FINAL
SUPPLEMENT I to the ENVIRONMENTAL IMPACT STATEMENT

DALLAS FLOODWAY EXTENSION
TRINITY RIVER BASIN, TEXAS

CHAPTER 1 – AUTHORITY AND PURPOSE

PROJECT AUTHORITY

Authority for construction of water resource development features described in the Comprehensive Survey Report on Trinity River and Tributaries, Texas (reprinted as House Document 276/89/1), including the Dallas Floodway Extension (DFE) project, is contained in Section 301 of the Rivers and Harbors Act, approved 27 October 1965 (Public Law 89-298). Authorization of the DFE was modified by Section 351 of the Water Resources Development Act of 1996, which authorized inclusion of non-Federal levees. Section 356 of the Water Resources Development Act of 1999 (Public Law 106-53) further modified the DFE Authorization to add environmental restoration and recreation as project purposes.

PURPOSE AND NEED

Following the severe flood event of 1989, the City of Dallas requested reactivation of the authorized Dallas Floodway Extension project, which had been inactive due to lack of local sponsor funding support since the mid 1980's. The project was reactivated in 1990 under the provision that a general reevaluation be conducted prior to construction. This reevaluation was required to address updated environmental and economic criteria, as well as significant land use changes within the study area. A product of the reevaluation was the General Reevaluation Report and Integrated Environmental Impact Statement (GRR/EIS) dated February 12, 1999. The Record of Decision (ROD) was signed December 1, 1999. Advanced design work has been completed on the lower chain of wetlands and has been initiated for the upper chain of wetlands. Construction initiation was funded by Congress for the DFE project at $2M in Fiscal Year (FY) 2001 and $10M in FY 2002.

In May 2000, shortly after the ROD was signed, various groups opposed to the DFE project sought an injunction (*Texas Committee on Natural Resources et al v. Major General Hans Van Winkle et al,)* to prevent construction. Two lawsuits were filed; the first (USDC, Northern District, Texas, Fort Worth Division) sought a permanent injunction against DFE project, the second, (USDC, Southern District, Texas, Houston Division) sought enforcement of the 1973 Trinity River Project injunction. On February 26, 2001, the U.S. District Court for the Southern District of Texas denied Plaintiff's motion, finding that the United States Court of Appeals for the Fifth Circuit had vacated the 1973 injunction in "Sierra Club v Froehlke 816 F.2d 205" (5th Cir. 1987). On April 10, 2002, The U.S. District Court for the Northern District ruled in favor of the Corps of Engineers on three of four counts. On the fourth count, the plaintiffs argued that the DFE-EIS did not address the cumulative impacts of reasonably foreseeable proposed actions. The Court ruled in favor of the plaintiffs on that count and remanded the matter to the Corps of Engineers *"for further consideration of the cumulative impacts of other similar, reasonably foreseeable future projects in the same geographical area as the DFE project."* The Order also directed that the Corps of Engineers stop work on any further action related to the construction of the DFE project.

The Corps of Engineers prepared this Supplement to the DFE EIS In response to the Court Order. Also in response to the Court, the Corps of Engineers suspended construction of the first wetland cell for the project. The City of Dallas is proceeding with land acquisition for mitigation and other project purposes. The City of Dallas recently purchased of 170 acres of the Great Trinity Forest (the first of

many tracts) as part of the mitigation for the DFE project. This is the first step in the process to place the forest in permanent protection from what might otherwise be subject to destruction and/or future development. Consistent with the Court Order, this Supplement to the EIS addresses the cumulative impacts of other known or reasonably foreseeable future projects. Again consistent with the Court Order, this Supplement does not re-evaluate the authorized features of the DFE project including levees, chain of wetlands, trails, and environmental restoration, nor does it re-evaluate alternatives to the project.

PRIOR STUDIES AND REPORTS

Numerous studies have been conducted regarding water resource development, flooding and emergency streambank erosion, and water quality within the Trinity River watershed. Pertinent information on previous studies and reports prepared by the Corps of Engineers and other Federal and State agencies was summarized in the GRR/EIS for the Dallas Floodway Extension project dated February 12, 1999. Table 1.1 provides a list of the studies and reports discussed in the GRR/EIS with addition of several reports prepared since completion of that document.

Table 1-1 Studies and Reports Relevant to Supplement 1 to the DFE EIS

Document Name	Agency	Date
Comprehensive Survey Report on Trinity River and Tributaries, Texas	Corps of Engineers	June 1962
The Texas Water Plan	Texas Water Development Board	November 1968
Trinity River Project, Texas, Phase 1 General Design Memorandum	Corps of Engineers	August 1974
Flood Insurance Study, Dallas County, Texas	FEMA	1977 - 1978
Water Resources Development in Texas	Corps of Engineers	1971, 1981, 1988, 1989, 1991,1995
Trinity River Project, Texas, Phase I General Design Memorandum	Corps of Engineers	October 1981
Trinity River Project, Texas, Habitat Mitigation Report	Corps of Engineers	December 1981
Water for Texas	Department for Water Resources	August 1987
Trinity Regional Environmental Impact Statement	Corps of Engineers	1988
Upper Trinity River Basin, Reconnaissance Report	Corps of Engineers	March 1989
Report on Flooding Dallas Floodway	Corps of Engineers	May – June 1989
Reconnaissance Report	Corps of Engineers	February 1989
Report on Flooding	Corps of Engineers	April – May 1990
The Texas Statewide Inventory of Flood Protection Needs		May 1990
Water for Texas, Today and Tomorrow	Texas Water Development Board	December 1990
Trinity River Basin Study	Texas Water Commission	September 1992
Water Resources Development in Texas	Corps of Engineers	1995
GRR/EIS for the Dallas Floodway Extension	Corps of Engineers	February 12, 1999
Programmatic EIS, Upper Trinity River Basin (PEIS)	Corps of Engineers	June 2000
Water for Texas - 2002	Texas Water Development Board	January 2002

NATIONAL ENVIRONMENTAL POLICY ACT REQUIREMENTS

The National Environmental Policy Act of 1969 (NEPA), as amended, is the nation's charter for environmental protection. NEPA establishes policy, sets goals, and provides means for carrying out the policy. Section 102 (2) of the Act includes a provision to prepare a detailed Environmental Impact Statement (EIS) on the effects of a proposed Federal action. The Federal regulations for implementing the procedural provisions of NEPA were published by the Council on Environmental Quality (CEQ) in the Code of Federal Regulations (CFR) as 40 CFR Parts 1500-1508 (43 Federal Register 55978-56007, November 29, 1978). The Corps of Engineers' Engineer Regulation (ER 200-2-2), Procedures for Implementing NEPA, dated March 1988, provides the Corps of Engineers procedure for preparing and processing an EIS or Supplement to an EIS.

STUDY OBJECTIVES

The Record of Decision on the DFE project as recommended in the GRR/EIS was signed by the Corps of Engineers' Deputy Commander for Civil Works on December 1, 1999, and the GRR/EIS was made available to Congress shortly thereafter. Groups seeking an injunction to prevent construction of the DFE project filed two separate lawsuits in May 2000 (*Texas Committee on Natural Resources et al v. Major General Hans Van Winkle et al,)*. The first suit, filed with the U.S. District Court for Northern District of Texas in Fort Worth, sought a permanent injunction against DFE project. The second suit, filed with the U.S. District Court for the Southern District of Texas in Houston, sought enforcement of the 1973 injunction on the Trinity River Project. On February 26, 2001, the U.S. District Court for the Southern District of Texas denied Plaintiff's motion to enforce the 1973 injunction, finding that the injunction had been vacated by the United States Court of Appeals for the Fifth Circuit.

The Motion for Summary Judgment filed with the Northern District included four counts:

Count 1: APA Review of Corps' Determination of Flood Levels
- *A. Factual Discussion – The Seven-Foot Rise is False*
- *B. Legal Standard for Arbitrary and Capricious*

Counts 2 and 3: The NEPA Counts
- *A. Count 2: Failure to Fully Disclose Environmental Impacts*
  - *Count 2(A) – Cumulative Impact of the DFE Project and Past Actions on Water Surface Elevations*
  - *Count 2(B) – Failure to Disclose Extent of Downtown Flooding and to Fully Disclose Economic Analysis of Benefits*
  - *Count 2(C) – Analysis of Reasonable Alternatives*
- *B. Count 3: Failure to Fully Assess Cumulative and Connected Impacts*
  - *Count 3(B) – Cumulative Impacts of Reasonably Foreseeable Future Actions*
  - *Count 3(A) – Connected Actions*

Count 4: Failure to Follow 1988 Record of Decision

On April 10, 2002, the US District Court for the Northern District of Texas ruled in favor of the Corps of Engineers on all but one of the counts and sub counts. On Count 3(B) of the motion, the Court ruled in favor of the plaintiffs argument that the GRR/EIS did not address the cumulative impacts of reasonably foreseeable future actions and remanded the matter to the Corps of Engineers "*for further consideration of the cumulative impacts of other similar, reasonably foreseeable future projects in the same geographical area as the DFE project*." The objective of this Supplement to the DFE EIS is, therefore, to address the U.S. Court for the Northern District of Texas' instruction by further examining the cumulative impacts of the DFE project and determining if any other projects are in fact "proposed actions that must be considered in a single EIS"

CHAPTER 2 – ALTERNATIVES

This chapter briefly summarizes the formulation process that led to the Recommended and Authorized Dallas Floodway Extension (DFE) project. The General Reevaluation Report and Integrated Environmental Impact Statement for the Dallas Floodway Extension Trinity River Basin, Texas (GRR/EIS), dated February 1999, can be referenced for more detailed discussion.

BACKGROUND

The DFE project is one of five local flood damage reduction projects authorized for construction in 1965 as part of the basinwide plan of improvement for the Trinity River and Tributaries, Texas. Authority for construction is contained in Section 301 of the Rivers and Harbors Act approved 27 October 1965 (Public Law 89-298). The originally authorized plan for the Dallas Floodway Extension consisted of a combination flood control channel and floodway levee that would provide a Standard Project Flood (SPF) level of protection with a design flow capacity of 270,000 cubic feet per second. The plan consisted of a 22-mile levee and floodway system with a 9.1-mile residual channel along the Trinity River, 4.1 miles of channel improvements along White Rock Creek, and 5.4 miles of channel improvements to divert Five Mile Creek.

A General Design Memorandum (GDM), which assessed the DFE project in greater detail, was completed in 1981. Work on the project was suspended in 1985, however, following the failure of a bond election by the City of Dallas. Final approval of the 1981 GDM was subsequently discontinued, resulting in the retention of the 1965 plan as the authorized plan. In 1990, following a severe flood event in 1989, a general reevaluation the authorized Dallas Floodway Extension Project was initiated at the request of the City of Dallas. An integrated General Reevaluation Report and draft Environmental Impact Statement was released for public review in May 1998. The report was finalized and made available to the public as a Final GRR/EIS for review in February 1999. The Deputy Commander for Civil Works signed the Record of Decision (ROD) for the DFE Impact Statement for the Corps of Engineers on December 1, 1999. A copy of that ROD is included in Appendix A to this Supplement.

FORMULATION

The plan formulation process for the Dallas Floodway Extension was performed in three phases, each predicated by changes deemed significant enough to necessitate reevaluation and revision of existing conditions hydrology, hydraulic, and/or economic models. These changes included, but were not limited to, the availability of more current technical data, the addition of risk-based flood damage reduction analysis requirements, and the passage of legislation providing for inclusion of previous non-federal levee construction in the Federal plan. Two of these phases were completed during the development of the National Economic Development (NED) Plan, while the third was initiated during selection of the Locally Preferred Plan (LPP).

Initially, a wide range of structural and non-structural flood damage reduction measures evolved from the analysis of available economic, environmental, engineering, and social data during the course of the study. Non-structural alternatives for flood damage reduction included flood proofing, relocation, and permanent evacuation. Structural alternatives analyzed during the preliminary screening included channelization, clearing and grubbing, detention dams, swales, levees, and combination plans. Additionally, several variations of the final concept were analyzed to insure that the solution was properly located and sized to provide the highest net annual benefits.

During the formulation process the NED Plan was identified as a 1,200 -foot wide swale in the overbank area adjacent to the Trinity River. Public opposition to environmental impacts of this plan on forested areas along the Trinity prompted the investigation of less environmentally detrimental alternatives, including the concept of a Chain of Wetlands. Floodplain residents of the DFE project

area sought additional flood protection in the immediate study area, beyond what the Chain of Wetlands would provide, and comparable to the level of protection to that afforded by the existing Dallas Floodway levees to the Central Business District. Their actions prompted the City to request investigation of additional levee alternatives aimed at removing more residents and businesses from flood risk within the immediate vicinity of the Dallas Floodway Extension. Alternatives analyzed in the final array are presented in detail in the DFE GRR/EIS and are summarized below.

NO ACTION

The no action plan for the DFE would involve no additional Corps of Engineers flood damage reduction, ecosystem restoration or recreational development within the DFE area. The Rochester Heights Levee as constructed and the Central Wastewater Treatment Plant levee modifications by the City of Dallas would remain in place. These flood damage reduction features provide important protection at those isolated locations, however, the City would lose the ability to utilize their previous construction expenditures for these two levees in the cost sharing of a complete flood damage reduction project for the entire DFE area. The No Action plan would do nothing more to provide equity of flood damage reduction between residents of the DFE area to that afforded the central business district.

NATIONAL ECONOMIC DEVELOPMENT (NED) PLAN

An alternative plan consisting of two 1,200-foot bottom width swales in series was determined to produce the greatest net economic benefits. This plan, identified as the NED Plan, would extend from upstream at the end of the existing Dallas Floodway downstream to approximately 2,000 feet below Loop 12, and would be separated at Interstate Highway (IH) 45. The length of the upper swale would be about 7,800 feet, or 1.5 miles, and would extend from the confluence of Cedar Creek, at the upstream end, to the river crossing of IH-45. The lower swale would extend a total length of 17,300 feet, or 3.3 miles. Based on applicable criteria, the 1,200-foot swale would produce the greatest net benefits and was designated as the NED plan. The NED plan is currently estimated to have a first cost of $103.6 million (Benefit/Cost = 2.46) based on January 2003 price levels.

From an environmental standpoint, the NED Plan would require acquisition of approximately 3,200 acres for mitigation. Because of these adverse impacts a “chain of wetlands” plan was formulated which would require only 650 acres of mitigation. A comparative analysis between the NED Swale Plan and the Chain of Wetlands Plan showed that the chain of wetlands would provide fewer net economic benefits than the NED Plan, but would also have a lower first cost.

LOCALLY PREFERRED PLAN (LPP)

The “Chain of Wetlands” would consist of an upper chain of four wetland cells and lower chain of three wetland cells, each of various lengths and shapes and totaling about 123 acres. The upper chain would have an average width of 400 feet and would extend from Cedar Creek to the oxbow lake at I-45, a distance of about 1.5 miles. The lower chain would have an average width of 600 feet, would extend between I-45 and Loop 12, a distance of about 2.2 miles, and would be aligned through the Linfield Landfill and Sleepy Hollow Golf Course to minimize impacts to forested areas and nearby residential areas. Total length of the wetland cells, therefore, would be about 3.8 miles with average width of about 500 feet, average depth of about 1.5 feet, and maximum depth of 7 feet. Environmental restoration features associated with the chain of wetlands include 123 acres of emergent wetland creation. The LPP is currently estimated to have a first cost of $154.4 million (Benefit/Cost = 2.06) based on January 2003 price levels.

The Chain of Wetlands Plan was initially identified as the Locally Preferred Plan (LPP), and was formally adopted by the Dallas City Council on August 28, 1996, with the caveat that the addition of levees to the plan would be further investigated. The Chain of Wetlands Plus Levees Plan, which

would include SPF levees protecting the Lamar and Cadillac Heights areas, in addition to the Chain of Wetlands feature, was determined to meet the needs of the local sponsor, by providing flood protection to the neighborhoods within the study area comparable to the protection provided to the Central Business District by the existing Dallas Floodway. The Lamar Levee would include an earthen levee to provide SPF protection for the Lamar Street area. This levee would extend from East Levee of the existing Dallas Floodway for a distance of 2.9 miles to the Rochester Park Levee, previously constructed by the City of Dallas. The Cadillac Heights Levee would include an earthen levee to provide SPF protection for the Cadillac Heights area. This levee would extend from near Cedar Creek to the Central Wastewater Treatment Plant (CWWTP), would raise a portion of the northwest corner of the CWWTP Levee, and would extend to high ground near the intersection of Kiest Boulevard and McGowan Avenue for a total distance of approximately 2.2 miles.

The recreation component of the Locally Preferred Plan would include construction of 18 miles of hike/bike trail, 8.5 miles of natural surface equestrian trail, 5 miles of natural surface nature trail, picnic areas and rest stop area. Seven access areas are proposed, one of which would require no modifications. Three of the remaining six would be located at existing parks or areas with adequate parking facilities and would require minimal modifications. Three other access areas are also proposed.

The environmental mitigation plan for the Locally Preferred Plan includes acquisition of 1,179 acres of additional lands within the “Great Trinity Forest”, and consists of conversion of grassland to bottomland hardwood areas, habitat improvement on existing bottomland hardwood areas, and grassland preservation.

On March 26, 1997, the Dallas City Council formally adopted the Chain of Wetlands and Levees plan along with recreation facilities and habitat mitigation included as components of the plan as the Locally Preferred Plan. The Chain of Wetlands alone would result in a lowering of the water surface profile of the SPF event at the end of the existing Dallas Floodway of 3.50 feet. Consequently, the locally supported plan, which includes the Lamar and Cadillac Heights SPF levees, would still result in a lowering of SPF water surface elevation by 1.40 feet at that point.

COMBINATION STRUCTURAL / NON-STRUCTURAL PLAN

The combination non-structural / structural plan investigated for the final array of Dallas Floodway Extension alternatives would involve the acquisition and removal of homes in the Cadillac Heights area in lieu of the construction of a Cadillac Heights Levee, as the last-added increment of an overall plan also including the construction of the chain of wetlands and the SPF Lamar Levee. This buyout was analyzed for the 2-, 5-, 10-, 25-, 50-, and 100-year flood zones. The economic analysis of this non-structural increment of the overall combination structural / non-structural plan was shown in Table 4-21 of the DFE/GRR EIS. Economic feasibility is not demonstrated for any buyout beyond the 25-year flood zone, leaving highly significant residual damages at the 50-, 100-, and SPF-flood frequencies. For comparative analysis, also included in Table 4-21 are the incremental costs and benefits of constructing a last-added 100-year levee in the Cadillac Heights area. The combination plan 10-year buyout of Cadillac Heights is currently estimated to have a first cost of $135 million (Benefit/Cost = 1.7), based on January 2003 price levels.

TENTATIVE FEDERALLY SUPPORTABLE PLAN (TFSP)

After adoption of the LPP by the City of Dallas, a channel realignment at I-45 was requested and supported by the Texas Department of Transportation, to allow the river to flow through a wider span of the I-45 Bridge, which was designed to more efficiently accommodate river flows. This realignment would reduce the risk of catastrophic failure of this bridge, and would significantly reduce current annual maintenance costs associated with debris removal around the bridge columns. The identified

TFSP would consist of the Chain of Wetlands, SPF Lamar Levee, 100-year Cadillac Heights Levee, the previously constructed non-Federal levees, and selected recreation features.

The TFSP would include an earthen levee providing SPF protection for the Lamar Street area, which would extend from the existing Dallas Floodway East levee to the previously constructed Rochester Park Levee, a distance of 2.9 miles. The plan would also include a levee / floodwall system providing 100-year protection for the Cadillac Heights area. This levee would extend from near Cedar Creek to the Central Wastewater Treatment Plant (CWWTP), a distance of 1.1 miles. In addition to the levees described above, the Tentative Federally Supportable Plan would also include the costs and benefits of the portions of the previously constructed non-Federal levees. The total cost for the compatible portions of these levees was estimated at $23.1 million ($14.2 million for the CWWTP Levee upgrade and $8.9 million for the compatible portion of the Rochester Park Levee). The TFSP would include recreation amenities compatible with the regional recreation master plan, including hike/bike trails, equestrian trails, canoe launches, and pavilions. The TFSP is currently estimated to have a first cost of $135.4 million (Benefit/Cost = 1.82) based on January 2003 price levels.

THE RECOMMENDED PLAN

The LPP, along with the realignment of the river channel at the Interstate Highway 45 (I-45) Bridge, was adopted as the Recommended Plan for the Dallas Floodway Extension. It provides for the "Chain of Wetlands", an SPF levee at Lamar Street, a SPF levee in the Cadillac Heights area, recreation features, and habitat mitigation. While meeting the primary goal of providing SPF protection in the immediate area of the Dallas Floodway Extension, the Recommended Plan would result in additional protection within the existing Dallas Floodway. Section 351 of the Water Resources Development Act of 1996 authorized inclusion of the previously constructed non-Federal levees at Rochester Park and the CWWTP as part of the DFE project. Section 356 of the Water Resources Development Act of 1999 (Public Law 106-53) further modified the DFE Authorization to add environmental restoration and recreation as project purposes. The current cost estimate for the Recommended DFE project is $154,400,000 2.06) based on January 2003 price levels, which includes the cost of the levees previously constructed by the City of Dallas.

Since completion of the GRR/EIS in 1999, a number of follow-on proposals have been discussed by various Dallas city officials and reported in the media for alternate uses of the area to be protected by the Cadillac Heights Levee once the levees are in place. Among these ideas are the buy-out and/or partial buy-out of residences in that neighborhood. One potential use suggested in the area is to build a police academy and/or other similar public facilities. To date the City Council has not taken any official action to support any changes other than those included in the LPP. A Project Cost Sharing Agreement has been signed by the City of Dallas, fully committing the City's support of the Recommended Plan. Until formal notification is made by the City of Dallas regarding their support of a plan that is different from that for which they have formally provided an endorsement, alternate plans discussed by individuals or the media cannot be considered as reasonably foreseeable. The plan recommended in the 1999 GRR/EIS, therefore, remains the Recommended Plan for analysis in this Supplement to the DFE EIS.

CHAPTER 3 – AFFECTED ENVIRONMENT

STUDY AREA

This section describes the study area within the geographic vicinity of the DFE project. Detailed discussion of the climatology, geology, physiography, soils, hydrology and hydraulics, vegetative cover, terrestrial resources, aquatic resources, water quality, air quality, cultural resources, socioeconomics, environmental justice, and recreation and open space may be found in the GRR/EIS dated February 1999 and in the PEIS for the Upper Trinity River Basin, dated June 2000. In accordance with CEQ regulations for implementing NEPA (40 CFR Part 1508), information from those documents is incorporated herein by reference.

From a water resource related perspective, the physical boundaries of the general study area correspond to the Standard Project Floodplain (SPF) of the Upper Trinity River and its major tributaries. The hydrologic study area can be considered to be the watershed of the Upper Trinity River. The hydraulic study area is most easily defined by the downstream and upstream limits of the major river reaches. The downstream limit was taken as River Mile (RM) 473.9. This point generally coincides with the Malloy Road Bridge crossing of the Trinity River in southeast Dallas County. The upstream limits of the study area can generally be defined as the first major impoundment on each of the major branches and tributaries of the Trinity River and all the adjacent land and all of the watercourses contained within the boundaries of the floodplain for the Standard Project Flood. The major river segments include: Denton Creek from Grapevine Lake Dam to its confluence with the Elm Fork, Elm Fork from Lewisville Lake Dam to its confluence with the West Fork, the Clear Fork from Benbrook Lake Dam to its confluence with the West Fork, Mountain Creek from Mountain Creek Dam to its confluence with the West Fork, and Village Creek from Lake Arlington Dam to its confluence with the West Fork, two segments of the West Fork - one beginning at the Lake Worth Dam to the confluence with Village Creek, and the second from the Village Creek confluence to the West Fork's confluence with the Elm Fork, and finally, the mainstem of the Trinity from the confluence of the Elm Fork and West Fork downstream to the Malloy Road Bridge crossing. This hydrologic and hydraulic study area is defined and described in detail in the PEIS dated June 2000.

DETAILED STUDY AREA

Instructions from the Court to address cumulative impacts of other similar, reasonably foreseeable future projects in the same geographical area as the DFE project (emphasis added) led to a focus on potential future developmental activities that would be water related or would occur in or near the floodplain of the Trinity River, with special emphasis on Dallas, Dallas County, and the general vicinity. The SPF floodplain within the study area is depicted in Figure 3-1. The study area for evaluating cumulative impacts within this Supplement to the GRR/EIS is defined based upon Standard Project Flood (800-year frequency) hydrology as it is anticipated to be in the year 2050. While accounting for past, present, and potential future actions of the Corps of Engineers and other entities that could occur within the general study area of the Upper Trinity River Basin, this document focuses on addressing the cumulative impacts of other projects in the floodplain of the Trinity River in Dallas, Dallas County, and the general vicinity of the authorized DFE project.

PAST ACTIONS AFFECTING THE STUDY AREA

This section presents past, present, and reasonably foreseeable future projects that have been or would be conducted in the study area. Focus of this section is on Corps of Engineers projects and projects of others as they relate to potential cumulative impacts associated with the DFE project. The PEIS, dated June 2000, may also be referenced for activities within the watershed that are more remote from the general vicinity of the DFE project.

CORPS OF ENGINEERS PROJECTS

Completed Section 205 Projects

Section 205 of the Flood Control Act of 1948 provides the authority to the Corps of Engineers for planning, design, and construction of water resources projects related to flood damage reduction. The federal expenditure limit on Section 205 projects is $7,000,000. Section 205 projects conducted within the general vicinity of the DFE project are discussed below. Discussion of additional Section 205 projects constructed in the Upper Trinity River Basin may be found in the June 2000 PEIS.

Ten Mile Creek – Lancaster:

Ten Mile Creek is located in the central portion of the City of Lancaster in southern Dallas County, approximately 14 miles south of Dallas. The creek begins on the east side of Joe Pool Lake, flows generally from west to east and joins the mainstem of the Trinity River in far southeast Dallas County. This nonstructural project completed in 1995 is a flood warning system consisting of six stream and rainfall gauges throughout the Ten Mile Creek Watershed.

Ten Mile Creek – Desoto:

Ten Mile Creek is a tributary of the mainstem Trinity River. It flows generally from west to east through the City of Desoto in south Dallas County. The project consisted of one-sided channel modification on the north bank of Ten Mile Creek approximately 4,200 feet in length. The project begins 700 feet east of Hampton Road and proceeds upstream to a point approximately 4,000 feet southeast of Westmoreland Road. The channel is grass-lined and features the excavation of a 50-foot wide terrace on the north bank, approximately 5 feet above the invert of the creek, which transitioned into a side slope. The right bank and the creek bottom were allowed to remain in their natural state. The project provides a minimum 25-year level of flood protection to the lowest structure within the project reach. Completed in 1997, the project resulted in adverse impacts to approximately 11 acres of mature riparian forest. Mitigation for the project included reforestation of a 22-acre site adjacent to the creek with hard- and soft-mast producing woody species, and revegetation of all disturbed areas with native plant species.

Johnson Creek - Grand Prairie:

Johnson Creek is a tributary of the West Fork Trinity River. The creek flows from southwest to northeast through Arlington in Tarrant County and Grand Prairie in Dallas County. The project called for 4,950 feet of gabion-lined channel to provide 100-year flood protection for residents between Duncan Perry Road and Carrier Parkway. Completed in 1998, the project resulted in adverse impacts to approximately 22 acres of riparian hardwoods. Mitigation for the project included the preservation of 5.3 acres of existing riparian hardwoods, the establishment of a 2.5-acre wetland and 1.0 acres of native grassland/herbaceous plant, and planting of 635 hard-mast producing trees and the same number of soft-mast producing shrubs on 12.8 acres adjacent to the creek.

Dry Branch -- Grand Prairie:

Dry Branch originates in west central Irving and flows southward through the cities of Grand Prairie and Irving to its confluence with Bear Creek, which is a tributary of the West Fork Trinity River. The plan for Dry Branch consisted of replacement of the Shady Grove Road Bridge and channelization. The project was divided into two channel reaches. The downstream reach consisted of a grass-lined channel that extended approximately 175 feet upstream and downstream of the Shady Grove Road Bridge. The upstream reach had a concrete-lined trapezoidal channel 2,850 feet in length and a trapezoidal drop structure at the upstream end. The project resulted in adverse impacts to approximately 100 predominately hard- and soft-mast producing trees with diameters greater than 10 inches. Mitigation for the project was completed in 1997, and included planting approximately 250 hard-mast producing trees and 250 soft-mast producing shrubs on 6.3 acres of land near Johnson Creek in Grand Prairie.

FIGURE 3-1 STANDARD PROJECT FLOOD

Delaware Creek -- Irving:
Delaware Creek originates in northwestern Irving and flows generally southeastward 7 miles to the West Fork Trinity River. The project consisted of constructing approximately 3,600 feet of grass-lined channel beginning at Oakdale Road and continuing southeast. A box culvert was constructed upstream of the Shady Mobile Home Park to allow low flows to continue along the original creek channel while high flows would be diverted to the southeast into the West Fork floodplain by a levee and a grass-lined diversion channel. The project was subsequently modified by the addition of 1000 feet of grass-lined diversion channel. The project adversely impacted 19.4 acres of riparian corridor and 11.3 acres of old field habitat. Environmental mitigation for impacts of the project was completed in 1997 and consisted of planting approximately 20 acres of hard- and soft-mast producing trees and shrubs downstream of Loop 12 within the floodplains of Delaware Creek and West Fork Trinity River on the Twin Wells Golf Course.

Specifically Authorized Flood Damage Reduction Projects
Certain projects are specifically authorized by Congress to meet a specific purpose(s), which may include flood damage reduction, water supply and conservation, and/or other benefits. While the existing Dallas Floodway is the most significant Congressionally authorized flood damage reduction project relative to the DFE project, both the Fort Worth Floodway and the Big Fossil Creek Floodway have also been constructed in the Upper Trinity River Basin and are described in the June 2000 PEIS for the Upper Trinity River Basin.

Dallas Floodway:
The project is located along the mainstem of the Trinity River just downstream of the confluence of the West and Elm Forks in west Dallas. Completed in 1960, the project consisted of strengthening approximately 23 miles of existing levees that were constructed by local interests between 1928 and 1932 on both sides of the river, clearing the floodway channel, and improving the capabilities of the interior floodway drainage facilities. The urban area protected by the existing Dallas Floodway levees consists of about 9,000 acres with about 1500 acres of open space between the levees. The Dallas Floodway was designed to provide SPF protection to the central business district of Dallas and the area to the west. This existing project is immediately upstream of the Recommended Dallas Floodway Extension Project.

Corps of Engineers Reservoir Projects
Five reservoirs have been constructed by the Corps of Engineers within the Upper Trinity River basin. One reservoir has been authorized and constructed within the Dallas County portion of the study Upper Trinity study area. Each of these multi-purpose Corps of Engineers reservoirs provides flood damage reduction, water conservation and storage, recreation, and other benefits. These Corps of Engineers reservoirs within the hydrologic study area, which are addressed in the June 2000 PEIS, are Benbrook, Grapevine, Lewisville, Ray Roberts, Joe Pool, and the Lewisville pool raise and associated recreation area (Green Belt). Of these lakes, Grapevine on Denton Creek and Lewisville and Ray Roberts on the Elm Fork of the Trinity River, north of Dallas County, have the greatest effect on the hydrology of the study area of the DFE, and those effects are incorporated into the hydrologic and hydraulic models for the study area.

PAST PROJECTS OF OTHERS IN THE STUDY AREA

Within the Upper Trinity River Basin in the general vicinity of the study area are a number of reservoir projects built by entities other than the Corps of Engineers. Among these is Mountain Creek Lake on its namesake tributary, which is just downstream of Joe Pool Lake and feeds into the mainstem Trinity River from the south. The lake is operated by a local entity for power plant cooling. Within the Dallas-Fort Worth Metroplex, other reservoir projects have been constructed over the years for various purposes including urban recreation and cooling for utility generation.

There are numerous projects that have been implemented within the study area in the last 20 to 30 years, which have resulted in significant adverse impacts to the environment. Environmental impacts

resulting from these projects are impossible to estimate. However, sources of information do exist regarding impacts to natural resources that are located within waters of the United States, including wetlands, around water bodies. Under the direction of Congress, using the authorities stated in Section 10 of the Rivers and harbors Act of 1899 and Section 404 of the Clean Water act, the Regulatory Branch of the Army Corps of Engineers regulates all work or structures in, or affecting the course, condition or capacity of navigable waters of the United States and the discharge of dredged and fill material into all waters of the United States including wetlands. Consequently, applicants are required to submit information to the Corps of Engineers for approval of many construction projects that are conducted in floodplain areas.

Regulatory documents reviewed in preparation of the PEIS indicate that over the period from 1985 to 1998 there were a total of 193 general permit verifications, letters of permission, or individual permit actions within the Upper Trinity study area. The location of these actions is illustrated in Figure 2-1 of the PEIS. Out of the 193 actions during that time period, adverse impacts occurred to approximately 630 acres of bottomland hardwood forests and wetlands occurred. Mitigation for impacted natural resources amounted to 261 acres for bottomland hardwoods and wetlands. It should be noted, however, that much of the adverse impacts occurred prior to the 1988 Record of Decision for the Trinity Regional Environmental Impact Statement (TREIS), with avoidance, minimization, and mitigation improving considerably after that time. More detail on recent trends is included in the Fills, Permits, Utilities, and Other Activities section of this chapter, Permit actions being considered since 1999 are shown on Figure 3.2 of the Supplement.

REASONABLY FORESEEABLE FUTURE CORPS OF ENGINEERS ACTIONS

As evidenced above, floodplain lands within the study area have undergone extensive alterations in the past 50 years due to the construction of flood control and water supply lakes, major channelization/levee projects, and numerous smaller projects, which may have affected the physical characteristics of the Upper Trinity River watershed and the general vicinity of the DFE project.

UPPER TRINITY RIVER FEASIBILITY STUDY

General Investigation (GI) studies are investigations that have been specifically authorized by Congress to address water resource related problems and opportunities within a given study area. Feasibility Studies for the Upper Trinity River Basin have been and are being conducted under the GI program in response to the authority contained in the following United States Senate Committee on Environment and Public Works Resolution dated April 22, 1988, as quoted below:

> *Resolved by the Committee on Environment and Public Works of the United States Senate, that the Board of Engineers for Rivers and Harbors is hereby requested to review the report of the Chief of Engineers on the Trinity River and Tributaries, Texas, House Document No. 276, Eighty-Ninth Congress, and other pertinent reports, with a view to determining the advisability of modifying the recommendations contained therein, with particular reference to providing improvements in the interest of flood protection, environmental enhancement, water quality, recreation, and other allied purposes in the Upper Trinity River Basin with specific attention on the Dallas-Fort Worth Metroplex.*

Initial investigations during the Upper Trinity Feasibility Studies, as compiled and distributed for public review in 1995 as part of the “Information Paper for the Upper Trinity River Basin, Texas”, focused on determining if continued Federal participation in more detailed studies was warranted in order to provide flood damage reduction, environmental enhancement opportunities, water quality, and recreational facilities in the Upper Trinity River Basin. The intent of the Information Paper was to identify for the public, those project proposals that appeared to have merit for further study. Detailed

FIGURE 3-2 PERMIT ACTIONS IN THE STUDY AREA

TABLE 3-1, STATUS OF SPONSORED STUDIES BY THE CORPS OF ENGINEERS AS PART OF THE UPPER TRINITY RIVER FEASIBILITY STUDY

Currently Active Studies		
Sponsor	**Study**	**Proposal**
City of Arlington	Johnson Creek (Study complete – project is under construction)	Non-structural flood damage reduction and ecosystem restoration project authorized by Water Resources Development Act of 1999. Project under construction.
City of Dallas	Stemmons North Industrial District	National Economic Development (NED) plan for Flood Damage Reduction has been investigated
	Dallas Floodway	NED Plan, Environmental Quality (EQ) Plan, City of Dallas' Trinity River Corridor Master Plan have been developed
*Tarrant Regional Water District	West Fork to Lake Worth and Clear Fork to Benbrook Lake	Study of flood damage reduction, ecosystem restoration, recreation and water quality improvements at numerous sites in and adjacent to floodway and tributaries to main channels
*Cities of Fort Worth, North Richland Hills Haltom City and others	Big Fossil Creek	Study to provide sponsors with updated baseline H&H models, FEMA, floodplain and detailed topographic maps and baseline environmental information, and to identify water related needs within the watershed
*City of Fort Worth	Watershed upstream of Lake Worth	Lake Worth Ecosystem restoration and watershed management
Studies Expected To Move Forward To Cost-Sharing Negotiations		
Grand Prairie	Mountain Creek Watershed	Multi-objective flood damage reduction, ecosystem restoration, and recreation
Cities of Fort Worth, Grand Prairie, Arlington, and Dallas County	West Fork at Hwy 360	Ecosystem restoration and recreation
Viable Projects, Not Expected To Be Sponsored		
Tarrant County	Village Creek	Basin-wide multi-objective study
City of Arlington	Quads at Hwy 157	Environmental restoration and recreation
City of Coppell	Denton Creek	Multi-objective, erosion control, flood damage reduction, ecosystem restoration
Cities of Dallas and Fort Worth	West Fork/Mainstem	Construction of emergent and forested wetlands to provide ecosystem restoration and water quality improvements. Would utilize effluent from existing waste water treatment plants.

∗Cost-sharing agreements and initiation of studies were imminent at time of final PEIS, and studies are now active.

descriptions of these nearly 90 measures are contained in the referenced Information Paper and the measures are listed and summarized in Chapter 2 of the June 2000 PEIS for the Upper Trinity River Basin.

In order to continue work into the detailed feasibility phase on any of the potential measures, a non-Federal sponsor must agree to cost-share (50/50) in the feasibility investigations. Potential sponsors have been identified for 11 interim feasibility studies. Table 3-1 lists the studies that are 1) currently active, 2) likely to go forward to cost-sharing agreements, and 3) proposed, but currently lack sufficient support for a reasonable expectation that they will be initiated within the near future. This table has changed somewhat from a similar table that was presented in the June 2000 PEIS for the Upper Trinity River Basin. Note that two of those active studies in the immediate vicinity of the DFE project are the Dallas Floodway and the Stemmons North Industrial District. Following is a discussion of those currently active studies under the Upper Trinity River Feasibility Study.

Clear Fork/West Fork Studies

Riverside Oxbow:
The study area is located just east of downtown Fort Worth on the West Fork of the Trinity River and includes the old West Fork channel, which formed an oxbow when the channel was realigned. Ecosystem restoration features include reestablishing low flows through the old oxbow; creation of 21 acres of emergent wetlands; creation and/or enhancement of 18 acres of open water habitat; restore 29 acres of forested pond vegetation; habitat improvement of 133 acres of existing forested tracts, including establishment of a 150 foot wide riparian buffer along the West Fork from Riverside Drive to East 1st Street; restoration of 43 acres of native grassland buffer along the old oxbow; establishment of native grasses and forbs mixed with tree mottes or, habitat islands, on approximately 229 acres of land; and reforestation of roughly 73 acres of open space using a variety of native hard and soft mast trees and shrubs. The project lands, which encompass approximately 600 acres of land, are adjacent to roughly 400 acres of city-owned park and open space. Together these lands would provide 1000 acres of fish and wildlife and open space habitat and outdoor education and recreation opportunities for local citizens within a rapidly growing and developing urban area. The feasibility study on this section was initiated in November 2001. Approximate cost of the project is $22,198,000 based on October 2002 price levels. An Interim Feasibility Report with Integrated Environmental Assessment was released for public review on 14 April 2003. Specific Congressional Authorization will be required prior to construction/implementation.

Central City:
The study area is located just north of downtown Fort Worth, Texas on the Clear Fork and West Fork of the Trinity River. Study limits are Interstate Highway 30 on the Clear Fork, Sumps #7 and #8 in the Rockwood Park area on the upstream end of the West Fork, NE 28th Street on the upstream end of Marine Creek, a tributary of the West Fork, and Riverside Drive on the downstream end of the West Fork. The Central City study area as defined by these boundaries encompasses approximately 4 square miles. The study is intended to be a comprehensive investigation of flood damage reduction, ecosystem restoration, recreation, economic development, and other allied purposes resulting in an integrated feasibility report and environmental impact statement. One of the preliminary concepts to be investigated consists of creating six to eight miles of urban waterfront along the Clear Fork and West Fork between 7th Street and Samuels Avenue. A higher and more constant water level would be impounded by a hydraulic dam near the Samuels Avenue bridge downstream from the junction of Marine Creek and the West Fork of the Trinity River. This would create a constant urban lake and river that link the Stockyards and near north neighborhoods with Downtown, the Cultural District area and Rockwood Park area. A bypass channel would generally follow the current path of the Fort Worth and Western Railroad. The bypass channel combined with the historic Oakwood Cemetery would transition between proposed urban developments and the historic near north neighborhoods. The preliminary cost estimates for this concept is approximately $400 million. The feasibility study on this section was initiated in August 2002. The study is currently in the existing conditions phase.

Stemmons North Industrial District (Interim Feasibility Study)
The study area for the Stemmons North Industrial District is approximately 1,034 acres in size. In the study area, there are about 14.4 acres of open water, 855 acres of grasslands, 154.3 acres of riparian forest, and 10.5 acres of wetlands. Detailed cost-shared feasibility investigations under the Upper Trinity River Feasibility Study are currently being held in abeyance. The City of Dallas is the local project sponsor. The study area is located on the left descending bank of the Elm Fork and is generally bounded by the Elm Fork to the west and south, Loop 635 to the north, and the Standard Project Floodplain boundary to the east. Present development of the area includes extensive commercial and industrial development with some multi-family and high-density residential areas.

No Action:
The "no action plan" or "Future Without Project" is an alternative plan that does not include implementation of any Federal activities within the Stemmons North Industrial District study area. This is the alternative to which other alternatives are compared.

Structural Plan:
A Levee alternative along Mañana Street was preliminarily identified as feasible, however, it has subsequently been determined not to be feasible. The plan would consist of an earthen levee beginning at Interstate 35 (Stemmons Freeway) on the north side of Mañana Drive and extending west to Wesco Creek. An intermittent earthen levee / concrete floodwall system would then be utilized, continuing south and west along the creek to the Burlington Northern Railroad track, then south along the railroad track to Northwest Highway. An earthen levee would then resume, extending south and east, and eventually tying in to the embankment of Loop 12. The levee alignment would cross various roads and streets. In lieu of ramping all of these transportation facilities over the levee, gate closure structures are proposed in some areas. The Mañana Street Levee alternative would provide 500-year flood protection to approximately 1000 acres within the area near Mañana Street. This alternative would remove about 180 acres from the current Federal Emergency Management Agency (FEMA) 100-year floodplain. The footprint of the levee and floodwall would directly impact approximately 31 acres. This plan has been determined not to be economically or environmentally feasible.

Non-Structural Plan:
The details and conditions of a non-structural plan for the Stemmons North Industrial District are under preparation and entail evaluation of the possible buy-out and removal of structures within various flood zones. Currently, the structures eligible for buyout and removal within the 2-year, 5-year, 10-year, and 25-year zones in the Stemmons North Industrial District are 0, 21, 27, and 37 structures, respectively. Based on preliminary evaluations completed to date, a non-structural alternative for this area does not appear justified. The area has been delineated into several reaches and an economic analysis was conducted on Reach 1, the area between the railroad and the Elm Fork, which appeared to be the only reach that had even the slightest chance of economic feasibility for federal participation in a buy-out plan. The results of the preliminary analysis indicate the damages begin at the 5-year flood event and effecting 21 structures with a benefit to cost ratio well below unity. At the 25-year flood event only 37 structures would be impacted, also resulting in a benefit to cost ratio below 1.0.

Status of the Stemmons North Industrial District Interim Feasibility Study:
Due to insufficient benefits to justify the potential costs and subsequent lack of Federal interest, it is likely that this study will be terminated.

Dallas Floodway (Interim Feasibility Study)
The potential exists for a multi-objective project located entirely within the existing floodway in Dallas County, Texas. The Floodway extends along the Trinity River upstream from the AT&SF Railroad Bridge at Trinity River Mile 497.37, to the confluence of the West and Elm Forks at River Mile 505.50, then upstream along the West Fork for approximately 2.2 miles and upstream along the Elm Fork approximately 4 miles. There are approximately 1,422 acres in the study area. Of that amount, 14

acres consists of open surface water, 1,159 acres are grasslands, 51 acres are emergent wetlands, and 198 acres are classified from SPOT satellite data as forest.

No Action:
The “no action” or “Future Without Project” is an alternative plan which would assume no Federal (Corps of Engineers) activities within the Dallas Floodway study area. For Feasibility Study purposes, the Future Without Project Alternative considers the effects of the Dallas Floodway Extension project, which includes the Lamar Street and Cadillac Heights Levees and the Chain of Wetlands measures as recommended in the GRR/EIS, as part of the baseline conditions.

Flood Damage Reduction Plan:
This alternative for the Dallas Floodway seeks to maximize the flood damage reduction outputs. Although an NED Plan has not been determined, preliminary investigations identified a plan that would consist of raising the existing Dallas East and West Levees to a crest height 2 feet above the SPF water surface elevation resulting from implementation of the Dallas Floodway Extension project, which is 1.4 feet lower than the existing elevation at the ATSF Bridge. The levee raise would involve placement of impervious fill up to the design crest height and the addition of fill on the riverside of the levees to a 4 horizontal to 1 vertical slope. This action would result in an increased levee height of approximately 2.5 feet near the Houston Street Bridge. No additional fill would be placed on the city side of the levees. The design would include removal of the existing road base material at the crest of the existing levees prior to the placement of the impervious fill. An additional 18 inches of road base material would be placed on top of the impervious fill to accommodate vehicular traffic for maintenance and inspections. The proposed crest width of the levees would be 16 feet. Excavated fill for the levees would be obtained from the floodplain near the toe of the levees. Levee fill would be excavated from the floodplain from a broad, shallow cut to minimize disruption of the uniformity of the floodplain. These borrow areas would be designed with an average width of 300 feet and have an average depth of 2.5 feet. The improvements to the East Levee would extend approximately 58,400 linear feet and include approximately 1,468,400 cubic yards of embankment. Approximately 54,600 linear feet of the West Levee would be raised and include placement of 1,388,400 cubic yards of embankment. These improvements would extend upstream the full length of the existing levees. The approximate cost for this project is currently estimated at $62.9 million (Benefit/Cost = 1.1) based on January 2003 prices.

No excavation of fill material would occur beneath any of the bridges. Floodwall-type structures would be constructed beneath and between the bridge beams to provide the needed protection at the bridges. All of the existing bridges over the levees provide adequate levee design crest height with the exception of the West Levee crossing of the Houston Street Bridge. Many of the bridges crossing the Trinity River in the study area are being considered as potential historic properties; however, detailed information regarding the status of these bridges and proposed modifications for their protection or restoration is not presently available.

Implementation of this alternative would result in a loss of 11.9 acres of riparian forest. Approximately 787.5 acres of grasslands would also be adversely impacted from implementation of this plan. Replacement of herbaceous vegetation would result in a net gain of 49 acres of grasslands. Mitigation for riparian forest losses would be 35.7 acres.

Environmental Quality Plan:
This alternative for the Dallas Floodway was investigated primarily to improve the environmental character of the study area. This Environmental Quality alternative would provide benefits to fish and wildlife habitat, water quality and aesthetic properties while minimizing adverse impacts to existing cultural resources and flood damage reduction benefits. The Environmental Quality alternative for the Dallas Floodway would consist of: excavating a new meandering low flow channel between the levees; establishing forested areas and additional wetlands; and raising the levees to provide a flood damage risk comparable to the “Future Without Project” alternative condition as compensation for additional roughness attributable to increased forested areas.

The meandering channel would be designed to mimic the original natural Trinity River channel with respect to sinuosity, side slope, and capacity. The meandering channel alignment would diverge from the existing channel alignment upstream of the Dallas Area Rapid Transit (DART) Bridge at the downstream end, and from the existing channel near the confluence of the Elm Fork and the West Fork at the upstream end. The preliminary design for the meandering channel would have a variable bank slope and bottom width but would have an average side slope of 3 horizontal to 1 vertical and an average bottom width of 70 feet. Raised overbank areas reminiscent of natural sediment depositional zones would be incorporated as part of the construction to allow the establishment of trees and shrubs normally found in high quality riparian habitat areas. The existing channel would be filled with excavation from the meandering channel up to an elevation approximately 2 to 4 feet below the existing top of bank except for the bridge crossings where the existing channel would be retained. Portions of the old channel would be partially filled and the old banks would be graded to provide gradual slopes that would lead to the development of shallow wetlands. Additional segments of the original channel would be left unfilled to provide sources of permanent water at several locations within the overbank areas. Woody vegetation, including cottonwood and willow, which has reestablished adjacent to the constructed channel over the last couple of decades, would remain. The new meandering channel would traverse the entire available floodplain width between the levees at several locations but would utilize the existing channel crossings at bridges. This would reduce costs by preventing the need to modify bridges to accommodate different channel crossings. The length of the meandering channel would be longer than the existing channel by approximately 8,500 feet. The average bottom slope of the meandering channel would be 0.025 percent.

The meandering channel would have rock outer-bank and streambed protection at the bends. The rock bank protection would be designed to prevent channel migration due to streambank erosion and provide grade control. Placement of rock in the channel and at key areas along the channel curves would promote areas of turbulence in the river flow that would improve aeration and simulate the natural riffles and pools found in the Upper Trinity River. The rock outer bank protection would extend from the toe of the slope approximately halfway up the bank slope or approximately 15 feet in height. The upstream and downstream limits of the rock slope protection would extend from the upstream curvature of the bend to approximately 200 feet downstream of the bend. The rock bed protection would be strategically placed to form riffles and pools and extend across the entire channel bottom from the downstream limit of the rock slope protection, to approximately 500 feet upstream.

Trees would be planted along the top of the bank of the meandering channel on one side at a minimum width of 100 feet. This riparian corridor is intended to ultimately provide overstory shading for the river and would be planted alternately on either side of the channel only on the outer bends of the meandering channel. One- to 5-acre forested areas would be established in random locations within the floodplain between the toes of the levees. A minimum tree spacing of 15 to 20 feet would be required to facilitate occasional underbrush mowing and floating debris collection; however, the perimeter of the forested area would be marked to ensure that mowing does not occur at the same frequency as the remaining areas between the levees and the levee slopes.

Existing depressions in the floodplain would be preserved or enhanced to provide seasonal wetland functions and to support wetland vegetation. No structures to provide water management of individual wetland sites are proposed. Wetland sites would also be periodically mowed to control woody vegetation but would not necessarily be required on the same frequency as the grassland areas of the floodplain. Implementation of the Environmental Quality alternative would result in an increase of 224 acres of surface water, 184 acres of forest, and 84 acres of wetlands. The Environmental Quality alternative would result in a loss of 492 acres of grasslands.

Status of the Dallas Floodway Interim Feasibility Study:
This study is suspended pending selection of an alignment for the Trinity Parkway proposed by the North Texas Tollway Authority and the City of Dallas. Alternatives being considered for the Trinity Parkway are described later in this chapter. Once the issue of an alignment for the Trinity Parkway is resolved, and if the City of Dallas still desires to proceed with the Corps of Engineers on formulation of a plan for flood damage reduction, ecosystem restoration, and recreation, studies will be resumed.

Any plan for the Dallas Floodway involving Corps of Engineers participation will be subject to additional appropriate NEPA requirements, including tiering from the June 2000 PEIS.

Studies Expected To Move Forward To Cost-Sharing Negotiations
Two potential interim feasibility studies have been identified under the Upper Trinity River Basin Study, which have a reasonable likelihood of sponsorship by local interests, and which are in the general vicinity of the DFE project. Those studies are shown on Table 3-1 as the Mountain Creek Watershed Study and the West Fork at Hwy 360 Study. Grand Prairie has expressed an interest in evaluating opportunities for multi-objective flood damage reduction, ecosystem restoration, and recreation in the Mountain Creek watershed. The Cities of Fort Worth, Grand Prairie, Arlington, and Dallas County have expressed an interest in cost sharing in the feasibility study of ecosystem restoration and recreation along the West Fork of the Trinity River near Hwy 360. Since no studies have currently been initiated it is not possible at this time to define what any potential projects might entail.

West Fork at State Hwy 360
A feasibility study is being considered to evaluate the Federal interest (Corps of Engineers) to participate in a project to provide ecosystem restoration and recreational development. The preliminary identified study area extends from FM157 on the west to Roy Orr Boulevard on the east in Grand Prairie. The area includes floodplain lands between these two areas. Degradation of forested resources has occurred from transportation crossings, uncontrolled offroad vehicle use, and local floodplain fill activities for developments. Aquatic and terrestrial restoration and preservation and linear recreation appear to be project features most likely to have a federal interest. The linear recreation could provide linkage between existing the Arlington trail system immediately to the west and a proposed recreational trail in the city of Grand Prairie. Access needed for operation and maintenance of the ecosystem restoration and recreation could incorporate potential linkage to TRE Centerport rail station. Additionally, the project could incorporate an abandoned railroad bridge, built around 1900 into the system for maintenance access. The existing regional recreational trail system typically utilizes a 12-foot wide concrete trail. This type of trail would be investigated along with other alternative sizes and surfaces along with differing alignments for incorporation into this plan. While the actual study area has not been finalized, it is currently estimated that 800 acres could be included in a project. This study could be initiated by Fall 2003. Potential cost sharing sponsors with the Corps of Engineers for this study include Grand Prairie, Arlington, and city of Fort Worth and Dallas County in cooperation with NCTCOG.

CONTINUING AUTHORITY PROGRAM STUDIES

The Corps of Engineers Continuing Authorities Program (CAP) consists of several authorities delegated by Congress to the Chief of Engineers for study and implementation of projects if determined to be in the Federal interest. All CAP authorities have limitations on Federal expenditures, most at about $5M to $7M per project, and all have requirements for cost sharing by a local sponsor. Among those Continuing Authorities are: Section 205 for local flood damage reduction; Section 206 for aquatic habitat restoration; Section 1135 for habitat restoration of damages caused by Corps of Engineers projects; and others. Descriptions of all on-going CAP studies in the Upper Trinity River Basin are contained in the PEIS for the Upper Trinity River. The only CAP studies that are currently underway that are closely related geographically to the DFE project are being conducted under the Section 1135 authority.

Section 1135 Projects
Section 1135(b) of the Water Resources Development Act of 1986, as amended, authorizes the modification of structures and operations of water resources projects constructed by Corps of Engineers, or restoration of areas affected by Corps of Engineers projects, for the purpose of improving the quality of the environment in the public interest. The Federal expenditure limit on Section 1135 projects is $5,000,000. Section 1135 studies being conducted in the study area are discussed below.

Ecosystem Restoration Project, Old Trinity River, Dallas:
This project will restore riparian and wetland vegetation along the remnant West Fork of the Trinity River channel adjacent to the south levee of the existing Dallas Floodway in west Dallas. This area along with interconnected small-excavated areas serves as the interior drainage system for the Dallas Floodway. The specific objective of the restoration would be to re-establish the bottomland hardwoods, riparian forest and emergent wetlands that originally existed in the project area. This would be accomplished through modification of the Bickers Street Sump, construction of a water surface elevation control structure at the Westmoreland Road crossing, restoration of the lower Shadrack Creek channel by construction of an overbank wetland, planting of trees and shrubs along the Old Trinity Channel that are conducive to enhancing wildlife values, and regeneration of the littoral zones along the developed and modified wetlands to provide additional wildlife and fisheries values. The project would restore approximately 29.93 acres of emergent wetlands, improve the quality of habitat on 28.42 acres of riparian forest and result in the restoration of 53.48 acres of grassland. Public review of the Draft Report and Environmental Assessment for this project is currently scheduled for July 2003.

Ecosystem Restoration Project, Joppa Preserve, Dallas County:
At the request of the Dallas County, and under the authority of Engineers Section 1135 of the Water Resources Development Act of 1986, as amended (33 USC 2201), the Fort Worth District Corps of Engineers conducted an ecosystem restoration study to identify the environmental degradation caused by the construction and operation of the Dallas Floodway project and subsequent development activities, evaluate measures to improve the functional stability and integrity of important ecological resources, identify opportunities that would improve the quality of these important ecological resources, and recommend a cost effective ecosystem restoration project, if applicable. The study area consisted of approximately 390 acres of lands within the 100-year floodplain of the Trinity River located southeast of Interstate Highway 45 and Loop 12 in southeast Dallas, Dallas County, Texas. The majority of the area, approximately 315 acres, is currently owned by Dallas County and operated and maintained by the city of Dallas. This property, known as the Joppa Preserve, consists of Lemmon Lake, Little Lemmon Lake, and some surrounding area and is located immediately adjacent to the main stem of the Trinity River about 9 miles downstream of the Dallas Floodway project.

Proposed project features include the reconstruction of the levee embankment separating Lemmon Lake from the Trinity River in two places where severe erosion and bank sloughing have occurred; the removal and replacement of the existing water inlet structure in Lemmon Lake from an unnamed tributary of Five Mile Creek, diversion of water from the same tributary into Little Lemmon Lake; repair of an existing water outlet structure in Little Lemmon Lake; relocation of the water control structure in Lemmon Lake to the southern bank of the lake, removal of the old structure, and repair of the breach in the levee at the location of the old structure; and dredging portions of Little Lemmon Lake to provide water depth gradients and use the dredge material to create a nesting island. In addition, the proposed project would restore or create approximately 123 acres of emergent wetlands, improve the quality of the habitat on 68 acres of bottomland hardwood and mixed deciduous forest stands, reforest 53 acres of open space to bottomland hardwoods, and restore 60 acres of native grass and forb lands, in addition to protecting 20 acres of maintained park lands, and 73 acres of open water. The remaining acres of existing habitat within the study area would become more valuable by reducing the fragmented nature of the existing habitat and restoring a contiguous corridor for migration of avian and wildlife species through the area. The recommended plan would significantly increase the habitat value of the study area over the future without project alternative.

A final component of the plan, recreation access, includes approximately 8,800 linear feet of equestrian trail that will be 10 foot wide, stabilized dirt covered with wood mulch, 550 linear feet of shared equestrian and pedestrian trail that will be 8 foot wide grass pavers suitable for pedestrians (approved by the Americans with Disabilities Act) and horses, and 3,900 linear feet of pedestrian trail the is 5 foot wide reinforce concrete. In addition, recreation access features include a roughly 900

square yard parking lot located in the southwestern corner of the study area, which can be reached from Simpson-Stuart Road.

The recommended plan would impact waters of the United States and is subject to provisions of Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The restoration activities recommended would meet the conditions of Nationwide Permit 27, Wetland and Riparian Restoration and Creation Activities. The State of Texas has issued a water quality certificate for Nationwide Permit 27 and therefore no further coordination is required under Section 404. The proposed project is located within the flood plain of the Trinity River. The project, as proposed, requires siting within the flood plain to meet its intended purpose and further, the project would not induce or increase flood damages within the area, therefore, the proposed project is in compliance with Executive Order 11988, Floodplain Management. The proposed project would neither adversely impact nor result in any loss of wetland areas so the project is in compliance with Executive Order 11990.

Public involvement for this project has been conducted, the Finding of No Significant Impact (FONSI) has been signed, and higher Corps of Engineers authority has approved the planning report. The project is currently waiting approval of the Project Cost Sharing Agreement (PCA) and funding for preparation of Plans and Specifications for construction.

REASONABLY FORESEEABLE ACTIONS OF OTHERS

There are a number of potential projects of other entities, including the private sector as well as local, state, and Federal agencies. There are relatively few, however, that have the potential for significant cumulative effect on water and related land resources of the Upper Trinity River Basin study area with the possible exception of the proposed Trinity Parkway.

FLOODPLAIN POLICIES AFFECTING FUTURE DEVELOPMENT

There have been two major regional policies developed since the mid-1980s that are specifically intended to reduce cumulative impacts to hydrology and hydraulics of development activities within the floodplain of the Upper Trinity River Basin. The first is the Trinity Regional Environmental Impact Statement (TREIS) and its Record of Decision of 1988. The second is The Corridor Development Certificate (CDC) program, which is a joint effort of the North Central Texas Council of Governments (NCTCOG), the Corps of Engineers, Fort Worth District, and member NCTCOG cities with jurisdiction over the Trinity River floodplain.

1988 Record of Decision for the Trinity Regional EIS

The TREIS was prepared by the Corps of Engineers in the mid-1980s to address extensive floodplain development that was occurring along the Trinity River within the region. The TREIS focused on actions requiring permits under Section 10 of the River and Harbors Act of 1899 and Section 404 of the Clean Water Act of 1972, as amended, with emphasis on addressing cumulative impacts of granting multiple permits. The Record of Decision (ROD) for the TREIS was signed in 1988. The ROD applies to all project actions requiring a permit under either Section 10 or Section 404 within the Standard Project Flood (SPF) floodplain. In general, the criteria developed to reduce hydraulic impacts include the provision for no increase in the 100-year or SPF elevation from dredging and/or fill activities along the mainstem, West Fork, and Elm Fork and tributaries. The criteria also require a maximum loss in storage capacity for the 100-year and SPF discharges of 0 percent and 5 percent, respectively. For projects proposed on tributaries with drainage areas of 100 square miles or less, criteria allow for up to 15 percent reduction of valley storage within the 100-year floodplain and up to 20 percent reduction of the SPF floodplain valley storage. Further, requested projects on tributaries that would increase water surface elevations to a point of inducing additional flooding or damage to others are not to be permitted. The ROD also established guidelines for mitigation of environmental habitat losses caused by projects in floodplain areas covered by the TREIS.

The criteria of the TREIS ROD apply only to navigable waters of the United States under Section 10 and waters of the United States including wetlands under Section 404. It does not apply to projects for which the Corps of Engineers has no regulatory authority. The TREIS raised awareness that a large area of floodplain lands within the Upper Trinity River Basin could be developed outside the jurisdiction of the Corps of Engineers and that if developed following only Federal Emergency Management Agency (FEMA) requirements, significant increases in flooding frequency and extent would continue to occur in adjacent and downstream areas. Subsequently, the Corridor Development Certificate process was established as a means to address those floodplain actions that were not within the jurisdictional areas administered by the Corps of Engineers.

Corridor Development Certificate Process

The purpose of the CDC Process is to affirm local government authority over for local floodplain management while establishing a common set of permit criteria and procedures for development within the Trinity River Corridor. The CDC process ensures that a proposed development's effect on future flooding will be considered in floodplain permitting decisions. Member cities, counties, and the NCTCOG administer the CDC program with technical advise by the USACE. The program, as part of the Trinity River Common Vision, relies on member cities within the area to require developers to submit plans showing the impact of their proposed projects on floodplain hydraulic values. Emphasis is placed on preservation of valley storage; however, participating cities may approve projects with valley storage losses when shown to be in the best overall public interest. After a review by all other cities within the CDC, the proponent city decides on whether to allow the floodplain alteration. The CDC criteria centers on stabilizing flood risk by not allowing new development to cumulatively worsen hydrologic and hydraulic impacts. The member cities participating in the CDC program include Arlington, Carrollton, Coppell, Dallas, Farmers Branch, Fort Worth, Grand Prairie, Irving, and Lewisville, and the counties of Dallas and Tarrant.

DALLAS TRINITY RIVER CORRIDOR MASTER IMPLEMENTATION PLAN

The City of Dallas, on 25 August 1999, preliminarily approved a Trinity River Corridor Master Implementation Plan for the Dallas Floodway and Dallas Floodway Extension area. In the footprint of the Dallas Floodway, this alternative, subsequently called the "Lakes Only" alternative, would consist of a series of lakes, a split river channel, promenades, constructed wetlands, recreation trails, parklands, grasslands, and pedestrian bridges. The lakes and split river channel would result in excavation of one large lake approximately 135 to 235 acres in size and numerous other smaller lakes within the existing Dallas Floodway. The main river channel would be divided with channels running parallel to the levee on either side of the floodway. The lake(s) would be located in the central section of the floodway between the channels, and source water for the lake would be a combination of groundwater and Central Wastewater Treatment Plant effluent polished by the upper three wetlands of the Dallas Floodway Extension's "Chain of Wetlands." The split river channel and raised promenade would provide 2-year flood protection to the lake.

The City of Dallas' Trinity River Corridor Master Implementation Plan provides for the inclusion of water-related or recreational features. However, there are a number of possible variations, depending upon the ultimate alignment selected for the proposed Trinity Parkway route (discussed below). The Trinity River Corridor Master Implementation Plan utilizing the "Lakes Only" plan or the "Lakes Only" plan in conjunction with the Industrial Boulevard option for the Trinity Parkway would result in adverse impacts to 492 acres of grasslands and 191 acres of riparian forest while creating approximately 513 acres of open surface water and 147 acres of wetlands. Implementation of this alternative with a Parkway between the levees would affect essentially the same acreage except that it would also create 260 acres of hard surface roads between the levees.

TRINITY RIVER CORRIDOR COMPREHENSIVE LAND USE PLAN (CLUP)

In June 2000, the City of Dallas contracted with a consulting group, the HTNB Team, to develop a comprehensive land use plan for the Trinity River Corridor. Currently, the project is in its fourth phase and the consultant team is developing a comparative analysis of the Trinity Parkway options that considers economic, land use and urban design factors. The purpose of the Trinity River Corridor Comprehensive Land Use Plan is to review and clarify the goals and objectives for the Trinity River Corridor in order to develop and provide information to the Dallas City Council and the Citizens of Dallas related to the costs and benefits of the Trinity River Project and its specific components. The objectives of the costs and benefits study are as follows:

- To identify the site specific, and spin-off costs and benefits of each of the Trinity River Project components as currently planned, including the Dallas Floodway Extension (DFE), the Elm Fork Levee, the Trinity Corridor Transportation Improvements, the Great Trinity Forest, and the Chain of Lakes,
- To provide analysis needed to assist the City in identifying a preferred alternative for the Trinity Parkway and associated improvements, and,
- To re-evaluate the phasing of the proposed improvements based upon the costs and benefits of each.

The purpose of the study is to develop a long-range plan, implementation strategies and economic analyses for the Trinity River Corridor. The plan will also provide analysis needed to assist the City in identifying a preferred alignment for the Trinity Tollway.

Study Area

In the first phase of the study, the consultant reviewed existing plans and policies, existing physical conditions, existing infrastructure, and proposed Trinity River Corridor Projects in order to identify potential boundaries for both primary and secondary areas of study. Twenty-two (22) sub-areas of the corridor were identified as primary study areas. The consultant will prepare very detailed land use plans and urban design strategies for these sites. These areas were selected based upon the following criteria: a) proximity to the Trinity River; b) proximity to one or more of the proposed Trinity Parkway options; c) proximity to existing or future DART rail; d) existing residential uses with housing issues; and e) existing under-utilized commercial and industrial areas. The secondary study area or overall project study area is roughly 1 to 1 ½ miles on either side of the Trinity River from Royal Lane on the north to IH 635 on the south. The consultant team will prepare a recommended land use plan and planning policies for this area.

Figure 3-3 provides an overview of the study area for the CLUP, along with the locations of the 22 sub-areas of the primary study area. From the 22 primary study areas, the consultant will identify 10 prototype sites. The development types in the prototype plans can occur in other places along the corridor with similar characteristics.

Expected Outcomes

The expected outcomes of the CLUP study include a comprehensive land use plan, including urban design strategies, for the Trinity River Corridor study area. Economic analyses from the study will include: cost/benefit analysis of the Trinity Parkway options; market analysis of the recreational amenities associated with the Trinity Project; market analysis of the Trinity River Corridor; and cluster/target industry analysis for corridor. The team will also conduct a study to determine the financial approaches that will capture the economic potential and benefits generated by the Trinity River Project. An implementation strategy will be developed which will include identification of budget strategies, financing program for improvements, identification of State and Federal funding opportunities, identification of regulatory tools and changes, identification of regulatory guidelines, identification of catalyst projects, and preparation of a phasing plan for development. In the last phase of the study, the consultant will identify the ordinances and policies that will need to be changed to implement the recommended plan. The team will also identify design guidelines that

would need to be incorporated in zoning and subdivision regulations and incorporated in property disposition agreements to achieve the desired results of the recommended plan.

Current Status
The consultant is tentatively scheduled to brief the City Council by Midyear 2003. This study is now expected to be completed by the end of 2003. The development of the comprehensive land use plan (last phase of the project) is scheduled after the City Council selects the locally preferred alignment for the Trinity Tollway. Until this plan is developed, presented to, and adopted by the Dallas City Council, it is not possible to predict the individual impacts of the plan or cumulative impacts associated with the DFE project.

TRANSPORTATION – VEHICULAR

The Texas Department of Transportation (TXDOT), Dallas District is responsible for planning to meet much of the transportation needs in the study area. Parts of Dallas, Denton, Collin and Ellis Counties are within the Dallas District portion of the Upper Trinity Basin. TXDOT provided data to the Corps of Engineers for inclusion in the Supplement to the EIS for the DFE project. The information was provided in the form of a spreadsheet that enabled the Corps of Engineers to conduct a further analysis to isolate the projects that actually were proposed to cross tributaries to or on the Main Stem, Elm Fork, and West Fork of the Trinity River. Data available at this time precludes determination of actual footprint that would be affected by most of the proposed activities; however, the width of the crossing including approach construction is available. Table 3-2 provides a summary of that information by county.

Most of the construction that would be conducted by TXDOT summarized in Table 3-2 would be replacement or in some cases widening of existing structures. Further most of these activities are on crossings of small tributaries on existing rights of way, and would likely be authorized by Nationwide permit under the Section 404 process. A few of these projects however have a potential to cause.

TABLE 3-2, DALLAS DISTRICT TXDOT REASONABLY FORESEEABLE PROJECTS
Bridge and Abutment Replacements and New Trail Construction
Within Upper Trinity River Basin

County	Number of Activities	Linear Feet	Proposed Construction Initiation Dates	Estimated Cost
Bridges				
Collin	6	1,900	Jan 2003 to Mar 2007	$7,276,000
Dallas	94	92,200	Mar 2001 to Jan 2010	$189,968,000
Denton	73	38,100	Jan 2000 to Apr 2012	$44,544,230
Ellis	3	1,600	Sep 2003 to Jan 2008	$1,905,657
	176	133,800		$243,693,887
Trails				
Dallas	6	34,500	May 2005 to Jun 2012	$15,660,521
	6	34,500		$15,660,521
Totals	182	168,300		$259,354,408

cumulative impacts to some resources, particularly, waters of the United States, including wetlands, riparian forests, hydrology and hydraulics or other floodplain values. These transportation projects as well as those that might be constructed under other local government authorities or initiatives, including the City of Dallas' proposal for bridge crossings of the Trinity River mainstem are described in the following paragraphs.

Trinity Parkway/Tollway

By far the proposed action within the general geographic area of the DFE with the greatest potential for cumulative effects is the proposed Trinity Parkway or Tollway. Feasibility studies are currently underway to determine whether the project may be economically and environmentally feasible. The Programmatic EIS for the Upper Trinity River Basin (PEIS) dated June 2000 addresses the status of the proposed Tollway, as it was understood at that time. Below is a brief background description of the proposal along with descriptions of the alternatives that are being evaluated by the NTTA and their estimated costs as of the date of this Supplement to the EIS for the DFE project.

In 1998, TXDOT completed a Major Transportation Investment Study (MTIS). The study focused on transportation needs in the IH-35E/IH-30 interchange on the west side of downtown Dallas (the Mixmaster) and the depressed portion of IH-30 south of downtown (the canyon). The MTIS plan of action consists of seven elements including constructing a reliever route along the Trinity River. Based upon support from the City of Dallas and the North Texas Tollway Authority (NTTA), the Federal Highway Administration, on June 17, 1999, issued Notice of Intent to prepare an Environmental Impact Statement on the Trinity Tollway. The EIS will address five alternative alignments for the Trinity Tollway. Additionally, a design option for access to IH-35E (South R.L. Thornton Freeway) will be addressed for each of the five alternatives. The alternatives include: 1) reconstructing Irving/Industrial Boulevard to be installed as a double-deck structure, 2) modification of the existing Irving/Industrial Boulevard to accommodate increased traffic load, 3) combined Tollway constructed on the riverside of the East Levee of the Dallas Floodway, 4) split Tollway constructed on the riverside slopes of the Dallas Floodway East and West Levees, 5) split Tollway constructed on the landside slopes of the Dallas Floodway East and West Levees. All alternatives use the US-175 interchange with S.M. Wright Freeway (SH-310) as the southern terminus, and the Stemmons Freeway (IH-35E) interchange with John W. Carpenter Freeway (SH-183) will serve as the northern terminus. Structural alternatives being evaluated by NTTA are described below:

Irving/Industrial Boulevard – Elevated:

This alternative would entail development of a reliever route by modifying the entire Irving/Industrial segment to be installed as a double-deck structure above the existing city street. Traffic along the proposed route would be bi-directional. The elevated Irving/Industrial Boulevard option would be approximately 8.83 miles in length and would vary from four to three lanes in each direction. The construction cost of this alternative is approximately $1.2 billion and would require approximately 280 acres of right-of-way. This alternative would essentially avoid impact to the Dallas Floodway.

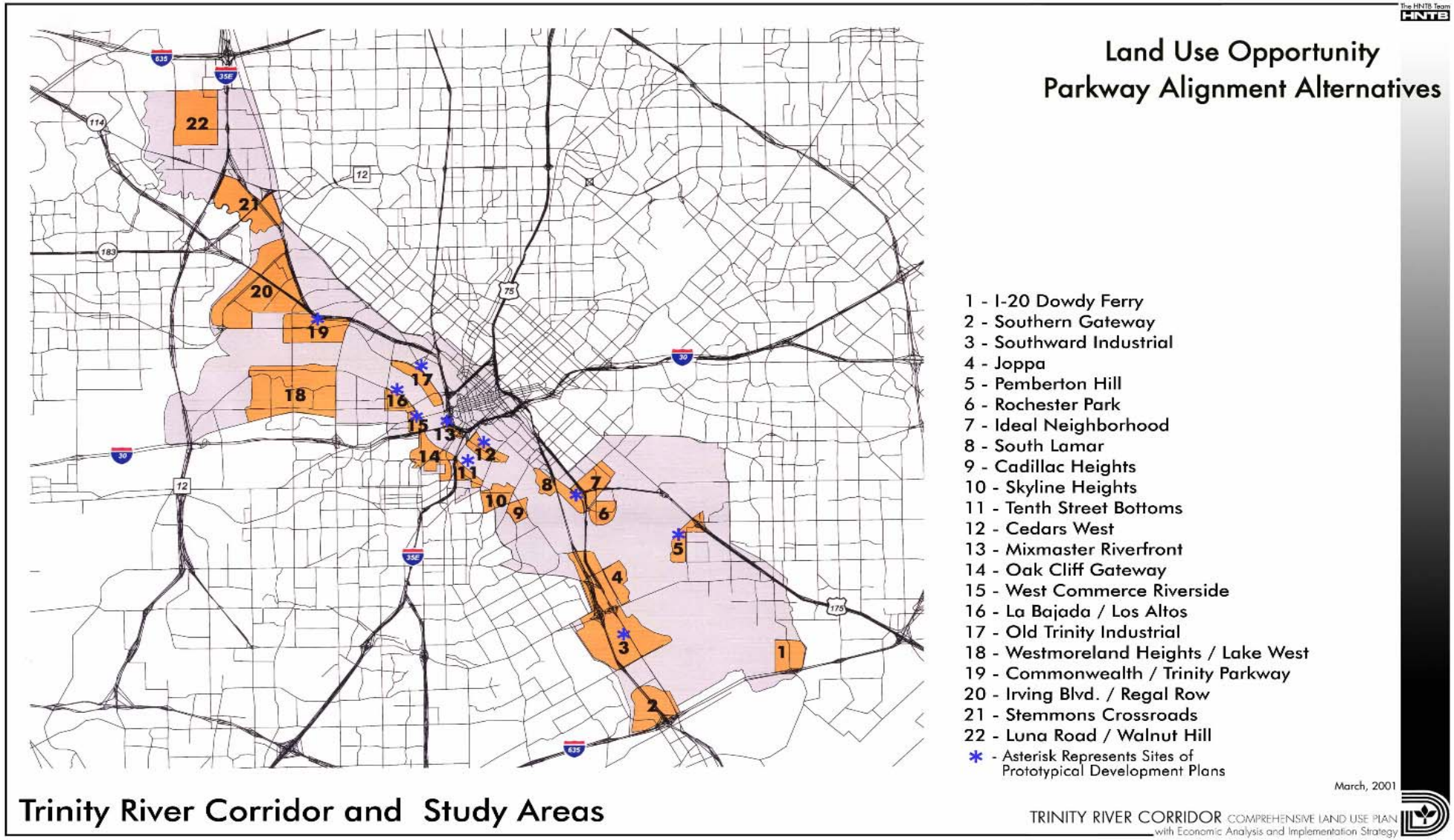
Irving/Industrial Boulevard – At Grade:

This alternative is similar to the elevated alternative; however, the road is installed primarily at-grade. Traffic would be bi-directional with four to three lanes in each direction. The route for this alternative would be approximately 8.83 miles in length and would require approximately 370 acres of right-of-way. The construction costs would be approximately $923 million to construct. This alternative would essentially avoid impact to the Dallas Floodway.

Combined Tollway – Riverside:

This alternative would have four to three lanes in each direction along the riverside of the Dallas Floodway East Levee. The route would have a design speed of 60 mph with a posted speed of 55 mph and be approximately 8.67 miles in length. The roadway would generally follow the riverside face of the Trinity Floodway East levee to the DART light rail bridge (5.6 miles) before crossing the levee to proceed on the landside of the proposed DFE East Levee extension (Lamar Levee). Placement of the roadway would be approximately two feet above the 100-year flood event, and

FIGURE 3-3, TRINITY RIVER CORRIDOR LAND USE PLAN (CLUP)



where the road underpasses existing bridge structures, protection from a 100-year flood event would be provided by a riverside floodwall. The tollway would have a width of approximately 332 feet in the floodway segment. The Combined Tollway – Riverside alternative would require 396 acres of right-of-way and cost approximately $620 million to construct.

Split Tollway – Riverside:
This alternative would be constructed on the riverside slopes of the Dallas Floodway East and West Levees with four to three lanes in each direction. The roadway would split west of Hampton/Inwood Road with the southbound lanes crossing the Trinity River to the West Levee. The southbound and northbound lanes would travel along the riverside face of the west and East Levee, respectively. The split would continue for approximately 4.2 miles before the southbound lanes would cross to the east levee via a bridge structure and rejoin the northbound lanes near Corinth Street. The roadway would be placed upon earthen embankments set approximately two feet above the 100-year flood level, and where the road underpasses existing bridge structures, protection from a 100-year flood event would be provided by a riverside floodwall. The roadway width would be 246 feet within the floodway segment, and a 20-foot drainage swale would be located on the levee side of the roadway. The entire Split Tollway – Riverside alternative is approximately 8.84 miles in length and would require 498 acres of right-of-way. The construction cost for this alternative is approximately $670 million.

Split Tollway – Landside:
The landside alternative is identical to the Split Tollway – Riverside alternate, except the roadway would be located on the landside of the levees and underpass existing arterial roadways. The normal drainage conditions of the levee-protected areas would be incorporated into the design of the roadway. As with the riverside alternative, the southbound lanes would cross from the west levee via a bridge to the east levee and rejoin the northbound lanes near Corinth Street. This alternative is approximately 8.90 miles in length and would require an estimated 402 acres of right-of-way. Construction costs would be approximately $865 million.

Status of the Proposed Trinity Tollway:
The Federal Highway Administration filed a Notice of Intent (NOI) to prepare an EIS for the Trinity Tollway on June 17,1999. A second NOI was published, which included analysis of potential lakes between the existing Dallas Floodway levees as part of the scope of the Trinity Tollway EIS. As of the date of this draft Supplement to the EIS for the DFE project, the Federal Highway Administration has a scheduled release of a draft EIS for the Trinity Tollway sometime in 2003 and the final EIS is due out sometime in 2004. The Federal Highway Administration's EIS for the Tollway will contain detailed discussions of the direct and indirect effects of each of the alternatives to the Trinity Tollway. After public input on the draft, the Final EIS for the Tollway will include the Federal Highway Administration's recommended alignment and a proposed implementation schedule.

Southwest Parkway
This potential project is not in the immediate vicinity of the DFE project, but because it was not identified in the PEIS, it is discussed here. The Southwest Parkway is a potential 32-mile commuter route from the southwest edge of downtown Fort Worth to Cleburne. The initial project will proceed in a southwesterly direction from downtown to an intersection at Alta Mesa Boulevard, a distance of approximately eight miles. This is a cooperative project between NTTA, the City of Fort Worth, and the Texas Department of Transportation. TXDOT plans to assist in the design and construction of the interchanges at IH 30 and IH 20. In addition, TXDOT plans to extend the initial phase of Southwest Parkway to FM 1187. Feasibility and environmental impact studies are on-going. Final design and right-of-way acquisition could take two years, with construction anticipated to begin in 2004.

Dallas North Tollway (DNT) System
The DNT is a 21-mile, six-lane, main street of the Metroplex connecting downtown Dallas to cities in northern Dallas and southern Collin and Denton Counties, passing through or along the cities of Dallas, Highland Park, University Park, Addison, Farmer's Branch, and Plano. Service roads have already been built north of SH 121 in cooperation with Collin County and Frisco in anticipation of an extension of the tollway. An environmental assessment was performed on the proposed extension from its current

terminus north of Legacy Drive in Plano to US 380 north of Frisco. From Legacy Drive to Gaylord Parkway, the DNT is currently under construction. This includes the interchange at SH 121. The NTTA periodically evaluates the financial feasibility of continued extensions of the DNT to points north of SH 121. Frontage roads currently exist from Legacy Drive just south of SH 121 to FM 2934. Collin County is currently constructing one frontage road from FM 2934 to US 380. Future work on this system falls outside of the study area.

Project Pegasus
Project Pegasus focuses on the IH 30/IH 35E interchange on the western edge of downtown Dallas, locally known as the 'Mixmaster'; the depressed portion of IH 30 south of downtown, locally known as the 'Canyon'; and the portion of IH 35E from the Mixmaster to SH 183, also referred to as 'Lower Stemmons'. Project Pegasus is intended to transform the two major Interstate Highways directly serving Downtown Dallas, by totally redesigning IH 30 from Sylvan Avenue to IH 45, and IH 35E from Eighth Street to Empire Central Drive (north of SH183).

Bridge Crossings of the Trinity River
The bridge crossings of the Trinity River are proposed to be completely reconstructed at both IH 30 and IH35. The City has determined that both bridge replacements should be done as a Signature Bridges. $12 million has been raised by the City of Dallas, Dallas County and from an anonymous donor for the design phase of I-30 Bridge. Phase 1 of preliminary design is expected later this year; design must be completed by 2005 to meet TXDOT anticipated construction schedules. Other proposed bridge replacements for the Trinity River in the vicinity of the DFE project are as follows:

Woodall Rodgers Extension and Bridge**:**
The extension across the Dallas Floodway would be constructed with funding coming from FHWA, TXDOT, and the City of Dallas. Environmental studies have been initiated and documents are in internal review. Although detailed design will not begin until the Trinity Parkway/tollroad alignment is selected, it has been determined that this bridge should be designed with aesthetic considerations. Award of design contract to Santiago Calatrava, S.A. was made in January 2002. The current estimated time for TXDOT to initiate construction of this bridge is mid-2005. The Woodall Rodgers Extension Bridge is potentially the first major signature bridge to be constructed across the Trinity River Corridor. Located between the Continental Avenue and Union Pacific Railroad Bridges, the Woodall Rodgers Extension Bridge would unite the West End and downtown Dallas to West Dallas and Oak Cliff. One suggested design for the bridge would be for a six to eight lane bridge consisting of two separate inclined arches connected at the top. The Continental Avenue Bridge could be totally converted to a pedestrian bridge.

Beckley Avenue Enhancement:
The studies to provide technical information for eventual design of Beckley Avenue improvements were initiated in Summer 2001. The segment currently being evaluated has boundaries of the Union Pacific Railroad and just south of Commerce Street. The intent of the upgrade is to improve Beckley to a six-lane expanded roadway. While studies have been initiated, the detail design is dependent on the Woodall Rodgers extension design. It is estimated that construction would be complete by 2008. The footprint of the Beckley Avenue improvement would be located entirely on the landside of the West Levee.

Corinth Street Bridge (new):
Proposed by TxDOT and the City of Dallas, it was originally anticipated that this bridge would be completely demolished and reconstructed. However, to retain the architectural significance of this structure it has now been planned as a separate additional bridge.

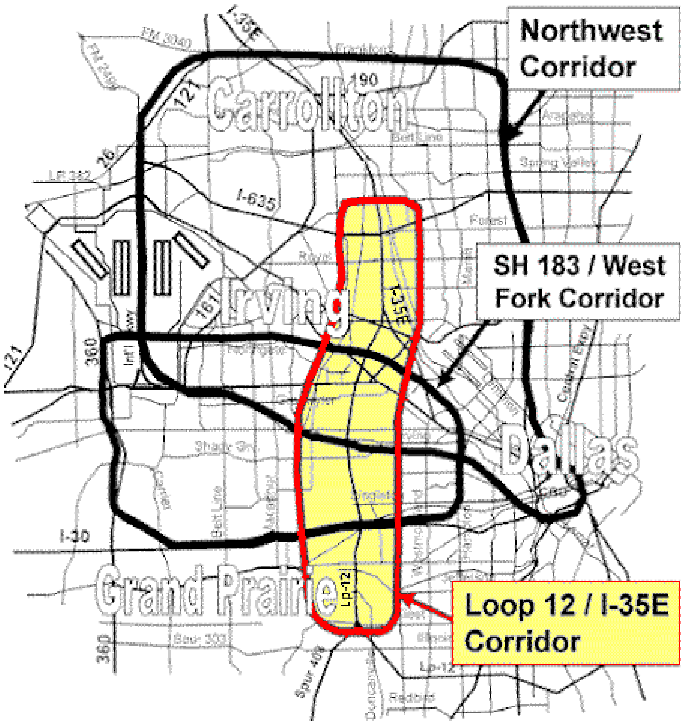
Hampton Road Bridge (replacement):
Based on information received, the Hampton Bridge replacement will provide for a widening of the existing lanes to provide for better traffic flow. Some of the design has been completed but construction funds are not foreseeable for this project at this time.

Sylvan Street Bridge (replacement):
The surface of this bridge and its approaches are entirely within the Dallas Floodway floodplain. Because of its location, the crossing is required to be closed on a frequent basis as rising waters inundate the floodway. An initial design has been done for this Dallas County Bridge, but construction funds have not been appropriated. No detailed information has been made available to the Corps of Engineers for this proposal.

SH 183 Bridge at Elm Fork (Replacement):
The SH 183 Bridge at the Elm Fork is a bridge widening enhancement project, with some lane widening and possible new lanes. The Major Investment Study (MIS) is underway by the highway department, which should provide more general information about capacity needed but will not provide details for impact assessment.

Loop 12 Bridge Replacement at Elm Fork and West Fork:
Consideration for improving this crossing is incorporated into a larger MIS, which should provide more general information about capacity needed. Currently, however, details are insufficient to determine size, timing, and exact location of the structures or other transportation features that might be implemented in the Loop 12 study area. Figure 3–4 provides an overview of the Loop 12 study area.

FIGURE 3-4, Transportation Corridors



President George Bush Turnpike (Segment IV)
The proposed project is approximately 5.5 miles in length and involves the construction of a new 6-lane north-south controlled-access tollway in Dallas County specifically within the Cities of Irving, Carrollton and Farmers Branch. The purpose of the proposed project is to create a direct link between IH 35E and IH 635, which would complete the northern and western sections of the President George Bush Turnpike. A Section 404 permit (199700020) was issued on May 24, 2002, authorizing placement of fill into 133 acres of waters of the United States. The project will result in permanent adverse impacts to 58.61 acres of waters of the United States including 26.22 acres of wetlands and temporary adverse impacts to 74.12 acres of waters of the United States including 11.54 acres of wetlands. To compensate for adverse

impacts to the aquatic environment, the project also includes a mitigation plan that must be implemented as part of the project. The plan includes restoration and /or enhancement of approximately 12, 251 linear feet, which would total 66.0 acres of Elm Fork Trinity River adjacent to the proposed roadway, development of 22.4 acres of emergent wetland and 18.5 acres of open water habitat within the 100-year floodplain of the Elm Fork. The entire 106.9 acres in the mitigation plan would be protected in perpetuity through management as mitigation and natural areas. Authorization for completing the work by Section 404 ends on December 31, 2006.

West Fork Corridor
The Texas Department of Transportation is performing a Major Investment Study (MIS) on improvements to SH 183 (the "Airport Freeway") and the construction of a companion transportation facility referred to as the West Fork Corridor. The general study area is also indicated on Figure 3-4 and basically covers east-west transportation needs in the north central region of the DFW Metroplex. Generally, the study area includes, west Dallas, central Irving, north Grand Prairie, and the southern area of DFW International Airport. Also covered are areas generally north of the West Fork of the Trinity River. The SH 183/West Fork Corridor covers existing SH 183 (Airport Freeway) through Dallas and Irving from the interchange of I-35E and SH 183 westward to SH 360 and is about 10 miles.

The West Fork Corridor connects to the west end of the "Trinity Parkway Corridor." Ultimately, this facility would connect the Central Business Districts of Dallas and Fort Worth. The corridor extends almost to I-30, covering some portions of Grand Prairie, Arlington, and Fort Worth. The MIS for the West Fork Corridor will cover a large variety of potentials to address transportation needs in this area and will consider travel modes such as:

- Rail and bus transit
- High Occupancy Vehicle (HOV) lanes
- Express lanes
- Bicycle and pedestrian facilities
- Toll facilities
- Non-construction measures such as Travel Demand Management (TDM)
- Transportation Systems Management (TSM)
- Intelligent Transportation Systems (ITS)
- Additional all purpose travel lanes

At this point in time, no specific alignments or features have been chosen or designed such that cumulative impacts can be quantified. However, it can generally be stated that hydrology and hydraulics and environmental preservation issues are of concern in the West Fork and its floodplain. Social and economic impacts will be of greater concern for alignments of project features near the existing Hwy 183 area, or for that matter along most areas not within the 100-year floodplain, which has been or will be subject to competing developmental pressures

TRANSPORTATION – RAIL

Trinity Railway Express (TRE) parallel bridge and repair of existing bridge on Elm Fork
The bridge crossing is actually owned and operated by Burlington Northern Santa Fe Railway, but is shared for use by the TRE. A parallel bridge at the Elm Fork crossing of the Trinity River within the existing Dallas Floodway will be added to allow better scheduling of the commuter train. The addition is part of an overall plan to improve the crossing of the river in this area. According to the Dallas Morning News, August 8, 2002, the Elm Fork bridge project would take about 18 months to complete.

The new bridge construction was authorized by Nationwide Permit 14 (199900397) and renovation / replacement of the existing bridge was authorized by Nationwide Permit 3 (20000935). Evaluation of information submitted for Corps of Engineers permit review, and also to the Federal Emergency Management Agency, indicates the combined actions would result in a impact of 0.11 acres of waters of

the United States and an additional 0.04 acres of wetlands. The project was reviewed and determined to meet the hydrologic and hydraulic criteria of the CDC review process discussed earlier in this chapter and also meets the aforementioned for new construction in a Federal floodway.

Northwest Corridor Crossing at Elm Fork
Dallas Area Rapid Transit (DART) initiated a Northwest Corridor Major Investment Study (MIS) beginning in Spring 1998. In December 1999, the Project Team completed the detailed evaluation of alternatives including costs, operating plans and ridership. The DART Board approved the Locally Preferred Investment Strategy (LPIS) on February 22, 2000. The rail portion of the strategy included two routes one of which detailed a crossing of the Elm Fork of the Trinity within the existing Dallas Floodway. The University of Dallas/Texas Stadium alignment diverges from the Union Pacific Railroad just south of Northwest Highway. The alignment turns southwest toward Texas Stadium and University of Dallas, paralleling Story Lane, and continues along the south side of SH 114 before turning north toward the Las Colinas Urban Center. At the North Urban Center Station, the alignment turns west and generally parallels SH 114 to its ultimate terminus at the north end of DFW Airport. Most of this alignment would be on a new corridor. Detailed design studies of this alignment will begin in Fall 2002. The crossing of the Elm Fork near Story Lane should have similar impacts to waters of the United States as those described for the TRE Elm Fork crossing.

Southeast Corridor Crossing at White Rock Creek
The US Department of Transportation, along with Federal Transit Administration and DART, has conducted studies to evaluate potential alternatives to provide light rail project to improve transit opportunities within the Southeast Corridor. The study area generally includes the area along and between IH-30 and IH-45 extending from Dallas CBD to IH- 635. Several alternatives were evaluated in a draft EIS dated February 2002. The “build” alternative discussed in the summary of the draft EIS indicates that eight streams or tributaries would be crossed with bridge structures. Four areas within the 100-year floodplain would be crossed. Approximately 70 acres of vegetation would be impacted, of which 30 acres are currently forested primarily within the White Rock Creek to the June Road segment.

Other Railroad Modifications
Representatives of the Union Pacific Railroad and others have met with Corps of Engineers and City of Dallas personnel to address a potential rail siding expansion within an area adjacent to the proposed DFE. The existing rail yard is located East of Highway 310 and is intersected by Linfield Street. In this area, the only direction that the yard could be expanded would be toward the Trinity River, which would require fill within the floodplain to accomplish. This expansion, if it should occur, would likely extend onto a 25-acre tract of land that was identified in the DFE GRR/EIS to be partially used to meet environmental mitigation requirements. Additional discussions indicate that should the UPRR decide to further consider expansion in this area, there would be a need to evaluate means to mitigate hydrologic, hydraulic and environmental impacts. One idea under consideration to accomplish the hydrologic and hydraulic impacts would be to develop valley storage on the east side of the Trinity River directly across from the existing rail yard. Material removed to provide the valley storage could be used for the rail yard expansion and additional material could be used on the more upland areas adjacent to the borrow site to raise that area above the 100 year flood plain for residential development.

The 25-acre tract represents about two percent of the required mitigation area, and should it not be available as planned for in the DFE/EIS then additional land, most likely within the White Rock Creek drainage, would need to be evaluated for its ability to offset this change.

AIR TRAVEL / AIRPORT PROJECTS

There are no known air travel or airport expansion projects or potential future developments that might affect hydraulics and hydrology of the DFE study area.

FLOOD DAMAGE REDUCTION

Cadillac Heights Buyout Plan

As a result of a recent settlement in the Miller lawsuit, the City of Dallas agreed to purchase six homes in Cadillac Heights. The six owners and the addresses of their homes are as follows; F. Crawford at 2511 Chrysler, C. Miller at 2723 Roberta, M. Cooper at 2503 Chrysler, M. Hayden at 2423 Chrysler, J. Adams at 2527 Chrysler, and D. Thomas at 2414 Chrysler. All of these six homes lie outside the 100-year floodplain.

There have been discussions by City officials and staff and in the media regarding a plan to buyout the remainder or a substantial number of homes in the Cadillac Heights residential area and then convert it to some other use after the area is protected by the levee system proposed in the DFE project. The most recent proposal is the buyout of a number of homes and vacant property above the 100-year floodplain and subsequent construction of a police training facility. In April 2002, City of Dallas staff presented a concept to City Council to replace the residential footprint of the Cadillac Heights neighborhood with a City services footprint that could serve the Police Department, Dallas Water Utilities, and Code Enforcement. This idea is currently unapproved and not funded. If such a concept is eventually adopted by City Council, it is envisioned that such a plan would take about ten years or longer to implement. Any schedule is totally dependent on the City's success in securing the necessary funds. A second idea for transforming the Cadillac Heights residential footprint to a light industrial, private development footprint was also presented by City staff to City Council.

During the scoping meeting for this Supplement to the DFE EIS, one attendee stated an indication that the City has a specific plan to either participate in a buyout, or to encourage others to convert the land use of the area, could be found by examining recent zoning changes in the Cadillac Heights area. From information provided to the Corps of Engineers subsequent to the Scoping meeting, no zoning changes have been recently implemented by the City of Dallas for the Cadillac Heights vicinity. In fact, no zoning category (residential verses industrial) changes have occurred since 1965. The only zoning changes since 1965 are the result of changes in zoning definitions (type of residential zoning or type of industrial zoning). Also, no specific proposal for a Cadillac Heights categorical zoning change is currently being prepared for City Council approval.

The City has contracted a study to produce economic development scenarios that may result from the full implementation of Trinity River Corridor Project Bond Program. This Comprehensive Land Use Plan (CLUP) has been ongoing since June 2000 and is expected to be completed by the end of 2003. It is conceivable that the CLUP may recommend some land use changes in the floodway and adjacent areas. Some rezoning might be required should the city choose to implement the CLUP. However, at this time no results are available that provide definitive information to the Corps of Engineers that there is any reasonably foreseeable project or plan to buy out houses within the Cadillac Heights area other than the six homes required by the previously discussed "Miller" lawsuit settlement.

Removal/Replacement of ATSF Bridge

Studies have been conducted to determine the historic status of this bridge, as well as, the possibility to use this alignment for a recreational trail crossing of the river. In addition, the existing configuration of the support piers and abutments cause substantial impacts to hydraulic conditions of the Dallas Floodway. It has been proposed to remove the wooden, concrete, and earthen approaches, preserve the historic center span, and reconstruct the approaches to blend with the preserved center span, thus potentially providing hydraulic relief while maintaining possible trail access. An interlocal agreement is required with TXDOT to use this bridge as a recreational trail. The City of Dallas' schedule calls for selection of a consultant to begin design in early 2003. TXDOT has agreed to assist in review and assist with design criteria. Figure 3–5 is a picture of the ATSF Bridge.

FIGURE 3-5, ATSF Bridge, Dallas Floodway

Elm Fork Area

The City of Dallas has initiated an Elm Fork Floodplain Management Study to develop a storm water management plan for the Elm Fork Corridor. The goals are to identify flooding problems and recommend solutions, identify open space ecosystem restoration and recreational opportunities, incorporate proposed transportation initiatives and produce a floodplain management plan. The study area also includes the floodplain area between the Elm Fork and IH 35 and between Royal Lane and Hwy 183; included in the area are the Richards Branch, Wesco Channel, and Daniels Branch watershed. Flood damage reduction alternatives being considered include a Luna Road levee and channel, buyout of areas to construct a mega-park with limited flood damage reduction capacity, and ring levees to protect all or portions of the study area. Other levee alternatives for the Daniels area, channel improvements for Richards Branch and culvert replacements and buyout of floodprone areas to convert to park and open space in the Wesco area are being considered for flood damage reduction potential. Several road modifications to locate the road surface above the 100-year floodplain are being considered. Other features considered in the plan include evaluation of proposed Dart light rail projects and recreational access between Bachman Lake and Irving. The plan included these and other transportation initiatives that cannot be considered as potential projects at this time. No transportation projects would be funded by the Trinity Bond Funds within the Elm Fork area. Twelve recreational priorities were identified in the plan. Recreational features proposed include conversion of disturbed open space to soccer fields, establishment of a primary trail from Luna Road south to Wildwood and another primary trail from Wildwood to Bachman Lake, secondary trail linkages, canoe access at Frazier Dam and California crossing, fishing enhancements, and a white water course. Ecosystem restoration features were incorporated into flood damage reduction and recreational proposal and not specifically identified by location or cost. The primary restoration being proposed is through preservation of existing riparian areas and some development of buffers to benefit existing wildlife habitat.

Las Colinas Levee Raise
Studies have been initiated by Dallas County Utility and Reclamation District (DCURD) to evaluate the need to modify the existing Las Colinas Levee protecting the Urban Center. This 17,700 foot-long levee was designed and constructed by DCURD to provide Standard Project Flood protection. However, DCURD studies indicate that based upon current hydraulic models, only 500-year protection plus freeboard currently exists for this intensively developed area. The DCURD has also indicated that preservation of freeboard designed for the areas being developed north of Royal Lane and east of O'Connor Boulevard is of interest to protect significant existing and future development. DCURD has indicated that they envision that projects to protect or restore flood damage reduction previously provided at these two areas would be conducted in the immediate future.

RECREATION

Trinity Lakes or "Chain of Lakes"(230 and 120 acre) – City of Dallas
The City of Dallas' Master Implementation Plan for the Trinity River Corridor provides for a "Chain of Lakes" between the existing levees of the Dallas Floodway to enhance recreation opportunities of the area. The plan calls for a complex of two lakes created from excavation of material, which would be used to raise the proposed Trinity Tollway to an elevation above the 100-year flood frequency elevation. Dallas' plan also calls for a split river channel that would carry normal flows on either side of the man-made lakes for water quality purposes. The need for the material, the evacuation of which would create the "lakes", is dependant upon which Tollway alignment might be ultimately selected. The City of Dallas is also considering a "Lakes Only" plan that would not require selection of a Tollway alternative that would involve excavation. Ostensibly, Dallas could also pursue the "Lakes Only" plan without Corps of Engineers participation in a multiobjective project between the existing Dallas Floodway levees. Until a Trinity Tollway alignment is selected it cannot be determined with any degree of certainty what configuration, if any, the Trinity Lakes might take.

Equestrian Center and Trinity Interpretive Center (Loop 12 at Main Stem)
A feasibility study and master plan for the Interpretive Center, Equestrian Center and other associated components is being conducted by contract. Brown Reynolds Watford Architectural team initiated the studies in August 2002 and design should be completed by March 2004. The Interpretive Center is estimated to cost $15 million. The Equestrian Center is estimated at this time to cost about $1.7 million. Included are additional funding for trails and design and feasibility studies including site, archeological, economic, conceptual design, programming, construction, feasibility and public participation.

ISTEA Trails
Three ISTEA-T21 grants have been awarded to the City of Dallas for two projects. Two of the grants are being applied to the Santa Fe Trestle Trails, which is described in its own section. The other grant was issued in the mid-1990s for the Trinity Trails, which is a trail project that is planned to extend 14 miles in length between Westmoreland and Corinth within the Dallas Floodway. The Trinity Trails project is pending the further development of the Urban Design Study and the concurrent Lakes Study for the Dallas Floodway.

Hike and Bike Trail Connection at West Fork and SH 360
See description of this potential project under Ecosystem Restoration projects.

Sylvan Avenue Boat Launch
This boat launch was constructed utilizing funds from the City of Dallas and Texas Parks and Wildlife Department. It is located adjacent to Sylvan Avenue and provides access to the Main Stem of the Trinity River within the Dallas Floodway. Construction was completed in February 2002. The original construction contract was for $250,849 of which Texas Parks and Wildlife Department provided $200,000. Figure 3-6 is a view of the Sylvan Avenue boat launch area.

FIGURE 3–6, Sylvan Avenue Boat Launch

Old Trinity Meanders Trail
This trail is proposed to be placed in west central Dallas adjacent to the cutoff Trinity River bed between Trinity River Park Trail and Katy Trail (near the American Airlines arena). Preliminary consideration is for the trail to cross I35 on the old rail corridor north of Continental, and ideally it would follow the old meander close to Medical City area. The trail is proposed to be a pedestrian "Woonerf" which is wide enough for a car, but designed to be used predominantly by pedestrians and is planned to go on the high banks along the southern side of the meander (at present). This will be part of a New Urbanism development approach with portions similar to White Rock Creek Trail and other area similar to the San Antonio Riverwalk. In addition, links to White Rock Lake, White Rock Creek Park Chain, the Dallas Zoo and a northern extension ultimately to the Collins County Line and a branch to UT Dallas would be considered. Nodes of development are planned along the way including the Trinity River/Stemmons Corridor. The project is being approached by City of Dallas and the Trinity Commons Foundation and will involve predominantly all private land. The City is hoping to get donations of land, but may approach funding in a future bond issue.

South Loop 12 Boat Ramp
Design is completed for this site and City Attorneys and City Council have approved a multi-use agreement with TxDOT. The agreement was necessary because of the proposed location of the ramp on the right-of-way for Loop 12. The project would be located on the west bank of the main stem of the Trinity River. The final design has been completed, and the current schedule calls for construction initiation by mid-2003.

Texas Buckeye Trail
The Texas Buckeye Trail would provide access to a unique botanical site in the White Rock Creek floodplain adjacent to the main stem of the Trinity River within Rochester Park. The project includes one soft surface trail (4300 ft) and one ADA accessible trail approximately one-half mile in length. The plan includes development of information kiosks and trail signage. The trailhead would be adjacent to a

parking area at the southern end of Bexar Street. The trail would require access over the Rochester levee which will be raised slightly higher than present as part of the tie in with the Lamar Street levee as included in the Dallas Floodway Extension Recommended Plan. The two trails would also cross wetlands or other waters of the United States. Preliminary trail layout was mapped by City staff and documented through use of GPS. Environmental analysis of the proposal would include a wetlands and waters of the United States delineation. Section 404 and Section 10 analysis is scheduled to begin in the Fall of 2002 and construction is expected to begin in early 2003. Construction time is estimated to be 3 months. All of the trail except the portion going over the Rochester Levee would lie within the White Rock Creek area, which is heavily forested with an early successional stage of bottomland hardwood forest. Previous studies indicate that approximately 50 percent of that area is wetland. The area is frequently flooded by overbank flooding events from both White Rock Creek and the Trinity River. The soft surface trail would require minimal clearing of understory vegetation, but the ADA trail would likely require more clearing to allow construction of a hard surface path. In addition, culverts or other methods would have to be used to allow access across many small drainages and depressional areas in the path of the trails. It is estimated that about 2400 linear feet, or less that one acre, of clearing would be required for placement of the ADA trail alignment. Figure 3–7 depicts the layout of the Texas Buckeye Trail.

FIGURE 3–7, Texas Buckeye Trail

Moore Park modification

The City of Dallas proposes several modifications to Moore Park, adjacent to the Dallas Floodway Extension area on the south side of the river. Figure 3–8 provides a representation of the modifications to Moore Park. Detailed design should be completed during 2003 and construction completed during 2004. The estimated cost of the first phase is $1 million. Initial features proposed during Phase 1 include:

- Pedestrian Promenade
- Trinity Welcome Center (Large Open air pavilion with ability for future expansion to include concessionaire spaces.)
- Park Entry and Signage (at this point limited to signage only)
- Pedestrian Bridge (access from motel property across Little Cedar Creek to existing Moore Park)
- Concrete Trail (access to Santa Fe Trestle trail and Trinity Trails
- Playground (Temporary location of playground near welcome center.)
- Canoe Launch, access road and parking on Trinity River (access from the maintenance road on the west side of DART line).

FIGURE 3-8, Moore Park Modification

ECOSYSTEM RESTORATION/PRESERVATION

Elm Fork Area

The ecosystem restoration component identified in the Elm Fork Floodplain Management Study primarily consists of preservation of existing riparian woodlands within the Stemmons area. Additional description of other features of the study is presented in the previous section on Flood Damage Reduction.

Great Trinity Forest

Dallas County Open Space Plan:
An open space plan was initially developed by Dallas County in 1980. This plan identified two major landscape features as the basic components of the recommended Open Space Program. The Trinity River and its various tributaries, lakes and floodplains is one of those components. In 1991, Dallas County approved a new plan that recommended acquisition of 60,000 to 65,000 acres of diverse open space resources including additional landscape features. The 1991 Plan identified 39 potential tracts for acquisition and management. Four of those Open Space components were located in creeks or corridors within tributaries to the West Fork of the Trinity River in Dallas County. Seventeen components of the plan are in areas that drain into a part of the Main Stem Trinity River and three components were recommended that lie in the Elm Fork segment. All of these components are substantially located in the floodplain and have ecological important water or forested related resources. Twenty-one total components have been acquired into the Dallas County Open Space, fifteen of which are within the drainage area to the West Fork, Elm Fork or Mainstem reaches of the study area. Since December 1, 1999, no new lands have been acquired but Dallas County has participated in studies to improve the quality of existing properties. One of these proposed restoration projects is the Joppa Preserve project proposal discussed in the Corps of Engineers Ecosystem Restoration projects.

Texas Parks and Wildlife Department (TPWD) Master Plan:
This study was funded by TPWD to provide a plan to guide the development of a large urban park utilizing two of Dallas' major natural assets, the large tract of bottomland hardwood forest and the Trinity River itself. The area for which the plan was developed is located along the banks of the Main Stem Trinity River in the corridor between the Santa Fe railroad trestle near the lower end of the existing Dallas Floodway and downstream to IH-20. The purpose of the Master Plan is to suggest boundaries for the park, recommend conceptual locations for recreational facilities that are placed in the park and provide a framework for implementation by recommending development phases, identification of alternative funding sources and management structures for the park. The plan suggests that 3,000 to 6,000 acres should be acquired for inclusion in the Great Trinity Forest, development of a Trinity Center, 30 to 40 miles of bicycle trails, 15 to 20 miles of equestrian trails and 50 or more miles of nature trails.

As indicated, this study produced a Master Plan to provide guidance for ultimate development. Any or all of the features suggested will be possible only as funds become available. For example, TPWD has provided funds to acquire one tract of land near 1H-20. Other features of the master plan would likely come about over a long period of time. The Dallas Bond issue had funds approved for acquisition of parts of the Great Trinity Forest. Other acquisitions could come about as a result of implementation of environmental mitigation plans for projects such as the DFE. Still other tracts are already in public ownership, such as those in the Rochester Park.

FILLS, PERMITS, UTILITIES AND OTHER ACTIVITIES

Corps of Engineers Regulatory Program
The Corps of Engineers regulates discharge of dredged and fill materials into all waters of the United States including wetlands under Section 404 of the Clean Water Act and regulates all work or structures in or affecting the course, condition, or capacity of navigable waters of the United States under Section 10 of the Rivers and Harbors Act of 1899. The Fort Worth District regulatory program includes maintenance of a database to track projects reviewed by the District. While not all activities that might occur in waters of the United States require reporting to the Fort Worth District Engineer, those that do not generally are of a nature that has been determined from a national, state and regional level to result in only minimal impacts on regulated resources. Description of proposed activities submitted to the District for processing under either of the two mentioned authorities is added to the database upon submission. Queries were conducted of the regulatory database to determine all of the permit requests that were received in the sixteen counties that contribute to the Upper Trinity River Basin. Data was retrieved for Archer, Clay, Collin, Cooke, Dallas, Denton, Ellis, Grayson, Hood, Jack, Johnson, Montague, Parker, Tarrant, Wise, and Young Counties. These data were further refined to only include those cases that we evaluated from

December 1, 1999 to the September 1, 2002 and screened by use of a GIS program to determine which of the projects were actually located in the Upper Trinity River Basin (Figure 3-2).

The resulting data indicate that 770 projects were authorized in the Upper Trinity River Basin within the study period. Of those, 55 were letters of permission or individual permits, and 570 were Nationwide General permits. The Nationwide permit authorizations resulted in 93.85 acres of impacts to water of the United States and 198.66 acres of compensatory environmental mitigation were provided to offset those impacts.

The Fort Worth District is considering another 127 pending project authorizations at this time. These projects are currently under review and could range from no permit action required to individual permits with substantial impacts. Specific activities regulated by Section 404 or Section 10 that were identified in the geographic area as reasonably foreseeable projects, which appear to have the potential to cause cumulative impacts in relation to Dallas Floodway Extension, were identified. These regulated activities include the McCommas Bluff Landfill modification located downstream of the DFE on the Trinity River floodplain, the Frasier Dam modification on the Elm Fork, the Basic Capital Management proposal for a commercial development near IH 635 and Luna Road in Farmers Branch on the Elm Fork and a proposal to construct a parking lot for a Park and Ride facility on a 12-acre tract within the 100 year floodplain of West Fork of the Trinity River in Grand Prairie. Several other projects regulated under Section 404 or Section 10 such as the bridge modifications associated with the TRE crossing of the Elm Fork, the new rail crossing proposed for the Northwest Corridor and the President George Bush Turnpike (Segment IV) are described in the Transportation Section in this chapter.

McCommas Bluff Landfill Extension. (Application Number 199900319):
The proposed project modification includes the extension of the existing landfill levee to allow an additional 425 acre expansion of the existing landfill, excavation of a swale to compensate for reduction in flood storage due to the landfill encroachment into the 100-year floodplain, relocation of existing high-pressure gas main and a 54 to 60-inch water main and implementation of an onsite mitigation plan to offset adverse impacts to waters of the United States. The construction of the project features (excluding mitigation) would permanently impact a total of 158.7 acres of waters of the United States and temporarily impact an additional 1.6 acres. The permanent impacts would occur to 92.6 acres of emergent wetland, 45 acres of open water and 21.1 acres of shrub-scrub wetlands. These would be temporary impacts to 1.6 acres of emergent wetland. As identified in the project description, features have been incorporated to mitigate hydraulic and hydrology impacts and to mitigate losses to waters of the United States. The environmental mitigation plan would provide for protecting, developing and managing a total of 254.5 acres of land in the vicinity of the landfill. The mitigation plan would provide for ultimate development and long-term preservation of 119.7 acres of emergent wetlands, 41.2 acres of forest, 8.9 acres of open water, 9 acres of stream channel, and 75.7 acres of vegetated buffer areas. Project final design is expected to be completed during 2003.

Frasier Dam Modification. (Application Number 200100031):
As demand for domestic water increases, the City of Dallas Water Utilities has had increasing difficulty in providing sufficient water supply at the time of demand. Water supply releases from Lake Lewisville and Lake Grapevine require 12 hours to flow down the Elm Fork to the pump station. Frasier Dam on the Elm Fork provides the storage volume to meet supply needs during peak demand periods. Recently, peak demands have surpassed the supply that can be stored behind the Frasier dam; therefore, the City has requested authorization to increase the available supply for peak demands by increasing the height of the existing dam. As proposed, the modification would provide the additional volume and operating range of the pumps for draw down. The modification would increase the water surface elevation within Elm Fork by two feet at the dam location. The two feet increase in at the dam would gradually diminish upstream but would have an effect over an approximate four-mile reach. A loss of valley storage would result from the proposed plan, however to compensate for this expected loss within the CDC area and the TREIS record of decision area, the applicant proposes linking an adjacent flood plain lake and using a water control structure to transfer flows to the Bachman Creek Drainage. It is anticipated that the increased water surface elevation within the Elm Fork Channel would also result in some minor changes to the vegetation on the vertical surface of the channel bank as well as a short distance horizontally from the channel.

Basic Capital Management (Application number 200100023).
This proposed commercial development would be located on a 138-acre tract of land near IH 635 and Luna Road in Farmers Branch on the Elm Fork of the Trinity River. The proposed project would result in discharge of dredged and fill material totaling 173,000 cubic yards into 12.2 acres of open water, 1,142 linear feet of Farmers Branch Creek, 1508 linear feet of ephemeral streams, and 0.18 acre of an ephemeral pond. The project would result in an adverse impact to a total of 14.3 acres of water of the United States. The project would also result in the fill of approximately 39 acres of the 100-year floodplain, resulting in an unspecified quantity (by the public notice for this project) of valley storage loss. This area lies within the CDC area requiring that valley storage losses be mitigated. In addition, the applicant proposed to mitigate environmental losses. The environmental mitigation proposed by the applicant included onsite and an offsite, 230-acre mitigation area within the floodplain of the Elm Fork approximately 2.15 miles northwest of the project site. Valley storage mitigation was proposed by development of two lakes.

Park and Ride facility, Grand Prairie (Application Number 199800690):
This facility is proposed to be located on a 12-acre tract to the west of MacArthur Boulevard and immediately north of IH-30 in Grand Prairie, Dallas County. The tract is within the 100-year floodplain of the West Fork of the Trinity River. As proposed the project would require placing fill on 7.8 acres. The project would result in permanent adverse impacts to 0.9 acres of open water and 0.7 acres of palustrine forested wetland. The applicant has proposed environmental mitigation at an offsite location approximately 1.1 miles northwest of the proposed fill site adjacent to Bear Creek. The applicant proposes to develop 1.8 acres of emergent wetland and 1.2 acres of forest for the environmental mitigation. No plan has been specified to mitigate valley storage losses in the 100-year floodplain

Other Dallas Floodway Projects or Activities

Urban Design Study:
The Urban Design Study is managed by the "Dallas Plan", which is not a City department. The study assesses the overall Trinity River Corridor Project program and its current vision for the Dallas Floodway and the Great Trinity Forest vicinity. The Trinity River Corridor Urban Design and Transportation Study is totally funded with private donations and is steered by Mayor Laura Miller and Judge Lee Jackson. Chan Krieger, a Cambridge Massachusetts consultant, initiated the study fall of 2002. A presentation of study results (www.thedallasplan.com) to date was presented to the Dallas City Council on March 5, 2003. With respect to the Dallas Floodway, the study produced an assessment and recommendations for several changes to the current Master Implementation Plan, the Trinity Parkway, the Corps of Engineers' / City's Dallas Floodway Study, or other Trinity River Corridor Project initiatives.

The concepts presented to the Council included a proposed sequential and integrated development of flood control, transportation, economic development and recreation. The transportation element varies from that previously thought to be the most compelling when considered for its ability to meet relief needs for the I-35/I-45 corridor. While it is not possible to call any of these concepts "plans", the idea expressed was to develop a less intrusive system that calls for a roadbed atop the East Levee as the reliever route, roadways to the outside of the east and west levees to serve residents and business development along the levees and a parkway within the floodway to provide recreational access. The suggested recreational areas would include many of the same features previously considered as reasonably foreseeable actions within the floodway, but differ in their design and functionality. The Study's Phase 1 Project Groups recommends proceeding with the Lamar and Cadillac Levee Extensions and the development of the Chain of Wetlands, in addition to development of flood damage reduction and environmental features (lakes and wetlands) within the existing Dallas Floodway. At this point in time, the Study would require the City to consider more modification to the Dallas Floodway alternatives, primarily the tollroad features. Those modifications, if acceptable to the decision makers for those projects, could result in slightly different cumulative impacts than determined for this project. However, the anticipated impacts would likely be less significant because of the emphasis on open space and quality of life issues. The concept has the potential to adversely impact the integrity of the existing levee system, due to the fact that the reliever route proposed would lie directly on top of the levee. This concept has not been evaluated by the Corps of Engineers for its impact to long-term stability of the levee. Other transportation design issues

that would have to be addressed would include the at-grade intersection with several major bridges crossing the Floodway.

Additionally, the City of Dallas has contracted with Camp, Dresser and McKee on a Lakes Study for the Dallas Floodway. The first objective of the study is to review previous work and recommend the best approach for lake configuration. This will involve a determination of whether an on-channel or off channel lake design is better, including functionality and operability issues. The resultant Lakes Study would provide technical guidance and input to the Urban Design Study consultant. This work is anticipated to be completed by the end of 2003.

New Utility Corridors:
The only specific information that has been made available was found in the review of Section 404 and Section 10 permit activities that were initiated or finalized after December 1, 2002. Generally underground utilities cause only temporary impacts to surface resources. Overhead utilities such as power lines cause longer-term impacts due to the necessity for operation and maintenance. Wooded vegetation generally is not allowed to mature in the corridors, and grasslands are frequently mowed or otherwise treated to reduce the introduction of woody growth.

Other Developments:
Construction of the International Environmental Training and Technology Center was scheduled to be completed by February 2003. The activity is located south of Loop 12 adjacent to McCommas Landfill and to the Joppa Preserve. Landfill operations will occupy a small portion of the facility and manage classes and the facility. Other recycling manufacturers are considering development of office/business sites at the park.

American Rivers Designation.
Founded in 1973, American Rivers is a national non-profit conservation organization dedicated to protecting and restoring healthy natural rivers and the variety of life they sustain for people, fish, and wildlife. Focus of the American Rivers organization is to improve river health; raise awareness among decision-makers; serve and mobilize the river conservation movement; and collaborate with partners to develop a national "river agenda". Each year, American Rivers solicits nominations from environmental organizations for their America's Most Endangered Rivers report. The report presents alternatives to proposals that would damage rivers, identifies those who will make the crucial decisions, and points out opportunities for the public to take action on behalf of each listed river. In April 2003 American Rivers named the Trinity River as one of the nation's Most Endangered Rivers for 2003, citing the consequences of flood control projects and tollroads planned for the river's floodplain in Dallas. The designation of the Trinity River through Dallas as number 10 on American River's Most Endangered Rivers report can be viewed at http://www.americanrivers.org/mostendangered/trinity2003.htm. Issues brought out in the nomination and designation are similar to those that are being addressed by this Supplement to the DFE EIS.

CHAPTER 4 – ENVIRONMENTAL CONSEQUENCES

This chapter presents the recommended Dallas Floodway Extension project in the context of current and future trends in the designated study area. The purpose is to assess the cumulative impacts of the proposed action to the study area when combined with other known actions in the vicinity of the Dallas Floodway Extension area as described in Chapter 3 "Past and Future Actions". The Final General Reevaluation Report for Dallas Floodway Extension (February 1999) and the Final Programmatic Environmental Impact Statement for the Upper Trinity Basin (June 2000) contain discussions with regard to cumulative impacts. These discussions are incorporated herein by reference as allowed by the CEQ regulations for implementing NEPA (40 CFR Part 1508).

CUMULATIVE IMPACTS

In 1997, the Council on Environmental Quality (CEQ) developed a handbook addressing cumulative effects in analyses prepared under the National Environmental Policy Act. CEQ has defined cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions". Clearly within the Upper Trinity River basin, potential for cumulative impacts is high. Establishing the significance of cumulative impacts on the other hand is much more difficult to accomplish. A significant cumulative effect on the environment means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the projects that results from the compounded or incremental individual environmental effects.

To date, there remains no universally accepted approach to the preparation of cumulative effects analyses. CEQ guidance indicates that it is not practical to analyze cumulative impacts for other than those truly meaningful environmental effects. In addition, the determination of the level of effects that produces the threshold beyond which cumulative effects significantly degrade an ecosystem or other resources is difficult. For a cumulative effects analysis to be worthwhile it must be limited through scoping to the effects that can be evaluated meaningfully. Accordingly, the scope of this cumulative impact analyses has been limited to the projects and resources discussed below.

Flood damage reduction projects typical of past Corps of Engineer's activities have the potential to impact an array of natural resources, induce downstream floodplain impacts and cause general land use changes within the newly protected areas. Continued reclamation of floodplain lands for residential and industrial uses also have potential to cause other cumulative effects. In recent years, a number of new authorities and administrative procedures have been implemented including mitigation banking. Administrative priorities promoting nonstructural flood damage projects including buy-outs and environmental protection alternatives are becoming more prevalent. Restoration of important ecosystem components is being conducted to mitigate and reverse some of the adverse impacts associated with past structural flood damage reduction measures. These philosophical changes affect cumulative impact analysis. Public scoping was utilized to ascertain the major issues of concern to general public and other agencies. Issues discerned from the public meetings held at the initiation of the NEPA process as well as those issues which have been made known through other public forums were considered.

FLOOD DAMAGE REDUCTION PROJECTS

The reasonably foreseeable flood damage reduction projects that were identified within the Upper Trinity Study area include the Dallas Floodway modifications by the Corps of Engineers and the modification of the Las Colinas existing levee by Dallas County Utility and Reclamation District. Studies underway by the City of Dallas indicate a potential for future actions to protect existing investments in the Stemmons Industrial area may eventually evolve, however, nothing has been specifically elevated to the point that any specific project could be considered as reasonably foreseeable.

TRANSPORTATION PROJECTS

A number of transportation projects were identified in the Upper Trinity area that are likely foreseeable. The majority of these individual projects are small, replacements of existing structures and located considerable distance from the Dallas Floodway Extension. Transportation projects that have a potential to cause cumulative impacts to the study area include the proposed modifications to I-30, I-35, Hwy 183, Woodall Rodgers, and the Trinity Parkway/Tollroad (should alignment fall on parts of Dallas Floodway or Dallas Floodway Extension project boundaries). Additional modifications in the Dallas Floodway that could induce cumulative impacts were identified for the Corinth and Hampton Road, Sylvan and Loop 12 bridges. In addition, the President George Bush Tollroad, Segment IV, largely falls on new alignment within the Elm Fork Corridor, and therefore, direct and cumulative impacts must be considered. The DART railroad study for the Southeast Corridor also indicates the potential for cumulative impacts to riparian forest associated with the White Rock Creek area.

ECOSYSTEM RESTORATION

The ecosystem restoration projects that have a potential for cumulative impacts include the Joppa, Old Trinity River, and various proposals for modification of the existing Dallas Floodway. While each of these three projects would provide positive direct and cumulative impacts for riparian vegetation and associated fish and wildlife resources, the potential for negative cumulative impacts to hydraulic conditions as a result of increased roughness associated with providing additional reforestation must be considered.

RECREATION

Recreational trail development generally results in minor direct and indirect impacts to environmental resources. The trails are generally designed to take advantage of the natural quality of the area they cross. They are intended for casual use and minor adjustments in alignment are common to avoid important resources. The potential to cause minor impacts to bottomland hardwoods and regulatory wetlands associated with the Texas Buckeye Trail and the Equestrian Center and Trinity Interpretive Center indicate that these two recreational projects should be considered for cumulative impacts.

FILLS, PERMITS, UTILITIES & OTHER ACTIVITIES

The reasonably foreseeable fill activities that could have cumulative impacts on resources in the study area include the McCommas Bluff Landfill extension on the main stem Trinity River, the Frasier Dam modification and the Basic Capital Management floodplain reclamation projects on the lower Elm Fork and the Park and Ride facility on the West Fork of the Trinity River.

CUMULATIVE IMPACT IDENTIFICATION

Identification of reasonably foreseeable projects was ascertained through a scoping process, including written requests for information from agencies that have information on proposed activities that would occur in the study area and through participation in meetings with regional organizations, literature and newspaper reviews and through active browsing of internet sites hosted by many agencies and organizations that have proposed projects or have interests in them. The most significant problem, however, comes not from identifying the reasonably foreseeable projects but in identifying the direct and indirect impacts that the projects might have on environmental resources. The term “reasonably foreseeable” implies that the project may only have a general public knowledge or acceptance at a point in time and that details of design and project specific impacts are yet to be developed or disclosed by the project proponent. That has been found to be the case during assembly of information for this Supplement. There is a general knowledge of various plans with components, any of which if implemented, would result in substantial changes in the existing Dallas Floodway. These plans could intensify transportation, recreation, environmental restoration and/or flood damage reduction benefits depending upon the ultimate selection of possible plans or plan components for any specific purposes. The fill activities identified during preparation of this Supplement are relatively more certain, as evidenced

by the greater level of information that has been developed by proponents or applicants for fill activities. Since it is still unclear which components proposed for the Dallas Floodway may ultimately be selected, this chapter evaluates an array of reasonably foreseeable alternative development scenarios for the Floodway and discloses cumulative impacts of those scenarios along with other reasonably foreseeable projects in the geographic vicinity of the Dallas Floodway Extension. In addition, cumulative impacts of these aforementioned activities are discussed and analyzed in relation to the final array of alternatives from the DFE GRR/EIS.

A summary of estimated impacts to important environmental floodplain vegetation resources that can be attributable to projects or their alternatives is shown in Table 4-1. All scenarios for Cumulative Impact in Table 4.1 include DFE acreages, and all scenarios include lakes between the existing levees except the Dallas Floodway EQ Plan.

Tables 4-2 through 4-6 summarize the cumulative changes to cover types or land cover based upon the impacts associated with reasonably foreseeable alternatives that are displayed in Table 4-1. If mitigation has been proposed or recommended with a plan, the acreage associated with that mitigation has been included in the summaries. The DFE alternatives are considered stepwise through the Tables. Table 4-2 discloses the cumulative impacts of reasonably foreseeable alternatives in relation to the No Action alternative in the DFE project area. This table provides a baseline for comparing other DFE alternatives in tables 4-3 through 4-6.

To address cumulative impacts of multiple reasonably foreseeable projects in this Supplement to the DFE EIS, input from Corps of Engineers environmental specialists was utilized. A matrix was developed to indicate the potential cumulative impact for reasonably foreseeable projects on a series of environmental, social and community resources. Table 4-2 displays an assessment of the magnitude of the potential impacts in relation to the recommended DFE plan and alternatives based upon information available at this time.

Several of the projects identified as reasonably foreseeable have not been sufficiently formulated and designed to date to offer detailed analysis. In other cases, the information may have been developed but has not been made available to the Corps of Engineers. For those instances, a preliminary estimate of potential cumulative impact has been made based upon the general types and magnitude of impacts those projects typically induce.

As noted earlier, there likely will not be a project proposed by the Corps of Engineers for the North Stemmons Industrial area as part of the Upper Trinity Feasibility Study due to unfavorable economic benefits for flood damage reduction. Dallas has continued evaluation of the Stemmons area and has developed a Floodplain Management Study for the Elm Fork in that area. The plan documents strategies for providing flood damage reduction as well as integrating environmental protection and extending recreational opportunities. The City's study documents a recommendation to allow previously permitted ongoing fill activities (26 issued from 1972 to 1999) to be extended through the end of 2004, ultimately requiring a variance from CDC guidelines for these activities. New fill requests would be reviewed under the CDC criteria. If adopted as included in the study, an additional 473 acres would ultimately be removed from the flood plain. Although none of the proposals discussed in the Management Study can be considered as reasonably foreseeable at this time, the action of developing the plan indicates that impacts could be significant relative to CDC criteria.

Insufficient information is available to ascertain the significance of any proposed modification of the existing Las Colinas Levee system. However, from a generic point of view, levee or other floodplain fills impact valley storage and have the potential to cause direct and cumulative impacts to hydrology and hydraulics. The project proposal would likely be a modification to an existing flood damage reduction project, and therefore, there would be less adverse impacts to forest and wetland resources, since most of the site would have been previously impacted. Cultural resources, however, could potentially be impacted. DCRUD has expressed concern that activities of others have produced cumulative impacts to

TABLE 4-1. ESTIMATED PROJECT IMPACTS (ACRES) TO FLOODPLAIN RESOURCES BY REASONABLY FORESEEABLE PROJECTS IN STUDY AREA

	Waters of United States	Open Water	Wetland	Forest Improvement	Forest Conversion	Grassland/ Buffer
Flood Damage Reduction						
Dallas Floodway Levee raise			-36.7		-11.9	
(Mitigation)			+36.7		+35.7	-35.7
Stemmons Area	U	U	U	U	U	U
Las Colinas Levee raise	U	U	U	U	U	U
ATSF Bridge Modification	0	0	0	0	0	
Ecosystem Restoration						
Old Trinity			+29.3	+28.42	+53.48	-82.8
Joppa Preserve		+73	+123	+53		
Dallas Floodway		+224	+84		+184	-492
Transportation						
Trinity Parkway						
Irving/Industrial						
Elevated	0	0	0	0	0	
At Grade		-2	-1		-7	
Combined Riverside		-22	-133		-7	-121
Split Riverside		-21	-132		-7	-220
Split Landside		-5	-1		-7	
George Bush (IV)	-58.6		-26.2			
(mitigation)	+18.5		+22.4	+66		
Trinity Railroad Express	-0.11		-0.04			
DART SE Corridor					-70	
Other Floodway Bridges	-9	-9	-9	0	-9	

TABLE 4-1 (concluded)
Estimated Project Impacts (acres) to Floodplain Resources by Reasonably Foreseeable Projects in Study Area

	Waters of United States	Open Water	Wetland	Forest Improvement	Forest Conversion	Grassland/ Buffer
Fill Activities						
McCommas Bluff Landfill		-45	-113.7			
(Mitigation)	+9	+8.9	+119.7	+41.2		+75.7
Frasier Dam Modification	-72	-72				
Basic Capital Management	-1.92	-12.2	-0.18			
(Mitigation)				+230		
Park and Ride, Grand Prairie		-0.9			-0.7	
(Mitigation)			+1.8		+1.2	
Recreation						
Floodway Lake(s)		+370	+147			-500
Texas Buckeye Trail			<-1.0			
Equestrian /Interpretive Center	U	U	U	U	U	U
Dallas Floodway Extension						
No Action	0	0	0	0	0	0
NED		-24.3	0	-99	-504	+504
(Mitigation)				+2514	+605	+81
LPP / Recommended Plan		+2	+123.3		-162	-109.7
(Mitigation)				+926	+223	+30
Comb. Structural/Non-Structural		+3	+123.3		-143	-68
(Mitigation)				+806	+195	+26
TFSP		+3	+123.3		-155	-78.6
(Mitigation)				+890	+217	+28

Parkway data from NTTA. All estimated impacts other than for DFE alternatives are preliminary and subject to change as plan formulation on these projects continues. + = gain - =loss U = Unknown

TABLE 4-2. CUMULATIVE CHANGES TO LAND COVER (ACRES) DUE TO REASONABLY FORESEEABLE ACTIONS IN DALLAS FLOODWAY, WITH "NO ACTION" AS THE DFE PROJECT

Resource	No Action	FDR	Combined Pkwy Riverside	Lakes/Split Pkwy	Lakes only	EQ
Waters of US	-114.13	-114.13	-114.13	-114.13	-114.13	-114.13
Open Water	-49.2	311.8	309.8	290.8	311.8	535.8
Wetland	154.28	292.28	291.28	160.28	292.28	376.28
Forest Improvement	418.62	418.62	418.62	418.62	418.62	418.62
Forest Conversion	-16.02	-1.22	-32.02	-32.02	-25.02	158.98
Grassland	-7.1	-542.8	-507.1	-727.1	-507.1	-999.1

"No Action" as the DFE project means that the Corps would not construct any alternative assessed in the final array of DFE/GRR EIS. The acreages in Table 4-2 represent a baseline for the total floodplain study area against which the DFE Alternatives (and reasonably foreseeable actions in the existing Dallas Floodway identified by column headings) in Tables 4-3 through 4-6 may be compared.

TABLE 4-3. CUMULATIVE CHANGES TO LAND COVER (ACRES) DUE TO REASONABLY FORESEEABLE ACTIONS IN DALLAS FLOODWAY, WITH "NED" AS THE DFE PROJECT

Resource	No Action	FDR	Combined Pkwy Riverside	Lakes/Split Pkwy	Lakes only	EQ
Waters of US	-114.13	-114.13	-114.13	-114.13	-114.13	-114.13
Open Water	-73.5	287.5	265.5	266.5	287.5	511.5
Wetland	154.28	305.12	172.12	173.12	305.12	389.12
Forest Improvement	2833.62	2767.62	2767.62	2767.62	2767.62	2767.62
Forest Conversion	84.98	178.78	147.98	147.98	154.98	3398.98
Grassland	577.9	42.2	-43.1	-142.1	77.9	-414.1

The column heading of "No Action" means that no Corps activities, Tollroad alternatives, Lakes or other activities being considered by others would be constructed in the existing Dallas Floodway. O&M would continue as currently required to maintain the existing Dallas Levees, Sumps and Floodway.
FDR= Corps studied Levee Raise Alternative in Dallas Floodway
EQ= Corps studied Environmental Quality Alternative in Dallas Floodway

TABLE 4-4. CUMULATIVE CHANGES TO LAND COVER (ACRES) DUE TO REASONABLY FORESEEABLE ACTIONS IN DALLAS FLOODWAY, WITH "LPP" (RECOMMENDED PLAN) AS THE DFE PROJECT

Resource	No Action	FDR	Combined Pkwy Riverside	Lakes/Split Pkwy	Lakes only	EQ
Waters of US	-114.13	-114.13	-114.13	-114.13	-114.13	-114.13
Open Water	-47.2	313.8	291.8	292.8	313.8	537.8
Wetland	277.58	415.58	282.58	283.58	415.58	499.58
Forest Improvement	1344.62	1344.62	1344.62	1344.62	1344.62	1344.62
Forest Conversion	44.98	59.78	28.98	28.98	35.98	219.98
Grassland	-86.8	-622.5	-707.8	-806.8	-586.8	-1078.8

TABLE 4-5. CUMULATIVE CHANGES TO LAND COVER (ACRES) DUE TO REASONABLY FORESEEABLE ACTIONS IN DALLAS FLOODWAY, WITH "COMBINATION STRUCTURAL/NON-STRUCTURAL PLAN" AS THE DFE PROJECT

Resource	No Action	FDR	Combined Pkwy Riverside	Lakes/Split Pkwy	Lakes only	EQ
Waters of US	-114.13	-114.13	-114.13	-114.13	-114.13	-114.13
Open Water	-46.2	314.8	292.8	312.8	314.8	538.8
Wetland	277.58	415.58	282.58	414.58	415.58	499.58
Forest Improvement	1224.62	1224.62	1224.62	1224.62	1224.62	1224.62
Forest Conversion	105.98	50.78	19.98	19.98	26.98	210.98
Grassland	-49.1	-584.8	-670.1	-549.1	-549.1	-1041.1

The column heading of "No Action" means that no Corps activities, Tollroad alternatives, Lakes or other activities being considered by others would be constructed in the existing Dallas Floodway. O&M would continue as currently required to maintain the existing Dallas Levees, Sumps and Floodway.
FDR= Corps studied Levee Raise Alternative in Dallas Floodway
EQ= Corps studied Environmental Quality Alternative in Dallas Floodway

TABLE 4-6. CUMULATIVE CHANGES TO LAND COVER (ACRES) DUE TO REASONABLY FORESEEABLE ACTIONS IN DALLAS FLOODWAY, WITH "TFSP" AS THE DFE PROJECT

Resource	No Action	FDR	Combined Pkwy Riverside	Lakes/Split Pkwy	Lakes only	EQ
Waters of US	-114.13	-114.13	-114.13	-114.13	-114.13	-114.13
Open Water	-49.2	311.8	289.8	290.8	311.8	535.8
Wetland	154.28	292.28	159.28	160.28	292.28	376.28
Forest Improvement	418.62	418.62	418.62	418.62	418.62	418.62
Forest Conversion	-16.02	-1.22	-32.02	-32.02	-25.02	158.98
Grassland	-7.1	-542.8	-628.1	-727.1	-507.1	-999.1

The column heading of "No Action" means that no Corps activities, Tollroad alternatives, Lakes or other activities being considered by others would be constructed in the existing Dallas Floodway. O&M would continue as currently required to maintain the existing Dallas Levees, Sumps and Floodway.
FDR= Corps studied Levee Raise Alternative in Dallas Floodway
EQ= Corps studied Environmental Quality Alternative in Dallas Floodway

The hydrology and hydraulics that have lowered the level of protection that the levee was originally designed to provide. It should be considered possible that the reduction of protection afforded by the Las Colinas Levee is more a reflection of the improved modeling capabilities developed after the levee was designed and constructed rather than a cumulative impact of other projects in the area.

WATER QUALITY

Implementation of any combination of the alternatives for the reasonably foreseeable future actions is not expected to result in any long-term adverse impacts to water quality. Short-term impacts might occur as a result of construction of major projects such as the toll roads, or as intermittent effects from runoff from any project area. Given recent trends in wastewater treatment and temporary retention of storm water runoff, overall water quality in the Trinity River should continue to experience moderate improvement. Implementation of the Environmental Quality plan within the Dallas Floodway as well as the Old Trinity and Joppa Preserve areas would produce slight beneficial cumulative impacts. The EQ plan for the Dallas Floodway would restore functional wetlands and restoration of stream sinuosity along with placement of rock at multiple locations along the channel bottom and banks near bends should provide aeration to produce more rapid clean up of nutrient enriched waters characteristic of the Trinity. The restoration of riparian forest along the new channel would also provide shading that should help with moderation of summer water temperatures. The chain of wetlands within the Dallas Floodway Extension would provide some water quality benefits as well as produce fish and wildlife resource benefits. Use of treated effluent for makeup water for the City of Dallas' proposed off-channel lakes within the Dallas Floodway could slightly reduce the predicted minor water quality improvements within those impoundments. Implementation of the Old Trinity and Joppa Preserve ecosystem restoration projects would add wetlands and improve existing wetlands in the cumulative study area that should produce minor incremental water quality benefits.

AQUATIC RESOURCES

Cumulative impacts to aquatic habitat, fish and aquatic invertebrates that would be associated with any combination of reasonably forseeable projects in the Upper Trinity River Watershed would be minimal. Beneficial cumulative impacts to aquatic habitat, fish, and aquatic invertebrates would occur if the Environmental Quality alternative for the Dallas Floodway were to be implemented, along with implementation of the ecosystem restoration projects at the Joppa Preserve and the Old Trinity sites. Implementation of this scenario would not generate as many acres of surface waters as plans consisting of lakes between the Dallas Floodway levees, but the quality of the aquatic habitat created would be much higher. The higher quality aquatic habitat afforded by this scenario would promote the development of a healthy ecosystem and facilitate a more rapid return to environmental conditions characterized by a high species diversity of aquatic organisms.

WETLANDS

It appears that during the 1984 to 1996 period, acreage of emergent wetlands has increased in the study area (Table 3-4 of the PEIS). Table 4-1 of this Supplement shows the known direct gains or losses in acres of wetlands resulting from implementation of the slate of reasonably foreseeable projects. Most of the flood damage reduction projects identified have only a minor potential to cause direct impacts to wetlands. While the Dallas Floodway levee raise, primarily resulting from excavation of suitable fill from within the floodway, could impact low quality emergent wetlands, a proposal exists to mitigate these impacts. All the transportation projects, including the Trinity Tollway, new and modified railroad bridge crossings, and the proposed modification of several bridges crossing the Trinity could have direct adverse impacts on wetlands; however, due to the nature of the types, small size of the bridge corridor footprints and overall low quality of the existing wetlands these impacts would only be minor from a cumulative standpoint. The Dallas Master Implementation Plan scenario proposes creation of large acreage of wetlands. At this point, that plan is not well defined as to when or by which agency these wetlands would be developed. Some wetlands might ultimately be constructed as mitigation for Trinity Tollway impacts.

Interaction with high-density recreation and proposed nearby parkway traffic could reduce the vitality and function of those wetlands for other than water quality improvements. Other wetlands might be constructed as part of the EQ plan for the Dallas Floodway resulting from the Corps of Engineers Feasibility Study. The Environmental Quality plan would increase emergent wetland acreage and, in light of trends observed, the direct individual benefits would be significant but cumulatively would still be minor from a regional perspective. The two Corps of Engineers proposed ecosystem restoration projects under Section 1135 also include wetland development. The fill activities evaluated appear to have potential to induce cumulative losses of wetlands. Of the four individual permit applications evaluated, only two indicate that mitigation for wetland losses would be required. Overall, without mitigation, there would be a cumulative loss to wetlands, resulting from the all projects identified. Based upon the trends evaluated in the PEIS, however, and review of past Corps of Engineer permit actions, mitigation for the wetland losses will be required. If that occurs, cumulative impacts would be minor, primarily resulting from the relocation of these resources at a different site from where they occurred.

FLOODPLAIN FOREST RESOURCES

The trend analysis conducted as part of the PEIS (see Table 3-4 of the PEIS) clearly shows that forest resources within the 100-year and SPF floodplain of the Upper Trinity study area have been adversely impacted as the result of many independent actions. The impacts that would cumulatively result from implementation of alternatives considered during evaluation of the PEIS are shown in Figure 4-1 of the PEIS.

Additional cumulative positive benefits to bottomland hardwoods would result should the ecosystem restoration studies considered in this Supplement to the DFE EIS be implemented. In particular, the reasonably foreseeable ecosystem restoration projects at the Old Trinity River and Joppa Preserve would provide protection to riparian forest, not necessarily reversing the trend for loss of forested resources but at a minimum slowing the rate of decrease. The Dallas Floodway EQ plan would also provide moderate beneficial cumulative impacts. The other Floodway plans would each result in minor cumulative adverse impacts to forest resources. The quality of the woodlands within the floodway are low from most resource agency standards, however, their presence is highly beneficial to a number of other resources including fish and wildlife, aesthetics, water quality, and noise filtering. Forests are particularly valuable because of the long period of time required to develop to maturity, even under the best management scenarios. Wildlife usage of riparian forests has been quite well documented. In addition, there is extensive amount of research indicating the cumulative values of both larger contiguous forest size and linear forests without breaks. The Trinity Tollway alternatives with footprints falling on the existing Dallas Floodway would each extend downstream along or near the recommended alignment for the Lamar Levee identified for the DFE project. Each of these alternatives would remove 7 acres of bottomland forest. The DART SE corridor alignment could also result in the loss of 70 acres of forest, the majority of which has been identified within the White Rock Creek corridor. At this point in time, no specific mitigation plan has been identified for either of these two projects. Therefore, any losses or even these relatively low quality woodlands would increase patchiness and decrease size of forested areas, constituting a significant cumulative impact that would require mitigation.

The most significant resource within the proposed project area has been identified as the bottomland hardwood forest ecosystem located in an area referred to as the “Great Trinity Forest”. While the proposed DFE project would impact only a small area of the forest, the proposed environmental mitigation plan would provide a catalyst to ultimate acquisition and management of 1,179 acres of the area which is either currently forested, or could be converted to bottomland hardwood forest through intensive management. In addition, the recommended environmental restoration project feature, which includes the development of emergent wetlands, would help reverse the trend to losses to this important resource, by restoring 123 acres.

OTHER VEGETATION RESOURCES

Table 4-1 indicates cumulative losses to grassland and cumulative increases in aquatic habitat that could result from implementation of the reasonably foreseeable projects. These cumulative changes are not viewed as significant, primarily because of the low quality of the grasslands impacted, the large number of grassland acres currently within the study area and the fact that much of the grassland losses are actually being converted to either forest or open water as part of the development scenarios. Implementation of the alternatives that have reforestation as a feature would provide a means of reversing the trend of cumulative losses of woodlands in the study area.

AIR QUALITY

The DFE project would not result in any significant impacts to air quality nor would construction and operation of the project interfere with the State's Implementation Plan to attain air quality requirements. Air quality is affected by a number of factors and environmental situations. A cumulative analysis was conducted in the PEIS that focused on impacts that would occur from alteration of vegetation resources in the study area. The results indicate that small but positive cumulative benefits from increasing acres of forested resources could occur. The DFE, because of the mitigation included as part of the plan, along with the EQ Plan for the Dallas Floodway, and the Old Trinity River and Joppa preserve ecosystem restoration projects would increase acreage of existing forest and protect many additional acres providing a net cumulative benefit to air quality. The footprint associated with the Southeast Corridor DART alignment would convert about 70 acres of wooded areas to grassland and thereby, cumulatively reduce air quality benefits associated with forest. Cumulative impacts to air quality resulting from vegetation changes could ultimately be insignificant, since environmental mitigation, if required or otherwise implemented, could result in an overall increase in the size of preserved and restored forested areas.

Cumulative impacts to air quality resulting from transportation projects are generally considered to be on the beneficial side of the ledger since overcrowded roadways resulting in excessive backup and traffic congestion are known to increase the amount of hydrocarbons and other ozone precursors. Should roadways be developed by others, on or adjacent to existing or proposed levees, the additional movement of vehicles past the project area could result in an increase in ozone-forming precursors or other atmospheric pollutants in the immediate area. The impacts associated with development of this or other transportation related air quality emissions would be determined during detailed studies by the entitles proposing the projects.

LAND USE / FLOODPLAIN VALUES

This resource category addresses the sustainability of project features once they are established, as well as consideration of how the alternatives would lend themselves to general recreation and other open space uses. Development plans within the Dallas Floodway would provide slight to beneficial cumulative opportunities to improve land use and floodplain values as evaluated for this resource. Ecosystem restoration plans and limited recreational development would be consistent with the spirit and intent of Executive Order 11988 on Floodplain Management, which encourages the preservation of natural floodplain functions. Construction of other features such as the Trinity Tollway will be reviewed against this EO which recommends these values be preserved by seeking to assure that development be allowed in floodplains only when it can be demonstrated that there are no practicable alternatives. The transportation alternatives that involve a parkway between the levees of the Dallas Floodway are neither water resource related nor floodplain dependent. The roadway of the tollway alignments between the levees as currently proposed would be elevated by one to two feet above the 100-year floodplain elevation. Thus, the purposed transportation facilities would only be susceptible to flood events of greater magnitude. There would be a slight adverse effect to floodplain functions with the removal of the parkway acreage from the 100-year floodplain and creation of additional impervious hard surface within the SPF floodplain. Most flood damage reduction projects, such as being evaluated in the feasibility study of the Dallas Floodway, require siting within the floodway, however, the multipurpose study and construction authorities associated with Corps of Engineers projects could ameliorate and even enhance the natural floodplain values

Urbanization has greatly influenced land use patterns within the Dallas area. As additional runoff from upstream areas has increased the frequency of flooding within the study area, and as adjacent urbanization has continued, floodplain land use has shifted away from agriculture, except for a few areas of pastureland. The large floodplain areas adjacent to the river are zoned for industrial development, but with or without project, it is unlikely that substantial new development will occur in flood-prone areas due to extensive flooding and regulatory prohibitions that are currently in place. Past programs for voluntary removal of some residences and other structures in the more frequently flooded areas have also influenced floodplain land uses. Most abandoned floodplain areas have re-vegetated with grasses, followed by young forests. The proposed DFE project would significantly reduce remaining flood damages that occur within the project area. Most of the areas that would be impacted by the proposed project features are currently in private ownership and would be shifted to public open space with the project. Physical features of the project would directly impact some forestlands that have developed during the past 30 to 40 years; however, these losses would be mitigated, resulting in a larger area of preserved and reestablished floodplain forests.

The proposed DFE project would provide a large net increase in wetlands regardless of which upstream future condition may come to fruition. It also provides a significant increase in acres of improved forests and increases in acres of other cover types converted to forest. Tables 4-1 through 4-6 show that these conversions to desirable habitats come as a result of conversion of grasslands, the region's most abundant cover type.

All lands acquired as features of the DFE project, including the area between the proposed levees, the footprint of the project features, and the mitigation areas, would no longer be available for uses such as agricultural production or industrial use. These lands would remain in the floodplain as open space and would be available for public uses compatible with the project. The project would result in increased use of the floodplain lands for recreation. Recreation trails and flood compatible day use facilities would be developed through project lands and the habitat mitigation area. The City of Dallas plans more intensive recreation facilities certain areas within the lands required for the project, including athletic fields and a community center. Direct land use changes caused by the proposed DFE project would be compatible with floodplain functions and should have no negative effects on floodplain uses compared to conditions without the project.

The DFE project would provide reduction in damages to areas in both the Lamar Street and Cadillac Heights areas that are currently susceptible to flooding. The economic stimulus associated with the project, combined with the reduction in frequency and intensity of flood damages, would result in a higher order of economic use of the affected lands which would be afforded protection or which are adjacent to the project. Redevelopment would not be expected to occur all at once, but over a period of years. The most obvious changes would likely be in the form of redevelopment and reuse rather than direct change from one land use to another. Liability concerns for environmental contamination must be addressed prior to any major redevelopment. This would be largely the responsibility of the land developer(s) and would need to comply with both Environmental Protection Agency and Texas Commission on Environmental Quality requirements, as well as consistency with such programs as the "Brownfields" initiatives administered by those agencies. Although no specific proposals have been identified with any certainty, it is probable that any industrial redevelopment that may be induced will be "cleaner" than former industrial development in the study area.

With participation in the DFE project, or any Corps of Engineers project currently in the Feasibility Study phase that might go on to implementation, the City of Dallas would be required to prepare a comprehensive floodplain management plan which should address watershed land uses adjacent to and upstream of the project. A primary purpose of this comprehensive plan is to assure that future developments do not increase potential future flood damages. The floodplain management plan must address conditions of the project as assumed to be in-place, along with any other proposals, such as highways or commercial, residential, or industrial development. Any potential zoning changes proposed by the City of Dallas in preparing this comprehensive floodplain management plan should provide opportunity for public input.

TABLE 4-7. CUMULATIVE IMPACT ANALYSIS, DALLAS FLOODWAY EXTENSION

Redevelopment of adjacent neighborhoods and commercial and industrial areas would be cumulatively influenced by the Trinity Tollway project proposed to extend from Hwy 175 to the existing Dallas Floodway along the Lamar Street Levee alignment of the proposed DFE project. The number and location of access ramps, as well as aesthetic treatment and noise reduction measures that would be included with the Trinity Tollway will affect the type and extent of adjacent land use changes. The Federal Highway Administration, Texas Department of Transportation, and the North Texas Tollway Authority will address those effects as those agencies move forward with compliance under the National Environmental Policy Act. One certain effect of the proposed roadway project on land use in the project vicinity would be an economic stimulus resulting from construction. The economic effect of a roadway project on land use within the study area would occur even in the absence of the DFE project or any other proposed flood damage reduction project. The DFE project and a Trinity Tollway project together, however, would have a combined or cumulative effect on land use. The nature, location, and extent of land use changes or economic redevelopment that would occur cannot be predicted with certainty at this time. Economic development within the project study area will be greatly influenced by the City of Dallas' comprehensive floodplain management plan, by the City's Trinity River Corridor Comprehensive Land Use Plan (CLUP), and by features of the proposal for the Trinity Parkway as they move along in the planning and public involvement process.

PUBLIC SERVICES

The cumulative impacts of the reasonably foreseeable projects on public services considered changes in the need or ability of local governments to effectively provide for the safety and welfare of citizens and visitors to the immediate area of the Dallas Floodway and the Dallas Floodway Extension. Reduction in injury and life threatening events would be considered beneficial. Benefits would accrue if emergency services could be provided with minimal delay. Other public service benefits would accrue from protection of wastewater treatment plants and sanitary landfill facilities. Potential adverse cumulative impacts to public services would occur from public gatherings at events with insufficient facilities to accommodate health and safety needs.

ENVIRONMENTAL JUSTICE/COMMUNITY STRUCTURE

Cumulative effects on social, economic, and community well being within proposed project areas are difficult to measure because it requires a delineation of cause-and-effect between the multiple actions and the human communities of concern. Until sufficient scoping of all the project proposals and coordination with affected communities can be completed, only a preliminary discussion of cumulative effect is possible. Both structural and nonstructural alternatives need to consider existing directly affected socioeconomic resources within potential project areas, especially with regard to issues of environmental justice and potential adverse cumulative impacts to communities.

The project area of the Stemmons North Industrial District, now being studied under the Elm Fork Floodplain Management Study, is unlikely to produce any negative, long-term, cumulative impacts to socioeconomic conditions from implementation of the recommendations reviewed. The reduction of flood damages within this portion of the study area would encourage the development of additional businesses and industries in this area. Job growth is already high in this area and could potentially increase even more as additional work opportunities become available.

The consequences to socioeconomic conditions within the area of Feasibility Study for the Dallas Floodway would be generally beneficial to the region at large. Reduction of flooding events, environmental restoration, and development of public use facilities, would generally result in stabilized and slightly increased property values and reduced public and private emergency expenditures. The incorporation of recreational components into any of these projects would provide even greater benefit. Some potentially negative consequences to low-income and minority communities caused by relocations and buy-outs is possible, especially within the area of the Dallas Floodway if the proposed Trinity

Parkway were constructed. The environmental restoration component of the Dallas Floodway (EQ Plan) alone, without the parkway component, is unlikely to have these direct negative impacts. Cumulatively, with other possible projects proposed for the broad study area, the DFE project would result in an enhancement of the area through reductions in flood damages or the threat of flood damage and/or ecosystem restoration and would produce positive benefits for the future.

HYDROLOGY AND HYDRAULICS

Generally, any alternative within the study area that results in alteration of the flood carrying capacity causes direct, indirect and cumulative impacts to some other locations within the floodplain. The hydrology and hydraulic analysis evaluation conducted for the PEIS presented the results of new studies. That study took into consideration the known new construction within the floodplain and considered the recommended plan for Dallas Floodway Extension, including environmental mitigation and recreational development to be in place.

The hydrologic and hydraulic models used for this SEIS follow the same development rationale and the HEC-1 hydrologic models used for the SEIS are the same as the models used for both the DFE GRR/EIS and the PEIS. See Appendix A of this SEIS for explanation of models used. The HEC-2 models developed for the original DFE GRR/EIS alternatives were converted to the HEC-RAS model format and combined with the Upper Trinity CDC HEC-RAS model. This was done in the same manner that the Recommended Plan for the DFE project was combined with the various alternatives for the Dallas Floodway as described on Page A-9 under Dallas Floodway alternatives in the PEIS. Additionally, the same “future conditions” year 2050 hydrologic land use conditions were used to compute the data within this Supplement to the DFE GRR/EIS in order to maintain consistency with the data presented in the PEIS.

Data from several tables in Appendix A of this report and from Appendix A of the PEIS are presented in this section. Tables 4-8 through 4-12 present the hydraulic conditions and impacts (change in water surface elevations) from reasonably foreseeable projects in the Dallas Floodway compared to the final array of alternatives of the DFE GRR/EIS. Table 4-8 provides hydraulic conditions that were predicted based upon there being no Federal Action in the DFE project area for the 100-year and Standard Project Flood conditions. The “No Action” column in this table thus provides the baseline for evaluation of individual and cumulative impacts displayed in this and subsequent H&H tables. .

It was found in the PEIS that subtle differences exist between the various “Lakes” alternatives. For example, the parkways would be protected to the 100-year level, and therefore, they would have less reduction in the water surface than the lakes alone during the 100-year event. However, during the SPF event, the parkways would act as concrete lined channels and allow/cause the water to flow faster and therefore lower the water surface more than just the stand-alone lakes. Regardless, the “Lakes” alternatives are sufficiently similar from a hydraulic perspective so that they can be grouped together. This being the case, and taking into account the magnitude of the reductions in water surface elevations, for the 100-year event, the cumulative impact upstream of the Dallas Floodway would be less than the sum of the DFE and “Lakes” evaluated separately.

Changes to the water surface elevations for the Flood Damage Reduction Alternative are sufficiently small that the change will converge to zero within a relative short distance upstream of the Elm Fork/West Fork confluence. This alternative, when combined with the DFE project would have essentially no impact to the area upstream of the existing Dallas Floodway. Thus, the cumulative hydraulic impacts of the two projects would be similar to the sum.

The EQ plan, because of the additional forest and overbank resistance to flows, causes a significant rise to water surface elevations at the upstream end of the Dallas Floodway. The City’s Elm Fork

TABLE 4-8 HYDRAULIC IMPACTS FOR DALLAS FLOODWAY REASONABLY FORESEEABLE ACTIONS, AT SELECTED TRINITY RIVER LOCATIONS, WITH "NO ACTION" AS THE DFE PROJECT (2050 HYDROLOGY)

100-year Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	424.12	423.96	-0.16	423.57	-0.55	423.61	-0.51	423.49	-0.63	425.30	1.18
Hampton	421.87	421.72	-0.15	421.37	-0.50	421.42	-0.45	421.24	-0.63	422.99	1.12
Commerce	419.40	419.29	-0.11	418.91	-0.49	418.92	-0.48	418.94	-0.46	420.42	1.02
DART Rail	417.61	417.56	-0.05	417.49	-0.12	417.49	-0.12	417.50	-0.11	417.59	-0.02
SH 310	410.80	410.8	0.00	410.83	0.03	410.83	0.03	410.82	0.02	410.74	-0.06
S Loop 12	403.14	403.15	0.01	403.19	0.05	403.19	0.05	403.17	0.03	403.07	-0.07

SPF Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	436.14	436.09	-0.05	435.10	-1.04	435.11	-1.03	435.17	-0.97	437.89	1.75
Hampton	434.00	433.92	-0.08	432.98	-1.02	432.98	-1.02	433.06	-0.94	435.75	1.75
Commerce	430.72	430.63	-0.09	429.84	-0.88	429.82	-0.90	429.96	-0.76	432.39	1.67
DART Rail	427.55	427.14	-0.41	427.27	-0.28	427.27	-0.28	427.26	-0.29	427.41	-0.14
SH 310	421.98	421.95	-0.03	422.09	0.11	422.09	0.11	422.09	0.11	421.85	-0.13
S Loop 12	411.78	411.75	-0.03	411.92	0.14	411.92	0.14	411.91	0.13	411.63	-0.15

Change reflects the differences in water surface elevations from the No Action water surface at the referenced location. A negative change represents a decrease in water surface elevation.

No Action Column provides water surface elevations related to No alternatives being implemented in Dallas Floodway area

TABLE 4-9 HYDRAULIC IMPACTS FOR DALLAS FLOODWAY REASONABLY FORESEEABLE ACTIONS, AT SELECTED TRINITY RIVER LOCATIONS, WITH "NED PLAN" AS THE DFE PROJECT (2050 HYDROLOGY)

100-year Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	422.87	422.62	-0.25	422.35	-0.52	422.37	-0.50	422.23	-0.64	424.18	1.31
Hampton	419.74	419.46	-0.28	419.19	-0.55	419.25	-0.49	418.95	-0.79	421.16	1.42
Commerce	415.80	415.57	-0.23	415.17	-0.63	415.17	-0.63	415.10	-0.70	417.47	1.67
DART Rail	412.26	412.21	-0.05	412.16	-0.05	412.16	-0.10	412.13	-0.13	412.24	-0.02
SH 310	407.17	407.17	0.00	407.19	0.02	407.20	0.03	407.19	0.02	407.10	-0.07
S Loop 12	403.36	403.36	0.00	403.39	0.03	403.39	0.03	403.38	0.02	403.28	-0.08

SPF Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	434.20	434.09	-0.11	433.07	-1.13	433.12	-1.08	433.09	-1.11	435.97	1.77
Hampton	431.37	431.23	-0.14	430.21	-1.16	430.27	-1.10	430.22	-0.15	433.20	1.83
Commerce	426.78	426.64	-0.14	425.58	-1.23	425.58	-1.20	425.72	-1.06	428.83	2.05
DART Rail	421.83	421.69	-0.14	421.60	-0.23	421.60	-0.23	421.60	-0.23	421.67	-0.16
SH 310	417.24	417.21	-0.03	417.34	0.10	417.35	0.11	417.35	0.11	417.10	-0.14
S Loop 12	412.24	412.21	-0.03	412.34	0.10	412.34	0.10	412.34	0.10	412.09	-0.15

TABLE 4-10. HYDRAULIC IMPACTS FOR DALLAS FLOODWAY REASONABLY FORESEEABLE ACTIONS, AT SELECTED TRINITY RIVER LOCATIONS, WITH "LPP" (RECOMMENDED PLAN) AS THE DFE PROJECT (2050 HYDROLOGY)

100-year Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	423.39	423.23	-0.16	422.86	-0.53	422.89	-0.50	422.75	-0.64	424.66	1.27
Hampton	420.70	420.51	-0.15	420.19	-0.51	420.24	-0.46	419.98	-0.72	421.99	1.28
Commerce	417.56	417.51	-0.05	417.05	-0.51	417.06	-0.50	417.01	-0.55	418.87	1.31
DART Rail	415.12	415.12	0.00	415.02	-0.10	415.02	-0.10	415.01	-0.11	415.10	-0.02
SH 310	407.62	407.62	0.00	407.64	0.02	407.64	0.02	407.63	0.01	407.54	-0.08
S Loop 12	403.35	403.35	0.00	403.39	0.04	403.39	0.04	403.38	0.03	403.26	-0.09

SPF Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	435.56	435.71	0.15	434.43	-1.13	434.47	-1.09	434.50	-1.06	437.32	1.76
Hampton	433.24	433.43	0.19	432.10	-1.14	432.14	-1.10	432.18	-1.06	435.01	1.77
Commerce	429.66	429.94	0.28	428.63	-1.03	428.65	-1.01	428.78	-0.88	431.42	1.76
DART Rail	426.24	426.19	-0.05	425.89	-0.35	425.89	-0.35	425.88	-0.36	426.07	-0.17
SH 310	418.08	418.04	-0.04	418.16	0.08	418.17	0.09	418.16	0.08	417.93	-0.15
S Loop 12	412.30	412.27	-0.03	412.40	0.10	412.40	0.10	412.40	0.10	412.16	-0.14

TABLE 4-11 HYDRAULIC IMPACTS FOR DALLAS FLOODWAY REASONABLY FORESEEABLE ACTIONS, AT SELECTED TRINITY RIVER LOCATIONS, WITH NON-STRUCTURAL/STRUCTURAL PLAN AS THE DFE PROJECT (2050 HYDROLOGY)

100-year Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	423.26	423.04	-0.22	422.73	-0.53	422.75	-0.51	422.61	-0.65	424.54	1.28
Hampton	420.46	420.24	-0.22	419.94	-0.52	419.99	-0.47	419.72	-0.74	421.78	1.32
Commerce	417.15	416.98	-0.17	416.62	-0.53	416.62	-0.53	416.57	-0.58	418.54	1.39
DART Rail	414.51	414.45	-0.06	414.42	-0.09	414.42	-0.09	414.40	-0.11	414.49	-0.02
SH 310	407.61	407.62	0.01	407.65	0.04	407.65	0.04	407.64	0.03	407.55	-0.06
S Loop 12	403.35	403.35	0.00	403.39	0.04	403.39	0.04	403.38	0.03	403.27	-0.08

SPF Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	434.93	434.79	-0.14	433.79	-1.14	433.82	-1.11	433.83	-1.10	436.64	1.71
Hampton	432.40	432.20	-0.20	431.23	-1.17	431.26	-1.14	431.27	-1.13	434.12	1.72
Commerce	428.43	428.20	-0.23	427.31	-1.12	427.30	-0.13	427.43	-1.00	430.20	1.77
DART Rail	424.47	424.18	-0.29	424.15	-0.32	424.15	-0.32	424.15	-0.32	424.32	-0.15
SH 310	418.05	418.02	-0.03	418.16	0.11	418.17	0.12	418.16	0.11	417.91	-0.14
S Loop 12	412.30	412.27	-0.03	412.40	0.10	412.40	0.10	412.40	0.10	412.16	-0.14

TABLE 4-12 HYDRAULIC IMPACTS FOR DALLAS FLOODWAY REASONABLY FORESEEABLE ACTIONS, AT SELECTED TRINITY RIVER LOCATIONS, WITH "TFSP" AS THE DFE PROJECT (2050 HYDROLOGY)

100-year Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	423.44	423.24	-0.20	422.92	-0.52	422.94	-0.50	422.80	-0.64	424.70	1.26
Hampton	420.78	420.58	-0.20	420.28	-0.50	420.33	-0.45	420.08	-0.70	422.05	1.27
Commerce	417.70	417.55	-0.15	417.21	-0.49	417.21	-0.49	417.16	-0.54	418.99	1.29
DART Rail	415.32	415.27	-0.05	415.23	-0.09	415.23	-0.09	415.22	-0.10	415.30	-0.02
SH 310	407.61	407.62	0.01	407.65	0.02	407.65	0.04	407.64	0.03	407.55	-0.06
S Loop 12	403.35	403.35	0.00	403.39	0.03	403.39	0.04	403.38	0.03	403.27	-0.08

SPF Water Surface Elevations (ft.)

Location	No Action	FDR	Change	Pkwy 1side	Change	Lakes/Split Pkwy	Change	Lakes only	Change	EQ	Change
Confluence	434.93	434.79	-0.14	433.79	-1.14	433.82	-1.11	433.83	-1.10	436.64	1.71
Hampton	432.40	432.20	-0.20	431.23	-1.17	431.26	-1.14	431.27	-1.13	434.12	1.72
Commerce	428.43	428.20	-0.23	427.31	-1.12	427.30	-0.13	427.43	-1.00	430.20	1.77
DART Rail	424.47	424.18	-0.29	424.15	-0.32	424.15	-0.32	424.15	-0.32	424.32	-0.15
SH 310	418.05	418.02	-0.03	418.16	0.11	418.17	0.12	418.16	0.11	417.91	-0.14
S Loop 12	412.30	412.27	-0.03	412.40	0.10	412.40	0.10	412.40	0.10	412.16	-0.14

proposals could then further increase the 100-year water surface elevation, and thus, the cumulative impacts may slightly exceed the sum of the two projects when evaluated separately. A project scenario such as this would most definitely require other hydraulic mitigation measures, which have yet to be determined.

As indicated by the hydrologic and hydraulic analysis for the Recommended Plan for the DFE, valley storage changes in the project reach would result from both the reduction of peak water surface elevation and the function of levees blocking floodwater access to the areas of the floodplain that would be protected by the levees. The analysis indicates that a reduction in the valley storage in the project reach would result in an increase in the peak discharges. This increase has been computed and is expressed in terms of an increase in the peak water surface profile downstream of the project. The water surface profile elevations would be increased an average of 0.15 feet for the 1 percent chance flood (100-year) and 0.3 feet for the SPF. Based on the small increases downstream of the DFE and the very limited potential for flood damages downstream of the project, a variance from the criteria requiring mitigation for reduction of valley storage based upon the Trinity River Environmental Impact Statement Record of Decision (ROD) has been considered and approved by the District Engineer for the Recommended Plan for the DFE project.

The cumulative effects of the various Dallas Floodway alternatives combined with alternatives downstream in the DFE study area and the results of the hydrologic and hydraulic analysis are discussed in the PEIS. These results are presented in terms of the individual project's impacts to the water surface profiles and flow velocities both upstream and downstream. In general, the data presented indicates that a project which raises the water surface profile upstream of the project results in lowering the water surface profile downstream of the project and vice versa due to the valley storage losses or gains resulting from implementation of the project. These phenomena are also observable in the additional data presented herein and the reasons are essentially the same as those discussed in the PEIS and will not be repeated here. Reference the PEIS for discussion of the valley storage effects of the various Dallas Floodway alternatives. However, one important conclusion can be drawn from the additional data presented in this Supplement. The relative scale of the effects both upstream and downstream for each of the Dallas Floodway alternatives when compared to the No Action Plan for the Dallas Floodway and combined with the final array of alternatives for DFE is very similar to those observed in the PEIS. In fact, the results show that all of the alternatives of the Dallas Floodway cause relatively insignificant impacts downstream. For example, the 100-year water surface (WS) elevation difference for the Recommended Plan DFE/FDR Plan combination in the PEIS is -0.16 ft. and the 100-year WS elevation difference for the No Action DFE/FDR Plan combination is –0.16 ft at the West Fork / Elm Fork confluence. The same comparison for the SPF WS elevation is 0.15 ft. for the Recommended Plan DFE/FDR Plan and is –0.05 ft. for the No Action DFE/FDR Plan. One should keep in mind that all of the data presented in the PEIS includes the Recommended Plan for DFE.

The data also indicates that the difference in the scale of the upstream water surface elevation impacts compared to the downstream impacts of the Dallas Floodway alternatives is quite high. This difference is observed in some cases higher than a 10:1 ratio upstream to downstream which means that an alternative that raises the water surface elevation upstream from the project of about 1.0 foot will generally result in lowering the water surface downstream of about 0.1 feet or less. This same hydrologic and hydraulic phenomenon is observed in the DFE alternatives and works to a distinct advantage for the DFE Recommended Plan which results in lowering the water surface elevation upstream in the Dallas Floodway reach significantly where extremely high flood damage values are located and raises flood levels downstream an insignificant amount where very low flood damage values exist.

Cumulative impacts can also be observed in the data when comparing the same plan for Dallas Floodway with various alternatives for the DFE. For example, the SPF water surface (WS) elevation comparison upstream of the EQ Plan at the West Fork/Elm Fork Confluence for the EQ Plan/No Action DFE combination with the EQ Plan/Recommended Plan in DFE combination equals –0.57 (437.32 - 437.89) and the same comparison downstream at Loop 12 would equal 0.53 (411.63 – 412.16). This comparison yields the results of adding the Recommended Plan for DFE if the EQ Plan were implemented first.

Almost identical results are obtained comparing the No Action in Dallas Floodway/No Action DFE combination and the No Action in Dallas Floodway/Recommended Plan for DFE combination.

Another way of using the data in a cumulative way would be to compare the implementation of two plans simultaneously in both the Dallas Floodway and the DFE area with the No Action Plan for both areas (Existing Conditions). Using the data in the previous example would yield an upstream elevation change for the SPF water surface at the West Fork/Elm Confluence of +1.18 (437.32 – 436.14) and a downstream change at Loop 12 of +0.38 (412.16- 411.78). This example yields the impacts of implementation of the EQ Plan and the Recommended Plan for DFE compared with existing conditions.

Based upon the evaluations conducted for the DFE GRR/EIS and PEIS, it appears that based upon all known reasonably foreseeable projects there would be potential for cumulative impacts to flood elevations both upstream of the Dallas Floodway and downstream of the Floodway Extension. All project proposals currently under investigation, including the Dallas Floodway Feasibility Study and the Trinity Tollway EIS, must take those potential cumulative effects into account. Plan formulation, selection, and design of all reasonably foreseeable projects must account for and must mitigate any determined adverse hydrologic and hydraulic effects.

Since it is would be impossible to combine plan features occupying the same space or that otherwise may have conflicting purposes, it is also not possible to view the hydrologic and hydraulic impacts of these preliminary individual plans developed for the Dallas Floodway as additive. For example, if it was found that one plan raised the water surface one foot at a point and another plan lowered the water surface at the same point the same amount then it might be construed that if the plans were combined the net effect would be approximately no change. This would be invalid because combining plans in most cases would require significant modification to either plan. However, the data provides indications to the overall effects of these types of projects and is valuable in the planning process for ultimately developing multiple purpose recommendations or plans that may individually provide several types of benefits and provide the most efficient means of satisfying the needs of the region both economically and environmentally. It is therefore likely, based on the findings of this data, that a combination of the various features of the reasonably foreseeable actions could be developed to produce an overall plan which results in very insignificant hydraulic impacts both upstream and downstream while providing many of the desired benefits. Some specifics of this process would be that since levee raises impact the design of a riverside Parkway reliever route, the Parkway could be located closer to the river to allow for riverside levee fill required to raise the levees. Also for example, floodplain recreational lakes that tend to lower water surface elevations could be used in some locations while forested areas as in the EQ Plan, that tend to raise water surface elevations could be used in other areas to compensate.

AESTHETICS

The Dallas Floodway alternatives, which would include a Parkway in association with the levees, would have moderate adverse impact on aesthetics as these hard-surface engineered features detract from remnant natural floodplain features. From a natural perspective, positive cumulative aesthetic impacts would result from implementation of the EQ and Lakes only alternative within the Dallas Floodway and from the Lakes alternative with the Parkway located at an alternate site such as the Industrial Boulevard alignment.

CULTURAL RESOURCES

Cumulative effects on cultural resources can be generally considered as limited with regard to individual Federal actions because of the nature of the resources and the actions. Properties that are eligible or listed in the National Register of Historic Places are accounted for and preservation actions would be taken on each property as the effects are identified. However, multiple actions by several agencies over time, and sometimes-separate State or privately sponsored activities within the same areas, have the potential for cumulative negative effects on the broad range of cultural resources. There is a potential for cumulative impacts within the Dallas Floodway project area associated with any of the alternatives being

considered. Any of the alternatives likely would encourage development adjacent to the floodway area. Resources which could be impacted in this project area are the archeological resources which may be present in areas where no survey effort has been completed or is required, buildings and structures which may or may not have been identified as significant, and properties of traditional importance to Native American Indian tribes or other traditional groups.

Construction in the Stemmons North Industrial District could produce adverse cultural resources impacts similar to those associated with the Dallas Floodway project area. Providing additional flood protection within the Stemmons area would encourage development in the protected area. Resources which could be impacted in this project area are the archeological resources which may be present in areas where no survey effort has been completed or is required, buildings and structures which may or may not have been identified as significant, and possibly properties of traditional importance to Native American Indian tribes or other traditional groups. Cumulatively, projects in the Dallas Floodway, Stemmons North Industrial District, and the Trinity Parkway routes, have potential to directly impact built architectural and engineering properties. Mitigation of cultural resources that would be impacted by any aspect of the Federal projects would be required. A programmatic agreement to address types of studies needed and actions necessary to mitigate cultural resource losses has been developed by the Corps of Engineers agreed upon by the SHPO to address Corps of Engineers actions.

Any impacts to cultural and historical resources would be mitigated, according to provisions of the National Historic Preservation Act. Therefore, the proposed federal actions would make no contributions to cumulative impacts of the area.

NOISE

All noise impacts directly attributable to the DFE project would be temporary in nature. Levees would tend to interfere with the distribution of some noises. Roadway traffic noise associated with proposed tollway alignments, bridge upgrades or replacements, and other transportation proposals in the study area must be evaluated by the Federal Highway Administration, TXDOT, NTTA, or other entities as appropriate. The recommended DFE project would not contribute to cumulative noise impacts and noise is not considered to be a significant cumulative impact issue relative to the DFE project.

ENVIRONMENTAL COMPLIANCE

The President's Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Act require that Environmental Impact Statements list all Federal permits, licenses, and other entitlements which must be obtained in order to implement a proposal. If it is uncertain whether or not any permits, licenses, or other entitlements are required, the EIS must state that as well. The GRR/EIS for the DFE lists those requirements for the DFE project. This section addresses the requirements, to the extent that they are known, for other reasonably foreseeable projects in the study area.

ENDANGERED SPECIES ACT

Several federally protected species may occasionally migrate through the proposed project area. It is known that the Black-capped vireo nests in southwestern Dallas County within the juniper forested area associated with that area. In addition, least tern has been documented nesting within the Southside Wastewater Treatment facility grounds several miles southeast of the Dallas within the mainstem Trinity River floodplain. Preliminary evaluation of the reasonably foreseeable proposals in the study area indicates that none would affect, nor would they have a cumulative affect on federally listed threatened or endangered species or their critical habitat. Each would have to be evaluated on a case-by-case and site-specific basis as planning progresses.

EXECUTIVE ORDER 11988

Executive Order 11988 was considered in preparation of this Supplement. The objective of the EO is to avoid, to the extent possible, long and short-term adverse impacts associated with occupancy and modification of the base floodplain. Further objectives are the avoidance of direct and indirect support of development in the base floodplain wherever there is a practicable alternative and protection and restoration of natural floodplain functions. Feasible alternatives may remain that need to be further evaluated prior to final determination of whether activities proposed within the 100-year floodplain of the Trinity River are compliant with the Executive Order. Corps of Engineers regulations for implementing EO11988 (ER 1165-2-26) defines the base floodplain as the one percent chance, or 100- year floodplain. For the most part, lakes and wetland features and flood damage reduction measures are required to be located within the floodplain to provide their intended function. Parkways, recreational features and associated support do not need to be located within the floodplain to fulfill their basic purposes. Additional analysis will be required of the Corps of Engineers and other Federal decision agencies prior to final determination of compliance of various project alternatives with this Executive Order. Review of policy issues associated with the various project proposals being investigated will continue to assure compliance with Executive Order 11988 directives.

SECTION 202(C) OF THE WATER RESOURCES DEVELOPMENT ACT OF 1996

This guidance requires the preparation of a comprehensive Floodplain Management Plan (FPMP) by the local sponsor for any projects that are cost shared with the Corps of Engineers. This requirement will have future floodplain impacts within the study area. The project sponsors of Corps of Engineers projects are required to develop a FPMP within one year after the signing of the Project Cooperation Agreement, and then must implement the plan within one year after completion of construction of the project. Thus, the City of Dallas, as cost sharing sponsor for the Dallas Floodway Extension, is required to complete a FPMP for that project prior to the development of any additional Corps of Engineers projects within their area of jurisdiction.

CLEAN AIR ACT

Federal agencies are required by this Act to review all air emissions resulting from Federal funded projects or permits to insure conformity with the State Implementation Plans in non-attainment areas. The Dallas/Fort Worth Metropolitan Area is a non-attainment area. Section 176(c) requires Federal agencies to demonstrate that an activity in which they engage, support, permit, or approve conforms to State Implementation Plans. The basic requirement of Section 309(a) is submission of the feasibility-level documents to the EPA for review and comment. The GRR/EIS and both the Draft and Final of this Supplement have been provided to that agency. The project is in compliance with the Clean Air Act and will not contribute to the air quality problem.

SECTION 404 CLEAN WATER ACT

Congress under Section 404 of the Clean Water Act (33 USC 1344) has directed the Corps of Engineers to regulate the discharge of dredge and fill material into all waters of the United States including adjacent wetlands. The intent of Section 404 is to protect the nation's waters from indiscriminate discharge of material capable of causing pollution, and to restore and maintain the chemical, physical and biological integrity of these areas. Although the Corps of Engineers does not issue itself permits for proposed activities that would affect waters of the United States, the Corps of Engineers must meet the legal requirements of the Act.

Each of the potential projects of others in this Supplement to the DFE EIS must be evaluated on its own merits as alternatives are selected and plans are developed. At this point, it is presumed that any of the Dallas Floodway project alternatives would impact jurisdictional areas, including wetlands, and would result in a requirement for the Corps of Engineers to conduct and incorporate Section 404(b)(1) analyses into subsequent NEPA and agency decision documents.

SECTIONS 9 AND 10 RIVERS AND HARBORS ACT

Section 9 (33 USC 401) and Section 10 (33 USC 403) of the Rivers and Harbors Act of 1899 direct the Corps of Engineers to regulate all work or structures in or affecting the course, condition, or capacity of navigable water of the United States. Since no alternative evaluated considers construction of a dam across a navigable waterway, Section 9 need not be considered further. The mainstem Trinity River at Dallas is navigable, as is the West Fork upstream to Riverside Drive; however, no commercial navigation occurs on the Upper Trinity. The Elm Fork is also not navigable and provided activities within the Stemmons area do not induce direct or cumulative impacts downstream on the mainstem, then the activities at Stemmons would be in compliance with Section10.

Project proposals within the Dallas Floodway would have minimal affect on navigation. The footprint of most features would lie within the floodplain adjacent to the mainstem. The construction of a split channel around the lakes and recreational features would cause some impacts to the recreational navigation that occurs on the mainstem. Most of these impacts would be temporary in nature occurring during the construction. Further evaluation of all mainstem alternatives would be required to determine compliance with Section 10.

EXECUTIVE ORDER 11990 - PROTECTION OF WETLANDS

In addition to Section 404 and Executive Order 11988, Executive Order 11990 for Protection of Wetlands was considered during the evaluation of proposed projects. The purpose of this Executive Order is to assure that Federal Agencies in the process of carrying out their missions, take all reasonable action to preserve and protect the functional values of wetlands. Further evaluation will be necessary for proposals within the existing Dallas Floodway as the proposals evaluated in this Supplement would clearly impact jurisdictional areas including wetlands.

SECTION 106 OF THE NATIONAL HISTORIC PRESERVATION ACT

Assessment, avoidance, and potentially, mitigation, of resources identified during future studies that would be impacted by any aspect of the federal projects would be required. For purposes of Section 106 of the National Historic Preservation Act, a programmatic agreement to address types of studies needed and actions necessary to mitigate cultural resource losses is being pursued with the Texas SHPO and Advisory Council on Historic Preservation. Other groups are being consulted with regarding potential properties of traditional significance.

FISH AND WILDLIFE COORDINATION ACT

The Fish and Wildlife Coordination Act requires the Corps of Engineers to coordinate with the U.S. Fish and Wildlife Service on water resources related projects to obtain their views toward preservation of fish and wildlife resource values and mitigation of unavoidable impacts. The Fish and Wildlife Service has provided information that was utilized during the planning of the DFE project and has assisted in the early planning process for other projects being studied by the Corps of Engineers. Subsequent detailed studies, including development of appropriate fish and wildlife resources mitigation plans, will be conducted with the U. S. Fish and Wildlife Service prior to recommendation of any specific project alternatives for construction authorization.

CORPS OF ENGINEERS HABITAT MITIGATION PROCESS

The Corps of Engineers has established a goal of no net loss of resource value for bottomland hardwoods as a part of the planning process. This goal is similar to the mitigation objectives established by the Fish and Wildlife Service as part of its mitigation policy. In light of the cumulative impacts to forested resources in the study area, particularly within the 100-year floodplain, the Corps of Engineers will continue within its planning process to minimize impacts to bottomland hardwoods and to fully mitigate unavoidable losses. The Corps of Engineers will continue to pursue projects such as, wetland restoration associated with the Dallas Floodway Extension, and ongoing ecosystem restoration activities

under the Continuing Authorities Program, including Section 1135. Coordination will continue with resource agencies to determine the most efficient use of program resources to maximize forested resource benefits. In particular, efforts will be pursued to minimize fragmentation of forests and to restore linear corridors of sufficient width to be utilized by migratory songbirds and local wildlife.

Recent trends indicate that emergent wetland resources are being conserved or compensatory mitigation has been appropriately required within the study area. Similar to the Corps of Engineers' mitigation policy for bottomland hardwoods, forested wetlands, and riparian corridors, Corps of Engineers policy specifies no net loss of wetlands. Resource values of emergent wetlands will be considered during the Corps of Engineers planning process. Wetland restoration in addition to mitigation of unavoidable losses will continue to be supported as project features for Corps of Engineers projects. Environmental mitigation under Department of the Army permitting for Section 404 and Section 10 activities within the study follow mitigation guidelines established in the Record of Decision (ROD) for the TREIS.

HYDROLOGY AND HYDRAULICS MITIGATION

The ROD for the Trinity Regional EIS applies to all project actions requiring a permit under Section 10 or Section 404 within the Standard Project Flood (SPF) floodplain of the study area. The ROD established criteria for minimizing cumulative impacts to hydrology and hydraulics.

The TREIS raised awareness that a large area of floodplain lands within the Upper Trinity River could be developed outside the jurisdiction of the Corps of Engineers and that if developed following only FEMA requirements, significant increases in flooding frequency and extent would continue to occur in adjacent and downstream areas. Subsequently, the Corridor Development Certificate (CDC) process was developed as a means to address those floodplain actions that were not within the jurisdictional areas administered by the Corps of Engineers.

CHAPTER 5 – PUBLIC INVOLVEMENT/COORDINATION

The Final General Reevaluation Report for Dallas Floodway Extension (February 1999) and the Final Programmatic Environmental Impact Statement for the Upper Trinity Basin (June 2000) contain extensive discussions of public involvement associated with the investigations for those documents. Incorporated herein by reference as allowed by the CEQ regulations for implementing NEPA (40 CRF Part 1508) are the discussions of public involvement contained in the aforementioned documents. Those documents should be referenced in order to understand the full context of public involvement that has occurred relative to the DFE project and cumulative impacts within the entire Upper Trinity River Basin. A summary of the public involvement process just for this Supplement to the EIS for the Dallas Floodway Extension follows.

SCOPING

A Notice of Intent to prepare a Supplement to the Environmental Impact Statement appeared in the Federal Register on June 28, 2002. On July 3, 2002, interested individuals and agencies were mailed notices of the initiation of the public scoping process and date and location of the scoping meeting. A notice was also placed in the Dallas Morning News on July 14 providing the location, date, and time of the scoping meeting. The Public Scoping Meeting was held on July 16, 2002, at the Ramada Plaza Hotel, 1011 South Akard Street, Dallas, Texas.

Forty-five individuals signed the attendance list for the meeting. Following a brief presentation discussing the background reasons for holding the scoping meeting and the information the Corps of Engineers desired to receive through the process, participants were given the opportunity to review separate displays within the room documenting the location of proposed projects in the geographic area that the Corps of Engineers believed should be considered for identification and assessment of cumulative impacts. The public was afforded the opportunity to provide information regarding these projects, other projects known to them that they believed should be considered and the types of impacts and resources that would be impacted that should be considered in the supplemental EIS. The scoping meeting was held to provide several means for individuals to provide meaningful comment. Open discussion with Corps of Engineers project team members familiar with the Dallas Floodway Extension project was encouraged. In addition, notebooks at each display were available for individuals to list other projects or items that should be considered. Oral statements could be made to a Court Reporter present at the scoping meeting and written statements could be presented at the meeting or later by mail. The scoping period was open until August 31, 2002.

During the Scoping Meeting, six individuals left formal comments with the court reporter. A common theme of all comments received was that the format of the meeting was inhibitory to public participation because it did not provide for open public comment. Several comments expressed a desire for the Supplement to the EIS to reopen the evaluation of alternatives to the DFE. One commenter suggested that the geographic study area cannot be defined by strict boundaries as it relates to hydraulics and hydrology. Projects identified as having cumulative effects that should be examined included the Trinity River Corridor Master Implementation Plan, a Tollway along the West Fork, the Northwest Corridor MIS, the Southeast Corridor MIS, Raising the existing Dallas Floodway Levees by Two Feet, Trinity Parkway, Trinity Tollway, Woodall Rodgers Bridge, Stemmons North Industrial District, Great Trinity Forest Master Plan, Dallas Open Space Plan, Trinity River Bridge Replacements, Ecosystem Restoration Projects, Levees around McCommas Bluff Landfill, Section 404 Fill Permits in Dallas County, and lack of protection to development along White Rock Creek afforded by the Lamar Levee.

Ten written comments were received during the open scoping period. The USFWS stated that projects affecting the watershed, not just the floodplains, should be considered. The attorney for the plaintiffs expressed a number of concerns similar to those in the motion to the Court for the Northern District. The Federal Highway Administration referred the Corps of Engineers to TXDOT and to a listing of about 500 bridges that cross the Trinity River and its tributaries in the hydraulic study area. The Trinity Improvement

Association expressed support for the need for the DFE project and provided information on two potential reasonably foreseeable projects. DCURD expressed concern about the loss and the potential to lose the existing level of flood damage protection for investments within the Las Colinas development. Dallas City Packing requested consideration of slight modification to the proposed Cadillac Levee alignment to minimize disruption to its operations. Four individuals provided information on several activities that they believed should be considered as reasonably foreseeable projects. Individual commenters stated that the Supplement to the DFE EIS should go beyond what the court ordered and use the supplement as a means to disclose a wide variety of specific information about the proposed tollroad including maintenance costs and to include benefits of actions such as voluntary buyouts of Cadillac Heights and raising the elevation of the top of the existing Dallas levee system. One individual also requested that the Corps of Engineers should reevaluate alternatives to the DFE and to conduct the cumulative impact assessment without assuming DFE to be in place.

Overall the comments during the scoping process identified air quality, water quality, recreational, historic and cultural sites and the Great Trinity River and other bottomland hardwood resources such as high quality wildlife habitat, as environmental resources on which the effects of cumulative actions should be evaluated.

To gather additional information on future foreseeable actions that were not presented by meeting participants, letters were sent to federal agencies and state and local government offices, including private and public transportation offices requesting information from them on future projects that might have cumulative impacts to the DFE project. Follow-up telephone calls were made to Dallas Area Rapid Transportation and Dallas District Texas Department of Transportation. Meetings were held with North Texas Tollroad Authority, City of Dallas and the Dallas District TXDOT office. Agency coordination was also conducted to identify projects that were authorized by either Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbor Act since December of 1999, or for which applications have been received but have not been processed to date within a nine county area including Dallas and upstream counties through which flows the West Fork, Clear Fork Elm Fork, Main Stem or tributaries to these segments.

COORDINATION MEETINGS RELATED TO SCOPING

Trinity Interagency Executive Committee Meeting

This is a monthly meeting used to coordinate and update each participating agency on the status of on-going activities along the Trinity River Corridor within the City of Dallas. The agencies which attend this meeting are: City of Dallas, Corps of Engineers (SWF and SWD), Texas Department of Transportation, Texas Commission on Environmental Quality (TCEQ), Dallas County, Environmental Protection Agency (EPA), North Texas Tollway Authority (NTTA), and the North Central Texas Council of Governments (NCTCOG). These monthly meetings started in 1996.

Project Pegasus Work Group Meeting

The agencies attending this monthly meeting are: Texas Department of Transportation, Texas Transportation Institute, North Texas Tollway Authority (NTTA), Dallas Area Rapid Transit (DART), North Central Texas Council of Governments, Federal Highway Administration, Corps of Engineers, and the consultants performing the work. This project is the design and future construction/rebuild of the I-30 and I-35E highways in Dallas. This includes the rebuild of the interstate highway bridges crossing the existing Dallas Floodway. These meetings started in 2001.

Southern Gateway Work Group Meeting

The agencies attending this monthly meeting are: Texas Department of Transportation, Texas Transportation Institute, Dallas Area Rapid Transit (DART), North Central Texas Council of Governments, Federal Highway Administration, Environmental Protection Agency (EPA), City of Cedar Hill, City of Lancaster, Corps of Engineers, and the consultants performing the work. This project is the IH 35E/US 67 MIS/Preliminary Engineering in southern Dallas County. These meetings started in 2001.

Loop 12/IH 35E Corridor MIS Work Group Meeting
The agencies attending this meeting are: Texas Department of Transportation, Texas Transportation Institute, Dallas Area Rapid Transit (DART), North Central Texas Council of Governments, Federal Highway Administration, Environmental Protection Agency (EPA), City of Irving, City of Dallas, Dallas County, Corps of Engineers, and the consultants performing the work. This project is the Loop 12 / IH 35E MIS/Preliminary Engineering in the cities of Dallas and Irving. These meetings started in 1998 as monthly meetings and are now held quarterly.

SH 183 Corridor MIS Work Group Meeting
The agencies attending this meeting are: Texas Department of Transportation, Texas Transportation Institute, Dallas Area Rapid Transit (DART), North Central Texas Council of Governments, Federal Highway Administration, Environmental Protection Agency (EPA), City of Irving, City of Dallas, Dallas County, Corps of Engineers, and the consultants performing the work. This project is the SH 183 Preliminary Engineering and Environmental Assessment in the city of Irving. These meetings started in 1998 as monthly meetings and are now held quarterly.

DRAFT SUPPLEMENT 1 TO THE DFE EIS

Notice of Availability of the Draft Supplement was published in the Federal Register on December 6, 2002, establishing a comment period that was originally scheduled to end on January 21, 2003. Public notices were also mailed to all known individuals interested in the study. Copies of the Draft were provided to EPA, Department of Interior, and State of Texas. Copies were available at the Main Library in Dallas and offices at the City of Dallas. The Draft was available for review at the Fort Worth District Internet web page and were mailed to individuals requesting a copy. A public meeting was held at the Ramada Plaza Hotel in Dallas on January 8, 2003 to allow for public review and input on the Draft Supplement 1 to the EIS for the Dallas Floodway Extension. Several individuals and one agency requested an extension in time to comment on the Draft Supplement. A letter stating the Corps had extended the comment period was until February 4, 2003 was sent to all known interested parties. The extension thus provided an overall comment period on the Draft Supplement of 60 days from the date of the original notice.

A total of 38 individuals registered their attendance at the Public Meeting. Ten individuals made statements at the meeting. Including written copies of comments presented at the public meeting, a total of 21 written statements were received during the entire comment period. Comments received have been included in Appendix B of this Final SEIS. Several commenters continued to question the original plan formulation process for the DFE project and stated belief that modification of the existing Dallas Floodway first would negate the need for construction of a flood damage reduction project in the area of the Dallas Floodway Extension. Other commenters questioned the ability to even identify reasonably foreseeable projects in the study area, particularly within the Dallas Floodway due to the continued review of priorities and preferences for the ultimate use of that area. Several commenters expressed concern that the Corps was basing its cumulative impact assessment solely on the impacts associated with the recommended DFE plan, thus assuming that the DFE were already constructed. Based upon comments received, the Final SEIS was clarified by bringing information from the referenced PEIS, specifically hydraulic impacts, and the DFE GRR/EIS into the SEIS and assessment of cumulative impact was conducted on the final array of alternatives from the DFE GRR/EIS, rather than just on the recommended plan (Locally Preferred Plan).

FINAL SUPPLEMENT 1 TO THE DFE EIS

An additional public review period of at least 30 days will be provided in review of this Final Supplement 1 to the EIS.

CHAPTER 6 - CONCLUSIONS AND RECOMMENDATIONS

This Supplement to the EIS for the Dallas Floodway Extension (DFE) was prepared to address the cumulative effects of reasonably foreseeable projects of the Corps of Engineers and other entities within the geographic area of the Dallas Floodway Extension. It has been prepared in response to the April 10, 2002, order of the U.S. District Court for Northern District of Texas in Fort Worth. That order remanded the DFE project to the Corps of Engineers to address the cumulative impacts of other similar reasonably foreseeable actions in the geographic area of the DFE. An analysis of cumulative impacts of various past, present, and reasonably foreseeable future Corps of Engineers projects and projects of other entities was made in combination with the plan for the DFE project as recommended and approved in the GRR/EIS.

Existing environmental and socioeconomic resources of the study area are described in detail in the General Reevaluation Report and Environmental Impact Statement (GRR/EIS) for the Dallas Floodway Extension dated February 1999. Past actions and potential future projects of the Corps of Engineers and other entities within the study area are identified, along with an analysis of the effects that those actions have had on study area resources of the Upper Trinity River Basin in a Programmatic EIS dated June 2000. The PEIS was prepared to address the cumulative impacts of potential projects being formulated under the Upper Trinity River Feasibility Study. Both the GRR/EIS and the PEIS are incorporated into this document by reference.

The Dallas Floodway Extension Project was originally authorized for construction in 1965 and subsequently the authorization was modified in 1999 to include ecosystem restoration and recreation as project purposes. This document describes reasonably foreseeable Corps of Engineers actions and actions of other entities and takes a hard look at the cumulative effects of the DFE project along with those that are considered to be reasonably foreseeable. In addition to the potential Corps of Engineers projects identified through the Upper Trinity River Feasibility Study, projects other entities are proposing in the study area are identified and addressed. Among the projects under consideration by other entities within the watershed, the Trinity Parkway has the most potential to significantly effect the floodplain and water and related land resources. That project is a proposal of the North Texas Tollway Authority and the City of Dallas. The Federal Highway Administration is presently preparing an Environmental Impact Statement for the Trinity Parkway because Federal funds of that agency are involved. Five potential roadway alignments are being evaluated.

Impacts of each of the potential projects are analyzed to the extent that details of the various alternatives are available. Pertinent resources for which each project is evaluated include hydraulics and hydrology, vegetative cover, terrestrial resources, aquatic resources, air quality, cultural resources, socioeconomics and environmental justice, recreation, and open space. Individually, each of the plans has some positive and some negative effects, depending upon the plan and the resources impacted. In addition to addressing the relative impacts of each individual alternative, this Supplement attempts to address the cumulative effects that implementation of any of the proposals might have on resources of the overall study area in combination with the DFE project . At the level of detail available for these evaluations, none of the impacts of the identified plans, or any combination of plans or alternatives, were found to cause a significant impact to study area resources to prohibit the projects from further consideration. As to be expected, the output and impacts associated with the plans and combinations addressed in this Supplement vary among the projects, with some being more environmentally sustainable over the long term, while others are more focused on addressing the region's economic needs.

Based upon analyses associated with preparation of this Supplement, and with the previous PEIS, it appears that while some of the alternatives are controversial to either the environmental interests or to the developmental interests, any of the projects being considered could be implemented with appropriate mitigative measures. Other than the DFE project, none of the proposals identified has been designed, evaluated, or disclosed to a point yet that a final decision document under the National Environmental Policy Act (NEPA) has been prepared. Each of the projects identified in this Supplement is of a significance that will require more detailed evaluation and public input through separate NEPA documentation on a project specific basis. Further, any project in the study area that is carried forward will be subject to review under

the Corridor Development Certificate process and Section 404 of the Clean Water Act. Any non-Corps of Engineers projects may also be subject to public interest review and individual permitting under Section 404.

Based upon analyses and findings developed as a result of preparation of this Supplement 1 to the EIS for the Dallas Floodway Extension project, it is believed that any of the projects being considered by the Corps of Engineers and other entities could be implemented with appropriate mitigative measures. Corps of Engineers higher authority will continue to review the various proposals as they progress and will have final policy approval of proposed Corps of Engineers project or permit actions. The cumulative impacts of any or all of the projects identified as reasonably foreseeable in this Supplement would need to be carefully ` planned, designed, and mitigated to acceptable levels to avoid, minimize, and mitigate identified adverse environmental effects.

Regardless of which set reasonable foreseeable future actions by the Corps or others may occur in the geographic area of the proposed DFE project, the cumulative effects assessment in this Supplement does not indicate significant adverse cumulative effects to any of the resources considered. Nothing in the analysis indicates the Recommended Plan should be changed from the plan addressed in the 1 December 1999 Record of Decision.

LIST OF PREPARERS

The people primarily responsible for contributing to the preparation of this Supplement 1 to the Environmental Impact Statement for the DFE are listed below.

NAME	DISCIPLINE/ EXPERTISE	EXPERIENCE	ROLE IN DOCUMENT
Gene T. Rice, Jr.	Civil Engineer	20 years, Corps of Engineers	Project Management
Billy K. Colbert	Wildlife Management and Environmental Biology	14 years Corps of Engineers; 15 years U.S. Fish and Wildlife Service	Report Preparation, Impact Assessment
Charissa Kelly	Forestry and Wildlife Management	2 years Forestry experience 1 year with Corps of Engineers	Report Preparation, Forestry
Michelle Dippel	Cultural Resources and Applied Anthropology	1 years Corps of Engineers and 12 years other professional experience	Cultural Resources, Socio-economics, and Environmental Justice Analysis
David Wilson	Hydraulic Engineer	20 years, Corps of Engineers	Hydraulic Analysis
Valerie Sewell	Landscape Architect	1 year, Corps of Eng 5 years NRCS	Recreation Planner
Bryon Haney	Physical Scientist	9 years, Corps of Engineers, 3 years private professional experience	Geographic Information System
Stephen Swihart	Regulatory Specialist	25 years with Corps of Engineers	Regulatory Data gathering and Interpretation

APPENDIX A

HYDROLOGY AND HYDRAULICS

APPENDIX B

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for

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DALLAS FLOODWAY EXTENSION

and

PROGRAMMATIC EIS
UPPER TRINITY RIVER BASIN FEASIBILITY STUDY