NRCS
Natural Resources Conservation Service
101 South Main Street
Temple, Texas 76501

October 25, 2010

The Honorable Keith Self
County Judge
Collin County Commissioners Court
2300 Bloomdale Road, Suite 4192
McKinney, Texas 75071

Dear Judge Self:

This is to inform you that Chief Dave White, Natural Resources Conservation Service (NRCS), has authorized Federal Assistance for the rehabilitation of Floodwater Retarding Structure (FRS) No. 2A of the East Fork Above Lavon Watershed, Collin County, Texas. The rehabilitation is authorized under the authority of Public Law 106-472, the Small Watershed Rehabilitation Amendments of 2000, which amends Public Law 83-566, the Watershed Protection and Flood Prevention Act.

As soon as funds are appropriated for this project, NRCS will proceed with detailed design and construction.

Enclosed is a copy of the Final Supplemental Watershed Plan and Environmental Evaluation for Rehabilitation of Floodwater Retarding Structure No. 2A of the East Fork Above Lavon Watershed, Collin County, Texas. Assistance will be provided in accordance with the terms, conditions, and stipulations included in the supplemental watershed plan.

Your input in the supplemental plan and environmental evaluation of this project was greatly appreciated.

If you have questions concerning the project, please contact Steven Bednarz, Assistant State Conservationist for Water Resources, at 254-742-9871.

Sincerely,

For DONALD W. GOHMERT
State Conservationist

Enclosure

cc wo/enclosure: Steven Bednarz, ASTC (WR), NRCS, Temple
Alfonso Leal, ASTC(FO), NRCS, Weatherford

cc w/enclosure: Kathleen Pinckney, Supervisory Contract Specialist, NRCS, Temple
Clyde R. Hogue, DC, NRCS, McKinney

United States
Department
Of Agriculture

**Natural
Resources
Conservation
Service**

FINAL
SUPPLEMENTAL WATERSHED PLAN NO. VIII
and
Environmental Evaluation
for the
Rehabilitation of Floodwater Retarding Structure No. 2A
of the
East Fork Above Lavon Watershed
Collin and Grayson Counties, Texas

Prepared By:
U.S. Department of Agriculture
Natural Resources Conservation Service

In Cooperation With:
Collin County Soil and Water Conservation District
Collin County
City of McKinney, Texas
Upper Elm-Red Soil and Water Conservation District
Grayson County
City of Van Alstyne, Texas
City of Anna, Texas

August 2010

Final Supplemental Watershed Plan No. VIII – Environmental Evaluation
for the
Rehabilitation of Floodwater Retarding Structure No. 2A
of the
East Fork Above Lavon Watershed
Collin and Grayson Counties, Texas

Prepared By:
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Grayson County
City of Van Alstyne
City of Anna

AUTHORITY

The original watershed work plan was prepared, and works of improvement have been installed, under the authority of the Soil Conservation Act of 1935 (Public Law No. 46, 74th Congress) and the Flood Control Act of 1944 (PL 534, 78th Congress) as amended and supplemented. The rehabilitation of floodwater retarding structure No. 2A is authorized under Public Law 83-566 (as amended), and as further amended by Section 313 of Public Law 106-472

ABSTRACT

Historical floods in the past fifty-two years since Floodwater Retarding Structure (FRS) No. 2A was constructed have caused the auxiliary spillway to function on at least one occasion. Residential and commercial development have occurred downstream of the dam and a significant increase in traffic has occurred downstream of FRS No. 2A. These factors have caused concerns regarding the hydraulic capacity of the dam and human health and safety. As a result, the dam has been reclassified as a high hazard dam, which does not comply with current dam safety and performance criteria. Local project sponsors have chosen to rehabilitate the dam to address the identified safety deficiencies. The purposes of the proposed rehabilitation of FRS No. 2A are to maintain present level of flood control benefits and comply with current performance and safety standards. Rehabilitation of the site will require the following modifications to the structure: raise the top of the dam 3.7 feet with earth fill and lengthen the dam by about 140 feet, flatten and extend the back slope of the embankment to 3:1 slope and add a stability berm, add a wave berm on the front slope, replace existing principal spillway with new intake structure with 54" pipe and impact basin at outlet, and install a foundation drain system. Project installation cost is estimated to be $3,333,000 of which $2,330,100 will be paid from the Small Watershed Rehabilitation funds and $1,002,900 from local funds.

COMMENTS AND INQUIRIES

Comments and inquires must be received by June 16, 2010. Submit comments and inquires to: Steven Bednarz, Assistant State Conservationist, Water Resources, USDA/NRCS, 101 South Main, Temple, Texas 76501 (254-742-9871).

FINAL
SUPPLEMENTAL WATERSHED AGREEMENT NO. VIII

Between the

Collin County Soil and Water Conservation District
Local Organization

Collin County
Local Organization

City of McKinney
Local Organization

Upper Elm-Red Soil and Water Conservation District
Local Organization

Grayson County
Local Organization

City of Van Alstyne
Local Organization

City of Anna
Local Organization

(Hereinafter referred to as the Sponsoring Local Organization)

and the

Natural Resources Conservation Service
United States Department of Agriculture
(Hereinafter referred to as the NRCS)

Whereas, The Watershed Work Plan Agreement for East Fork Above Lavon Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 12th day of September, 1956; and

Whereas, the Supplemental Watershed Work Plan Agreement for East Fork Above Lavon Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 1st day of December 1964; and

Whereas, the Supplemental Watershed Work Plan Agreement No. II for East Fork Above Lavon Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 19th day of September, 1972; and

Whereas, the Supplemental Watershed Work Plan Agreement No. III for East Fork Above Lavon Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 28th day of April, 1977; and

Whereas, the Supplemental Watershed Work Plan Agreement No. IV for East Fork Above Lavon Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 28th day of November, 2001; and

Whereas, the Supplemental Watershed Work Plan Agreement No. V for East Fork Above Lavon Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 17th day of September, 2002; and

Whereas, the Supplemental Watershed Work Plan Agreement No. VI for East Fork Above Lavon Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 22nd day of September, 2003; and

Whereas, the Supplemental Watershed Work Plan Agreement No. VII for East Fork Above Lavon Watershed, State of Texas, executed by the Sponsoring Local Organization named therein and the Service, became effective on the 29th day of July, 2005; and

Whereas, in order to carry out the Watershed Work Plan for said watershed, it has become necessary to modify said Watershed Work Plan Agreement, as supplemented; and

Whereas, in order to extend the watershed plan for said Floodwater Retarding Structure (FRS) No. 2A beyond its current evaluated life, it has become necessary to modify said watershed agreement; and

Whereas, the rehabilitation of said FRS No.2A has been authorized under the authority of the Watershed Protection and Flood Prevention Act (PL 83-566) as amended by the Watershed Rehabilitation Amendments (PL 106-472) provides the authority for rehabilitation; and

Whereas, it has become necessary to supplement said watershed work plan by modifying FRS No. 2A to bring it up to current performance and safety standards and to extend the service life of the dam for an additional 50 years; and

Whereas, the responsibility for administration of the Watershed Protection and Flood Prevention Act, as amended, has been assigned by the Secretary of Agriculture to the NRCS; and

Whereas, a Supplemental Watershed Plan and Environmental Evaluation which modifies the Watershed Work Plan for said watershed has been developed through the cooperative efforts of the Sponsoring Local Organization (SLO) and the NRCS, which plan is annexed to and made a part of this agreement; and

Now, therefore, in view of the foregoing considerations, the Secretary of Agriculture, through the NRCS, and the SLO hereby agree upon the following modifications of the terms, conditions, and stipulations of said watershed agreement, as supplemented:

(1) Paragraph No. 13 regarding **Amendments** is hereby modified to read as follows:

This plan may be amended or revised only by mutual agreement of the parties hereto, except that NRCS may de-authorize or terminate funding at any time it determines that the SLO have failed to comply with the conditions of this agreement. In this case, NRCS shall promptly notify the SLO in writing of the determination and the reasons for the de-authorization of project funding, together with the effective date. Payments made to the SLO or recoveries by NRCS shall be in accord with the legal rights and liabilities of the parties when project funding has been de-authorized. An amendment to incorporate changes affecting a specific measure may be made by mutual agreement between NRCS

and the SLO having specific responsibilities for the measure involved.

(2) Paragraph No. 16, pertaining to **Certification Regarding Drug-Free Workplace Requirements** (7 CFR Part 3021) is hereby modified to include the correct reference to the code of federal regulations and to include correct wording in the statement as follows:

By signing this Watershed Agreement, the sponsoring local organization is providing the certification set out below. If it is later determined that the sponsoring local organization knowingly rendered a false certification, or otherwise violated the requirements of the Drug-Free Workplace Act, the NRCS, in addition to any other remedies available to the Federal Government, may take action authorized under the Drug-Free Workplace Act.

Controlled substance means a controlled substance in Schedules I through V of the Controlled Substances Act (21 U.S.C. Section 812) and as further defined by regulation (21 CFR 1308.11 through 1308.15);

Conviction means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes;

Criminal drug statute means a Federal or non-Federal criminal statute involving the manufacturing, distribution, dispensing, use, or possession of any controlled substance;

Employee means the employee of a grantee directly engaged in the performance of work under a grant, including: (i) all direct charge employees; (ii) all indirect charge employees unless their impact or involvement is insignificant to the performance of the grant; and, (iii) temporary personnel and consultants who are directly engaged in the performance of work under the grant and who are on the grantee's payroll. This definition does not include workers not on the payroll of the grantee (e.g., volunteers, even if used to meet a matching requirement; consultants or independent contractors not on the grantees' payroll; or employees of sub-recipients or subcontractors in covered workplaces).

Certification:

A. The sponsoring local organization certify that they will or will continue to provide a drug-free workplace by:

(1) Publishing a statement notifying employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the grantee's workplace and specifying the actions that will be taken against employees for violation of such prohibition;

(2) Establishing an ongoing drug-free awareness program to inform employees about: –

(a) The danger of drug abuse in the workplace;

(b) The grantee's policy of maintaining a drug-free workplace;

(c) Any available drug counseling, rehabilitation, and employee assistance programs; and

(d) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.

(3) Making it a requirement that each employee to be engaged in the performance of the grant be given a copy of the statement required by paragraph (1);

(4) Notifying the employee in the statement required by paragraph (1) that, as a condition of employment under the grant, the employee will:

(a) Abide by the terms of the statement; and

(b) Notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

(5) Notifying the NRCS in writing, within ten calendar days after receiving notice under paragraph (4) (b) from an employee or otherwise receiving actual notice of such conviction. Employers of convicted employees must provide notice, including position title, to every grant officer or other designee on whose grant activity the convicted employee was working, unless the Federal agency has designated a central point for the receipt of such notices. Notice shall include the identification number(s) of each affected grant;

(6) Taking one of the following actions, within 30 calendar days of receiving notice under paragraph (4) (b), with respect to any employee who is so convicted—

(a) Taking appropriate personnel action against such an employee, up to and including termination, consistent with the requirements of the Rehabilitation Act of 1973, as amended; or

(b) Requiring such employee to participate satisfactorily in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency.

(7) Making a good faith effort to continue to maintain a drug-free workplace through implementation of paragraphs (1), (2), (3), (4), (5), and (6)

B. The sponsoring local organization may provide a list of the site(s) for the performance of work done in connection with a specific project or other agreement.
C. Agencies shall keep the original of all disclosure reports in the official files of the agency.

(3) Paragraph No. 28 regarding **Emergency Action Plan** is hereby modified to read as follows:

Prior to construction, the SLO shall prepare an Emergency Action Plan (EAP) for each dam or similar structure where failure may cause loss of life or as required by state and local regulations. The EAP shall meet the minimum content specified in Part 500.52 of the NRCS Title 180, National Operation and Maintenance Manual (NOMM), Part 500, Subpart F, Section 500.52, and meet applicable State agency dam safety requirements. The NRCS will determine that an EAP is prepared prior to the execution of fund obligating documents for construction of the structure. EAP's shall be reviewed and updated by the SLO annually.

(4) Paragraph No. 29 regarding the **Term** of Supplemental Watershed Agreement No. VIII is hereby added as follows:

The term of this agreement is for the installation period and evaluated life of the project (50 years) and does not commit NRCS to assistance of any kind beyond the end of the evaluated life.

(5) Paragraph No. 30 regarding **Real property** is hereby added as follows:

The SLO will acquire such real property as will be needed in connection with the works of improvement. In Texas, the minimum requirements for landrights upstream from the dam will be all the area below the higher elevation of either (1) two feet vertically above the crest of the auxiliary spillway, or (2) the maximum elevation of the water surface attained during passage of the 100-year, 24-hour storm flow through the structure. The SLO currently holds easements for EFAL FRS No. 2A that meet minimum Public Law 83-566 requirements (existing auxiliary spillway crest elevation plus 2.0 feet). However, these easements are at an elevation below top of dam. Although any future upstream development must adhere to current easement restrictions, development could occur outside current easements and below top of dam elevation. Landrights above the currently required 100-year floodplain would be desirable but would address storms far in excess of what should reasonably be expected to occur. The sponsors have determined that land rights for the 100-year floodplain are adequate based on current local, state, and federal guidelines. This determination is consistent with criteria for other structures in the state, such as road embankments at culvert crossings, bridges, and other similar structures. All land rights must be identified by metes and bounds surveys conducted by a professional land surveyor. The amounts and percentages of the real property acquisition costs to be borne by the SLO and NRCS are as shown in the Cost Share table in paragraph No. 31 hereof.

(6) Paragraph No. 31 regarding the **Rehabilitation of Floodwater Retarding Structure No. 2A**, the following Cost Share Table is hereby added to show cost-share percentages and estimated amounts for Watershed Project Plan implementation:

Cost Share Table for EFAL FRS No. 2A					
Works of Improvement	**NRCS**		**Sponsors**		**Total**
Cost-Sharable Items	Percent	Cost	Percent	Cost	Cost
Construction Costs	68%	$1,862,400	32%	$889,100	$2,751,500
Sponsors Project Administration Costs	NA	NA	100%	$68,800	$68,800
Land Rights Acquisition Cost	NA	NA	100%	$45,000	$45,000
Subtotal: Cost-Sharable Costs [1/]	65%	$1,862,400	35%	$1,002,900	$2,865,300
Non Cost-Sharable Items [2/]					
NRCS Engineering Cost	100%	$247,600	NA	NA	$247,600
NRCS Project Administration Cost	100%	$220,100	NA	NA	$220,100
Subtotal: Non Cost-Share Costs	100%	$467,700	NA	NA	$467,700
Total:	NA	$2,330,100	NA	$1,002,900	$3,333,000

[1/] Maximum NRCS cost share is 65% of Cost-Sharable items not to exceed 100% of construction cost.
[2/] If actual Non Cost-Sharable item expenditures vary from these figures, the responsible party will bear the change.

(7) Paragraph No. 32 regarding **Operation and Maintenance (O&M)** of rehabilitated FRS No. 2A is hereby added as follows:

The SLO will be responsible for the operation, maintenance, and any needed replacement of the works of improvement by actually performing the work or arranging for such work, in accordance with an O&M Agreement. Specifically, the City of McKinney will be responsible for the O&M of rehabilitated FRS No. 2A with assistance from the Collin County Soil and Water Conservation District. An O&M agreement will be entered into before federal funds are obligated and continue for the project life (50 years). Although the SLO responsibility to the Federal Government for O&M ends

when the O&M agreement expires upon completion of the evaluated life of measures covered by the agreement, the SLO acknowledge that continued liabilities and responsibilities associated with works of improvement may exist beyond the evaluated life.

(8) Paragraph No. 33 regarding **NRCS Assistance** is hereby added as follows:

This agreement is not a fund-obligating document. Financial and other assistance to be furnished by NRCS in carrying out the plan is contingent upon the fulfillment of applicable laws and regulations and the availability of appropriations for this purpose.

(9) Paragraph No. 34 regarding **Additional Agreements** is hereby added as follows:

A separate agreement will be entered into between NRCS and the SLO before either party initiates work involving funds of the other party. Such agreements will set forth in detail the financial and working arrangements and other conditions that are applicable to the specific works of improvement.

(10) Paragraph No. 35 is hereby added to include the most recent version of **Nondiscrimination provisions** as follows:

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

By signing this agreement the recipient assures the Department of Agriculture that the program or activities provided for under this agreement will be conducted in compliance with all applicable Federal civil rights laws, rules, regulations, and policies.

(11) Paragraph No. 36 regarding **Clean Air and Water Certification** is hereby added as follows:

(Applicable if this agreement exceeds $100,000, or a facility to be used has been subject of a conviction under the Clean Air Act (42 U.S.C. Section 7413(c)) or the Federal Water Pollution Control Act (33 U.S.C. Section 1319(c)) and is listed by EPA, or is not otherwise exempt.)

A. The project sponsoring organization(s) signatory to this agreement certifies as follows:

(1) Any facility to be utilized in the performance of this proposed agreement (mark X in the blank) is (____), is not (____) listed on the Environmental Protection Agency List of Violating Facilities.

(2) To promptly notify the NRCS-State Administrative Officer prior to the signing of this agreement by NRCS, of the receipt of any communication from the Director, Office of Federal Activities, U.S. Environmental Protection Agency, indicating that any facility which is proposed for use under this agreement is under consideration to be listed on the Environmental Protection Agency List of Violating Facilities.

(3) To include substantially this certification, including this subparagraph, in every nonexempt sub-agreement.

B. The project sponsoring organization(s) signatory to this agreement agrees as follows:

(1) To comply with all the requirements of section 114 of the Clean Air Act as amended (42 U.S.C. Section 7414) and section 308 of the Federal Water Pollution Control Act (33 U.S.C. Section 1318), respectively, relating to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, issued there under before the signing of this agreement by NRCS.

(2) That no portion of the work required by this agreement will be performed in facilities listed on the EPA List of Violating Facilities on the date when this agreement was signed by NRCS unless and until the EPA eliminates the name of such facility or facilities from such listing.

(3) To use their best efforts to comply with clean air standards and clean water standards at the facilities in which the agreement is being performed.

(4) To insert the substance of the provisions of this clause in any nonexempt sub-agreement.

C. The terms used in this clause have the following meanings:

(1) The term "Air Act" means the Clean Air Act, as amended (42 U.S.C. Section 7401 et seq.).

2. The term "Water Act" means Federal Water Pollution Control Act, as amended (33 U.S.C. Section 1251 et seq.).

(3) The term "clean air standards" means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted pursuant to the Air Act or Executive Order 11738, an applicable implementation plan as described in section 110 of the Air Act (42 U.S.C. Section 7414) or an approved implementation procedure under section 112 of the Air Act (42 U.S.C. Section 7412).

(4) The term "clean water standards" means any enforceable limitation, control, condition, prohibition, standards, or other requirement which is promulgated pursuant to the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by section 402 of the Water Act (33 U.S.C. Section 1342), or by a local government to assure compliance with pretreatment regulations as required by section 307 of the Water Act (33 U.S.C. Section 1317).

(5) The term "facility" means any building, plan, installation, structure, mine, vessel, or other floating craft, location or site of operations, owned, leased, or supervised by a sponsor, to be utilized in the performance of an agreement or sub-agreement. Where a location or site of operations contains or includes more than one building, plan, installation, or structure, the entire location shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are collocated in one geographical area.

(12) Paragraph No. 37 regarding **Assurances and Compliance** is hereby added as follows:

As a condition of the grant or cooperative agreement, the sponsor assures and certifies that it is in compliance with and will comply in the course of the agreement with all applicable laws, regulations, Executive Orders and other generally applicable requirements, including those set out below which are hereby incorporated in this agreement by reference, and such other statutory provisions as a specifically set forth herein.

State, Local, and Indian Tribal Governments: OMB Circular Nos. A-87, A-102, A-129, and A-133; and 7 CFR Parts 3015, 3016, 3017, 3018, 3021, and 3052.

Non-Profit Organizations, Hospitals, Institutions of Higher Learning: OMB Circular Nos. A-110, A-122, A-129, and A-133; and 7 CFR Parts 3015, 3017, 3018, 3019, 3021 and 3052.

(13) Paragraph No. 38 regarding **Examination of Records** is hereby added as follows:

The sponsors shall give the NRCS or the Comptroller General, through any authorized representative, access to and the right to examine all records, books, papers, or documents related to this agreement, and retain all records related to this agreement for a period of three years after completion of the terms of this agreement in accordance with the applicable OMB Circular.

The SLO and NRCS further agree to all other terms, conditions, and stipulations of said watershed agreement not modified herein.

City of McKinney, Texas
Local Organization

By _____
Rick Chaffin
Title Interim City Manager

Date _____

The signing of this agreement was authorized by a resolution of the governing body of the City of McKinney, Texas adopted at a meeting held on February 2, 2010.

Sandy Hart 8/25/10
(Secretary, Local Organization)

CITY OF MCKINNEY TEXAS COLLIN COUNTY, TEXAS

Collin County Soil and Water Conservation District
Local Organization

By R. E. Lipsett Jr.
Title Chairman CCSWCD
Date 9-7-10

The signing of this agreement was authorized by a resolution of the governing body of the Collin County Soil and Water Conservation District adopted at a meeting held on _____.

_____
(Secretary, Local Organization)

Collin County
Local Organization

By _____
Title County Judge
Date 9/13/10

The signing of this agreement was authorized by a resolution of the governing body of Collin County adopted at a meeting held on September 13, 2010.

Georgi Shepherd
(Secretary, Local Organization)

Upper Elm-Red Soil and Water Conservation District
Local Organization

By Donnie Worthen

Title member

Date 8/25/10

The signing of this agreement was authorized by a resolution of the governing body of the Upper Elm-Red Soil and Water Conservation District adopted at a meeting held on 8/25/2010.

Charles Boyer
(Secretary, Local Organization

Grayson County
Local Organization

By Dave Byrum

Title County Judge

Date 7 SEPT 2010

The signing of this agreement was authorized by a resolution of the governing body of Grayson County adopted at a meeting held on September 7, 2010.

Wilma Bush
(Secretary, Local Organization) County Clerk

City of Van Alstyne, Texas
Local Organization

By Barbara Callen

Title Mayor

Date 9-14-10

The signing of this agreement was authorized by a resolution of the governing body of the City of Van Alstyne, Texas adopted at a meeting held on Sept 14 2010.

(Secretary, Local Organization)

CITY OF VAN ALSTYNE TEXAS

City of Anna, Texas
Local Organization

By Dan Jarrell

Title City Manager

Date 9/7/2010

The signing of this agreement was authorized by a resolution of the governing body of the City of Anna, Texas adopted at a meeting held on Sept. 7, 2010.

Natta Wilhelm
(Secretary, Local Organization)

Natural Resources Conservation Service
United States Department of Agriculture

Approved By: Donald W. Gohmert

DONALD W. GOHMERT
NRCS State Conservationist

Date SEP 15 2010

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List of Tables:

Final
Summary
Supplemental Watershed Plan No. VIII – Environmental Evaluation
for
East Fork Above Lavon Watershed
Collin and Grayson Counties, Texas
Texas 4th Congressional District – Ralph M. Hall

Authorization:

- The original watershed work plan was prepared, and works of improvement have been installed, under the authority of the Soil Conservation Act of 1935 (Public Law No. 46, 74th Congress) and the Flood Control Act of 1944 (PL 534, 78th Congress) as amended and supplemented. The rehabilitation of floodwater retarding structure No. 2A is authorized under Public Law 83-566 (as amended), and as further amended by Section 313 of Public Law 106-472

Sponsoring Local Organizations (SLO):

- City of McKinney (lead SLO with primary responsibilities)
- Collin County Soil and Water Conservation District
- Collin County
- Upper Elm-Red Soil and Water Conservation District
- Grayson County
- City of Van Alstyne
- City of Anna

Proposed Action:

- Upgrade Floodwater Retarding Structure (FRS) No. 2A to meet current safety and performance standards for a high hazard dam.

Purpose and Need for Action:

- The original purpose of the East Fork Above Lavon (EFAL) Watershed Plan was flood prevention. The purpose of this supplemental watershed plan is to maintain the present level of flood control benefits to downstream properties and to bring FRS No. 2A into compliance with current safety and performance standards for a high hazard dam.
- Due to residential and commercial development downstream of FRS No. 2A, the dam has been re-classified from low hazard to high hazard and does not meet current safety and performance standards. The dam needs to be rehabilitated and up graded to meet current criteria for a high hazard dam.

Description of the Preferred Alternative:

- The preferred alternative is to rehabilitate FRS No. 2A and bring the dam into compliance with current state and federal safety and performance standards for a high hazard dam, provide sediment storage for an additional 50 years and to maintain the current level of flood protection downstream. The evaluated life of the rehabilitated structure will be extended for an additional 50 years.

Resource Information:
• FRS No. 2A is located at Latitude, decimal degree 33.25 and Longitude, decimal degree -96.71.
• The Eight Digit Hydrologic Unit Number for East Fork Above Lavon Watershed is 12030106.
• The climate of Collin County is warm temperate, subtropical, and humid. The project area lies within the Blackland Prairie Physiographic Area. The topography has moderately rolling hills.
• The project area for FRS No. 2A is comprised of 4,204 acres.
• Land uses within the watershed are: cropland 2,027 acres, grassland 1,698 acres, roads/highways 66 acres, woodland 369 acres, and residential/commercial 44 acres.
• Land ownership within the watershed is: Private 97.9%, State-Local 1.7% and Federal 0.4%.
• The population of Collin County in 2008 was 762,010. According to the U. S. Census Bureau in 2006 the county was about 78% white, 8% African American, 10% Asian, 1% Native American, and 3% Other or mixed. Ethnicity population in the county is about 14% Hispanic or Latino.
• Relevant Resource Concerns identified during the scoping process
▪ Sedimentation and Erosion
▪ Clean Waters Act/Waters of the US
▪ Floodplain Management
▪ Public Health and Safety
▪ Flood Damages
▪ Dam Safety
▪ Aesthetics
▪ Land Values
Alternative plans considered:
• Alt. #1 – Future without project: Alternative #1, which does not involve federal action, consists of excavating a breach in the dam of sufficient size to safely pass the 100-year, 24-hour frequency flood event. This breach would be a minimum size opening in the dam from top of dam down to the valley floor, which would eliminate the structure's ability to store water. In order not to impede flows through the breached embankment and to remove potential safety hazards, the principal spillway components would also be removed. Downstream flooding conditions would be similar to those that existed prior to the construction of the dam. The 100-year floodplain downstream would be enlarged from 21 acres to 189 acres. Exposed areas would be vegetated for erosion and sediment control.
• Alt. #2 – Decommission FRS No. 2: Alternative #2 removes the storage function of the dam and reconnects, restores, and stabilizes the stream and floodplain functions. Downstream flooding conditions would be similar to those that existed prior to the construction of the dam. Partial removal of the embankment would consist of excavating a breach in the dam of sufficient size to safely pass the 100-year, 24-hour frequency flood event. This would eliminate the structure's ability to store water. The 100-year floodplain downstream would be enlarged from 21 acres to 189 acres. In order not to impede flows through the breached embankment and to remove potential safety hazards, the principal spillway components would also be removed. Channel work would be performed to

reconnect the stream channel through the sediment pool. Riparian vegetation would be established along the stream channel. A grade stabilization structure would be installed to prevent head cutting and sediment movement to downstream areas. Exposed areas would be vegetated for erosion and sediment control.

- Alt. #3 – Rehabilitation of FRS No. 2A: Alternative #3 consists of removing the existing principal spillway inlet structure and filling the pipe with grout to seal it. A new principal spillway inlet tower and 54" pipe with an impact basin at the outlet end will be installed. The auxiliary spillway will be hardened with articulating blocks to prevent breaching and the right-hand cut slope will be flattened to 3:1 for stability. The top of the dam will be raised by 3.7 feet with earth fill and lengthened by about 140 feet, the back slope of the embankment will be extended and flattened to a 3:1 slope, a stability berm will be added and a foundation drain system will be installed along the back toe of the embankment. A wave berm will be added to the front slope for slope stability. All disturbed areas will be re-vegetated using adapted species.

- Mitigation Measures: No compensatory mitigation will be required as a result of implementing any of the alternatives.

Project costs:	**PL 83-566 funds**	**Other funds**	**Total**
• Construction	$1,862,400	$889,100	$2,751,500
• Engineering	$247,600	$0	$247,600
• Real Prop. Rights	$0	$45,000	$45,000
• Project Admin.	$220,100	$68,800	$288,900
TOTAL INSTALLATION COSTS	$2,330,100	$1,002,900	$3,333,000
Annual O&M (non-Fed)	$0	$5,000	$5,000

Project Benefits:

- Description of Monetary Benefits: Project benefits are derived from assuring the continued performance of FRS No. 2A by meeting current safety and performance standards. Benefits are based on continuing flood protection (damage reduction benefits) to the downstream area, maintaining upstream property values, and avoiding costs associated with implementing Alternative No. 1. Total average annual flood damage reduction benefits are estimated to be $38,000, which include benefits to cropland and pastureland ($16,400), other agricultural properties like fences and barns ($9,900), roads and bridges ($4,500), and urban properties ($2,700). Damage reduction benefits also include reduction in sediment and erosion ($3,400 and $1,100 respectively). By rehabbing FRS No. 2A, upstream property values will be maintained, resulting in $143,300 in average annual benefits. Also, the SLO would not incur costs of breaching the dam, equating to an annual savings (benefit) of $22,400. Summing all of the benefits provides a total of $203,700 average annual benefits.

- Number of Direct Beneficiaries: Onsite – Several hundred Offsite- NA
Due to the nature of the at-risk properties downstream, it is difficult to predict an exact number of people at risk. The commercial properties house a baseball/softball training complex that is utilized by hundreds of customers (primarily youth) year-round. Other beneficiaries include residents of two at-risk homes, multiple motorists on County Roads 123 and 124, and other landowners benefitting from reduced flood damages.

- Description of Other Beneficial Physical Effects: Debris clean-up following

major storm events could be done sooner. Also, due to flattening the back slope of the dam to 3:1, maintenance activities will be safer.
• Benefit to Cost Ratio (authorized rate): 1.2: 1.0
• Benefit to Cost Ratio (current rate): 1.2: 1.0
• Net Beneficial Effects (NED): $33,400
Funding Schedule:
• Funding Schedule (budget year + 1): Federal Funds (budget year): $2,330,100 Non-Federal Funds (budget year): $1,002,900 Non-Federal Funds (year after budget year): $5,000 annually
• Period of Analysis – 50 years
• Project Life – 50 years
Environmental Effects:
• Environmental Effects, Impacts - Installation of the preferred alternative will result in the disturbance of approximately 8 acres of grassland vegetation. All disturbed areas will be replanted with adapted native and/or introduced grasses. Installation of the preferred alternative will have very minor adverse impacts to wildlife habitat. Only minor temporary impacts on water quality (turbidity and sedimentation) associated with construction are anticipated. No compensatory mitigation is planned.
Major Conclusions:
• Rehabilitation of FRS No. 2A will minimize the risk of loss of life within the breach area, will have only a very minor temporary impact to the environment, and will allow the continuance of flood prevention benefits.
Areas of Controversy:
• There are no known areas of controversy.
Issues to be resolved:
• A new Operation and Maintenance (O&M) Agreement will be developed with the City of McKinney and the Collin County SWCD for FRS No. 2A for the 50-year program life of the structure. The new O&M Agreement will be signed before the Project Agreement is signed.
• For projects with disturbances equal to or greater than five acres it is necessary to have a Stormwater Pollution Prevention Plan (SWPPP) in place at least 48 hours prior to and during construction of the proposed project and filing a Notice of Intent with the Texas Commission on Environmental Quality (TCEQ) is required. A Notice of Termination (NOT) must be filed once the site has reached final stabilization.
• The SLO will be responsible for developing an Emergency Action Plan (EAP) prior to construction and will review and update the EAP annually with local emergency response officials.
Evidence of Unusual Congressional or Local Interest: The local sponsors have taken a

proactive role in controlling future development in the area downstream of FRS No. 2A designated as the 100 year floodplain and to upgrade FRS No. 2A to meet current performance and safety standards.
Is this report in compliance with executive orders, public laws, and other statues governing the formulation of water resource projects? Yes ____X_____ No _____

CHANGES REQUIRING PREPARATION OF A SUPPLEMENT

Major changes in land use from a rural setting to an urban setting have occurred in large portions of the East Fork Above Lavon (EFAL) Watershed (Appendix B – Watershed Project Map). These land use changes have occurred upstream and downstream of many of the floodwater retarding structures (FRS) in the EFAL Watershed. The Texas Commission on Environmental Quality and the United States Department of Agriculture/Natural Resources Conservation Service (NRCS) both concur that EFAL Watershed FRS No. 2A is a high hazard structure based on current criteria. The auxiliary spillway has functioned at least once in the past. There are human health and safety concerns about the performance of this dam. FRS No. 2A does not comply with the current performance and safety standards for a dam of this classification.

When EFAL Watershed was planned, the original intent of the FRS's was to protect downstream agricultural areas of the watershed and prevent adverse economic and physical effect of flooding throughout the entire watershed community. The economy in the EFAL Watershed area was almost entirely agricultural (cropland and grassland) when the original planning was completed; however, fifty-four years later, the population growth of Collin County has been extensive, especially within the expanding McKinney area where it has consumed much of the watershed. From the seven years 2000-2006, McKinney was listed five years by the U.S. Bureau of Census (Census) as the fastest growing city in the nation for cities with a population of 50,000 or more. The population of Collin County has grown from approximately 41,000 in 1960 to over 762,000 in 2008. According to the Census, since 1960 the population of Collin County has increased an average of 80% every 10 years. Per capita income in 2008 for Collin County ($37,637) was considerably higher when compared to Texas and US figures ($24,709 and $27,466 respectively). Urban development is especially noticeable in the vicinity of the 64 constructed FRS's in the EFAL Watershed.

FRS No. 2A is located within the city limits of McKinney. The watershed for FRS No. 2A heads just north of Farm to Market Road (FM) 2478 approximately 9 miles northwest of downtown McKinney, Collin County, Texas. As a result of people at risk downstream from FRS No. 2A, the dam needs to be upgraded to meet current performance and safety standards and ensure continued protection of the watershed and the lives of people downstream.

PURPOSE AND NEED FOR THE PROJECT

This Supplemental Watershed Plan was prepared and an Environmental Evaluation was performed to evaluate alternatives to bring FRS No. 2A into compliance with current performance and safety standards. FRS No. 2A was originally installed under the authority of the Soil Conservation Act of 1935 (Public Law No. 46, 74th Congress) and the Flood Control Act of 1944 (Public Law No. 534, 78th Congress) as amended and supplemented. The proposed rehabilitation of FRS No. 2A is authorized under Public Law 83-566 (as amended), and as further amended by Section 313 of Public Law 106-472.

The purposes of the FRS No. 2A rehabilitation project are to maintain present level of flood control benefits and comply with the current performance and safety standards. FRS No. 2A was built in 1958 in a rural setting and is now influenced by population growth and land development

due to proximity to the Dallas-Fort Worth metroplex area. In particular, there are two residences, two commercial properties, and two roadways with moderately heavy use downstream that would be impacted by a dam failure of FRS No. 2A. These roadways, County Road (CR) 123 (Bloomdale Road) and CR 124, serve as two of the main routes between several residential developments and more heavily utilized traffic arteries leading into the City of McKinney and Plano. This risk of loss of life and the dam not meeting current performance and safety standards is the reason that FRS No. 2A needs to be rehabilitated. Rehabilitation of FRS No. 2A is needed to protect downstream properties and infrastructure, and reduce the risk of loss of life. The rehabilitation of FRS No. 2A will allow for the service life of the dam to be extended for a minimum of fifty additional years.

The primary concern is the safety of FRS No. 2A and the potential problems that failure of the dam would cause. Several hundred people located downstream of FRS No. 2A are at risk should the dam fail. Also, about 10 motorists that might be traveling on CR 123 and CR 124 at the time of failure would be at risk.

Currently FRS No. 2A is functioning as originally planned and providing downstream flood damage protection from the 45-year, 24-hour storm. However, there is a possibility of the dam failing from overtopping if a storm produces runoff that is greater than the structure's current capacity. Total estimated damages from a catastrophic breach of FRS No. 2A would exceed $1.4 million and the risk of loss of human life would be significant.

Following is a list of opportunities that will be realized through the implementation of this watershed rehabilitation plan:

- Comply with current dam safety criteria
- Protect human health and safety
- Protect infrastructure and transportation system
- Maintain flood control benefits and prevent increased flooding in the floodplain
- Maintain or improve water quality
- Protect fish and wildlife habitats
- Prevent SLO and others from costly consequences of a controlled breach

SCOPE OF THE PLAN

A scoping process was used to determine the issues significant in defining the problems, and formulating and evaluating alternatives. Scoping included public meetings, written request for input from Federal, State, and local agencies, and a steering committee of SLO and local citizens was also formed to solicit input. The NRCS convened a group of interdisciplinary agency experts to review the actions of the alternatives being evaluated. The environmental evaluation conducted was fully documented on form NRCS-CPA-52 Environmental Evaluation Worksheet (see pages 27-30 of this document. It has been determined that the activities to be undertaken under this project fall within a category of NRCS actions that have been excluded from further NEPA evaluation (Categorical Exclusions). Table A presents a summary of the scoping process:

Table A – Summary of Scoping			
ITEM/CONCERN	Relevant to the proposed action?		RATIONALE
	YES	NO	
Air Quality		X	Minor temporary impacts, BMP's in use
Coastal Zone Management Area		X	None present in project area
Coral Reefs		X	None present in project area
Historical & Cultural Resources		X	None identified in project area, monitor during construction
Ecological Critical Areas		X	None present in project area
Environmental Justice		X	Subject population not present
Fish & Wildlife Resources	X		Temporary effects, drained pool
Essential Fish Habitat		X	None present in project area
Regional Water Resource Plans		X	None present in project area
Invasive Species		X	Presence, introduction or spread of invasive species not anticipated
National Parks, Monuments, and Historic Sites		X	None present in project area
Natural Areas		X	No designated areas in project area
Parklands		X	None present in project area
Prime & Unique Farm Lands		X	APE is prior converted to non-ag use
Riparian Area	X		Minor Temporary impacts, BMP's in use
Scenic Areas		X	None identified in project area
Significant Scientific Features		X	None identified in project area
Threatened and Endangered Species		X	No T & E species identified or habitat present
Water Bodies (Including waters of the U.S.)	X		No impaired watersheds in APE. Project meets the terms and conditions of NWP 3 for maintenance.
Wetlands	X		Temporary effects, drained pool
Wild and Scenic Rivers		X	None present in or near the project area
Wildlife Community (Including Migratory Birds)	X		Temporary effects - drained pool
Water Quality	X		Minor temporary impacts, SWPPP used
Public Health and Safety	X		Concern for safety if dam breaches

Table A – Summary of Scoping (Continued)			
ITEM/CONCERN	Relevant to the proposed action?		RATIONALE
	YES	NO	
Flood Damages	X		Concern for flood damages from breach
Aesthetics	X		Maintain aesthetics for potential future development
Land Values	X		Maintain land values
Sedimentation and Erosion	X		50 yr sediment storage required
Floodplain Management	X		Compliance with E.O. 11988

AFFECTED ENVIRONMENT

This Supplemental Plan and Environmental Evaluation are for the watershed (drainage area) upstream of FRS No. 2A and the downstream area affected by a breach of the existing dam (Appendix C – Breach Inundation Map). FRS No. 2A was constructed on Stover Creek which flows into Wilson Creek approximately 5 miles west of downtown McKinney (Appendix C – Vicinity Map). Wilson Creek is a major tributary of the EFAL Watershed and is located in the Trinity River Basin. A historic description of the EFAL Watershed and the Trinity River Watershed can be found in the East Fork Above Lavon Watershed Work Plan dated August 1956 and the Environmental Impact Statement for the Trinity River Watershed, dated July 1979.

The rehabilitation project area is 4,204 acres that consists of the drainage area of FRS No. 2A (3,885 acres) plus the area downstream that would be inundated by a breach of the dam (319 acres). Primarily the dam, reservoir and downstream areas are located within the city limits of McKinney and the drainage area upstream of the reservoir is located within the extraterritorial jurisdiction (ETJ) of the City of McKinney, Collin County, Texas. Land uses within the rehabilitation project area include residential, commercial, ponds, grazing lands, cropland, highways/roads, utility right-of-ways and wooded areas.

EXISTING CONDITIONS

Original Project

The East Fork Above Lavon Watershed Plan was prepared and approved for Federal assistance in 1956 under the authority of the Soil Conservation Act of 1935 (Public Law No. 46, 74th Congress) and the Flood Control Act of 1944 (Public Law No. 534, 78th Congress) as amended and supplemented. The watershed plan provides for application of conservation practices for watershed protection and flood prevention. The SLO are Collin County SWCD, the Upper Elm-Red SWCD, Collin County, Grayson County, the City of McKinney, the City of Van Alstyne, and the City of Anna. Federal assistance was provided by the United States Department of Agriculture (USDA), Soil Conservation Service (now the Natural Resources Conservation Service or NRCS). A total of sixty-four FRS were planned and constructed during 1951 through 1974. Seven FRS and one multi-purpose structure are planned and have never been built. Four of the original FRS had upgrades completed through the rehabilitation program to meet current safety and performance criteria and four other FRS's have upgrades planned but not completed. There have been seven previous supplements to the original 1956 work plan. Following is a description of the current physical, biological, ecological, economic, and social environment for the FRS No. 2A project area.

Description of Existing Dam

FRS No. 2A was originally designed and constructed in 1958 as a low hazard dam, a hazard classification given to dams that pose little or no threat to loss of life. FRS No. 2A was constructed as a homogenous earth fill embankment with one vegetated auxiliary spillway and a principal spillway consisting of an inlet tower with a 19-inch concrete outlet pipe that discharges into an earthen plunge basin. The top of dam elevation is 673.4. The front slope of the embankment was constructed to a 3:1 slope capped with a 15 foot horizontal width rock blanket and the back slope was constructed to a 2:1 slope capped with a 10 foot horizontal width rock blanket. The auxiliary spillway has a 350 foot bottom width and the crest elevation is 668.4.

The principal spillway inlet structure is a 36-inch by 36-inch by 20-foot tower with the crest elevation of 655. The tower has four 9-inch square ports, two each on the front and back sides of the tower at elevation 648.6. There is an 8-inch flanged gate valve (connected to an inlet filter house) located at the bottom of the tower with an invert elevation of 635 to facilitate lowering the permanent water level for repairs and maintenance. The principal spillway conduit consists of 228-feet of 19-inch diameter reinforced concrete pipe connected to the back side of the inlet tower. As part of the routine operation and maintenance, the timber deck anti-vortex baffle was replaced with a galvanized steel debris guard when it was approximately 50 years old.

The NRCS conducted a field survey in 2009 and secured Light Detection and Ranging (LiDAR) survey information from the City of McKinney to determine current elevations of FRS No. 2A. The 2009 field survey, LiDAR and 1958 "As-Built" drawings all indicate consistency within the vertical datum (elevations); however, there are several discrepancies in the horizontal datum (surface areas and capacities) between the "As-Built" and the other two surveys. At the present principal spillway port elevation of 648.6 the sediment pool contains approximately 22.5 surface acres and 55 acre feet of sediment storage. The current flood storage at auxiliary spillway crest elevation of 668.4 is 1,381 acre feet. The maximum height of the dam is 53 feet.

The embankment is in good condition. The rock blanket cover on the embankment slopes has provided a stable, non-erosive surface for the past 52 years. The auxiliary spillway has a protective cover of bermudagrass. The west end of the embankment and auxiliary spillway are fenced to control grazing from livestock. Brush and trees on the embankment are controlled routinely to prevent deterioration of the dam. The principal spillway inlet and conduit were visually inspected and no deficiencies were noted. The dam has no visible stability or foundation problems, and there are no signs of seepage along the back toe, however; the exit channel is partially blocked causing water to back up into the outlet pipe. The land adjacent to FRS No. 2A is primarily used for grazing and agricultural purposes; however the entire surrounding area is planned as a residential development for potential conversion in the near future.

Physical Features and Environmental Factors

Project location: The EFAL Watershed, located in Collin and Grayson Counties, Texas, is comprised of 224,935 acres (about 351 square miles). Of this total, the drainage area for FRS No. 2A is 3,885 acres or about 6.07 square miles. FRS No. 2A is constructed on Stover Creek which is a tributary of Wilson Creek, a main tributary within the EFAL Watershed. In the area of the project, Stover Creek is an intermittent stream that, when flowing, has an average depth of approximately six inches. The stream is normally dry during the summer months but has an estimated average width of approximately 6 to 8 feet during and following small storm events. Based on the amount of sediment sequestered in the sediment pool and the lack of erosion below the structure, the stream sediment loads appear to be heavy in the stream above the structure and greatly reduced, but not depleted, below the structure. The stream bed above and below the sediment pool is composed of gravel over limestone bedrock. Because the pool has been drained by the SLO for maintenance activities, stream flows are currently carried across the pool area by a manmade trapezoidal channel that is approximately 6 to 8 feet wide at the bottom with approximately 3 to 1 side slopes. The watershed for FRS No. 2A heads just north of FM 2478 approximately 9 miles northwest of downtown McKinney, Collin County, Texas. EFAL Watershed FRS No. 2A is located at Latitude, decimal degree 33.25 and Longitude, decimal degree -96.71. The watershed is located within the Trinity River Basin as delineated by the United States Water Resources Council, hydrologic unit number 12030106.

Topography: The project area lies within the Blackland Prairie Physiographic Area. The topography is dominated by moderately rolling hills.

Soils and Geology: Two general horizons are present within EFAL Site 2A. The horizons consist of Cretaceous Austin Formation (K_{au}) and Quaternary Alluvium (Q_{al}). The (K_{au}) occurs at depth throughout the site and at grade within the Auxiliary Spillway consisting of limestone and claystone. The (Q_{al}) is located at or near the surface along the downstream toe of the dam from approximately Sta. 4+50 to 13+50 DS CL Dam. No faulting is located in the immediate area. Probabilistic ground motion values as measured in %g for this site indicates low seismicity.

On the surface the site is made up of mostly silty clays, clay loams, and clays on the uplands and occasionally flooded clayey soils along the creek. The gently to moderately sloping soils adjacent to FRS No. 2A consist of Austin silty clay, Eddy gravelly clay loam, and Houston Black clay on the uplands and Trinity clay soils, occasionally flooded along the stream (Web Soil Survey 2.2, National Cooperative Soil Survey 2007).

Climate: The climate of Collin County is warm temperate, subtropical, and humid. Average annual rainfall is 34.8 inches. Normal temperatures range from an average daily high of 96 degrees Fahrenheit in July and an average daily low of 34 degrees in January. The normal freeze-free period for Collin County is 237 days.

Cultural Resources: No prior cultural resources identification activities have been conducted in the FRS No. 2A project area. The dam and reservoir were constructed in 1958, prior to implementation of the National Historic Preservation Act and other historic preservation laws that now require NRCS (Soil Conservation Service at that time) to consider effects to significant cultural resources.

A search of the Native American Consultation Database was conducted to determine if there were any Indian tribes that might attach religious or cultural significance to historic properties that could be located in the proposed project area. This was done in accordance with 36 CFR 800.2 (c)(i) of the Advisory Council on Historic Preservation Regulations. No tribes listed land area claims that included Collin County, Texas (NPS 2010).

A search of the Texas Archeological Sites Atlas, completed in March 2010 did not reveal any recorded archeological or historic sites in the vicinity of the proposed project (THC 2010). NRCS and the Texas State Historic Preservation Officer (SHPO) have agreed that a cultural resources survey should be completed on all areas of new disturbance associated with potential rehabilitation measures. Accordingly, the NRCS cultural resources specialist conducted a survey of areas of potential new disturbance associated with the prospective rehabilitation alternative at FRS No. 2A in March 2010. These areas have been subject to various disturbances associated with original construction and other activities including farming/ranching practices, roads, and trails.

No cultural resources were found in the areas of potential new disturbance associated with rehabilitation measures at FRS No. 2A and overall there appears to be low potential for subsurface cultural deposits in these areas. The FRS No. 2A dam and appurtenances were installed in 1958, and accordingly exceeds the 50 year threshold for consideration as a historic property under the NHPA. Criteria listed in 36CFR60.4 were applied and it was determined that FRS No. 2A is a typical floodwater retarding structure in design and function and holds no

unique engineering characteristics or relationship to important events or individuals, and therefore is not eligible for the National Register of Historic Places.

The NRCS has determined pursuant to 36 CFR 800.4(d) that there are no properties included in or eligible for the National Register of Historic Places within the area of potential effect of the alternative resulting in rehabilitation of FRS No. 2A. This determination was reported to the SHPO in April 2010 for review and concurrence (letter on file). The SHPO concurred in the determinations on May 14, 2010 (letter on file).
It should be noted that additional cultural resources investigations would be necessary should the no action or decommissioning alternatives be selected. At this time, areas of potential effect for alternatives other than rehabilitation have not been specifically identified.

Prime Farmland: Soils in the project work area were evaluated by the USDA-NRCS in accordance with requirements of the Farmland Protection Policy Act (FPPA). The proposed project work area impacted by the rehabilitation of FRS No. 2A may contain Important Farmland Soils as defined by the FPPA; however NRCS now considers this location to be "prior converted" and part of the easement. Farmland Conversion Impact Rating form AD-1006, was utilized to assess the project area and shows the area to be exempt and requires no additional follow-up. Completed forms and a letter documenting this determination are on file.

Fish and Wildlife Resources: Land along either side of the detention pool is used primarily for livestock grazing. The land cover is predominantly fair condition pastureland/rangeland with a mixed overstory of cockleburs, annual broomweed, and other invading forb species. FRS No. 2A currently provides habitat for small mammals, neo–tropical songbirds, shore birds and various water fowl. Various species of reptiles and amphibians also inhabit the project site. Under normal conditions, the sediment pool provides a perennial fishery that supports species such as bluegill (*Lepomis macrochirus*), black bass (*Micropterus spp.*), probably some species of catfish, such as blue catfish (*Ictalurus furcatus*) and/or channel catfish (*Ictalurus punctatus*) as well as other species. The sediment pool has currently been drained by the SLO for maintenance activates, therefore the federal action would have no impact on the current fishery condition. However, after the maintenance activities and the rehabilitation project are completed, the gates will be closed and the pool (fishery) will be returned to pre-drained conditions. The fishery in the stream below the structure is intermittent and does not provide a fishery during the summer months. When water is present in the stream, it has an average depth of 6 to 8 inches and would provide habitat for small species such as fathead minnows (*Pimephales promelas*). Downstream fisheries would have minor adverse impacts from increased turbidity due to construction activities, but these impacts would be minimized using BMP's with a SWPPP in place.

Threatened and Endangered Species: The U.S. Fish and Wildlife Service (USFWS) lists 1 bird species as endangered in Collin County, Texas (Table B). According to the Texas Parks and Wildlife Department (TPWD), Wildlife Division, Diversity and Habitat Assessment Programs, three species are state listed as endangered and twelve species are state listed as threatened in Collin County, Texas.

Investigations by NRCS biologists identified no individuals or suitable habitat for any species federally or state listed as threatened or endangered. The proposed project will have no effect on threatened or endangered species.

Table B shows Federally and State Listed Threatened and Endangered Species for Collin County:

Table B – Federally and State Listed T & E Species for Collin County

Common Name	Scientific Name	Species Group	Federal Status	State Status
Piping Plover	*Charadrius melodus*	Birds		T
Peregrine Falcon	*Falco peregrinus*	Birds		T
American Peregrine Falcon	*Falco peregrinus anatum*	Birds		T
Whooping Crane	*Grus americana*	Birds	E	E
Bald Eagle	*Haliaeetus leucocephalus*	Birds		T
Wood Stork	*Mycteria Americana*	Birds		T
White-faced Ibis	*Plegadis chihi*	Birds		T
Interior Least Tern	*Sterna antillarum athalassos*	Birds		E
Red wolf	*Canis rufus*	Mammals		E
Sandbank pocketbook	*Lampsilis satura*	Mollusks		T
Louisana pigtoe	*Pleurobema riddellii*	Mollusks		T
Texas heelsplitter	*Potamilus amphichaenus*	Mollusks		T
Timber/Canebrake rattlesnake	*Crotalus horridus*	Reptiles		T
Alligator snapping turtle	*Macrochelys temminckii*	Reptiles		T
Texas horned lizard	*Phrynosoma cornutum*	Reptiles		T

Wetlands: The pool area of FRS No. 2A is approximately 22.5 acres of a lacustrine, open water, impounded pool that is seasonally flooded (F1OWHh, Classification of Wetlands and Deepwater Habitats of the United States, 1979, by Cowardin, Lewis M. et al.). The upstream end of the sediment pool is classified as an impounded, palustrine, broad-leaved deciduous forested wetland that is seasonally flooded (PFO1CHh). Upstream of the impounded forested wetland, the stream is classified as a palustrine, broad-leaved deciduous forested wetland that is seasonally flooded but not impounded (PFO1C). Currently, the sediment pool has been drained for maintenance activities and the pool area is dry except for a small stream through the pool. When maintenance activities and re-habilitation of the dam are completed, the sediment pool will be returned to pre-construction levels with only temporary impacts to the wetlands.

STATUS OF OPERATION AND MAINTENANCE

Collin County is currently responsible for the maintenance of FRS No. 2A. Collin County and the Collin County SWCD are jointly responsible for the operation of the structure. The City of McKinney provides assistance in the routine operation and maintenance that requires engineering support. Inspections of the dam indicated that the dam is being operated and maintained properly. The City of McKinney has been very proactive in restricting development in the area that would flood by a dam failure. The City is also actively working to reduce sedimentation and flooding as a result of development activities. Collin County prevents development from encroaching upon the 100-year floodplain.

The dam is in good condition. A thick stand of bermudagrass covers the auxiliary spillway. The front and back slopes of the embankment are protected by a 10-15 foot horizontal width rock blanket cover. Trees and brush are not allowed to grow on the slopes of the embankment or in the auxiliary spillways. The inlet structure and conduit of the principal spillway were visually inspected and no deficiencies were noted. The original wooden deck anti-vortex baffle has been

replaced with a galvanized metal debris guard. Investigations indicate that the dam, including the principal spillway, is structurally sound and is being properly maintained.

SEDIMENTATION

The original planned total sediment volume was 506 ac-ft or 10.12 ac-ft/yr. This volume was broken down as follows: 200 ac-ft below 648.6 (lowest ungated outlet) and 306 ac-ft of sediment reserve below the principal spillway crest elevation of 655. The "As Built" plans do not account for any aerated sediment reserve planned in the detention pool above the principal spillway elevation of 655.

The sediment survey and predictive soil loss equations, completed in 2009, indicates that approximately 106 ac-ft of sediment storage are needed for the 50 year evaluated life of the rehabilitated structure. Therefore, the new principal spillway elevation will be planned for 649.6 which will allow for 94 ac-ft of sediment storage below the principal spillway crest and 12 ac-ft of aerated sediment storage in the detention pool. The accumulated sediment in the sediment and detention storage areas was not tested as it will not be disturbed during the rehabilitation of the FRS No. 2A.

BREACH ANALYSIS AND HAZARD CLASSIFICATION

EFAL Watershed FRS No. 2A does not meet current dam design and safety requirements. The dam was originally constructed in 1958 as a low hazard structure for the purpose of protecting downstream agricultural lands from flooding. As a result of population growth and rural development in recent years, two residences, two commercial properties, and two roadways are now at risk from a catastrophic breach of FRS No. 2A. The NRCS and the TCEQ - Dam Safety Program both agreed on the classification of the structure as "high hazard". The high hazard classification is based on the risk of loss of life concerning at-risk properties located in the downstream dam breach inundation area.

The breach floodwaters would reach and inundate the first floor elevations of two residences and two commercial properties. Each residence would experience floodwaters' depth greater than three feet. Both commercial properties are part of a baseball/softball complex that offers indoor and outdoor training facilities for year-round use. Hundreds of youth utilize these facilities during the year to train and develop their baseball/softball skills. In the event of a breach, one building would have over six feet of floodwaters and the other over two feet. Seven baseball fields are located at the complex, four of which are located fully and two partially within the breach area. These fields have elevations lower than the buildings. If games or practices are ongoing during a breach of FRS No. 2A, the lives of staff, participants, and spectators would be jeopardized.

Breach studies indicate that CR 123 would be overtopped by approximately seven feet of floodwaters if the dam failed, resulting in extensive property and infrastructure damages. Also, CR 124 would be overtopped by approximately four feet of water if the dam were to fail. According to the Texas Department of Transportation (TXDOT) about 1,800 vehicles utilize these roadways daily (2007 average daily traffic count). Table C contains information regarding depth of floodwaters.

Although the structure is presently sound, there is always the risk of failure. The most likely cause of FRS No. 2A failing is by overtopping. In the unlikely event that the structure was overtopped and failed, the most serious failure would be a breach in the highest point. This would result in a breach hydrograph that has a peak discharge of 72,500 cubic feet per second (cfs). Fair weather conditions were assumed to develop the breach hydrograph. The reservoir pool elevation was static at top of dam with non-storm conditions downstream. See Appendix C, Breach Inundation Map and Appendix D, Investigation and Analysis, Hydrology.

POTENTIAL MODES OF DAM FAILURE

Both NRCS and the TCEQ - Dam Safety Program, recognize that EFAL Watershed FRS No. 2A is a high hazard dam. Several potential modes of failure were examined as follows:

Sedimentation – Sediment can be deposited in both the sediment pool (the area below the principal spillway crest) and flood detention pool (the area between the principal spillway crest and the auxiliary spillway crest). When the sediment pool has filled to the elevation of the principal spillway inlet, the pool no longer has permanent water storage. As the detention pool loses storage due to sediment deposition, the auxiliary spillway operates, or has flowage, more often and is therefore subject to erosion. A potential mode of failure exists as the auxiliary spillway continues to degrade, and depth and frequency of flow increases. The dam will ultimately breach.

FRS No. 2A was designed with a 50-year sediment storage life. In 2009 the sediment pool was completely dry due to the sponsors having the reservoir dewatered for removal of some of the sediment by property owners. The sediment survey and predictive soil loss equations indicate that while some sediment has accumulated, FRS No. 2A has sufficient storage capacity remaining for at least another 50 years. With the change in upstream land use, the actual sediment rates were dramatically lower than that originally planned. Future sediment load is expected to remain at a low rate as the land use continues to change from agricultural to urban. Therefore, in the near future, sedimentation presents a low potential mode of failure for FRS No. 2A.

Hydrologic Capacity – Hydrologic failure of a dam can occur by breaching the auxiliary spillway or overtopping the dam during a storm event. The integrity and stability of the auxiliary spillway is dependent on the depth, velocity, and duration of flow; the vegetative cover; and the spillway's resistance to erosion. The integrity and stability of the embankment during overtopping is dependent on the depth, velocity, and duration of flow; the vegetative cover; and the embankment's resistance to erosion.

FRS No. 2A was originally designed to temporarily store 1,816 ac-ft of detention storage with an additional 4.0' of freeboard. Current criteria require FRS No. 2A to temporarily store the Probable Maximum Precipitation (PMP) storm of 30.1" in 6 hours without overtopping the embankment. The PMP storm is the maximum design storm required by the State of Texas Dam Safety Office. The possibility of a storm of this magnitude occurring is very low, but if it does, flow will occur in the current auxiliary spillway at a depth that exceeds capacity for a long duration, and the dam will be overtopped. These conditions could lead to the possible breaching of the auxiliary spillway, the embankment, or both. FRS No. 2A is currently performing as originally designed and is expected to continue to perform into the future; however, it does not

meet current dam safety design criteria for a high hazard dam. Therefore, the potential for FRS No. 2A to fail due to a deficiency in hydrologic capacity is judged to be high.

Seepage – Seepage is the primary geotechnical concern on FRS No. 2A. Embankment and foundation seepage can contribute to failure of an embankment by removing (piping) soil material through the embankment or foundation. As the soil material is removed, voids can be created, allowing ever increasing amounts of water to flow through the embankment or foundation until the dam collapses due to the internal erosion. Seepage that increases with an increase in pool elevation is an indication of a potential problem, as is stained or muddy water. Foundation and embankment drainage systems can alleviate the seepage problem by removing the water without allowing soil particles to be transported away from the dam.

FRS No. 2A shows no visible signs of seepage along the back toe of the dam. Geologic investigation does not indicate this to be a concern; however a new foundation drain system is planned for installation. No sloughing or any other indications of embankment instability were noticed. FRS No. 2A is protected with a 10-15 foot thick rock blanket cover on both the upstream and downstream slopes and a thick cover of bermudagrass in the auxiliary spillway. Trees and brush are controlled on the embankment and in the auxiliary spillway. Therefore, in the near future, seepage presents a low potential mode of failure for FRS No. 2A.

Seismic – The integrity and stability of an earthen embankment are dependent on the presence of a stable foundation. Foundation movement through consolidation, compression, or lateral movement can create weak zones or voids within an embankment, separation of the principal spillway conduit joints, or in extreme cases, complete collapse of the embankment.

FRS No. 2A is located in the Algermissen Seismic Zone 0. There are no indications that any foundation movement has occurred in the past that would weaken the integrity of the embankment or any of the components of the structure, and none is anticipated in the future. Seismic activity creates only a very small potential as a mode for failure of FRS No. 2A.

Embankment Slope Failure - An embankment slope failure allows increased saturation and weakens the integrity of the dam during the PMP and could result in a catastrophic failure. Slope failure can also create slides and sloughing that lower the top of dam elevation so that overtopping may occur during the PMP.

FRS No. 2A shows no visible signs of slope failure, sloughing, or any other noticeable indications of instability on the embankment. The embankment of FRS No. 2A is protected with a 10-15 foot horizontal width rock blanket cover and trees are kept under control. Therefore, embankment slope failure presents a low potential mode of failure for FRS No. 2A, but it should continue to be monitored in the future**.**

Material Deterioration - Material used in the principal spillway system and fences are normal, common construction materials, but they are subject to weathering and chemical reaction due to natural elements within the soil, water, and atmosphere. Concrete components can deteriorate and crack, metal components can rust and corrode, and leaks can develop. Embankment failure can occur from internal erosion caused by these leaks.

Based on available information and field observations, the structure appears to be in extremely good condition with no evidence of deterioration on any of the materials that would require structural repair at this time. Several metal components on the inlet tower and the original

wooden deck anti-vortex baffle have been replaced and/or painted. The conduit appears to be in excellent condition. As a result, the potential failure of the existing dam due to deteriorating components is judged to be low. However, due to the age of the existing structural components, FRS No. 2A should continue to be monitored annually and after significant storm events.

CONSEQUENCES OF DAM FAILURE

All of the structural components of the dam are in very good condition. However, the dam does not meet current performance and safety standards for a dam in this location, and there is a risk of the dam failing from overtopping. An analysis of the dam indicated that a storm of PMP magnitude would overtop the dam. The risk of dam failure is low, but the consequences of such a failure, if it were to occur, would likely be catastrophic.

Two residences and two commercial properties downstream of the dam as well as motorists on CR 123 and CR 124 would be at-risk in the event of a breach. Because the commercial buildings are a part of a baseball/softball training complex, potentially hundreds of people could be subjected to the risk of loss of life. Given the estimated depth combined with the velocity of the breach floodwaters, there could be many other people (especially motorists) at risk of serious injuries. Given the depth and velocity of the floodwaters, it is estimated that both road crossings would be destroyed as a result of a breach. Vehicles on the two roads would be washed downstream, and the road surfaces would be damaged and impassable. Traffic would be disrupted for an extended time while the roadways were being repaired. It is estimated that at a minimum the number of people at risk due to a breach of FRS No. 2A would be 115.

Table C shows the effects of a breach of FRS No. 2A on downstream properties and crossings.

Table C – Effects of Breach of FRS No. 2A to Downstream Properties and Crossings

Downstream Properties/Crossings	**Depth Above First Floor Elevation (ft)**	**Depth Over X-ing (ft)**	**Daily Traffic Count (#)**	**Maximum Velocity [1/]**
2 Residences Total	–	–	–	–
2 Houses	3 - 4			
2 Commercial Properties (Buildings & baseball fields)	2 - 7	–	–	–
County Road 123	–	7	1,000	8
County Road 124	–	4	800	7

[1/] Maximum velocity for identified crossing in feet per second.

Total damages from a catastrophic breach of FRS No. 2A are estimated to be over $1.4 million: $727,000 for residential and commercial properties (includes contents), $611,000 for the road crossings and other infrastructure, $62,000 for affected agricultural lands, and $20,000 in vehicle damages and traffic detour costs. As a result of a breach, approximately 12,500 cubic yards of fill material from the dam would move downstream, clogging stream channels and increasing flooding on roads and bridges.

County Road 123 (Bloomdale Road) Crossing approximately 800 feet downstream of FRS No. 2A would be completely submerged by floodwater to a depth of approximately 7 feet within 15 minutes of failure of the dam (flood depth approximated by tip of yellow arrow). 2007 TxDoT average daily traffic count for County Road 123 was 1,000 vehicles.

The opening beneath the bridge on County Road 123 is quite large; however, a breach of FRS 2A would overtop the bridge deck by approximately 7 feet.

County Road 124, approximately 1.2 miles downstream of FRS No. 2A, could have floodwaters reach 4 feet deep if the dam were to breach (depth approximated by tip of yellow arrow). 2007 average daily traffic count by TxDoT was approximately 800 vehicles.

Residence located approximately 0.9 miles downstream of FRS No. 2A. A breach of FRS No. 2A would flood the ground floor of the home to a depth of over 3 feet.

ALTERNATIVES

FORMULATION PROCESS

A 50-year evaluated life was established as well as a 50-year period of analysis. All alternatives were planned to function for a minimum of 50-years with proper maintenance. Alternatives are eligible for financial assistance under the Watershed Protection and Flood Prevention Act (PL 83-566) as amended by the Watershed Rehabilitation Amendments of 2000 (Public Law 106-472). To be eligible for federal assistance, an alternative must meet the requirements as contained in the Watershed Rehabilitation Amendments of 2000.

The Future Without Project alternative serves as a baseline to evaluate the other alternatives. It depicts the most probable future conditions in the absence of a federally assisted project. Collin County SWCD is the entity that owns the easements for the dam, and is responsible for determining what action to take if the dam is not brought up to current performance and safety standards. Additional information on land rights requirements and current easements can be found in footnote [4/] of Table F, Comparison of Structural Data on page 45 of this document.

Based on conditions set forth by the Future Without Project baseline, present conditions were developed. The dam does not meet current safety standards for a dam in this location, and there is a risk of the dam failing from overtopping. An analysis of the dam indicated that the PMP would overtop the dam. Appendix C (Breach Inundation Map) shows the area that will be flooded if the dam breached under fair weather conditions.

Failure of the dam would result in significant damage and risk of loss of life. The Collin County SWCD considered the following options in deciding the most likely course of action:

Modify the dam to comply with current safety standards with Federal assistance.
Modify the dam to comply with current safety standards without Federal assistance.
Take no action and accept the risk of the dam failing sometime in the future.
Breach the dam to eliminate the risk of failure from a catastrophic storm event.

After considering the options, the Collin County SWCD decided that their best option in the absence of Federal assistance is to breach the dam and eliminate the risk of the damages from a failure. Accepting the risk of the dam failure was deemed unacceptable, and no entity was identified which would accept the responsibility of the present dam.

Alternatives eligible for financial assistance under The Watershed Protection and Flood Prevention Act (PL 83-566) as amended by the Watershed Rehabilitation Amendments of 2000 and alternatives ineligible for financial assistance were developed. To be eligible for federal assistance, an alternative must meet the requirement as contained in Public Law 106-472.

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

A wide range of non-structural and structural measures were considered singly and in combination as alternatives were formulated. Non-structural measures included flood plain management, liability insurance, zoning, flood warning systems, flood proofing of properties,

and installation of storm water detention structures. These non-structural alternatives were either cost prohibitive or did not meet the purpose of the project.

Another non-structural alternative considered but rejected as economically infeasible included the purchase of deed restrictions of all land outside of the current 100-year floodplain but within the breach area and relocating residences within the breach area. The estimated cost of this alternative ($5.4 million) was based on complying with all of the policies and procedures of the NRCS and the Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 U.S.C. Section 4601 et. seq. as implemented by 7 C.F.R. Part 21), and ensuring that traffic along CR 123 and CR 124 would not be in peril. Even subtracting the modification cost of the 2 road crossings (which would not have been eligible for cost-share under the Rehabilitation program), this alternative would still have been economically infeasible due to excessive cost of relocation and deed restrictions (about $4.9 million).

Several structural measures were considered but eliminated from detailed study. These included decommissioning of the dam by total removal of the embankment, raising the dam with a concrete parapet wall, and raising the dam and installing a roller compacted concrete (RCC) spillway on top of the dam.

Decommissioning of the dam by total removal of the embankment was eliminated due to cost considerations. Raising the dam with a concrete parapet wall was eliminated due to cost and possible problems with the strength of existing fill within the dam. Project costs associated with raising the top of the dam and installing an RCC spillway on top of the dam would far outweigh benefits from this alternative.

DESCRIPTION OF REASONABLE ALTERNATIVES

The following is a description of the alternative plans that were developed:

Alternative No. 1 – No Action or Future Without Project

Under this alternative, no additional federal funds would be expended on the project. This alternative consists of excavating a breach in the dam of sufficient size to safely pass the 100-year, 24-hour frequency flood event with no influence on the water surface profile. This breach would be a minimum size opening in the dam from top of dam down to the valley floor, which would eliminate the structure's ability to store water. The principal spillway components would also be removed to eliminate potential injury to visitors from adjacent neighborhoods. Downstream flooding conditions would be similar to those that existed prior to the construction of the dam. This course of action would minimize the SLO dam safety liability but would not eliminate all liability. The excavated material (about 53,000 cu yd) would be placed in the present easement area. The remaining portion of the embankment and the land currently covered by the sediment pool would be maintained as a greenbelt area. All exposed areas would have vegetation established for erosion control (approximately 26 acres). Construction activities will require that a Stormwater Pollution Prevention Plan be in effect.

Since the 100-year floodplain would be enlarged from 21 acres to 189 acres due to the absence of flood protection, potential future downstream development would be restricted. Although floodwaters from a 100-year storm event would not overtop CR 123, CR 124 would be overtopped by about 2.7 feet. However, even though no residences or commercial

properties would be subjected to flooding from a 100-year event, several barns, recreational trailers, swimming pools, and other outbuildings would flood. The estimated cost of this alternative is $452,200.

Alternative No. 2 - Decommission FRS No. 2A

This alternative removes the storage function of the dam and reconnects, restores, and stabilizes the stream and floodplain functions. Although complete removal of the embankment is sometimes required for decommissioning, a partial removal of the embankment would take place. Partial removal of the embankment would consist of excavating a breach in the dam of sufficient size to safely pass the 100-year, 24-hour frequency flood event with no influence on the water surface profile. This would eliminate the structure's ability to store water. Downstream flooding conditions would be similar to those described for Alternative No. 1.

The remaining portion of the embankment and land currently covered by the sediment pool would be maintained as a greenbelt area. Excavated material (about 53,000 cu yd) would be placed in the sediment and detention pool areas and all exposed areas would be vegetated as needed for erosion control (about 22 acres). Channel work would be performed to reconnect the stream channel through the sediment pool. Riparian vegetation would be established along the stream channel (about 4 acres). A grade stabilization structure (GSS) would be installed to prevent head cutting and movement of sediment to downstream areas. Construction activities will require that a Stormwater Pollution Prevention Plan be in effect.

In order not to impede flows through the breached embankment, the principal spillway components would be removed. Removal of the components would also insure that people would not be subject to injury by climbing on or around the exposed components. The estimated cost of this alternative is $1,177,500.

Alternative No. 3 – Rehabilitation of FRS No. 2A

This alternative consists of removing the existing two-stage principal spillway inlet structure and grouting the pipe. A new standard drop inlet type principal spillway tower and 54” pipe with an impact basin at the outlet end will be installed. Crest of the new principal spillway will be at elevation 649.6, which is 5.4 feet lower than the existing crest. The permanent water level will be raised one foot above the current ported elevation. The auxiliary spillway will be hardened with articulating blocks to prevent breaching. The top of the dam will be raised by 3.7 feet with earth fill and lengthened by about 140 feet, the back slope of the embankment will be extended and flattened to a 3:1 slope, a stability berm will be added and a foundation drain system will be installed along the back toe of the embankment. A wave berm will be added to the front slope for slope stability. All disturbed areas will be re-vegetated using adapted species. Construction activities will require that a Stormwater Pollution Prevention Plan be in effect.

Modifications to FRS No. 2A will insure compliance with current safety and performance standards. The evaluated life of the structure will be extended for an additional 50 years. The 100-year floodplain downstream of FRS No. 2A will be unchanged. The level of flood protection will increase to 100-year (1.0% frequency). The dam will continue to provide flood damage reduction benefits downstream. Estimated cost is $3,333,000.

National Economic Development Alternative

For water and related land resources implementation studies, standards and procedures have been established in formulating alternative plans. These standards and procedures are found in "Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G)". According to P&G, an alternative that reasonably maximizes net national economic development benefits is to be formulated. This alternative is to be identified as the national economic development (NED) plan. During the process of formulating alternatives, the NED alternative was determined to be Alternative No. 3 described above.

COMPARSION OF ALTERNATIVES

Table D compares differences of each of the alternatives.

Table D – Summary and Comparison of Alternative Plans

Resource Concerns	**Alternative No. 1 Future Without Project**	**Alternative No. 2 Decommission FRS No. 2A**	**Alternative No. 3 Rehabilitation of FRS No. 2A**
NED Account [1]			
Project Investment	$452,200	$1,177,500	$3,333,000
Annual Benefits	$0	$22,400	$203,700
Annual Costs	$0	$60,400	$170,300
Net Benefits	$0	($38,000)	$33,400
EQ Account [2]			
Fish and Wildlife Resources	Converts a 22.5 ac. impoundment to riverine habitat w/o improved riparian zone or floodplain.	Converts a 22.5 ac. impoundment to riverine habitat with improved riparian zone and floodplain.	Minor temporary impacts due to drained pool, fish & wildlife habitat returned to pre-existing conditions
Riparian Area	Same as Fish & Wildlife Resources above	Same as Fish & Wildlife Resources above	Minor temporary impacts, riparian area returned to pre-existing cond.
Water Bodies (Including waters of the U.S.)	Converts sediment pool to ephemeral stream, not a Federal Action	Converts sediment pool to ephemeral stream, most likely authorized by NWP 27.	Increase sediment pool from 22.5 acres to 26.3 acres. Authorized by NWP 3 without PCN.
Wetlands	Probable conversion of wetlands to forested riparian areas	Probable conversion of wetlands to forested riparian areas	Minor temporary effects, drained pool, returned to pre-existing cond.
Wildlife Community (Incl. Migratory birds)	Decreases open water habitat and increases riparian habitat	Decreases open water habitat and increases riparian habitat	Temporary effects, maintains habitat in pre-existing condition following rehabilitation
Water Quality	Increased sediment loads could occur downstream. SWPPP in effect.	Efforts would be made to stabilize existing sediment and to prevent headcutting. SWPPP in effect.	Minor temporary impacts, increased sediment storage post rehabilitation. SWPPP in effect.
Sedimentation and Erosion	Minor erosion during & after construction. Loss of sed. pool	Minor erosion during construction. Loss of sediment pool.	Minor erosion during construction. 8 acres disturbed during construction.
RED Account [3]			
Land Values	Upstream land values would be negatively impacted.	Upstream land values would be negatively impacted	Upstream land values would be maintained.
OSE Account [4]			
Public Health & Safety	Reduced threat to loss of life from breach, more frequent flooding.	Reduced threat to loss of life from breach, more frequent flooding.	Reduced threat to loss of life. Increased level of flood protection.
Flood Damages	Downstream flood damages would increase.	Downstream flood damages would increase.	Increase level of flood protection
Aesthetics	Area covered by sediment pool would be maintained as a greenbelt.	Area covered by sediment pool would be maintained as a greenbelt area.	8 acres affected by construction activities would be reseeded.
Floodplain Management	No flood protection provided for any storm events	No flood protection provided for any storm events	Increase level of flood protection

[1] NED – National Economic Development: SLO would incur $452,200 cost in the absence of federal action. This annualized cost ($22,400) is included instead as a benefit for Alternatives 2 and 3 since it would not be incurred if any alternative except number one were adopted.
[2] EQ – Environmental Quality
[3] RED – Regional Economic Development
[4] OSE – Other Social Effects

Table E compares the monetary effects and associated impacts of the alternatives.

Table E – Monetary Effects of Alternatives [1/]					
Item	**Alternative No. 1 Future Without Project**	**Alternative No. 2 Decommission FRS No. 2A**		**Alternative No. 3 Rehabilitation of FRS No. 2A**	
	Benefits	Benefits	Change in Benefits	Benefits	Change in Benefits
Flood Damage Reduction Benefits	$0	$0	$0	$38,000	$38,000
Maintain Upstream Property Values	$0	$0	$0	$143,300	$143,300
Avoidance of Cost of SLO Breach	$0	$22,400	$22,400	$22,400	$22,400
Total	$0	$22,400	$22,400	$203,700	$203,700

[1/] All numbers reflect 2010 prices.

ENVIRONMENTAL EVALUATION WORKSHEET
NRCS-CPA-52

The following NRCS-CPA-52 form documents the environmental evaluation conducted for the EFAL 2A Rehabilitation Project. The Environmental Evaluation Worksheet, NRCS-CPA-52, replaces the Environmental Consequences section of the Watershed Work Plan since the EFAL 2A Rehabilitation Project is cover by categorical exclusions (NWPM Part 501.38(A)).

610.70 Environmental Evaluation Worksheet

U.S. Department of Agriculture Natural Resources Conservation Service **ENVIRONMENTAL EVALUATION WORKSHEET**	NRCS-CPA-52 4-22-2009	**A. Client Name:** City of McKinney, Texas **B. Conservation Plan ID #** (as applicable): Sup.WS PlanEFAL 2A **Program Authority** (optional): Watershed Rehab
D. Client's Objective(s) (purpose): Sponsors want to comply with current safety and performance standards and maintain present level of flood protection for downstream properties. Dam needs to be rehabilitated to meet current performance and safety criteria.		**C. Identification #** (farm, tract, field #, etc as required): East Fork Above Lavon Watershed, Floodwater Retarding Structure No. 2A

E. Need for Action:	**G. Alternatives**		
	No Action √ if RMS ☐	***Alternative 1*** √ if RMS ☐	***Alternative 2*** √ if RMS ☐
EFAL 2A has been reclassified as a high hazard dam and does not meet the minimum criteria for safety and performance standards.	Future without Project: Controlled breach of dam by creating a minimum size opening in the dam to eliminate hazard of a catastrophic breach from overtopping.(No Federal Assistance)	Decommission of EFAL 2A: Controlled breach of dam to eliminate hazard of a catastrophic breach from overtopping. Re-connect stream channel & re-establish floodplain functions & veg.	Rehabilitation of EFAL 2A: raise dam, flatten back slope, add foundation drain, new principal spillway with larger pipe and impact basin, harden the auxiliary spillway, add wave berm.

Resource Concerns & Special Environmental Concerns

In Section "F" below, analyze, record, and address concerns identified through the Resources Inventory process. (For *Resource Concerns* see FOTG Section III - Resource Quality Criteria for guidance. For *Special Environmental Concerns* complete and attach applicable Environmental Procedures Guide Sheets for documentation. Items with a "•" may require a federal permit or consultation/coordination between the lead agency and another government agency. In these cases, effects may need to be determined in consultation with another agency. Planning and practice implementation may proceed for practices not involved in consultation.)

F. Concerns and Existing/Benchmark Conditions (Analyze and record the existing/benchmark conditions for each identified concern)	**H. Effects of Alternatives**													
	No Action				***Alternative 1***				***Alternative 2***					
	Trend		Amount, Status, Description	√ if meets QC or needs action	Trend		Amount, Status, Description	√ if meets QC or needs action	Trend		Amount, Status, Description	√ if meets QC or needs action		
	short	long			short	long			short	long				
SOIL														
Erosion (Sheet and Rill) Not present under current conditions	- -	-	Negligible sheet & rill erosion on 26 ac. of disturbed area during vegetation estab. SWPPP in effect.	meets ☐ QC	- -	-	Negligible sheet & rill erosion on 26 ac. of disturbed area during vegetation estab. SWPPP in effect.	meets ☐ QC	-	0	Negligible sheet & rill erosion on 8 ac. of disturbed area during vegetation estab. SWPPP in effect.	meets ☐ QC		
Erosion (Streambank) Minimal streambank erosion under present conditions	- -	- -	Breaching the dam could potentially increase streambank erosion both upstream and downstream.	meets ☐ QC	- -	-	Moderate SB erosion downsteam (short term), decreasing SB erosion longterm as riparian	meets ☐ QC	0	0	New impact basin will negate any effects of larger PS pipe on SB erosion downstream.	meets ☐ QC		
Sediment Reduction FRS 2A safely stores sediment from upstream watershed	- -	- -	Sediment stored in FRS 2A becomes unstable following controlled breach of dam and potentially moves	meets ☐ QC	-	0	Sediment stored in FRS 2A is stabilized by GSS following controlled breach and riparian vegetation is	meets ☐ QC	0	+	Stored sediment remains in FRS 2A plus 50 additional years of sediment storage is planned for in new design.	meets ☐ QC		
				meets ☐ QC				meets ☐ QC				meets ☐ QC		
Prime and Unique Farmlands (APE) "prior converted" to non-agricultural use (FRS) is exempt			Upon Review, No Effect	needs ☐ action			Upon Review, No Effect	needs ☐ action			Upon Review, No Effect	needs ☐ action		
WATER														
Quality (Surface Water: Excessive Susp. Sedmt & Turbidity) Suspended sediment and turbidity confined to FRS 2A sediment pool	- -	-	Water quality downstream decreases due to suspended sediment from erosion following controlled breach	meets ☐ QC	-	0	Slight water quality degradtion downstream following controlled breach.	meets ☐ QC	0	+	Slight water quality improvement due to increased sediment storage and installation of impact	meets ☐ QC		
				meets ☐ QC				meets ☐ QC				meets ☐ QC		
				meets ☐ QC				meets ☐ QC				meets ☐ QC		
•Clean Water Act/Waters of the U.S. Waters of the U.S. are present			Unknown, not a Federal Action	needs ☐ action	0	0	Anticipate proposed activity will be authorized by NWP 27 for stream resotration.	needs ☑ action	0	0	Anticipate proposed activity will be authorized by NWP 3 w/o preconstruction notifica.	needs ☐ action		
•Coastal Zone Management Areas Not present in APE (re:FOTG Sec. 2)			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action		
Floodplain Management 100 year floodplain downstream of project area currently protected by	- -	- -	Floodplain protection from all storm events removed by this alternative.	needs ☐ action	- -	- -	Floodplain protection from all storm events removed by this alternative.	needs ☐ action	++	++	Current level of floodplain protection enhanced by rehabilitation project.	needs ☐ action		
Riparian Area Riparian area present upstream, adjacent to and downstream of FRS	- -	-	Proposed activity could cause degradation and agradation in surrounding	needs ☐ action	+	++	Proposed activity would re-establish riparian areas thru stream resotration.	needs ☐ action	0	0	Upon Review, No Effect	needs ☐ action		
•Wetlands Sediment pool currently drained by SLO for maintenance, temporary	- -	- -	Loss of wetlands by breaching dam	needs ☐ action	-	-	Change in wetland classification; re-establishing riparian area	needs ☐ action	0	0	Current wetland classification maintained by rehabilitation, minor temporary impacts.	needs ☐ action		
•Wild and Scenic Rivers Not present in APE (re:FOTG Sec. 2)			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action		

610.70 Environmental Evaluation Worksheet

F. Concerns and Existing/Benchmark Conditions (Analyze and record the existing/benchmark conditions for each identified concern)	H. (continued)											
	No Action				*Alternative 1*				*Alternative 2*			
	Trend		Amount, Status, Description	√ if meets QC or needs action	Trend		Amount, Status, Description	√ if meets QC or needs action	Trend		Amount, Status, Description	√ if meets QC or needs action
	short	long			short	long			short	long		
AIR												
				meets ☐ QC				meets ☐ QC				meets ☐ QC
				meets ☐ QC				meets ☐ QC				meets ☐ QC
				meets ☐ QC				meets ☐ QC				meets ☐ QC
•Clean Air Act Collin County is in Non-attainment (Air pollution information web-site)			Upon Review, No Action Needed	needs ☐ action			Upon Review, No Action Needed	needs ☐ action			Upon Review, No Action Needed	needs ☐ action
PLANTS												
				meets ☐ QC				meets ☐ QC				meets ☐ QC
				meets ☐ QC				meets ☐ QC				meets ☐ QC
				meets ☐ QC				meets ☐ QC				meets ☐ QC
				meets ☐ QC				meets ☐ QC				meets ☐ QC
•Endangered and Threatened Species Not present in APE (re:FOTG Sec. 2)			Upon Review, No Effect	needs ☐ action			Upon Review, No Effect	needs ☐ action			Upon Review, No Effect	needs ☐ action
Invasive Species Not present in APE (re:FOTG Sec. 2)			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action
Natural Areas Not present in APE (re:FOTG Sec. 2)			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action
Riparian Area Riparian area present upstream, adjacent to and downstream of ERS	- -	-	Natural regeneration of riparian area could occur over time	needs ☐ action	+	++	This alternative re-connects the stream and re-establishes the riparian area	needs ☐ action	0	0	Upon Review, No Effect	needs ☐ action
ANIMALS												
Fish and Wildlife Habitat Pool temporarily drained by SLO for maintenance	- -	- -	22.5 acres of shallow & deep water habitat converted to unimproved riparian habitat or floodplain	meets ☐ QC	- -	-	22.5 acres of shallow & deep water habitat converted to improved riparian habitat or floodplain	meets ☐ QC	0	0	Minor temporary impacts due to drained pool, fish & wildlife habitat returned to pre-existing conditiond following	meets ☐ QC
				meets ☐ QC				meets ☐ QC				meets ☐ QC
				meets ☐ QC				meets ☐ QC				meets ☐ QC
Coral Reefs Not present in APE (re:FOTG Sec. 2)			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action
•Endangered and Threatened Species Not present (USFWS and visual			Upon Review, No Effect	needs ☐ action			Upon Review, No Effect	needs ☐ action			Upon Review, No Effect	needs ☐ action
•Essential Fish Habitat Not present in APE (re:FOTG Sec. 2)			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action			Upon Review, Not Applicable	needs ☐ action
Invasive Species Not present in APE (re:FOTG Sec. 2)			Upon Review, No Effect	needs ☐ action			Upon Review, No Effect	needs ☐ action			Upon Review, No Effect	needs ☐ action
•Migratory Birds/Bald and Golden Eagles Eagle habitat not present	- -	-	Converts 22.5 ac. of open water habitat to unimproved riparian habitat	needs ☐ action	- -	0	Converts 22.5 ac. of open water habitat to improved riparian habitat	needs ☐ action	-	0	Minor temporary impacts, habitat returned to pre-existing conditions post	needs ☐ action
Riparian Area Riparian area present upstream, adjacent to and downstream of ERS	- -	-	Natural regeneration of riparian area could occur over time	needs ☐ action	+	++	This alternative re-connects the stream and re-establishes the riparian area	needs ☐ action	0	0	Upon Review, No Effect	needs ☐ action

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F. Concerns and Existing/Benchmark Conditions (Analyze and record the existing/benchmark conditions for each identified concern)	H. (continued) No Action Trend short	Trend long	Amount, Status, Description	√ if meets QC or needs action	Alternative 1 Trend short	Trend long	Amount, Status, Description	√ if meets QC or needs action	Alternative 2 Trend short	Trend long	Amount, Status, Description	√ if meets QC or needs action
HUMAN												
•Cultural Resources No NRHP listings or known sites in APE (re:State CR specialist/SHPO)	0	0	Cultural resources survey will be required on all areas of new distrubance.	needs action ☑	0	0	Cultural resources survey will be required on all areas of new distrubance.	needs action ☑	0	0	CR survey completed: none identified; monitor const. (Documentation on file)	needs action ☑
Environmental Justice Subject population not present in APE			Upon Review, No Effect	needs action ☐			Upon Review, No Effect	needs action ☐	+	++	Project intended to benefit subject population if present	needs action ☐
Scenic Beauty Not present in APE (re:FOTG Sec. 2)			Upon Review, Not Applicable	needs action ☐			Upon Review, Not Applicable	needs action ☐			Upon Review, Not Applicable	needs action ☐
Other:				needs action ☐				needs action ☐				needs action ☐

I. Economic and Social Considerations (For guidance see FOTG Section I and Form Instructions)	No Action			Alternative 1			Alternative 2		
Land Use Floodwater Retarding Structure	- -	-	FRS converted to unimproved green space area. Should improve over	-	0	FRS converted to improved riparian area through stream restoration.	0	0	No change in primary land use
Capital potential for high cost	- - -	-	Non-federal action, 100% of cost is clients responsibility	- -	0	High initial cost for client even with federal assistance, low cost long	-	+	High initial cost for rehab, low long term cost for O&M
Labor high labor for some alternatives	- -	-	No federal imvolvment, client is 100% responsible for all actions	-	0	Federal action relieves client of some labor and mgt obligations	0	0	Amount of labor reduced with rehabilitated FRS
Management Level Adequate	-	- -	Increased level of mgt possible with increased DS flooding	-	+	Reduced level of mgt once riparian area is restored	0	+	Level of mgt reduced with rehabilitated FRS
Profitability cost risk & feasibility	-	-	Does not meet all objectives of client, no federal cost share	-	0	Does not maintain flood benefits, does not meet all needs, riparian	+	++	Preferred alt. is needed and feasible to meet current safety & health
Risk potential hazard/resource damages	-	-	Increased risk of flooding and damages DS, breach risk removed	-	-	Increased risk of flooding and damages DS, breach risk removed	+	++	Risk of breach reduced, flooding and resource damage risk reduced
Social Well-Being possible health & safety hazard	-	-	Breach potential removed, downstream flooding increased,	-	0	Breach hazard removed, DS flooding increased, riparian area improved	+	++	Rehabilitated FRS meets current safety & health standards,
Other:									

J. Other Agencies and Broad Public Concerns	No Action	Alternative 1	Alternative 2
Easements, Permissions, or Permits Required and Agencies Consulted			All necessary easements and permits are the reaponsibility of the SLO
Identify any additonal environmental, resource-protection, or land use laws or regulations or concerns to address:			Upon Review, Not Applicable
K. Mitigation			Upon Review, No Action Needed

L. Preferred Alternative	No Action	Alternative 1	Alternative 2
√ preferred alternative	☐	☐	☑
Supporting reason	This alternative did not meet the purpose of the project.	This alternative was cost prohibitive and did not meet the purpose of the project.	This Alt. is the "NED" plan and meets the objectives and purposes of the project. It is the preferred Alt chosed by the SLO.

M. The information recorded above is based on the best available information:

Steven D. Uselton	Environmental Coordinator	17-Aug-10
Signature	Title	Date

THE FOLLOWING SECTIONS ARE TO BE COMPLETED BY THE RESPONSIBLE FEDERAL OFFICIAL (RFO). Sections "N" & "O" do not need to be completed when only Technical Assistance is provided (e.g. conservation plan development).

The RFO is to use the NRCS-CPA-52 to determine whether there are significant adverse environmental effects or "extraordinary circumstances" that would preclude the applicability of a categorical exclusion or the tiering process. Review definitions below of significance and extraordinary circumstances as defined by context and intensity (40 CFR Part 1508.27).

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N. Context (Record context of alternatives analysis) — **site-specific**

The significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality.

O. Determination of Significance or Extraordinay Circumstances

Intensity: Refers to the severity of impact. Impacts may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

If you answer ANY of the below questions "yes" then contact the State Environmental Liaison as there may be extraordinary circumstances and significance issues to consider and a site specific NEPA analysis may be required.

Yes	No	
☐	☑	• Is the preferred alternative expected to cause significant affects on public health or safety?
☐	☑	• Is the preferred alternative expected to significantly effect unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.the unique characteristics of the geographic area?
☐	☑	• Are the effects of the preferred alternative on the quality of the human environment likely to be highly controversial?
☐	☑	• Does the preferred alternative have highly uncertain effects or involve unique or unknown risks on the human environment?
☐	☑	• Does the preferred alternative establish a precedent for future actions with significant impacts or represent a decision in principle about a future consideration?
☐	☑	• Is the preferred alternative known or reasonably expected to have potentially significant environment impacts to the quality of the human environment either individually or cumulatively over time?
☐	☑	• Will the preferred alternative likely have a significant adverse effect on ANY of the special environmental concerns? Use the Evaluation Procedure Guide Sheets to assist in this determination. This includes, but is not limited to, concerns such as cultural or historical resources, endangered and threatened species, environmental justice, wetlands, floodplains, coastal zones, coral reefs, essential fish habitat, wild and scenic rivers, clean air, riparian areas, natural areas, scenic beauty, and invasive species.
☐	☑	• Will the preferred alternative threaten a violation of Federal, State, or local law or requirements for the protection of the environment?

P. NEPA Compliance Finding (check one)

The preferred alternative:		Action required
☐	1) is **not a federal action** subject to NRCS regulations implementing NEPA (7 CFR Part 650)	Document in "Q" below. No additional analysis is required
☑	2) is a federal action that is **categorically excluded** from further environmental analysis **and** there are no extraordinary circumstances.	Document in "Q" below. No additional analysis is required
☐	3) is a federal action that has been **sufficiently analyzed** in an existing published NRCS state, regional, or national NEPA document **and** there are no predicted significant adverse environmental effects or extraordinary circumstances.	Document in "Q" below. No additional analysis is required.
☐	4) is a federal action that has been sufficiently analyzed in another Federal agency's NEPA document (EA or EIS) that addresses the proposed NRCS action and its' effects **and has been formally adopted by NRCS**. NRCS is required to prepare and publish the agency's own Finding of No Significant Impact for an EA or Record of Decision for an EIS when adopting another agency's EA or EIS document.	Contact the State Environmental Liaison for list of NEPA documents formally adopted and available for tiering. Document in "Q" below. No additional analysis is required
☐	5) is a federal action that has **NOT** been sufficiently analyzed or may involve predicted significant adverse environmental effects or extraordinary circumstances and may require an EA or EIS.	Contact the State Environmental Liaison. Further NEPA analysis required.

Q. Rationale Supporting the Finding	As a result of performing this Environmental Evaluation it is concluded that the preferred alternative is covered by categorical exclusion numbers 14, 15, 16, and 17 dealing with the rehabilitation of a floodwater retarding structure to meet current safety and performance standards. No extraordinary circumstances or significant impacts will result from actions of the preferred alternative.

I have considered the effects of the alternatives on the Resource Concerns, Economic and Social Considerations, Special Environmental Concerns, and Extraordinary Circumstances (as outlined in the NECH 610.22).

R. Signature of Responsible Federal Official:

Steven Bednarz	Acting State Conservationist	18-Aug-10
Signature	**Title**	**Date**

CONSULTATION, COORDINATION, & PUBLIC PARTICIPATION

SPONSORING LOCAL ORGANIZATION:

SLO of the EFAL Watershed FRS No. 2A rehabilitation project are the City of McKinney, Collin County SWCD and Collin County. The City of McKinney agreed to be the "lead SLO" being responsible for leading the planning process, providing assurances for landrights and to provide coordination of the project with assistance from NRCS.

PLANNING TEAM:

An Interdisciplinary Planning Team provided for the "technical" administration of this project. Technical administration includes tasks pursuant to the NRCS nine-step planning process, and planning procedures outlined in the NRCS-National Planning Procedures Handbook. Some of the tasks undertaken by the Interdisciplinary Planning Team include but are not limited to: Preliminary Investigations, Hydrologic and Engineering Analysis, Reservoir Sedimentation Surveys, Economic Analysis, Evaluating Environmental Concerns, Formulating and Evaluating Alternatives, Performing an Environmental Evaluation, and Writing the Supplemental Plan/EE. Informal discussions amongst the planning team, SLO, NRCS, and landowners were conducted throughout the planning period.

The initial on-site review was conducted on 5/19/05 to determine the potential for eligibility of FRS 2A for the rehabilitation program. On 3/7/07 an application for participation in the rehabilitation program on FRS No. 2A was submitted by the City of McKinney, Collin County, and the Collin County SWCD. On 5/2/07 the planning team conducted another field review to gather data for potential dam failure index and priority ranking. Rehabilitation evaluation and ranking was completed on 5/8/07 and results were forwarded to the Texas State Soil and Water Conservation Board (TSSWCB) for approval. On 8/24-25/09 an NRCS economist and environmental coordinator returned to the site to gather additional information needed in performing the environmental evaluation. On 10/22/09 a Memorandum of Understanding was signed by the NRCS and the City of McKinney outlining parameters to be utilized for the sponsors to earn in-kind-credit to satisfy a portion of the financial requirements of the rehabilitation project.

A search of the Native American Consultation Database was conducted to determine if there were any Indian tribes that might attach religious or cultural significance to historic properties that could be located in the proposed project area. This was done in accordance with 36 CFR 800.2 (c)(i) of the Advisory Council on Historic Preservation Regulations. No tribes listed land area claims that included Collin County, Texas (NPS 2010).

A search of the Texas Archeological Sites Atlas, completed in March 2010 did not reveal any recorded archeological or historic sites in the vicinity of the proposed project (THC 2010). NRCS and the Texas State Historic Preservation Officer (SHPO) have agreed that a cultural resources survey should be completed on all areas of new disturbance associated with potential rehabilitation measures. On 3/31/10 an NRCS Archaeologist and Biologist gathered additional data critical in completing the environmental evaluation process. A cultural resources survey of the proposed project site was conducted. Information gathered was used to document the environmental evaluation on form NRCS-CPA-52. After consultation of the prepared report

with the State Historic Preservation Officer, it was determined that no historic properties would be affected. Documentation and concurrence letter are on file.

On 5/20/10 members of the NRCS Interdisciplinary Planning Team held a field orientation review to discuss any concerns that any individuals or environmental agencies might have on the proposed rehabilitation project. Letters were sent to U.S. Fish and Wildlife Service, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers (USACE), Texas Commission on Environmental Quality, and the Texas Parks & Wildlife Department inviting them to attend the field review and provide input concerning the project. Only the USACE responded by telephone and it was indicated that this project was similar to other rehabilitation projects that were authorized by Nation Wide Permit 3 without a Preconstruction Notification. Following the field orientation review a public meeting and steering committee meeting was held to review the project and gather additional comments or discuss concerns of landowners and the general public.

A review of NEPA concerns was initiated early in the planning process by the planning team. Identified NEPA concerns were reviewed and documented on form NRCS-CPA-52 (Environmental Evaluation). As a result of performing the Environmental Evaluation, it was concluded that the preferred alternative is a federal action that is categorically excluded from further environmental analysis by categorical exclusion Nos. 14, 15, 16, and 17. The NRCS Interdisciplinary Planning Team determined that the actions of the preferred alternative will not individually or cumulatively have a significant effect on the environment and there are no extraordinary circumstances present. Additional supporting documentation and information on the use of categorical exclusions are more fully explained in Appendix E (Other Supporting Information).

PUBLIC PARTICIPATION:

Integral to the planning process is the solicitation of public comments to identify, understand, and address the issues and concerns of the relevant agencies and the public. The SLO intent during the scoping process was to inform local, state, and federal agencies and the public about the planning process and solicit their comments in order to identify issues and questions to consider when preparing the Supplemental Watershed Plan and Environmental Evaluation. During the scoping period, the SLO announced the commencement of the planning process through various means, invited written comments, and held a public scoping meeting. Opportunities for the public to participate in the planning process occurred at key milestones throughout the process. The scoping process was continuous and comments were solicited and received for consideration throughout the entire planning procedure.

On 12/9/09 a public scoping meeting was held in the City of McKinney Council Chambers to explain the Watershed Rehabilitation Program and to discuss resource problems, issues, and concerns of local residents associated with the FRS No. 2A project area. Invitations to participate in the public meeting were made to potentially affected landowners and interested parties around and below FRS No. 2A and reservoir area. A PowerPoint Presentation and handout material were utilized to provide information to the group. Potential alternative solutions to bring the EFAL Watershed FRS No. 2A into compliance with current dam safety criteria were presented at the initial scoping committee meeting.

USFWS and the TPWD furnished information concerning federally and state listed endangered and threatened species in Collin County, Texas through their respective web sites. The findings

are shown in Table B found on page 14 of this document. These agencies along with EPA, TCEQ, TSSWCB, SLO's, and the USACE were invited to participate in a field review during the week of May 24, 2010. Federal, State, and local agencies all participated in the scoping planning process. Environmental, cultural, and economic concerns were evaluated by NRCS personnel to determine effects of potential rehabilitation alternatives.

A steering committee made up of local, interested individuals was formed. Comments and concerns were solicited from this committee during the planning process. A list of the steering committee members and contact information can be found on page 49.

A second advertised public meeting was held during the week of May 24, 2010 to review the first draft of the Supplemental Plan and Environmental Evaluation, summarize planning accomplishments, and present various structural and non-structural alternatives.

THE PREFERRED ALTERNATIVE

Alternative No. 3 is the preferred alternative. The dam will be modified to meet current performance and safety standards for a high hazard dam and the service life of FRS No. 2A will be extended for an additional 50 years. The modification will consist of rehabilitation of FRS No. 2A by removing the existing principal spillway tower and grouting the existing conduit, installing a new standard drop inlet type principal spillway with a 54 inch pipe, and installing an impact basin to replace the existing plunge pool. The new principal spillway crest will be 5.4 feet lower than the existing principal spillway crest. The auxiliary spillway will be hardened with articulating block, the elevation will be raised 0.1 feet and the right-hand cut slope will be flattened from 2:1 to 3:1. The top of the dam will be raised by 3.7 feet with earth fill and the east end of the dam will be extended by about 140 feet. The back slope will be extended and flattened to a 3:1 slope, and a new toe drain system will be installed along the back toe of the embankment. A wave berm will be added to the front slope and a stability berm added to the back slope. Estimated cost is $3,333,000.

Construction activities will result in the disturbance of approximately 8 acres and will require that a Stormwater Pollution Prevention Plan be in effect. The removal of vegetation will only be that necessary to allow rehabilitation of the structure. Disturbed areas will be reestablished to adapted vegetation to reduce erosion. Established precautionary procedures will be followed to prevent the establishment or spread of invasive species during the vegetation establishment process. Preventive activities may include the use of certified seed, cleaning of planting equipment, the use of recommended pest management procedures, and other Best Management Practices to insure that invasive species are not introduced onto the project site.

The SLO will develop an Emergency Action Plan (EAP) before any rehabilitation construction activities begin stating the responsibilities for the development, implementation and review of actions necessary to provide safety to individuals downstream of the structure should extreme flooding occur.

RATIONALE FOR ALTERNATIVE PREFERENCE

Alternative plans were formulated as required by NRCS policy and “Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies” (P&G) (USWRC, 1983). According to P&G, an alternative that reasonably maximizes net national economic development benefits is to be formulated. This alternative is to be identified as the National Economic Development (NED) Plan. Alternative No. 3 (Rehabilitation of FRS No. 2A) is the NED plan.

Alternative plans were formulated in consideration of the purposes of the project and concerns expressed during the public scoping process. Formulation of the alternative plans gave consideration to four criteria: completeness, effectiveness, efficiency, and acceptability. Alternative Nos. 1, 2, and 3 all meet the criteria for completeness. Alternative Nos. 1 and 2 remove the safety hazard of the dam from failing but they do not address the primary problem of assuring that downstream flood protection would continue to be provided; however alternative No. 3 effectively reduces the risk of dam failure by overtopping and maintains the current level of flood protection downstream.

Alternative No. 3 is the preferred alternative. It meets the purpose and need to maintain the present level of flood control benefits and comply with current performance and safety standards.

It also produces the highest net monetary benefits and a local sponsor has agreed to fund the local share of the cost.

MEASURES TO BE INSTALLED

The recommended plan consists of structural modifications to FRS No. 2A as follows:

- Lengthen dam 140 feet and raise top of dam elevation 3.7 feet to 677.1 by using earth fill.
- Remove old principal spillway inlet tower, grout old pipe and install a new principal spillway (standard drop inlet type) at elevation 649.6 with a 54" pipe with a impact basin to replace the existing plunge pool. The new principal spillway crest elevation will be 5.4 feet lower than the existing principal spillway crest.
- Extend the back slope and flatten to a 3:1 slope and install a new toe drain system along back toe of embankment.
- Harden the auxiliary spillway with articulating blocks to prevent breaching and flatten the right-hand cut slope to 3:1 for stability.

MITIGATION

An environmental evaluation was performed early in the planning process to determine the potential effects of alternative solutions for meeting the SLO's objectives to comply with safety and performance standards concerning FRS No. 2A. It was determined that the preferred alternative is covered by categorical exclusion numbers 14, 15, 16, and 17 dealing with the rehabilitation of a floodwater retarding structure to meet current safety standards and that no extraordinary circumstances or significant impacts will result from actions of the preferred alternative. No compensatory mitigation is planned as part of the preferred alternative.

PERMITS AND COMPLIANCE

Potential Permits Needed

U.S. Army Corps of Engineers (USACE) guidelines indicate that any discharge of dredged or fill material into "Waters of the United States" require authorization under Section 404 of the Clean Water Act of 1972. Based on previous consultations with USACE, the SLO and the NRCS have determined that any discharges into Waters of the U.S. associated with the rehabilitation of FRS No. 2A would be authorized by a general permit such as Nationwide General Permit 3 for Maintenance without a Preconstruction Notification.

For projects with disturbances equal to or greater than five acres it is necessary to have a Stormwater Pollution Prevention Plan (SWPPP) in place at least 48 hours prior to and during construction of the proposed project and filing a Notice of Intent with the TCEQ is required. A Notice of Termination (NOT) must be filed once the site has reached final stabilization. Construction activities associated with the rehabilitation of FRS No. 2A will require a SWPPP.

Compliance with Local, State, and Federal Laws

All applicable local, state, and federal laws will be complied with in the installation of this project.

Efforts to identify cultural resources have been conducted in compliance with Section 106 and Section 110 (f) and (k) of the National Historic Preservation Act. No historic properties were identified in the areas of Alternative 3 and no known sites are recorded in the vicinity. Ensuing disturbances associated with rehabilitation measures will be monitored for the presence of undiscovered sites. In the event of such discovery, appropriate actions will be taken in

accordance with the State Level Agreement among NRCS and the Texas State Historic Preservation Officer, the National Programmatic Agreement among NRCS, the National Conference of State Historic Preservation Officers, and the Advisory Council on Historic Preservation, and NRCS General Manual 420, Part 401 guidance.

COSTS AND COST SHARING

The percentages of the eligible project costs including construction, engineering, project administration, and land rights to be paid by the City of McKinney and the NRCS are as follows:

	City of McKinney	Estimated NRCS	Project Cost
Rehabilitation of FRS No.2A	35 %	65 %	$2,865,300

An amount up to the percentage rate specified may be satisfied by the City of McKinney for cost of an element such as engineering, real property acquisition or construction. The decision to, and arrangements for, such action will be negotiated between the City of McKinney and NRCS and will be included in a project agreement executed immediately before implementation. NRCS costs will not exceed 100 percent of the construction cost.

NRCS is responsible for the engineering services and project administration costs ($467,700) it incurs. However, these costs are not used in the calculation of the federal cost share. These costs are, however, included in the Estimated Installation Cost (Table 1). Also, costs of water, mineral and other resource rights, as well as federal, state and local permits are the responsibility of the City of McKinney and are not counted toward local cost share. See Table 2 for a complete distribution of total rehabilitation costs.

INSTALLATION AND FINANCING

The installation of the project will be financed jointly by the City of McKinney and the NRCS. NRCS will use funds appropriated for this purpose. The City of McKinney has approved a bond issue for its share of the costs. The installation schedule indicates that real property rights will be secured during the 2012 fiscal year and construction funding will be requested for fiscal year 2013 (National Watershed Program Manual Part 501.40 (40) and National Watershed Program Handbook Part 601.40 (F)). The City of McKinney has the power of eminent domain to secure the real property rights and will serve as the local contracting agent.

Memorandum of Understanding
The City of McKinney and NRCS have entered into a Memorandum of Understanding (MOU) to establish a framework under which the city of McKinney may proceed with work on specific aspects of the proposed rehabilitation project. Accordingly, that specified work might then contribute towards the SLO 35 percent cost-share obligation.

Project Agreement
The Sponsoring Local Organization responsible for the 35 percent non-federal cost share (City of McKinney) and the NRCS will enter into a Project Agreement in accordance with the National Contract Grants and Agreement Manual before any work is initiated by either the City of McKinney or the NRCS.

Operation and Maintenance Agreement

The project will be operated and maintained by the Sponsoring Local Organizations. Once FRS No. 2A is rehabilitated, the City of McKinney will have the primary responsibilities for maintenance of FRS No. 2A. A new Operation and Maintenance (O&M) Agreement will be developed with the City of McKinney and the Collin County SWCD for FRS No. 2A for the 50-year program life of the structure. The new O&M Agreement will be based on the National Operation and Maintenance Manual (NOMM) and will be signed before the Project Agreement is signed. O&M activities include but are not limited to inspections, maintenance, replacement of inoperable components and repairs of the principal spillways, dam, vegetation and the auxiliary spillways. Based on data from the City of McKinney, it is estimated that O&M activities will cost about $5,000 per year.

Emergency Action Plan

The Sponsoring Local Organizations will provide leadership in developing an Emergency Action Plan (EAP) prior to the commencement of construction and will review and update the EAP annually with local emergency response officials. As required by the National Engineering Manual, Part 520, Subpart C, Section 520.27 and the NOMM, Part 500, Subpart F, the NRCS State Conservationist is to determine that an EAP is prepared for FRS No. 2A prior to the execution of fund obligating documents for construction of the structure. NRCS will provide technical assistance in preparation and updating of the EAP. The breach inundation map of the final design and its data will be the basis for potential areas to be affected and citizens to be notified. The purpose of the EAP is to identify areas at risk, outline appropriate actions and to designate parties responsible for those actions in the event of a potential failure of FRS No. 2A.

ECONOMIC AND STRUCTURAL TABLES

Table 1 - Estimated Installation Cost

FRS No. 2A
East Fork Above Lavon Watershed, Texas
(Dollars) [1/]

Installation Cost Item	Unit	Number	Estimated Costs [2/]		
			Public Law 83-566 Funds	**Other Funds**	**Total**
Rehabilitation of FRS No. 2A	No.	1	$2,330,100	$1,002,900	$3,333,000
Total Project			**$2,330,100**	**$1,002,900**	**$3,333,000**

August/2010

[1/] Price base: 2010

[2/] Public Law 83-566 Funds include NRCS Engineering and Project Administration ($467,700), which are not included when calculating eligible federal cost share. Therefore, federal cost share is based on Total Eligible Project Cost of $2,865,300.

Table 2 - Estimated Cost Distribution - Structural and Non-structural Measures
FRS No. 2A
East Fork Above Lavon Watershed, Texas
(Dollars) [1/]

	Installation Cost – Public Law 83-566 [2/]				Installation Cost – Other Funds					
	Construction	Engineering	Project Administration	Total PL 566	Construction	Engineering	Real Property Rights	Project Administration	Total Other	Total Installation Cost
Rehabilitation of FRS No. 2A	$1,862,400	$247,600	$220,100	$2,330,100	$889,100	$0	$45,000	$68,800	$1,002,900	$3,333,000
GRAND TOTAL	**$1,862,400**	**$247,600**	**$220,100**	**$2,330,100**	**$889,100**	**$0**	**$45,000**	**$68,800**	**$1,002,900**	**$3,333,000**

August/2010

[1/] Price base: 2010

[2/] Federal Engineering and Project Administration costs ($467,700) are not included when calculating eligible federal cost share. Therefore, federal cost share is based on Total Eligible Project Cost of $2,865,300.

Table 3 - Structural Data – Dams with Planned Storage Capacity
East Fork Above Lavon Watershed, Texas

Item	Unit	FRS No.2A
Class of structure		High
Seismic zone		0
Location	dec. deg.	Lat. 33.25, Long. –96.71
Uncontrolled drainage area	sq-mi	6.07
Runoff curve number (1-day) (Avg. AMC)		78
Time of concentration (T_c)	Hrs	2.88
Elevation top of dam	ft	677.1
Elevation crest of auxiliary spillway	ft	668.5
Elevation crest principal spillway	ft	649.6
Maximum height of dam	ft	57
Volume of fill	yd^3	233,238 1/
Total capacity (auxiliary spillway crest)	ac-ft	1670
Sediment pool	ac-ft	94
Aerated sediment	ac-ft	12
Floodwater retarding pool	ac-ft	1564
Surface area		
Sediment pool	acres	26.3
Floodwater retarding pool	acres	144.4
Principal spillway		
Rainfall volume (1-day)	in	9.6
Rainfall volume (10-day)	in	16.0
Runoff volume (10-day)	in	9.88
Type - existing (standard drop inlet)		concrete
Diameter	in	54
Capacity	ft^3/s	519
Auxiliary spillway		
Structural (articulating block)		
Bottom width	ft	350
Exit slope	%	7.4
Frequency of operation	% chance	1.0
Auxiliary spillway hydrograph		
Rainfall volume	in	12.9
Runoff volume	in	10.04
Storm duration	hrs	6
Velocity of flow (V_e)	ft/s	12.8
Maximum reservoir water surface elevation	ft	671.8
Freeboard hydrograph		
Rainfall volume	in	30.1
Runoff volume	in	26.96
Storm duration	hrs	6 2/
Maximum reservoir water surface elevation	ft	677.1
Storage capacity equivalents		
Sediment volume	in	0.32
Floodwater retarding volume	in	4.83

August 2010

1/ Total volume of fill in dam 233,238 CY (includes additional 55,000 CY needed in rehabilitation project).

2/ The 24-hour Freeboard storm was also routed but was determined to be less critical than the 6-hour storm.

Table 4 - Estimated Average Annual NED Costs
FRS No. 2A
East Fork Above Lavon Watershed, Texas
(Dollars) [1/]

Evaluation Unit	Project Outlays		Total
	Amortization of Installation Cost [2/]	Operation, Maintenance and Replacement Cost	
FRS No.2A	$165,300	$5,000	$170,300
Grand Total	**$165,300**	**$5,000**	**$170,300**

August/2010

[1/] Price base: 2010
[2/] Amortized over 50 years at a discount rate of 4.375 percent

Table 5 - Estimated Average Annual Flood Damage Reduction Benefits

FRS No. 2A

East Fork Above Lavon Watershed, Texas

(Dollars) [1/ 2/]

Item	Estimated Average Annual Damages Without the Project [3/]	Estimated Average Annual Damages With the Project [3/]	Estimated Average Annual Benefits
Floodwater			
Crop and Pasture	$16,900	$500	$16,400
Other Agricultural	$10,200	$300	$9,900
Road and Bridge	$4,500	$0	$4,500
Urban	$2,700	$0	$2,700
Subtotal	$34,300	$800	$33,500
Sediment			
Overbank Deposition	$3,500	$100	$3,400
Erosion			
Flood Plain Scour	$1,200	$100	$1,100
Grand Total	**$39,000**	**$1,000**	**$38,000**

August/2010

[1/] Price base: 2010

[2/] All figures reflect agriculture-related damages and benefits, including damages and benefits to rural communities.

[3/] Original downstream damages updated using applicable indices and updated data. Damages and benefits will accrue from floods of greater magnitude than the 500-year frequency event, but these were not evaluated.

Table 6 - Comparison of NED Benefits and Costs
FRS No. 2A
East Fork Above Lavon Watershed, Texas
(Dollars) [1/]

Evaluation Unit	Average Annual Benefits				Average Annual Cost [3/]	Benefit/Cost Ratio
	Agriculture-Related	Nonagricultural		Total		
	Damage Reduction [2/]	Maintain Upstream Property Values	Avoidance of Cost of Sponsor's Breach			
Rehabilitation of Floodwater Retarding Structure No. 2A	$38,000	$143,300	$22,400	$203,700	$170,300	1.2:1.00

August/2010

[1/] Price base: 2010
[2/] From Table 5
[3/] From Table 4

Table F shows comparison of structural data between original as-built, existing conditions and planned rehabilitation:

Table F Comparison of Structural Data				
FRS No. 2A	**Unit**	**As Built[1/]**	**Existing Conditions[2/]**	**Planned[2/]**
Surface Area (Principal Spillway Crest)	acres	64.0	47.6	26.3
Elevation, Top of Dam (effective)	ft MSL	673.4	673.4	677.1
Principal Spillway	Type	Std. drop inlet, 2 stage	Std. drop inlet, 2 stage	Std. drop inlet
Length of Dam	Ft.	1,392	1,392	1,530
Elevation, Principal Spillway Crest	ft MSL	655.0	655.0	649.6
Pipe Diameter, Principal Spillway	in	19	19	54
Auxiliary Spillway	type	Veg.	Veg.	Structural
Elevation, Auxiliary Spillway [4/]	ft MSL	668.4	668.4	668.5
Bottom Width, Auxiliary Spillway	Ft.	350	350	350
Submerged Sediment Storage	acre-feet	506	289	94 [3/]
Sediment Reserve Below Riser	acre-feet	200	-	-
Aerated Sediment Storage	acre-feet	60	-	12
Flood Storage	acre-feet	1,494	1,381	1,564
Total Storage at Auxiliary Spillway Crest	acre-feet	2,000	1,670	1,670

[1/] As built data based on 1958 Record Drawings using National Geodetic Vertical Datum of 1929 (NGVD29). Stage/storage from "As-Built" Drawings.

[2/] Existing and Planned conditions data based on 2001 LiDAR data using North American Vertical Datum of 1988 (NAVD88).

[3/] Elevation 649.6.

[4/] In Texas, the minimum requirements for landrights upstream from the dam will be all the area below the higher elevation of either (1) two feet vertically above the crest of the auxiliary spillway, or (2) the maximum elevation of the water surface attained during passage of the 100-year, 24-hour storm flow through the structure. The SLO currently holds easements for EFAL FRS No. 2A that meet minimum Public Law 83-566 requirements (existing auxiliary spillway crest elevation plus 2.0 feet). However, these easements are at an elevation below top of dam. Although any future upstream development must adhere to current easement restrictions, development could occur outside current easements and below top of dam elevation. Landrights above the currently required 100-year floodplain would be desirable but would address storms far in excess of what should reasonably be expected to occur. The sponsors have determined that land rights for the 100-year floodplain are adequate based on current local, state, and federal guidelines. This determination is consistent with criteria for other structures in the state, such as road embankments at culvert crossings, bridges, and other similar structures. All land rights must be identified by metes and bounds surveys conducted by a professional land surveyor.

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20. USDA, Natural Resources Conservation Service, (NRCS, 2010), *Hydrologic Simulation, East Fork Above Lavon Watershed Site 2A, Collin County, Texas*, 2010.

LIST OF PREPARERS

Name & Present Title	Education	Experience (Years)
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Steve Uselton, Soil Conservationist, NRCS	B.S. Agriculture Education	32
James Featherston, Agricultural Economist, NRCS	M.S. Agricultural Economics	33
Brian Moffatt, Geologist, NRCS	B.S. Geology	29
Calvin Sanders, Cultural Resources Specialist, NRCS	M.A. Anthropology	28
Ronnie Skala, P.E., CFM, Hydraulic Engineer, NRCS	B.S. Agricultural Engineering	31
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Steven Bednarz, P.E., Assistant State Conservationist (Water Resources), NRCS	B.S. Agricultural Engineering	35
Jim Kelly, Wildlife Biologist, NRCS	M.S. Forestry	9
Tim Dybala, P.E., Civil Engineer, NRCS	B.S. Agricultural Engineering	33
Carl Amonett, Soil Conservationist, NRCS	M.S. Forestry	28

STEERING COMMITTEE MEMBERS

The local steering committee provided invaluable information, helped identify local concerns, and provided reviews during the development of the environmental evaluation.

NAME	ORGANIZATION	PHONE	EMAIL
Andrew Baxter	Landowner	940-390-1912	abaxter@coserv.com
Michael Hebert	City of McKinney	972-547-7424	mhebert@mckinneytexas.org
John Mahar	Landowner	972-562-7731	jjmahar@mindspring.com
Tom Clark	Landowner	972-347-1970	tclark51@sbcglobal.net
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Dale Clark	Landowner	972-672-6776	dc@wcdevelopment.com
Bernd Fitzau	Landowner	972-562-8362	

DISTRIBUTION LIST

Following is a list of the agencies, organizations, and persons to whom the Watershed Project Plan-Environmental Evaluation were sent. Those listed on this distribution list were invited to participate in a field review and respond with comments. Letters and/or oral comments and responses are located in Appendix A on page 53.

Texas State Soil and Water Conservation Board
Texas Commission on Environmental Quality
Texas Parks & Wildlife Department
US Army Corps of Engineers, Ft. Worth District
U.S. Environmental Protection Agency
U.S. Fish and Wildlife Service
Collin County Commissioners Court
Grayson County Commissioners Court
Collin County Soil and Water Conservation District
Upper Elm-Red Soil and Water Conservation District
Local Steering Committee members
The City of McKinney
The City of Van Alstyne
The City of Anna

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APPENDICES

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APPENDIX D: Investigation and Analysis Report

APPENDIX E: Other Supporting Information

APPENDIX A

Comments and Responses

Not all agencies, organizations, and individuals invited to participate in the review of the Draft Supplemental Watershed Plan and Environmental Evaluation submitted comments. The comments, corresponding responses, and the disposition of each are as follows:

Comment: The USACE utilized a standardized form letter for their comment that included an assigned project number of SWF-2010-00241 which is to be used in all future correspondence concerning the project. Mr. Scott Kelly was assigned as the regulatory project manager for the project and his telephone number and address was furnished for contact purposes. Mr. Kelly contacted NRCS by telephone to inquire about the proposed project. During the conversation the project was described as being similar to numerous other rehabilitation projects we had completed in the past and that it probably would be authorized under NWP 3 without Preconstruction Notification.

Response: Mr. Kelly was personally invited to an on-site field review and public meeting to provide input into the project. He did not show up for the field review or meeting.

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

REPLY TO
ATTENTION OF

May 21, 2010

Planning, Environmental, and Regulatory Division
Regulatory Branch

SUBJECT: Project Number SWF-2010-00241, Floodwater Retarding Structure No. 2A of the East Fork Above Lavon Watershed

Mr. Steven Bednarz
Natural Resources Conservation Service
101 South Main Street
Temple, TX 76501

Dear Mr. Bednarz:

Thank you for your letter received 05/17/2010 concerning a proposal by the Natural Resource Conservation Service to rehabilitate the Floodwater Retarding Structure No. 2A of the East Fork Above Lavon Watershed located in the City of McKinnney, Collin County, Texas. This project has been assigned Project Number SWF-2010-00241. Please include this number in all future correspondence concerning this project.

Mr. Scott Kelly has been assigned as the regulatory project manager for your request and will be evaluating it as expeditiously as possible.

You may be contacted for additional information about your request. For your information, please reference the Fort Worth District Regulatory Branch homepage at http://www.swf.usace.army.mil/regulatory and particularly guidance on submittals at http://www.swf.usace.army.mil/pubdate/environ/regulatory/introduction/submital.pdf, and mitigation at http://www.usace.army.mil/CECW/Pages/final_cmr.aspx that may help you supplement your current request or prepare future requests.

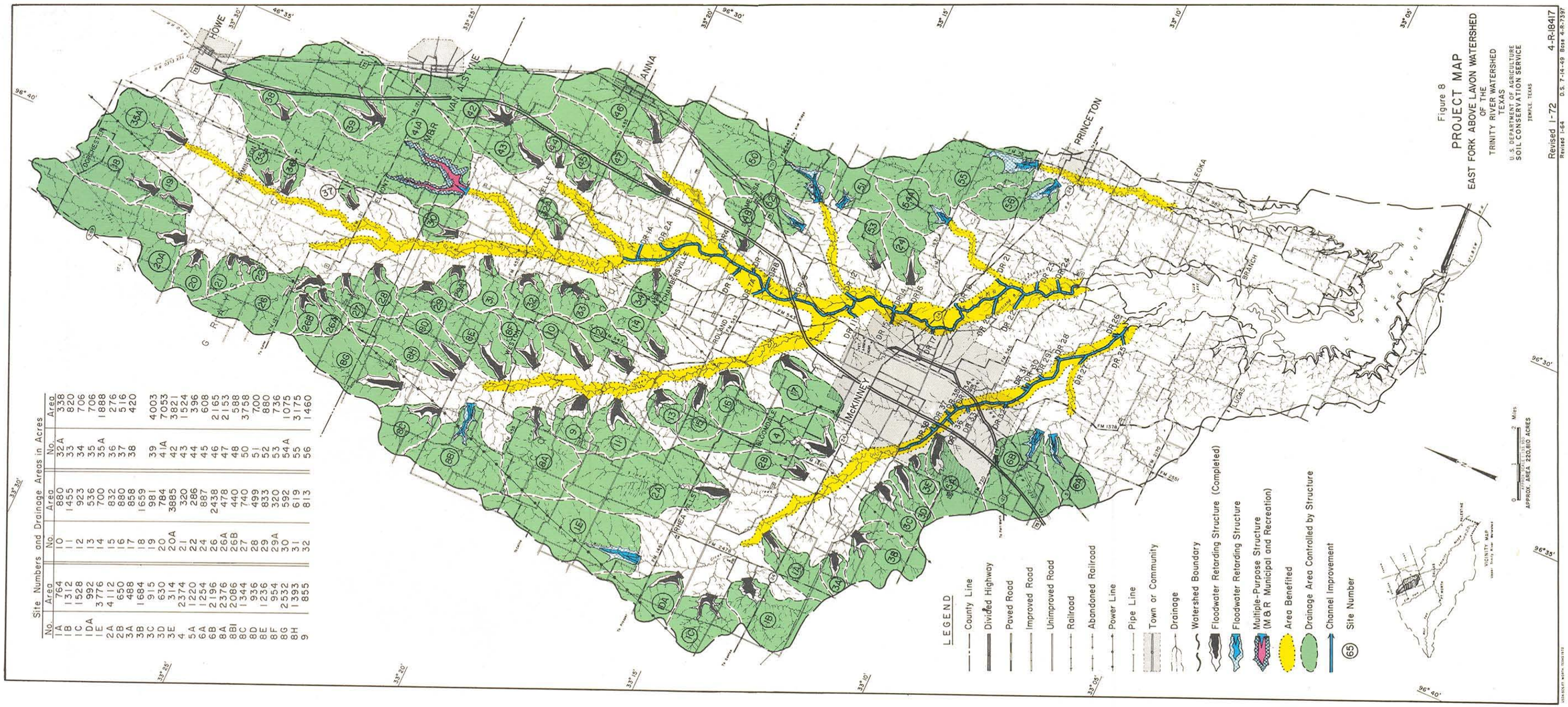
If you have any questions about the evaluation of your submittal or would like to request a copy of one of the documents referenced above, please contact Mr. Scott Kelly at the address above or telephone (817) 886-1662 and refer to your assigned project number. Please note that it is unlawful to start work without a Department of the Army permit if one is required.

Please help the Regulatory Program improve its service by completing the survey on the following website: http://per2.nwp.usace.army.mil/survey.html.

Stephen L Brooks
Chief, Regulatory Branch

APPENDIX B

Project Map

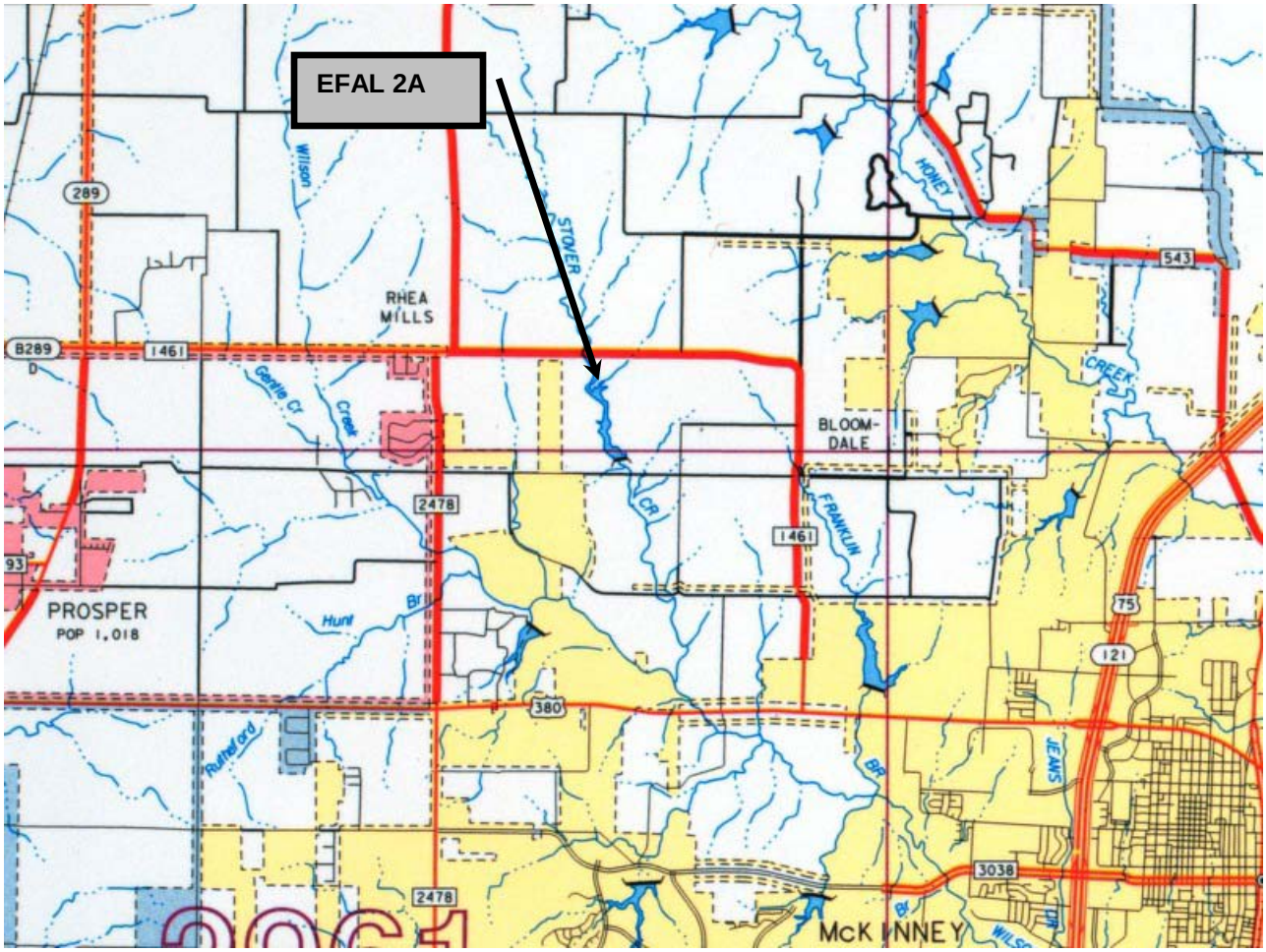


Site Numbers and Drainage Areas in Acres

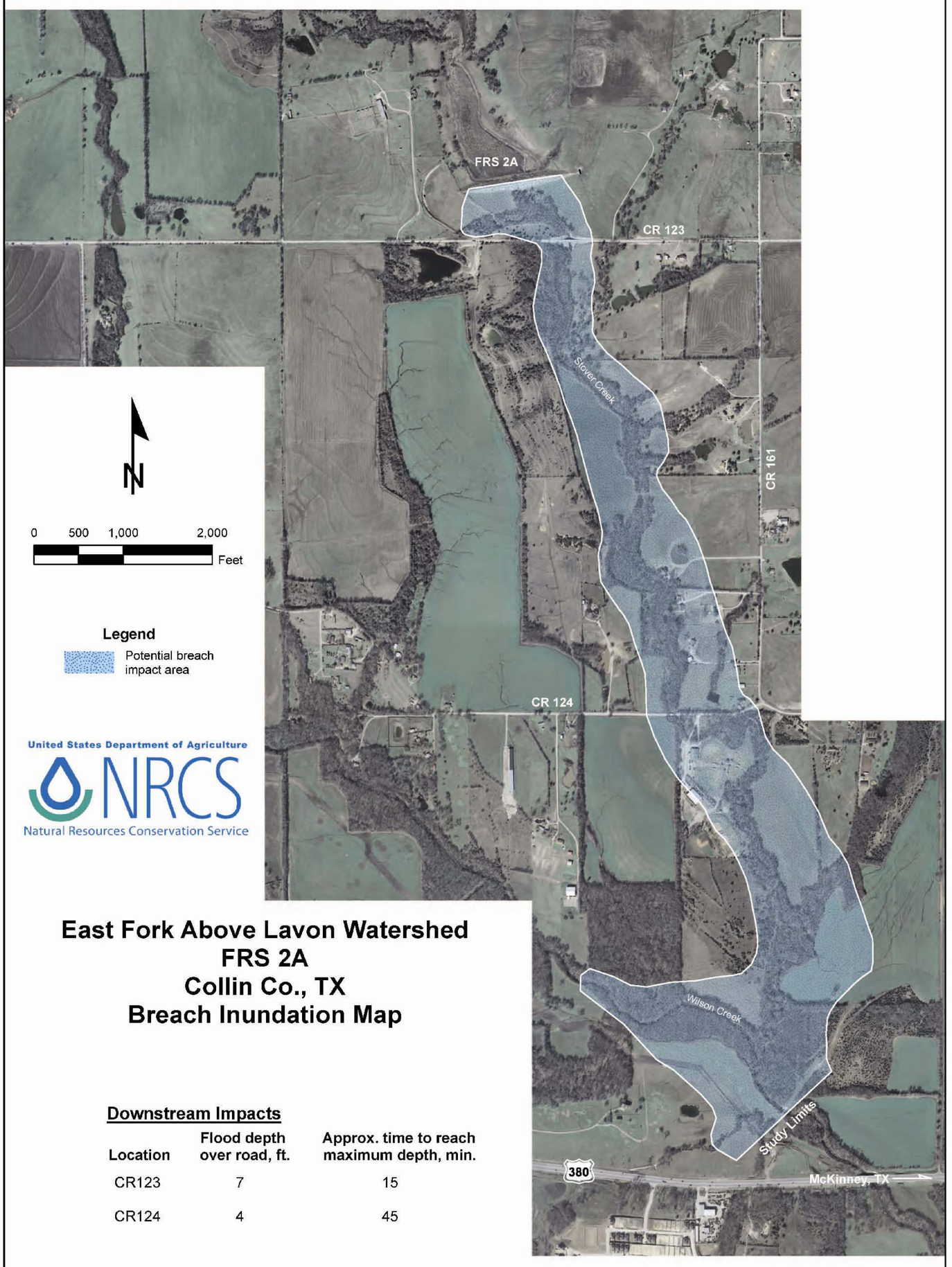
No.	Area	No.	Area	No.	Area
1A	764	10	880	32A	338
1B	1312	11	1455	33	820
1C	1528	12	923	34	706
1DA	992	13	536	35	706
1E	3776	14	700	35A	1888
2A	4112	15	832	36	276
2B	650	16	880	37	516
3A	488	17	858	38	420
3B	1684	18	1659		
3C	915	19	981	39	4003
3D	630	20	784	41A	7053
3E	314	20A	3885	42	3821
4	2374	21	320	43	1524
5A	1220	22	286	44	396
6A	1254	24	887	45	608
6B	2196	26	2438	46	2165
8A	2376	26A	478	47	2153
8B	2086	26B	440	48	588
8C	1344	27	740	50	3758
8D	936	28	499	51	700
8E	1236	29	833	52	880
8F	954	29A	320	53	736
8G	2532	30	592	54A	1075
8H	1393	31	619	55	3175
9	855	32	813	56	1460

APPENDIX C

VICINITY MAP



Vicinity Map – East Fork Above Lavon Watershed FRS 2A (From TxDoT Map of Collin County).



East Fork Above Lavon Watershed
FRS 2A
Collin Co., TX
Breach Inundation Map

Downstream Impacts

Location	Flood depth over road, ft.	Approx. time to reach maximum depth, min.
CR123	7	15
CR124	4	45

Water Resources, Temple, TX - May 2010

APPENDIX D
Investigation and Analysis Report

Economics:

In general, the NED benefits presented in this supplemental plan were developed based on Principles and Guidelines utilizing methods of (1) updating agricultural downstream benefits and sediment and erosion benefits; (2) updating rural community (urban area, road and bridge) flood reduction benefits; (3) maintaining upstream property values; and (4) saving the SLO the cost of a controlled breach.

For flood damage reduction agricultural benefits (including erosion and sediment), original damages with and without project were obtained from the 1956 work plan. Origins for these damages were compared with field notes of current land uses downstream of FRS No. 2A. Extent of damages was adjusted due to changes in land use. Adjusted damages were updated using appropriate indices (prices paid by producers, prices received by producers, consumer price index, and construction cost index). The difference in damages with and without project results in benefits. Based on this analysis, updated flood damage reduction agricultural benefits were estimated to be $30,800 annually.

There are 2 roadways (1 crossing each) below FRS No. 2A. According to the Texas Department of Transportation (TXDOT), the 2007 average daily traffic count for these roads (County Road 123 and County Road 124) was a total of 1,800 (1,000 and 800 respectively). In the absence of the dam, floodwaters would only overtop CR 124 during storm events greater than 25 years. Using current construction costs, floodwater damages were calculated with and without project. The damage reduction benefits were estimated to be $4,500 annually.

Other benefits of the project were floodwater damage reduction benefits to the developed area located downstream of the dam. This area included 7 properties (5 residential and 2 commercial). The local tax appraisal district records were utilized in order to obtain values of properties (structures and land) that would possibly be affected by project activities. By utilizing the Urban Floodwater Damage Economic Evaluation (URB1) program, damages with and without project were calculated. Even though no residences or commercial properties would be subjected to flooding from a 100-year event, several barns, recreational trailers, swimming pools, and other outbuildings would incur floodwater damages under the Future Without Project (FWOP) Alternative. Alternative number three would reduce all flood damages within the urban area from the 100-year storm event. Therefore, average annual benefits would equal flood damages incurred, which amounted to $2,700.

An area upstream of FRS No. 2A has been planned for development (about 642 acres). Interviews were conducted with the property owners (developers). Plans are to build about 1,450 single family residential (low density) dwelling units, about 350 single family residential (medium density) dwelling units (i.e. townhomes), five retail areas, a school, and a park (which would include the dam and sediment pool area). According to the developers, under the FWOP Alternative, lots adjacent to and/or that would have access to the dam/sediment pool would experience a reduction in value due to the absence of aesthetics that the permanent water would provide. By rehabbing FRS No. 2A, the property values would be maintained, thus providing a benefit to the landowners. Using a conservative premium for aesthetics and lagging the development project for 10 years, estimated average annual benefits were estimated to be $143,300.

The cost of breaching the dam under the FWOP Alternative was considered a cost avoided benefit for the Decommissioning and Rehabilitation Alternatives. A breach by the SLO of FRS No. 2A was estimated to cost $452,200. Amortized over 50 years at 4.375%, annual cost is $22,400, which equates to a cost savings (benefit).

Population At Risk: Due to the potential catastrophic nature of a breach of FRS No. 2A, population at risk (PAR) was estimated. It should be noted that estimating a number for population at risk is based on professional judgment coupled with empirical data. However, conservative means were utilized in order to hopefully avoid misconceptions of the PAR leading to unwarranted fear. PAR estimates were provided for motorists, residents, and other people located downstream within the breach area.

Using a 5-minute window over a 24-hour period and the latest TXDOT traffic counts, it was estimated that 4-6 vehicles traveling on CR 123 and CR 124 would be at risk from breach floodwaters overtopping the road, thus endangering 8-12 people inside the vehicles (based on two people per vehicle).

Two residences and 2 commercial properties downstream of FRS No. 2A would be impacted by a breach. Depth and velocity of floodwaters would produce very hazardous conditions to anybody within the buildings. Using 2.5 people per residence results in 5 people living downstream FRS No. 2A who would be at risk. Because the commercial buildings are a part of a baseball/softball training complex open most of the year, potentially hundreds of people could be subjected to the risk of loss of life. However, for this study it was estimated that about 100 people would be at risk from a breach.

Based on the above-mentioned scenarios, total PAR was estimated to be 115.

Hydrology:

Dam breach modeling performed for this project demonstrated that loss of life could occur as a result of dam failure and, as a result, the hazard classification for the dam is high hazard. This classification requires that the dam meet two basic criteria:

- The 100-year, 10-day Principal Spillway Hydrograph (PSH) storm event will not overtop the auxiliary spillway crest; and
- The PMP does not overtop the dam.

The design to meet these criteria required determining event flow rates for the watersheds above and immediately below the structure. This was accomplished by the use of a TR-20 model. The dam hydraulic and hydrologic site computer analysis program SITES was used to develop storage-discharge relationships, set the top of dam, auxiliary and principal spillway crests, and conduit dimensions for the FRS No. 2A rehabilitation alternatives. The two alternatives studied were the 6-hour PMP with a rainfall of 30.1 inches and the 24-hour rainfall, 5 point distribution of 41.3 inches. The 6-hour storm proved to be the most conservative design of the stability and integrity of the dam and auxiliary spillway. Simplified Dam Breach Routing Procedures (TR-66) were used to develop a breach hydrograph of FRS No. 2A. Fair weather conditions were assumed to develop the breach hydrograph. The reservoir pool elevation was static at top of dam with non-storm conditions downstream. Event flow rates from the TR-20 model and the breach hydrograph were used in a HEC-RAS model to define impacts and benefits associated with

project alternatives. These models are available as part of the supporting documentation developed for this planning study.

The subtasks performed are summarized as follows:

- Assembly of existing relevant geographic information system (GIS) data into a project database;
- Delineation of the East Fork Above Lavon Dams and East Fork Above Lavon Watershed
- Estimation of rainfall depths for event and design storms
- Estimation of watershed time of concentration, Tc
- Estimation and calibration of watershed curve numbers
- Estimation of channel loss factors
- Use SITES program to evaluate FRS No. 2A rehabilitation alternatives
- Estimation of flow rates using the computer model TR-20
- Development of FRS No. 2A breach hydrograph
- Estimation of downstream water surface elevations using the computer model HEC-RAS

Engineering:

Engineering planning efforts were completed to meet the following rehabilitation project purposes:

- Maintain present level of flood control benefits.
- Comply with the current performance and safety standards.

The preferred alternative which best meets the purposes and need for the project is rehabilitation of the dam by construction of dam safety modifications developed to address dam safety deficiencies consistent with the dam's high hazard classification. Designed dam safety modifications include raising the dam 3.7 feet with earth fill and lengthening the dam by about 140 feet, extending the back slope and flatten the back slope to a 3:1 slope, installing a new toe drain system, replacing the existing principal spillway inlet structure and conduit with a new inlet structure, 54 inch conduit and impact basin. The auxiliary spillway will be hardened with articulating blocks and raised 0.1 feet and the right-hand cut slope flattened to 3:1 for stability.

Engineering work items completed as part of the development of this planning study include:

- Gathering and reviewing existing site data.
- Identifying problems, opportunities, and concerns.
- Conducting planning studies, including:
    - Analyzing existing data
    - Conducting field investigations to evaluate the condition of existing structures and obtain additional data (e.g., survey and geotechnical data)
    - Developing topographic mapping for the watershed
    - Conducting and assisting engineering, environmental, geologic, hydrologic, hydraulic, social, and economic analyses in accordance with the requirements of NRCS design criteria (e.g., national engineering handbook, technical releases, technical notes, design notes, SITES software, TR20 software)
- Developing design layouts and cost estimates for evaluation of design alternatives including:
    - No Action or Future Without Project
    - Decommission of dam
    - Rehabilitation of dam:
        Raising top of dam

Increasing principal spillway capacity
Upgrading auxiliary spillway

- Developing inundation maps for impact comparisons associated with the proposed design modifications.
- Providing public involvement support services, including coordinating with local NRCS offices, site landowners, SLO, and the public; preparing presentations to the public; and attending public meetings.
- Preparing a Supplemental Watershed Plan and Environmental Evaluation for the project SLO.

Environmental – Wetlands and Fish/Wildlife Habitat:

During the planning process, an evaluation was undertaken to determine what effects or consequences the selected alternatives would have on the environment. NRCS biologists, environmental coordinators and hydraulic engineers conducted multiple field reviews and determined that best professional judgment was appropriate to make fish and wildlife habitat determinations.

The pool area of FRS No. 2A is approximately 22.5 acres of a lacustrine, open water, impounded pool that is seasonally flooded (F1OWHh, Classification of Wetlands and Deepwater Habitats of the United States, 1979, by Cowardin, Lewis M. et al.). The upstream end of the sediment pool is classified as an impounded, palustrine, broad-leaved deciduous forested wetland that is seasonally flooded (PFO1CHh). Upstream of the impounded forested wetland, the stream is classified as a palustrine, broad-leaved deciduous forested wetland that is seasonally flooded but not impounded (PFO1C). Currently, the sediment pool has been drained for maintenance activities and the pool area is dry except for a small stream through the pool. When maintenance activities and re-habilitation of the dam are completed, the sediment pool will be returned to pre-construction levels with only temporary impacts to the wetlands.

NRCS hydraulic engineers determined that the downstream low water crossings on CR 123 and CR 124 are not currently overtopped by flows from storm events classified as 100 year events or less. If East Fork Above Lavon FRS No. 2A were removed, flows from the 25-year event and greater would overtop CR 124. For these reasons, NRCS biologists determined that:

● Increased flows from Alternatives 1 and 2 would overtop CR 124 and would flow out of banks during minor storm events causing erosion in the area downstream of the existing structure, creating a braided stream system in this area, and adding to downstream aggradation due to the increased erosion,

● Alternatives 1 and 2 would convert all open water habitat to ephemeral riverine habitat,

● While Alternative 3 increases flows over existing conditions for storm events, flows will remain in the current channel,

● Alternative 3 will have only minor temporary adverse impacts to existing fish and wildlife habitats,

●Through conducting field investigations, no threatened or endangered species or suitable habitat for threatened or endangered species is present on the project site.

APPENDIX E

Other Supporting Information

Compliance With NEPA

The Natural Resources Conservation Service (NRCS) published an interim final rule on July 13, 2009, that identified 21 additional categorical exclusions, which are actions that NRCS has determined do not individually or cumulatively have a significant effect on the human environment and, thus, should not require preparation of an environmental assessment (EA) or environmental impact statement (EIS) under the National Environmental Policy Act (NEPA). NRCS' categorical exclusions encompass actions that promote restoration and conservation activities related to past natural or human induced damage, or alteration of floodplains and watershed areas. Following a 60 day comment period and providing responses to comments, Dave White, Chief, Natural Resources Conservation Service, signed the final rule and it became effective February 10, 2010.

This final rule amends the procedures for implementing NEPA at 7 CFR part 650 and will not directly impact the environment. An agency's NEPA procedures are guidance to assist the agency in its fulfillment of responsibilities under NEPA, but are not the agency's final determination of what level of NEPA analysis is required for a particular action. The Council for Environmental Quality (CEQ) set forth the requirements for establishing agency NEPA procedures in its regulations at 40 CFR 1505.1 and 1507.3. The CEQ regulations do not require agencies to conduct NEPA analyses or prepare NEPA documentation when establishing their NEPA procedures.

The following four categorical exclusions (Nos. 14, 15, 16, and 17) are part of the 21 categorical exclusions that were recently added to the procedures at 7 CFR part 650 and are available for application to proposed actions described in this document provided that extraordinary circumstances do not exist. Upon completion of the environmental evaluation and in the absence of any extraordinary circumstances as determined through NRCS' EE review process, the preferred alternative will be able to proceed without preparation of an EA or EIS.

CATEGORICAL EXCLUSIONS

(14) Repairing or maintaining principal spillways and appurtenances associated with existing serviceable dams, originally constructed to NRCS standards, in order to meet current safety standards. Work will be confined to the existing footprint of the dam, and no major change in reservoir or downstream operations will result;
(15) Repairing or improving (deepening/widening/armoring) existing auxiliary/emergency spillways associated with dams, originally constructed to NRCS standards, in order to meet current safety standards. Work will be confined to the dam or abutment areas, and no major change in reservoir or downstream operation will result;
(16) Repairing embankment slope failures on structures, originally built to NRCS standards, where the work is confined to the embankment or abutment areas;
(17) Increasing the freeboard (which is the height from the auxiliary (emergency) spillway crest to the top of embankment) of an existing dam or dike, originally built to NRCS standards, by raising the top elevation in order to meet current safety and performance standards. The purpose of the safety standard and associated work is to ensure that during extreme rainfall events, flows are confined to the auxiliary/emergency spillway so that the existing structure is not overtopped

which may result in a catastrophic failure. Elevating the top of the dam will not result in an increase to lake or stream levels. Work will be confined to the existing dam and abutment areas, and no major change in reservoir operations will result. Examples of work may include the addition of fill material such as earth or gravel or placement of parapet walls.