United States Department of Agriculture

Natural Resources Conservation Service

DRAFT SUPPLEMENTAL WATERSHED PLAN and ENVIRONMENTAL ASSESSMENT
For the
SALLISAW WATERSHED

(Hydrologic Unit Number 11110104)

A supplement to the original watershed plan for rehabilitation of Sallisaw Creek Floodwater Retarding Structure (FWRS) No. 36; includes supplemental watershed agreement No. 8.

Sequoyah County, Oklahoma

May 2025

SUPPLEMENTAL WATERSHED PLAN and ENVIRONMENTAL ASSESSEMENT
For
Rehabilitation of Floodwater Retarding Structure No. 36 of the
Sallisaw Creek Watershed
Sequoyah County, Oklahoma

(Hydrologic Unit Number 11110104)

A supplement to the original watershed plan for rehabilitation of floodwater retarding structure (FWRS) No. 36 (FWRS also referred to as dam, site, or structure); includes supplemental watershed agreement No. 8.

Prepared by:
U.S. Department of Agriculture, Natural Resources Conservation Service
In Cooperation with the Sponsoring Local Organizations: Sequoyah County Conservation District

AUTHORITY

The original work plan was prepared and works of improvement have been installed under the authority of the Watershed Protection and Flood Prevention Act of 1954 (Public Law 83-566), as amended. The rehabilitation of FWRS 36 is authorized under the authority of Section 14 of Public Law 83-566 (as amended).

ABSTRACT

FWRS No. 36 was constructed in 1965 as a low hazard class (a) dam, a hazard classification given to dams that do not pose a threat to loss of life, but could cause damage to agricultural lands, fences, livestock, farm equipment, and county roads and bridges. The dam has operated for 57 years, exceeding its 50-year design life. Overtime, as a result of changes in dam safety criteria and development downstream of the dam, which includes 29 houses, 2 mobile homes, 1 apartment building, 5 businesses, 2 highways (OK-101, US-64), an Interstate Highway (I-40) and 5 county roads, the site does not meet the current safety criteria and performance standards for a high hazard class dam, a hazard classification given to dams that pose a threat to loss of life. Local project sponsors have chosen to rehabilitate the dam to address the identified safety deficiencies. The purpose of the proposed rehabilitation of FWRS No. 36 is to reduce the risk of loss of life due to catastrophic dam failure and flooding by bringing the dam into compliance with the current NRCS and Oklahoma safety performance standards and to provide an additional 100 years of flood damage reduction through the project action. Rehabilitation of the site will require the following modifications to the structure: install a new 36-inch diameter reinforced concrete pipe, with a standard NRCS design riser, and lower the auxiliary spillway crest elevation 6.2 feet. The auxiliary spillway will be lined with articulating concrete blocks (ACB) for erosion resistance. The principal spillway crest will remain at the existing elevation. The modifications will allow the ability to safely convey 100 percent of the Probable Maximum Precipitation (PMP) flood event through the auxiliary spillway without overtopping the dam and the capacity to safely contain the 100-year, 10-day storm without flowing over the crest of the auxiliary spillway. Project installation cost is estimated to be $5,468,900 of which $3,826,300 will be paid from the Small Watershed Rehabilitation funds and $1,642,600 from local funds.

.

COMMENTS AND INQUIRIES:

Comments and inquiries must be received by XXXX, XX 20XX Submit inquiries to: Jeanne Jasper, State Conservationist USDA, Natural Resources Conservation Service, 100 USDA, Suite 206, Stillwater, Oklahoma 74074, (405) 742-1206

In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact the responsible Agency or USDA's TARGET

Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at https://www.usda.gov/oascr/how-to-file-a-promgram-discrimination-complaint and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

SALLISAW CREEK WATERSHED

Supplemental Watershed Agreement No. 8

For Floodwater Retarding Structure (FWRS) No. 36

Between the

Sequoyah County Conservation District,
(Hereinafter referred to as the Sponsors)

State of Oklahoma,

And the

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
(Referred to herein as NRCS)

Whereas, the watershed plan for the Sallisaw Creek Watershed, a sub-watershed of the Arkansas River watershed, executed by the sponsors named therein and the Soil Conservation Service (SCS, now NRCS), became effective in 1961; and supplemented in March 1963, October 1968, March 2005, June 2005, August 2005, July 2006 and July 2007.

Whereas, in order to extend the watershed plan for said FWRS No. 36 beyond its original evaluated life and meet current safety and performance standards, it has become necessary to modify said watershed agreement; and

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

Whereas, application has heretofore been made to the Secretary of Agriculture by the sponsors for assistance in preparing a plan for works of improvement for the rehabilitation of watershed structure 36 in the Sallisaw Creek Watershed, State of Oklahoma, under the authority of Section 14 of Public Law 83-566 (as amended), the Watershed Protection and Flood Prevention Act of 1954; and

Whereas, there has been developed through cooperative efforts of the sponsors and NRCS a supplemental plan for works of improvement for FWRS No. 36 of the Sallisaw Creek Watershed, State of Oklahoma, which plan is annexed to and made part of this agreement;

Whereas, the Adair County Conservation District, the Cherokee County Conservation District, the City of Stilwell, City of Sallisaw and the Stilwell Area Development Authority are removed as sponsors only for the rehabilitation of FWRS No. 36 and will have no responsibilities for this new project. The Sequoyah County Conservation District will serve as sponsors for these new projects.

Now, therefore, in view of the foregoing considerations, the Secretary of Agriculture, through NRCS and the sponsors hereby agree on this supplemental plan and that the works of improvement for this project will be installed, operated, and maintained in accordance with the terms, conditions, and stipulations provided for in this supplemental watershed agreement and including the following:

1. Term. The term of this agreement is for the expected life of the project (100 years) and does not commit the NRCS to assistance of any kind beyond that point unless agreed to by all parties.

2. Costs. The costs shown in this agreement are preliminary estimates. Final costs to be borne by the parties hereto will be the actual costs incurred in the installation of works of improvement.

3. Real Property. The sponsors will acquire all land rights, easements, or right-of-ways as will be needed in connection with the works of improvement. The amount and percentages of the real property acquisition cost to be borne by the Sponsors and NRCS are as shown in the cost-share table in item 10 hereof. The sponsors acknowledge the potential risk of flood damages for the real property between the flowage rights elevation and the top of dam elevation.

4. Uniform Relocation Assistance and Real Property Acquisition Policies Act. The sponsor hereby agrees to comply with all of the policies and procedures of the Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 U.S.C. 4601 et seq. as further implemented through regulations in 49 C.F.R. Part 24 and 7 C.F.R. Part 21) when acquiring real property interests for this federally assisted project. If the sponsor is legally unable to comply with the real property acquisition requirements it agrees that, before any federal financial assistance is furnished; it will provide a statement to that effect, supported by an opinion of the chief legal officer of the state containing a full discussion of the facts and law involved. This statement may be accepted as constituting compliance.

5. Land treatment agreements. The sponsors will obtain agreements from owners of not less than 50 percent of the land above each multiple-purpose and floodwater-retarding structure. These agreements must provide that the owners will carry out farm or ranch conservation plans on their land. The sponsors will ensure that 50 percent of the land upstream of any retention reservoir site is adequately protected before construction of the dam. The sponsors will provide assistance to landowners and operators to ensure the installation of the land treatment measures shown in the Watershed Project Plan. The sponsors will encourage landowners and operators to continue to operate and maintain the land treatment measures after the long-term contracts expire, for the protection and improvement of the watershed.

6. Floodplain Management. Before construction of any project for flood prevention, the sponsors must agree to participate in and comply with applicable Federal floodplain management and flood insurance programs. The sponsor is required to have development controls in place below low and significant hazard dams prior to NRCS or the sponsor entering into a construction contract.

7. Water and mineral rights. The sponsors will acquire or provide assurance that landowners or resource users have acquired such water, mineral, or other natural resources rights pursuant to State law as may be needed in the installation and operation of the works of improvement. Any costs incurred must be borne by the sponsors and these costs are not eligible as part of the sponsors cost-share.

8. Permits. The sponsors will obtain and bear the cost for all necessary Federal, State, and local permits required by law, ordinance, or regulation for installation of the works of improvement. These costs are not eligible as part of the sponsors cost-share.

9. Cost-share for Rehabilitation Plan. The percentages of total rehabilitation project costs to be paid by the sponsors and by NRCS are as follows:

Sallisaw Creek FWRS No. 36

Works of Improvement	NRCS	Sponsors	Total
Cost Sharable Items			
Rehabilitation of dam (Construction Cost)	$3,050,600	$1,401,800	$4,452,400
Relocation, Replacement in-kind	$0	$0	$0
Relocation, Required Decent, Safe, Sanitary	$0	$0	$0
Sponsors Planning Costs	NA	$0	$0
Sponsors Engineering Costs	NA	$0	$0
Sponsors Project Administration a/	NA	$800	$800
Land Rights Acquisition Cost b/	NA	$240,000	$240,000
Subtotal: Cost-Share Costs	$3,050,600	$1,642,600	$4,693,200
Cost-Share Percentages	65%	35%	100%
Non Cost-Sharable Items c/			
NRCS Engineering & Project Administration a/	$775,700	NA	$775,700
Natural Resources Rights	NA	$0	$0
Federal, State and Local Permits	NA	$0	$0
Relocation, Beyond Required decent, safe, sanitary	NA	$0	$0
Subtotal: Non Cost-Share Costs	$775,700	$0	$775,700

[a/]The sponsors and NRCS will each bear the costs of project administration that each incurs.

[b/]The sponsors will acquire with other than Watershed Protection and Flood Prevention Act Funds, such real property as will be needed in connection with the works of improvement. The value of real property is eligible as in-kind contributions toward the sponsors' share of the works of improvement costs. In no case will the amount of an in-kind contribution exceed the sponsors' share of the cost for works of improvement. The maximum cost eligible for in-kind credit is the same as that for cost sharing.

[c/] If actual Non Cost-Sharable item expenditures vary from these figures, the responsible party will bear the change.

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

11. Additional agreements. A separate agreement will be entered into between NRCS and the sponsors 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.

12. Amendments. This Rehabilitation 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 sponsors have failed to comply with the conditions of this agreement or when the program funding or authority expires. In this case, NRCS must promptly notify the sponsors in writing of the determination and the reasons for the de-authorization of project funding, together with the effective date. Payments made to the sponsors or recoveries by NRCS must be in accordance 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 sponsors having specific responsibilities for the measure involved.

13. Prohibitions. No member of or delegate to Congress, or resident commissioner, may be admitted to any share or part of this plan, or to any benefit that may arise therefrom; but this provision may not be construed to extend to this agreement if made with a corporation for its general benefit.

14. Operation and Maintenance (O&M). The sponsors 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 the Operation and Maintenance Agreement. An O&M agreement will be entered into before Federal funds are obligated and will continue for the project life (100 years). Although the sponsor's 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 sponsors acknowledge that continued liabilities and responsibilities associated with works of improvement may exist beyond the evaluated life. A specific Operation and Maintenance Plan will be prepared for FWRS No. 36 before issuing invitations to bid for construction, utilizing the NRCS National Operation and Maintenance Manual.

15. Emergency Action Plan. Prior to construction, the sponsors must 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 must meet the minimum content specified in 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. EAPs must be reviewed and updated by the sponsors annually.

16. Memorandum of Understanding. A Memorandum of Understanding (MOU) shall be prepared between NRCS and the project sponsors that identifies and establishes a maximum value of the non-federal in-kind contribution. All project sponsors providing in-kind services and/or land rights acquisition for the rehabilitation project shall sign the MOU. Only costs accrued for activities included in the MOU shall be considered as part of the non-federal in-kind contribution. Determination of the final amount to be credited shall be at the sole discretion of NRCS.

17. Nondiscrimination provisions. In accordance with Federal civil rights law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, the USDA, its Agencies, offices, and employees, and institutions participating in or administering USDA programs are prohibited from discriminating based on race, color, national origin, religion, sex, gender identity (including gender expression), sexual orientation, disability, age, marital status, family/parental status, income derived from a public assistance program, political beliefs, or reprisal or retaliation for prior civil rights activity, in any program or activity conducted or funded by USDA (not all bases apply to all programs). Remedies and complaint filing deadlines vary by program or incident.

Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotape, American Sign Language, etc.) should contact

the responsible Agency or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. Additionally, program information may be made available in languages other than English.

To file a program discrimination complaint, complete the USDA Program Discrimination Complaint Form, AD-3027, found online at How to File a Program Discrimination Complaint and at any USDA office or write a letter addressed to USDA and provide in the letter all of the information requested in the form. To request a copy of the complaint form, call (866) 632-9992. Submit your completed form or letter to USDA by: (1) mail: U.S. Department of Agriculture, Office of the Assistant Secretary for Civil Rights, 1400 Independence Avenue, SW, Washington, D.C. 20250-9410; (2) fax: (202) 690-7442; or (3) email: program.intake@usda.gov.

USDA is an equal opportunity provider, employer, and lender.

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.

18. Certification Regarding Drug-Free Workplace Requirements. (7CFR Part 3021). By signing this watershed agreement, the sponsors are providing the certification set out below. If it is later determined that the sponsors 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 Sections 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 sponsors 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 sponsors may provide a list of the site(s) for the performance or 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.

20. Certification Regarding Lobbying (7 CFR Part 3018).
(applicable if this agreement exceeds $100,000).

A. The sponsors certify to the best of their knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the sponsors, to any person for influencing or attempting to influence an officer or employee of an agency, Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

(3) The sponsors shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including subcontracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

B. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

21. Certification Regarding Debarment, Suspension, and Other Responsibility Matters - Primary Covered Transactions (7 CFR Part 3017).

A. The sponsors certify to the best of their knowledge and belief, that they and their principals:

(1) Are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or Local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or Local) with commission of any of the offenses enumerated in paragraph (A)(2) of this certification; and

(4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or Local) terminated for cause of default.

B. Where the primary sponsors are unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this agreement.

22. Clean Air and Water Certification.

(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 organizations signatory to this agreement certify as follows:

(1) Any facility to be utilized in the performance of this proposed agreement is (____), is not (_x_) 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, plant, 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, plant, 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.

23. Assurances and Compliance

As a condition of the grant of 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 C.F.R. Parts 3015, 3016, 3017, 3018, 3021, 3052.

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

24. Examination of Records.

The sponsors must 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.

25. Signatures

Sequoyah County Conservation District BY _____
P.O. Box 1522
Sallisaw, OK 74955_____ Title _____
Address
Date _____
The signing of this supplemental watershed agreement was authorized by a resolution of the governing body of the Sequoyah Conservation District adopted at a meeting held on _____(Date).

_____
Secretary Address

Adair County Conservation District BY _____
Rt 1 Box 333
Stilwell, OK 74960_____ Title _____
Address
Date _____
The signing of this supplemental watershed agreement was authorized by a resolution of the governing body of the Adair Conservation District adopted at a meeting held on _____(Date).

_____
Secretary Address

Cherokee County Conservation District BY _____
918 W. Choctaw, Suite 2
Tahlequah, OK 74464_____ Title _____
Address
Date _____
The signing of this supplemental watershed agreement was authorized by a resolution of the governing body of the Cherokee Conservation District adopted at a meeting held on _____(Date).

_____
Secretary Address

City of Sallisaw BY _____
P.O. Box 525
Sallisaw, OK 74955 _____ Title _____
Address
Date _____
The signing of this supplemental watershed agreement was authorized by a resolution of the governing body of the City of Sallisaw adopted at a meeting held on _____(Date).

_____
Secretary Address

City of Stilwell BY _____
503 W. Division
Stilwell, OK 74960 _____ Title _____
Address
Date _____
The signing of this supplemental watershed agreement was authorized by a resolution of the governing body of the City of Stilwell adopted at a meeting held on _____(Date).

_____
Secretary Address

Stilwell Area Development Authority BY _____
925 W. Hickory St.
Stilwell, OK 74960_____ Title _____
Address
Date _____
The signing of this supplemental watershed agreement was authorized by a resolution of the governing body of the Stilwell Area Development Authority adopted at a meeting held on _____(Date).

_____
Secretary Address

Natural Resources Conservation Service BY _____
United States Department of Agriculture Jeanne Jasper
100 USDA, Suite 206
Stillwater, OK 74074_____ Title: State Conservationist
Address
Date _____

Table of Contents

List of Plan Tables

List of National Watershed Manual Prime Tables

List of Figures

Appendices

Summary of the Supplemental Watershed Plan for the Sallisaw Creek Watershed

Project Name: Sallisaw Creek Supplemental Watershed Plan for the Rehabilitation of Floodwater Retarding Structure No. 36.

Authorization: Public Law 83-566 as amended by Section 313 of Public Law 106-472.

County: Sequoyah State: Oklahoma Oklahoma Congressional District: 2

Sponsors: Sequoyah County Conservation District

Hydrologic Unit Number: 11110104

Latitude and Longitude: Lat. 35.5279, Long -94.6966

Proposed Action: Rehabilitate one floodwater retarding structure to meet current NRCS safety criteria and performance standards for a high hazard dam and extend the service life to 100 years.

Project Purpose and Need:

Purpose: The purpose is to maintain Flood Prevention and Watershed Protection by reducing the risk of loss of life and flood damages in the project area by bringing the dam into compliance with current NRCS and Oklahoma Water Resources Board safety and performance standards.

Need: To address the public health and safety issues surrounding a flood control dam that does not meet existing safety criteria and performance standards for a high hazard dam. To sustainably improve dam safety, continue flood damage reduction, and protect community resources. There is a need to continue to provide flood protection to properties downstream. The properties downstream of FWRS No. 36 include: 29 houses, two mobile homes, one apartment building, five businesses, two highways (OK-101, US-64), an Interstate Highway (I-40) and five county roads. The Sponsor and NRCS have determined rehabilitation of the dams to the current criteria for a high hazard dam is justified and will provide economic benefit to the area.

Description of the Preferred Alternative: Rehabilitate the dam to current high hazard criteria: raise the top of dam 0.6 ft to an elevation of 733.9, install a new 36-inch diameter reinforced concrete pipe, with a standard NRCS design riser, lower the auxiliary spillway crest elevation by 6.2 feet to elevation 722.8, and install articulating concrete blocks to protect the auxiliary spillway. The principal spillway elevation will remain at the existing elevation of 674.6. The modifications will allow the ability to safely convey 100 percent of the Probable Maximum Precipitation (PMP) through the auxiliary spillway without overtopping the dam and the capacity to safely contain the 100-year, 10-day storm without flowing over the crest of the auxiliary spillway.

Resource Information:	Watershed	FWRS No. 36
Drainage Area (acres)	192,600	5,397
Land Use (acres)		
Cropland	192	0
Pasture/Range	79,544	1,074
Timber	92,641	4,177
Other	20,223	146
Land Ownership:		
% Private	95%	66%
% Federal	0%	0%
% State	0%	0%
% Tribal Lands	1%	34%
% Other	4%	0%
Number of Farms:	950	21
Prime Farmland (acres):	38,052	1
Minority Farmers:	209	5
Average Farm Size (acres):	180	180
Limited Resource Farmers:	There are applications and contracts for limited resources farmers within the Sallisaw Creek Watershed basin.	
Highly Erodible Cropland (acres):	0	0
Wetlands (lacustrine acres):	3,517	41
Floodplains:		
Floodplains (benefited acres)	12,771	1,750

Climate and Topography: The project is located in the Lower Boston Mountain Ecoregion of Oklahoma, with elevation ranging from 200 ft – 1,900 ft. This region contains low mountains, high round hills, and elevated plateaus. These mountains are abundant with thick forests, with pasture and forage production on along the valley floors. Soils are a mixture of sandstone and shale from the Boston Mountain Plateau region. This area is humid and subtropical will rainfall peaking in May and again in the fall and an annual rainfall between 45 – 52 inches.

Project Beneficiary Profile:

	Sequoyah County [2/]	Oklahoma [2/]	Nation [2/]
Population	40,291	4,053,824	334,914,895
Median per capita income	$24,708	$33,630	$41,261
Median household income	$47,494	$61,364	$75,149
Median value owner-occupied housing units	$118,600	$170,500	$281,900
	School District [1/]	Oklahoma [1/]	Nation [1/]
Families living below the poverty level	21.2%	15.7%	11.5%
Caucasian Population	60.8%	73%	75.5%
Native American Population	23.4%	9.5%	1.3%[(2)]
Black Population	2.0%	7.9%	13.6%[(2)]

Hispanic Population	5.5%	12.1%	19.1%(2)
Asian Population	0.9%	2.6%	6.3%(2)
Two or More Races Population	9.4%	6.7%	3.0%(2)

[1/]School district community data – 2019 District School Reports from the Education Oversight Board Office
[2]2023 Data from https://www.census.gov/quickfacts

Population Demographics: A five-mile radius from the project location, was reviewed for population dynamics. This radius includes the downstream of Little Sallisaw Creek, therefore reflects the appropriate demographic that receives flood protection from the dam. This area encompasses 78.53 square miles and has a population of 2,609. The five ethnic groups within the area include: White (non-Hispanic) (52%), American Indian (31%), Two or more races (8%), Asian (6%), and Hispanic (2%).

Resource concerns examined during the scoping process include:

- Stream Bank Erosion
- Sedimentation
- Prime and Unique Farmland
- Surface Water Quality
- Surface Water Quantity
- Clean Water Act/Waters of the United States
- Regional Water Management Plans
- Coastal Zone Management Areas
- Floodplain Management
- Sole Source Aquifers
- Wetlands
- Wild and Scenic Rivers
- Air Quality
- Clean Air Act
- Endangered and Threatened Species
- Essential Fish Habitat
- Invasive Species
- Natural Areas
- Riparian Areas
- Ecologically Critical Areas
- Land Use
- Forest Resources
- Fish and Wildlife Habitat
- Coral Reefs
- Migratory Birds/ Golden and Bald Eagles
- Historic Properties/ Tribal Resources
- Potable Water Supply
- Public Health and Safety
- Socioeconomics
- Recreation
- Scenic Beauty and Parklands
- Scientific Resources

Problem Identification: FWRS No. 36 was originally built as a low hazard class (a) dam. Over time, development downstream of the dam has resulted in reclassification of the dam to high hazard. The potential for loss of life exists if the dam suddenly fails. The dam should be upgraded to meet high hazard safety criteria because of the potential for loss of life.

Alternative Plans Considered:

1. Sponsors Action – No Federal Assistance: Sponsors upgrade the dam to meet Oklahoma Water Resources Board (OWRB) criteria for a high hazard dam. Some loss of flood damage reduction would result from continued encroachment of sediment on the detention storage.
2. Rehabilitation to high hazard criteria: Upgrade the dam to meet current NRCS safety criteria and performance standards for a high hazard dam. Extend the service life of the dam to 100 years and maintain flood protection.
3. Rehabilitate to low hazard criteria: This would require relocating and /or flood-proofing 29 houses, two mobile homes, one apartment building, five businesses, two highways (OK-101, US-64), an Interstate Highway (I-40) and five county roads downstream and obtaining conservation easements on about 4,110 acres in the breach impact area to prevent future development.

4. Decommissioning: Removal of a section of the dam in a safe and environmentally sound manner to eliminate the potential for a catastrophic flood, and installation of a drop structure to stabilize stored sediment. With loss of the dam, flooding would resume downstream.
5. No Action (Future Without Project): No remedial action will be taken. Dam will eventually fail.

Mitigation Measures: No compensatory mitigation is anticipated with the rehabilitation of the dam as the proposed alternative will keep the permanent conservation pool elevation the same as the existing pool. Wetlands will be impacted with the lake drawdown during construction, but these impacts will be minimal and temporary. A Storm Water Pollution Prevention Plan (SWPPP) will be developed by the contractor before the initiation of the project and will prevent and/or minimize runoff and sedimentation from construction activities.

Mitigation actions are necessary to avoid or minimize impacts to endangered species and migratory birds. These mitigation measures include felling potential roost trees during the inactive period of the Indiana bat, Northern long-eared bat, and Tri-colored bat (November 15 – March 15) and initiating construction activities or site preparations prior to the primary nesting season for migratory birds and eagles (April 1 – July 1).

Project Costs:	**Public Law 83-566 funds**	**Sponsor's funds**	**Total Project Costs**
Construction	$3,050,600	$1,401,800	$4,452,400
Engineering	$689,900	$0	$689,900
Project Administration	$85,800	$800	$86,600
Landrights	$0	$240,000	$240,000
Total for FWRS No. 36	**$3,826,300**	**$1,642,600**	**$5,468,900**

Project Benefits: Reduces the potential for loss of life due to catastrophic failure of the dam. Rehabilitation of the dam provides $67,500 of average annual flood damage reduction benefits.

Net Beneficial effects:
Non-Monetary: Maintains existing protection of streams, wetlands, upland and riparian habitat, fish and wildlife habitat and traps 9,352 tons of sediment per year.

Number of Direct Beneficiaries: Offsite 61

Benefit to Cost Ratio: 0.5:1.0

Period of Analysis: 104 Years

Funding Schedule:	Year 2024	Year 2025	Year 2026	Year 2027
Federal Funds	$344,900	$345,000	$1,568,200	$1,568,200
Non-Federal Funds	$0	$800	$940,900	$700,900

Population at Risk: 139 Risk Index 812

Summary of Environmental Effects and Impacts of the Preferred Alternative: Rehabilitation to high hazard criteria, meeting NRCS and the State of Oklahoma dam safety and performance standards.

Resource Concern	Effects and Impacts
Soils	
Stream Bank Erosion and Sedimentation	Rehabilitation of the dam would allow for continued flood protection, reducing erosion and sedimentation downstream. Short-term impact to sedimentation during construction activities. A Stormwater Pollution Prevention Plan (SWPPP) would be developed prior to the beginning of construction and will utilize best management practices (BMPs).
Prime and Unique Farmland	Long-term continued flood protection downstream with no conversion of prime farmland. Maintenance of the flood control structure will protect existing prime farmland used for agricultural purposes.
Water	
Surface Water Quality/ Clean Water Act – Waters of the United States (WOTUS)	There is potential for short-term impacts to Little Sallisaw Creek and Sallisaw No. 36 reservoir from sedimentation during rehabilitation construction activities. A Stormwater Pollution Prevention Plan would be developed prior to the beginning of construction and will utilize best management practices. Little Sallisaw Creek, Sallisaw 36 reservoir, and adjacent wetlands are considered Waters of the United States (WOTUS). Impacts to these resources should be less than 1/10 of an acre for wetlands or open water, and 0.03 acres for streams. If the impacts are greater, compensatory mitigation may be required. 404 permitting was received 01-11-2022. Permit # SWT-2022-00480 (Appendix A).
Surface Water Quantity	Short-term impacts to surface water quantity will occur during temporary drawdown of pool levels during construction. No long-term impact to surface water quantity expected as the permanent pool level will remain the same.
Regional Water Management Plans	Oklahoma is preparing the statutorily required update of the Oklahoma Comprehensive Water Plan (OCWP) which is scheduled to roll out in 2025. The preferred alternative does not appear to be inconsistent with the OCWP and therefore the project would not impact the plan.
Floodplain Management	Existing conditions of the floodplain would continue, with a reduced risk from flooding due to catastrophic dam failure as the dam is rehabilitated to meet State and NRCS safety standards. The preferred alternative would have no measurable impacts on the characteristics of the existing flood plain.
Wetlands	Short-term adverse impacts to fringe wetlands due to draw down of the permanent pool during construction. Upon project completion, permanent pool level would return to existing conditions, restoring any short-term loss of fringe wetlands.
Air	
Air Quality	There is potential for short-term temporary increase in PM-10 or other potential emissions with the preferred alternative. Pollutant emissions consistent with construction equipment (vehicles) will likely increase the emission rate of PM-10 but not reach levels of concern. This increase in PM-10 will be temporary (approximately 12 – 18 months), upon rehabilitation completion, PM-10 emissions will discontinue. Construction activities are not expected to violate air quality standards due to the implementation of Best Management Practices (BMPs) during construction (EPA Stormwater BMPs).
Clean Air Act	Sallisaw 36 is located within an attainment area (meets current EPA air quality standards) for all criteria pollutants. It is not anticipated that emission levels from

	construction equipment will reach levels of concern (EPA Green Book). Impacts to air quality would be minor and short-term.
Plants	
Invasive Species	There is potential for accidental introduction of invasive plant species at the project site during construction activities. No invasive plant species were found during site visits; however, they may exist in the project area. Government contractors are required to clean construction equipment prior to bringing the equipment on site. Equipment cleaning is a best management practice (BMP) that would eliminate or minimize the potential of invasive plants at the project site (EPA Stormwater BMPs). Introduction or spread of invasive species are not anticipated.
Riparian Areas	Drawdown of the conservation pool prior to construction would result in short-term impacts on surrounding riparian area. The proposed rehabilitation will not permanently change the conservation pool elevation, therefore no long-term impacts to riparian habitat are anticipated.
Land Use	The land surrounding Sallisaw 36 is heavily forested. Sallisaw 36 is located on the Cherokee Nation's Sequoyah Hunting Preserve. Land use would continue as normal with the preferred alternative.
Forest Resources	FWRS Sallisaw No. 36 is surrounded by forested land. Approximately 5 acres of forested land may need to be cleared prior to construction to allow for access to the dam during rehabilitation. Upon construction completion, tree and brush species will be allowed to re-establish in most areas. Tree and brush on the dam will be maintained for Operation and Maintenance (O&M).
Animals	
Fish and Wildlife Habitat	Rehabilitation of the dam would require a drawdown of the reservoir during construction as well as the felling of trees and ground disturbance with construction equipment. Potential for the loss of fish and macroinvertebrates during short-term drawdown. Approximately 5 acres of trees/brush will need to be cleared prior to construction initiation. Upon construction completion, tree and brush species will be allowed to re-establish in most areas.
Endangered and Threatened Species	The project area is within the range of 10 species that are federally listed as or proposed as threatened or endangered. There would be short-term impacts to aquatic and wetland species associated with the reservoir from water drawdown during project construction, with no long-term impacts as habitats return after project completion. These short-term changes in water level are not likely to adversely affect federally listed species. Mitigation measures include felling potential bat roost trees during the inactive period (Nov 15 – Mar 15) and initiating construction activities out of the primary nesting season for migratory birds and eagles (April 1 – July 1).
Migratory Birds	Migratory birds would avoid the project site in the short-term during construction due to noise and equipment. Mitigation measures would be required to avoid or minimize adverse long-term effects on migratory birds. Mitigation measures may include vegetation clearing and initiation of construction activities outside of the primary nesting season (PNS). No long-term effects as birds would resume using existing habitats.
Golden and Bald Eagles	Bald eagles would avoid the project site in the short-term during construction due to noise and equipment. Mitigation measures would be required to avoid or minimize adverse long-term effects on bald eagles. Mitigation measures may include vegetation clearing and initiation of construction activities outside of the

	primary nesting season. No long-term effects as birds would resume using existing habitats.
Humans	
Cultural Resources and Historic Properties	The negotiated Area of Potential Effect (APE) was defined by the top-of-dam elevation upstream of FWRS No. 36 as well as below FWRS No. 36, using the top-of-dam elevation, to the extent of the state/federal easement. The APE also included the auxiliary spillway, the ingress/egress route, and the likely location of a staging area. These areas total 48.4 acres. Extensive background research of available records was performed. No historic properties (including archaeological sites) were previously recorded in the APE. The pedestrian survey of 30-meter transects, accompanied by shovel test pits every 30 meters, did not identify any historic properties (including archaeological sites) in the APE. NRCS determined FWRS No. 36 and accoutrements, warrant historic resource documentation, having been constructed in 1965. As stipulated by the SHPO, a Historic Property Resource Identification form was completed for the FWRS and fixtures. FWRS No 36 and its associated equipment were evaluated using National Register of Historic Places (NRHP) criteria. NRCS made the determination of "no historic properties (including archaeological sites) affected" by the undertaking. The Oklahoma Archaeological Survey and the Oklahoma State Historic Preservation Office concurred with this determination as did the Cherokee Nation and Osage Nation. The Otoe-Missouria Tribe of Indians noted that the undertaking was outside their area of interest. Given the Otoe-Missouria's response, NRCS searched additional tribal ancestral land database and determined that the initial consultation invitations to the Kaw Nation, Muscogee Nation, Pawnee Nation of Oklahoma, Ponca Tribe of Indians of Oklahoma, Tonkawa Tribe of Oklahoma were not necessary. Hence, NRCS refrained from conducting further consultation with these tribes. The United Keetoowah Band of Cherokee Indians in Oklahoma did not respond to NRCS' invitation to be a consultation partner on three separate occasions.
Public Health and Safety	The preferred alternative would allow for the continuation of flood control downstream, keeping flood protection for roads and access.
Socioeconomics	The preferred alternative would continue to provide flood protection for all demographics, household incomes, and employment living near the project area.
Recreation	Sallisaw 36 is located on the Cherokee Nation's Sequoyah Hunting Preserve.
Scenic Beauty and Parklands	Rehabilitation of the dam would require draw down of the reservoir during construction. Impacts to scenic beauty would be short-term and minimal. There are no parklands present in the project area.

Summary of Relevant PR&G Ecosystem Services for the Preferred Alternative: Alternative B – Rehabilitation to high hazard criteria, meeting NRCS and the State of Oklahoma dam safety and performance standards.

Ecosystem Services	Rationale
Provisioning (goods provided for human consumption)	
Food	Land surrounding Sallisaw 36 reservoir owned by the Cherokee Nation and is referred to as the Sequoyah Hunting Preserve.
Regulating (any benefit obtained from the natural process and functioning of an ecosystem)	

Flood Protection	Sallisaw 36 is a flood water retarding structure (FWRS) with a primary purpose of flood protection downstream. The current annual flood damage benefit for FWRS Sallisaw Creek No. 36 is $67,500.
Supporting (support the production of provisioning, regulating and cultural services)	
Nutrient Cycling	Construction would include ground disturbing activities which could impact nutrient cycling because of compaction and removal of vegetation.
Cultural (benefits from interactions with the environment	
Recreational Use	Sallisaw 36 is owned by the Cherokee Nation and is used for tribal fishing and hunting opportunities.
Tribal Value/Education	Land surrounding Sallisaw 36 reservoir owned by the Cherokee Nation and is referred to as the Sequoyah Hunting Preserve. Cherokee Nation uses this land for recreation and education purposes.
Aesthetic Viewsheds	Scenic beauty of resources is present.
Inspiration/ Spiritual	Secluded serene topography with a standing body of water will be maintained as a setting for leisure and introspection with the preferred alternative.

Major Conclusions: The rehabilitation of FWRS No. 36 will upgrade the dam to meet current NRCS and State dam safety criteria and performance standards for a high hazard dam, thereby reducing the risk of loss of life due to dam failure. The designed life of the dam will be extended to 100 years.

Areas of Controversy: None

Issues to be Resolved: None

Evidence of Unusual Congressional or Local Interest: None

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

As a result of changes in dam safety criteria and development of residual dwellings downstream in the breach inundation areas, FWRS No. 36 does not have sufficient spillway capacity to meet NRCS and State of Oklahoma dam safety criteria for a high hazard classification. This hazard classification is given to dams that pose a threat to human life. Additionally, rehabilitating the dam involves major changes to the structure and requires a supplement to the original watershed plan.

Purpose and Need for the Federal Action

Project Purpose and Need

The Purpose of the proposed action is Flood Prevention and Watershed Protection. The Sponsor's purpose is to reduce the risk of loss of life and flood damage reduction in the project area by bringing the dam into compliance with current NRCS and Oklahoma Water Resources Board safety and performance standards. The Project is needed to sustainably improve dam safety, continue flood damage reduction, and protect community resources. The Sponsor and NRCS have determined rehabilitation of the dams to the current criteria for a high hazard dam is justified and will provide economic benefit to the area.

Sallisaw Creek 36 was constructed in 1965 under the authority of *Public Law 83-566* as *low* hazard potential dams. Low hazard dams are classified as those where failure may cause damage to farm buildings, agricultural land, or township and country roads. The original design life of the dam was 50 years, which has been exceeded, and a purpose is to continue flood damage reduction. Currently, the dam does not safely convey 100 percent of the Probable Maximum Precipitation (PMP) through the auxiliary spillway without overtopping the dam or have the capacity to safely contain the 100-year, 10-day storm without flowing over the crest of the auxiliary spillway.

The Need for the proposed action is that the Sallisaw Creek Site 36 is currently classified as *high* hazard potential dams and NRCS has determined it to be out of compliance with NRCS TR 60 design criteria and performance standards regarding principal spillway capacity and freeboard capacity. The Oklahoma Water Resources Board determined the dam was out of compliance with the Oklahoma State Dam Safety Criteria. This dam was built as a single structure with the purpose of providing flood control benefits. High hazard dams are those where failure may cause loss of life and serious damage to homes, industrial or commercial buildings, important public utilities, main highways, or railroads. Out of the 127 Potential Damage Locations (PDLs) that were evaluated, Site 36 protects 29 houses, two mobile homes, one apartment building, five businesses, two state highways (OK-101, US-64), one Interstate Highway (I-40), and five county roads. This protection is currently at risk with the dam not meeting NRCS TR 60 design criteria.

The Principles, Requirements and Guidelines for Federal Investments in Water Resources states that the Federal Objective of all water resources projects should strive to maximize public benefits, with appropriate cost considerations. Public benefits encompass environmental, economic, and social goals and

include monetary and nonmonetary effects and quantified and unquantified measures. No hierarchy exists among these three goals and, as a result, trade-offs among alternatives are assessed.

The Federal Objective, as set forth in the Water Resources Development Act of 2007, specifies that Federal investments in water resources shall reflect national priorities, encourage economic development, and protect the environment by: (1) seeking to maximize sustainable economic development; (2) seeking to avoid the unwise use of floodplains and flood-prone areas and minimizing adverse impacts and vulnerabilities in any case in which a floodplain or flood-prone area must be used; and (3) protecting and restoring the functions of natural systems and mitigating any unavoidable damage to natural systems.

Opportunities

The following opportunities will be recognized by implementing the Preferred Alternative. Quantification of these opportunities will be provided in other sections of this report as necessary.

- Comply with dam design and safety criteria established by NRCS and the Oklahoma Water Resources Board (OWRB).
- Minimize the potential for loss of life associated with a failure of the dams.
- Extend or improve the existing level of flood protection for downstream agricultural land, houses, businesses, and infrastructure. Economic analysis of the 10-, 25-, 50-, 100-, and 500-year return intervals shows a rehabilitated dam would provide $67,500 in average annual flood damage reduction benefits.
- Protect current and future real estate values.

Scope of the Plan

A scoping process was conducted early in the planning process to determine objectives and primary concerns of the project sponsors and to identify other relevant issues and environmental concerns associated with FWRS No. 36. A packet of maps and information describing the projects scope, affected environment and potential effects determination of threatened and endangered species potentially occurring within the project area was e-mailed to an interagency review team. The review team included representatives from the U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, Oklahoma Conservation Commission and the Oklahoma Department of Wildlife Conservation.

Due to Covid meeting procedures, an in person scoping meeting was not able to be held for this project. An informative PowerPoint presentation, designed by NRCS staff, was made available to the public and State and Federal Agencies. This presentation discussed potential impacts to soil, water, air, animals, plants, and humans, focusing on topics such as human health and safety, flooding, land use and management, wetlands, riparian habitat, and fish and wildlife habitat. Areas of potential concern were evaluated and are listed in Table 1 (Summary of Scoping), along with their relevance to the proposed action.

USDA planning policy [*Guidance for Conducting Analyses Under the Principles, Requirements, and Guidelines for Water and Land Related Resources Implementation Studies and Federal Water Resource Investments* (PR&G) (USDA-NRCS DM 9500-013) requires the use of an ecosystem services framework. The concept of ecosystem services is a way of framing and describing the comprehensive set of benefits that people receive from nature. They are characterized as the ecological goods and services provided by a healthy, functioning environment. Ecosystem services (either tangible or intangible) are the critical link between ecological function and social well-being. By analyzing and monitoring the ecosystem services produced from a given federal investment, natural resource managers can also ensure that the detrimental ecological impacts of that decision are minimized to the extent possible. The evaluated Ecosystem Services for Sallisaw No. 36 are listed in Table 2.

Table 1. Summary of Scoping

ITEM / CONCERN	Relevant to the Proposed Action		RATIONALE
	YES	**NO**	
SOILS			
Stream bank erosion	X		Scour and erosion of stream banks contributing to water quality impairment with some alternatives.
Sedimentation	X		Increase of 9,352 tons of sediment to stream system/year with some alternatives.
Prime and Unique Farmland	X		Potential loss of flood protection to 249 acres of soils rated as prime farmland with some alternatives.
WATER			
Surface Water Quality/ Clean Water Act/ Waters of the United States (WOTUS)	X		Temporary adverse impacts associated with construction. The work would not be expected to violate any state water quality standards. A Storm Water Pollution Prevention Plan (SWPPP) would be required by the contractor before construction begins. Best management practices would be

			used during construction. Little Sallisaw Creek is considered a Category-3 stream, having insufficient or lack information to assess attainment of benefits. Robert S. Kerr Lake, the receiving waters 13.25 miles downstream of embankment, is considered impaired due to turbidity (Category 5). Surface water quality may improve with some alternatives if the steam would be allowed to flow naturally, however sedimentation downstream would increase during flooding events impacting water quality short-term. Little Sallisaw Creek, Sallisaw 36 reservoir, and adjacent wetlands are considered Waters of the United States (WOTUS). A Clean Water Act 404 permit would likely be required for any action alternative involving a discharge of fill material into WOTUS.
Surface Water Quantity	X		Surface water quantity would stay approximately the same with most alternatives. Potential loss of 15 surface acres of water (conservation pool) with some alternatives (decommissioning).
Regional Water Mgt. Plans	X		Upon review, the project does not appear to be inconsistent with the current Oklahoma Comprehensive Water Plan. Updated plan is scheduled to roll out in 2025.
Coastal Zone Management Areas		X	There are no coastal zone management areas in the state of Oklahoma. The closest coastal management zone, the Gulf of America, is approximately 400 miles from the proposed project area.
Floodplain Management	X		Alternatives may affect the regulatory floodplain and require permits from Sequoyah County. No changes to current floodplain with most alternatives. Increased flooding downstream would occur with some alternatives.
Sole Source Aquifers		X	No sole source aquifers occur within or near the project area. The project area is not within the recharge areas of the Arbuckle-Simpson Sole Source Aquifer. (Sole Source Aquifer Mapper).
Wetlands	X		Potential loss of 15 acres of surface water and wetlands with some alternatives.
Wild and Scenic Rivers		X	The State of Oklahoma does not have any designated National Wild and Scenic Rivers. There are no other protected stream segments of the Nationwide Rivers Inventory that would be impacted by the proposed work. (National Wildlife and Scenic River System and Nationwide Rivers Inventory websites).
AIR			
Air Quality	X		Machinery emissions (PM-10) and airborne durst associated with some alternatives, would slightly degrade air quality during construction and maintenance. These impacts to air quality would be minor and of short duration. Best management practices would be used during construction activities.

Clean Air Act	X		Permits may be required if it involves emission of a regulated pollutant. Sallisaw 36 is located within an attainment area (meets current EPA air quality standards). for all six criteria pollutants (EPA Greenbook).
PLANTS			
Endangered and Threatened Species	X		None were identified during site visits. After initial consultation with USFWS (Information for Planning and Consultation (IPaC) no Endangered or Threatened plant species were listed for the project area. Consultation is on-going (USFWS IPaC species list Appendix A).
Invasive Species	X		No state listed noxious weeds were observed. No other species occurring on the Oklahoma Invasive Species Council dirty dozen or watch lists were observed. Contractors will be required to clean equipment prior to arriving on site, which will mitigate potential spread and introduction of invasive species to the site. Best management practices will be used during construction (EPA BMPs).
Natural Areas	X		Sallisaw 36 is owned by the Cherokee Nation and is located within the Nation's Sequoyah Hunting Preserve.
Riparian Areas	X		Sallisaw 36 has approximately 5,878 ft of shoreline. Loss of conservation pool with some alternatives will have long-term impacts on aquatic habitat as well as terrestrial habitat, increasing the riparian zone along Little Sallisaw Creek. With some alternatives, no change in the conservation pool elevation suggest impacts will be short-term and non-significant. Furthermore, temporary impacts to stream riparian habitat at the terminal end of the principal spillway will be minimized too only that necessary.
Ecologically Critical Areas		X	Upon review, no ecologically critical areas are present in the project area.
Land Use	X		Land types could be impacted due to breach and flood hazards. The extent of flood damage would depend on the size and duration of the flood event. Therefore, land use is relevant. Land surrounding the lake is heavily forested with little to no Prime and Unique farmland surrounding the reservoir. Land use would remain the same with most alternatives, however there is potential change of 15 acres of lake surface area with some alternatives.
Forest Resources	X		Sallisaw 36 is located within the Cherokee Nation's Sequoyah Hunting Preserve. This project area is heavily forested. Potential impact to 5 – 8 acres of forest may occur with some alternatives.
ANIMALS			
Fish and Wildlife Habitat (PL 83-566 Section 12 and Section 7 Coordination)	X		The land surrounding the lake is heavily forested and is part of the Cherokee Nation's Sequoyah Hunting Preserve. Land use would remain the same with most alternatives, however there is potential change of 15 acres of lake surface area to Little Sallisaw Creek riparian zone with some alternatives.

Coral Reefs		X	There are no coastal zones or coral reefs in Oklahoma. (See above, Coastal Zone Management Areas).
Invasive Species		X	No invasive species observed in the project area.
Essential Fish Habitat		X	No designated EFH in the area of the project. (Correspondence with ODWC in Appendix A).
Endangered and Threatened Species	X		The project area is within the range of 10 species that are federally listed as threatened or endangered or proposed threatened or endangered and one candidate species under the Endangered Species Act (ESA)In accordance with the Council on Environmental Quality, regulations implementing the National Environmental Policy Act (NEPA), Endangered Species Act (ESA) Section 7 consultation, and regulations in part of the Watershed Protection and Flood Prevention Act (PL- 83-566). Public Law 83-566 requires NRCS to notify USFWS, requesting agency consultation for dam rehabilitation projects. A formal letter of request was sent to USFWS to provide agency input and/or consultation on the rehabilitation of Sallisaw No. 36 (Appendix A). Initial consultation through the Information for Planning and Consultation (IPaC) has also been initiated (Appendix A).
Migratory Birds	X		Migratory bird habitat within the project area is consistent with wetland, shrub/scrub and woodland edge. Construction activities could have short-term impacts to migratory bird species due to avoidance of project area. To mitigate for adverse impacts, construction activities will be initiated outside of the Primary Nesting Season (PNS; Apr 1 – June 30). If activities must begin during the PNS and vegetative cover remains, a biologist will survey for nesting birds and establish buffers to avoid or otherwise delay construction.
Bald and Golden Eagles	X		No eagles or eagle nests were observed during site visits. Bald eagles are known to utilize habitat within Sequoyah County. Construction activities could have short-term impacts to eagles as eagles may avoid habitat due to construction noise. Construction activities will not begin if an active nest is within 660 feet of the project area.
HUMANS			
Cultural Resources and Historic Properties	X		Based on pre-field/background research, there were no documented National Register of Historic Places (NRHP) sites, no Determination of Eligibility sites, or no recorded archaeological sites within the Area of Potential Effect (APE), as determined through consultation with the Oklahoma Archaeological Survey and Oklahoma State Historic Preservation Office and based on past interaction with consultation partners. A standardized field assessment of the 48.4-acre APE was conducted. No prehistoric resources were identified and FWRS No. 36 did not meet criteria A-D to

			warrant listing on the NRHP. No Traditional Cultural Places, no culturally significant resources, no Indian Sacred Sites, and no ethnographic data were documented in the APE based on communication with tribal consultation partners. If cultural resources/historic properties are encountered during construction, the post-review discovery plan will be enacted. Regarding structural rehabilitation of FWRS No. 36, NRCS made a "no historic properties affected" determination. Regarding non-structural measures (floodproofing), there are no documented NRHP sites, no Determination of Eligibility sites, or no recorded archaeological sites downstream of the APE that would require modifications. The same is true for the decommissioning alternative. As far as visual effects, should the dam be decommissioned, anything other than total removal will not affect visual cohesiveness of the built environment since an earthen embankment will remain and represent conservation and flood control within the greater watershed—dams in series. Regarding the non-structural and decommissioning of FWRS No. 36, NRCS made a "no historic properties affected" determination. The no action alternative, if selected, would need to be addressed through statute and regulation in concert with the National Historic Preservation Act.
Potable Water Supply		X	The reservoir water is not used as potable water. No sole source aquifers occur within or near the project area. Run off will be mitigated using BMPs and the development of a SWPPP.
Public Health and Safety	X		Potential loss of protection to roads during flood events resulting in disruption of school bus routes, emergency vehicle access, and access to towns and medical facilities with some alternatives.
Socioeconomics	X		Socioeconomics factors describe the local demographics, income characteristics, and employment in the region that could be affected by some alternatives.
Recreation	X		Sallisaw 36 is located on the Cherokee Nation's Sequoyah Hunting Preserve. Recreation opportunities would continue with most alternatives. Potential loss of fishing and hunting opportunities with some alternatives (decommissioning).
Scenic Beauty	X		Potential loss of lake element from the landscape with some alternatives. Potential gain in natural stream function and stream riparian habitat with some alternatives.
Parklands		X	No parklands are present in the proposed project area.
Scientific Resources		X	No significant scientific resources are present in the project area.

Table 2: Summary of Ecosystem Services (PR&G)

Ecosystem Service	Relevant to the proposed action?		Rationale
	Yes	No	
Provisioning (goods provided for human use and consumption)			
Food	X		Land surrounding Sallisaw 36 reservoir owned by the Cherokee Nation and is referred to as the Sequoyah Hunting Preserve.
Fuel		X	Wood, dung, and other biological materials serve as sources of energy. Sallisaw No. 36 is not significant fuel production area.
Raw Materials		X	Materials included here are wood, jute, cotton, hemp, silk, and wool. Sallisaw No. 36 is not a significant fiber production area.
Water		X	Sallisaw No. 36 is not a water supply reservoir.
Regulating (any benefit obtained from the natural process and functioning of an ecosystem)			
Water Purification and Filtration		X	Ecosystems can help filter out and decompose organic wastes that are introduced into inland waters. The project area is not within a groundwater aquifer recharge area.
Crop Pollination		X	Ecosystems changes affect the distribution, abundance, and effectiveness of pollinators. Monarch butterflies my occur within the project area, but proposed action has been determined “may affect, not likely to adversely affect” the monarch butterfly.
Flood Protection	X		Sallisaw 36 is a flood water retarding structure (FWRS) with a primary purpose of flood protection downstream. The current annual flood damage benefit for FWRS Sallisaw Creek No. 36 is $67,500.
Pest and Disease Control		X	Little Sallisaw Creek is not listed on the 303(d) list of impaired streams.
Supporting (support the production of provisioning, regulating and cultural services)			
Primary Production		X	Primary production is the accumulation of energy and nutrients by organisms. Limited production of oxygen from vegetation surrounding the project site. No impact to primary production is

			anticipated from the rehabilitation of Sallisaw No. 36.
Soil Formation/Retention		X	Soil fertility in the watershed will not be impacted. Land use will remain the same.
Nutrient Cycling	X		Construction would include ground disturbing activities which could impact nutrient cycling because of compaction and removal of vegetation.
Cultural (benefits from interactions with the environment)			
Recreation	X		Land surrounding Sallisaw 36 reservoir owned by the Cherokee Nation and is referred to as the Sequoyah Hunting Preserve.
Aesthetic Viewsheds	X		Wooded rolling hills with panoramic vistas will not be negatively impacted following brief construction activities.
Tribal Values/ Education	X		Construction activities associated with some alternatives will be scheduled around tribal cultural activities at the request of the Cherokee Nation.
Inspiration/Spiritual	X		Secluded serene topography with a standing body of water will be maintained as a setting for leisure and introspection with some alternatives. Decommissioning may have long-term impacts due to loss of lake habitat.

Affected Environment: Current Conditions

Background and Current Status of Project Area

The Sallisaw Creek Watershed was planned and implemented under Public Law 78-534, the Flood Control Act of 1944. The Sallisaw Creek Watershed rises near the City of Stilwell in Adair County, Oklahoma, and flows in a southerly direction for 35 miles through Adair and Sequoyah counties before entering Robert S. Kerr Reservoir near the City of Sallisaw. The project work plan was authorized in 1961. Thirty-four of the 43 planned dams in the Sallisaw Creek Watershed have been constructed. The project was originally planned for an evaluated life of 50 years.

Project Setting

Oklahoma lies in the South-Central portion of the United States bordered by Kansas, Arkansas, Texas, New Mexico, and Missouri. The eastern side of the state experiences a more humid sub-tropical climate versus the more semi-arid climate of the west. According to the National Weather Service, Sequoyah County receives an average of 48.19 inches of precipitation per year.

This project sits within the Lower Boston Mountains ecoregion of Oklahoma. The Lower Boston Mountains ecoregion is mostly covered by high, round hills and elevated plateaus with a mosaic of forest and woodlands, with pasture and forage production on the valley floors. Bedrock in this region is composed of a mixture of Pennsylvania-age sandstone and shale. Natural vegetation is mostly oak-hickory forest, with logging and recreation being important land uses. Summer flow in small streams is usually non-existent, however, isolated pools may contain high quality aquatic communities.

Sallisaw Creek No. 36 sits within the southernmost extent of the Ozark Mountains. Ridges of this area are narrow and rolling, and valley sides are steep. Elevation ranges from 570 to 1,860 feet. Flooding is a major ecosystem disturbance in this area. The effects of flooding on the ecosystem vary and depend on flooding duration, time of year, and ponding duration. Species diversity can decrease with an increase in flooding duration. Flooding events can distribute nutrients and seeds throughout the landscape.

Inventory of Existing Resources and Conditions

Soil Resources

Soils: The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) maintains the information and online databases that identify the soil types across the U.S. Soil information presented in this section is summarized from USDA NRCS Web Soil Survey (WSS) data.

Dominant soils found in the project location consist of Hector-Linker-Enders Complex (94.0%) with 5 – 40 % slopes and are extremely stoney. Guyton and Rexor (1.3%) soils are found within the stream channels of Little Sallisaw Creek. Table 3 lists all soils within the proposed project action area (USDA-Web Soil Survey).

Table 3. Soils in Proposed Project Action Area

Map Unit Symbol	Soil Name	Comments	Acres within Action Area	Percent within Action Area
Ce	Cleora fine sandy loam	0 to 2 % slopes, occasionally flooded	0.7	0.1%
HeF	Hector-Linker-Enders complex	5 to 40 % slopes, extremely stony	1,199.6	94.0%
LnC	Linker-Hector complex	3 to 5 % slopes, extremely stoney	35.5	2.8%
Ru	Guyton and Rexor soils	0 to 1 %s slopes, frequently flooded	16.2	1.3%
W	Water		16.7	1.3%
DAM	Large Dam		7.2	0.6%

Prime and Unique Farmland: The goal of the Farmland Protection Policy Act is to minimize the impact Federal programs have on the unnecessary and irreversible conversion of farmland to non-agricultural uses. Within the Sallisaw Creek No. 36 breach inundation area, there are 2,716 acres of soil classified as prime farmland (Appendix E).

Water Resources

Water Quality: Section 303(d) of the Clean Water Act requires states to develop lists of waterbodies that do not meet water quality standards and to submit updated lists to the U. S. Environmental Protection Agency (EPA) every two years. Section 303(d) also authorizes EPA to assist states in listing impaired water and developing Total Maximum Daily Loads (TMDLs) for each listed waterbody. FWRS Sallisaw No. 36 is located on Little Sallisaw Creek, a section of the creek that is not listed by the State as a 303(d) "impaired" stream. No water quality issues have been identified at this site and state water quality standards are being met.

The U. S. Army Corps of Engineers (USACE) regulates the discharge of dredged and fill material into waters of the U.S. (WOTUS), including wetlands, under Section 404 of the Clean Water Act. Little Sallisaw Creek, along with Sallisaw 36 reservoir, and any associated wetlands would meet the regulatory definition of WOTUS and be subject to CWA jurisdiction. A CWA 404 permit would likely be required for any alternative involving a discharge of fill material into WOTUS. Consultation with the United States Army Corps of Engineers (USACE) began early in the scoping process. A 404 Nationwide Permit (NWP) 43 – Storm Water Management has been issued for FWRS Sallisaw No. 36 (Appendix A).

Water Quantity: The reservoir behind FWRS Sallisaw No. 36 is approximately a 16-acre shallow freshwater pond PUBHh, palustrine, unconsolidated bottom, permanently flooded, impounded (National Wetlands Inventory) (Appendix E).

Regional Water Management Plans: Oklahoma Department of Water Quality (ODEQ) is currently updating the Oklahoma Comprehensive Water Plan (OCWP). The 2025 planning team is updating water demand forecasts of all consumptive water use categories as well as updating groundwater supply availability estimates. The OCWP has no impact on the proposed project.

Floodplain Management: The majority of the floodplain area downstream of FWRS Nos. 36 is mapped as Zone A – "No base flood elevations determined" and as Zone AE – "Regulatory Floodway" as Little Sallisaw Creek clips the east edge of Sallisaw as designated by the Federal Emergency Management Agency (FEMA) flood insurance rate map (Panel 40135C0300F effective September 29, 2010) (Appendix C). The methodology for delineation of Zone A is more of an approximation than the delineation of Zone AE which uses more refined modelling methodologies. Zone A and AE are subject to inundation by the 1-percent-annual-chance flood event also known as the 100-year storm. Rehabilitation of Sallisaw No. 36 will result in the continuation of flood protection downstream, further protecting homes, businesses, and roads. The preferred alternative structure will result in no change to the base flood elevation (BFE) downstream. FEMA flood mapping will not be impacted or changed by the preferred alternative.

Wetlands: Wetlands in the Sallisaw Creek watershed consist mostly of small man-made reservoirs (lakes) and ponds. According to the National Wetland Inventory there are approximately 2,370 of these lacustrine wetlands within the watershed. Some forested/shrub wetlands and emergent wetlands occur throughout the watershed in close association with an expansive stream (riverine) network. Terrestrial wildlife habitat in the watershed is a mixture of mostly woodland (48%) and tame pasture (42%). Upland woodlands are mostly oak-pine forest type. Bottomland tree species include oaks, hickory, elm, sycamore, hackberry, and Osage orange. Fishery habitat in most streams and creeks is limited. The intermittent nature and water quality factors of most streams are the main limiting features.

Air Resources

Air Quality and Clean Air Act: There are six criteria pollutants that act as indicators of air quality in the United States: carbon monoxide, lead, ozone, nitrogen dioxide, particulate matter, and sulfur dioxide. The National Ambient Air Quality Standards (NAAQS) are the concentrations of these criteria pollutants, above which, adverse effects on human health may occur. Areas where air pollution levels consistently stay below these standards are designated "attainment areas". According to the Oklahoma Department of Environmental Quality the state is currently in attainment for all six criteria pollutants (EPA Greenbook). Permits may be required if it involves emission of a regulated pollutant. At this time, permits will not be required for dam rehabilitation.

Plants

Endangered and Threatened Species: No endangered and/or threatened species were identified during site visits. After initial consultation with USFWS (Information for Planning and Consultation (IPaC) no Endangered or Threatened plant species were listed for the project area. Consultation is on-going (USFWS IPaC species list Appendix A).

Invasive Plant Species: During scoping site visits, no invasive plants were observed at or near project area, including state listed noxious weeds or Oklahoma Invasive Species Plant Council Dirty Dozen list. The Oklahoma Invasive Plant Council lists 34 invasive plant species that are present in the eastern portion of Oklahoma (Table 4). There was at least one species of the genus *Bromus* observed at the dam site, and it is widespread and common in the area. The species was likely planted in the area for forage or erosion control, but is also easily spread by vehicles, livestock, and wildlife. No other invasive species were

observed.

Table 4: List of Invasive Plants Species of Eastern Oklahoma

Common Name	Genus	Species
Mimosa	*Albizia*	*julibrissin*
Brome	*Bromus*	*spp.*
Paper Mulberry	*Broussonetia*	*papyrifera*
Balloon vine	*Cardiospermum*	*halicacabum*
Spotted Knapweed	*Centaurea*	*stoebe*
Bull thistle	*Cirsium*	*vulgare*
Clematis	*Clematis*	*terniflora*
Hemlock	*Conium*	*maculatum*
Common teasel	*Dipsacus*	*fullonum*
Barnyard grass	*Echinochola*	*crus-galli*
Hydrilla	*Hydrilla*	*verticillata*
Rye grass	*Lolium*	*perenne*
Japanese honeysuckle	*Lonicera*	*japonica*
Purple loosestrife	*Lythrum*	*salicaria*
Black hop medic	*Medicago*	*lupulina*
Japanese stiltgrass	*Microstegium*	*uimineum*
Marsh Dayflower	*Murdannia*	*keisak*
Brazilian watermilfoil	*Myriophyllum*	*aquaticum*
Eurasian watermilfoil	*Myriophyllum*	*spicatum*
Watercress	*Nasturtium*	*officinale*
Yellow Floatingheart	*Nymphoides*	*peltata*
Water grass	*Paspalum*	*dilatatum*
Princess tree	*Paulownia*	*tomentosa*
Beefsteak plant	*Perilla*	*frutescens*
Spotted ladysthumb	*Persicaria*	*maculosa*
Reed canary grass	*Phalaris*	*arundinacea*
Curly pondweed	*Potamogeton*	*crispus*
Russian knappweed	*Rhaponticum*	*repens*
Common sheep sorrel	*Rumex*	*acetosella*
Crown vetch	*Securigera*	*varia*
Spiny sowthistle	*Sonchus*	*asper*
Common sowthistle	*Sonchus*	*oleraceus*
Saltcedar	*Tamarix*	*spp.*
Greater periwinkle	*Vinca*	*major*

Riparian Areas: Riparian areas are located around the conservation pool and along Little Sallisaw Creek and contribute to the floodplain function, streambank stability, nutrient cycling and filtering and sediment retention. Common tree species include oak, hickory and pine. The riparian zone extends 300ft and greater for the first 0.25 miles south of the dam, then runs along cropland and is approximately 25 – 50 feet wide on each side of Little Sallisaw creek.

Land Use, Forest Resources and Natural Areas: The proposed project location lies within the Boston Mountains Major Land Resource Area (MLRA). Approximately 76% of the Boston Mountain MLRA is forested with smaller woodlots being privately owned and larger tracts of land designated as National Forests (USDA soil conservation Handbook). In Sequoyah County, 47.32 % is forested, 35.53 % used for agriculture (annual crops and livestock production), and 2.42%.

Elevation ranges from 650 feet within narrow valleys to 2,630 feet at the highest hill crests. This area supports pine and hardwood forests, with primary overstory species being oak, hickory, pine and redcedar. Within the action area of Sallisaw Creek, land use is primarily forested habitat. This property is owned by the Cherokee Nation and is located within the Sequoyah Hunting Preserve.

Table 5. Land Cover categories for Sequoyah County, Oklahoma

NLCD 2023 Land Cover Database Land Use/Land Cover	Action Area (sq mi)
Deciduous Forest	310.12
Pasture/ Hay	224.22
Open Water	37.05
Cultivated Crops	29.47
Developed Open Space	28.30
Mixed Forest	0.42
Grassland/ Herbaceous	15.42
Woody Wetlands	14.35
Evergreen Forest	5.89
Barren Land (rock/sand/clay)	3.01
Emergent Herbaceous Wetland	2.93
Scrub/ Shrub	0.88

*2023 land cover data derived from the Multi Resolution Land Characteristics Consortium Viewer (MRLC)

Animals

Fish and Wildlife Habitat: The project is in a rural, heavily forested area that provides habitat for wildlife species such as white-tailed-deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), bobcat (*Lynx rufus,* skunk (Mephitis mephitis), coyote (*Canis latrans*), black bear (*Ursus americanus*) and other species. Many species of songbirds and migratory waterfowl also utilize the lake. Waterbodies in the area support a typical warm-water fishery including centrarchids (bass, bluegill, and crappie), and ictaluridae (catfish) species. Sallisaw No. 36 reservoir sits within the Cherokee Nation Reservation and is closed to the general public. Areas immediately adjacent to, and downstream of the lake provide wooded riparian habitat.

Endangered and Threatened Species: The U.S. Fish and Wildlife Service lists 10 species that are threatened, endangered or candidate species, that could potentially occur within the project area. This information was obtained through the USFWS Information for Planning and Consultation (IPaC) system (USFWS, 2023a). The following species are listed for the project area: the Gray bat (*Myotis grisescens*) (Endangered), Indiana bat (*Myotis sodalis*) (Endangered), Ozark big-eared bat (*Corynorhinus townsendii ingens*) (Endangered), Northern long-eared bat (*Myotis septentrionalis*) (Endangered), Tri-colored bat (*Perimyotis subflavus*) (Proposed Endangered), American burying beetle (*Nicrophorus americanus*) (Threatened), Monarch butterfly (*Danaus Plexippus*) (Candidate), Piping plover (*Charadrius melodus*) (Threatened), Rufa red knot (*Calidris canutus rufa*) (Threatened), and Alligator snapping turtle (*Macrochelys temminckii*) (Proposed Threatened) .

Piping Plover (Charadrius melodus): The reservoir margins offer emergent vegetation that could serve as potential habitat for the Piping plover and Rufa red knot, however, this habitat is limited on site and habitat is otherwise abundant in the local landscape. The Piping Plover prefers broad open expanses along major rivers that provide foraging and/or stopover habitat. No habitat of this type occurs within project area. The project area to be impacted does not include large mudflats or sandbars.

Rufa red knot (Calidris canutus rufa): The reservoir margins offer emergent vegetation that could serve as potential habitat for the Red Knot, however this habitat is limited on site and habitat is otherwise abundant in the local landscape. The Red knot prefers to forage on mudflats, and that this type of foraging habitat is limited within the state, and Oklahoma is not a critical breeding or staging area for the species. Fewer than five birds are reported in Oklahoma annually. Of those, 85 percent have been reported during fall migration. No habitat of this type occurs within project area.

American burying beetle (Nicrophorus americanus): American burying beetles have been found in upland grasslands, woodlands and forest habitats as well as bottomland hardwood forests. They are nocturnal scavengers that rely on the carcasses of small animals to reproduce. Potential threats include soil disturbance or compaction from vehicles and equipment, vegetation removal, use of herbicide/pesticides, use of artificial lighting or any other activity that may impact soil or vegetation.

Monarch butterfly (Danaus Plexippus): The monarch is a large butterfly with orange wings, black boarders and veins and white spots. Monarchs migrate through Oklahoma in the spring (Mar – June) and again in the fall (Aug – Oct) as they travel to and from their wintering grounds in Mexico and summer grounds in the Upper Mid-west and Canada. Milkweed species are host plants for larvae. Milkweeds can be found in a variety of habitats such as rangeland, pasture, open woodlands riparian areas and gardens. During migration, females will seek out milkweed plants to lay their eggs.

Alligator Snapping Turtle (Macrochelys temminckii): Alligator snapping turtles can be found in deep rivers, oxbow lakes and sloughs in eastern Oklahoma. They prefer deeper water with plenty of structure like tree roots, stumps and submerged trees. Hatchlings can be found in shallow water with abundant canopy and vegetation. They feed on a variety of foods, including fish, crayfish, mussels, birds, mammals, and other reptiles and amphibians.

Tri-colored bat (Perimyotis subflavus): The tri-colored bat is a small sized bat that is distinguished by its tricolored fur and can appear yellowish to orange in color. During the winter, these bats are found in caves mines, and road-side culverts. During warmer months, tri-colored bats can be found in forested habitats, roosting in trees and occasionally within human structures. These bats are one of the first species to emerge each evening to forage for small insects along forest edges and over ponds and waterways.

Northern long-eared bat (Myotis septentrionalis): The northern long-eared bat is a medium sized bat (3 – 3.7 inches long) and can be distinguished by its long ears compared to other species within the genus *Myotis*. These bats spend the winter hibernating in caves and mines, and the summer, roosting singly or in colonies underneath bark, in cavities of both dead and live trees. Pregnant females will migrate to summer areas where they roost in maternity colonies and give birth. Northern long-eared bats feed at dusk along forested hillsides and ridges, feeding on months, flies, beetles, etc.

Gray bat (Myotis grisescens): The gray bat is a medium sized bat (overall length approximately 3.5 inches)with gray dorsal fur bleaching to reddish-brown by early summer. Gray bats inhabit caves year-round. During the winter, gray bats hibernate in caves that are typically deep and vertical, with summer caves that are warm and can trap body heat of clustered bats. No hibernating colonies are known from Oklahoma. Pregnant females emerge from caves in the spring and form maternity colonies. Summer maternity colonies typically use roosting caves that are along a stream, river or reservoir. Summer maternity colonies have been known from caves in Adair, Cherokee, Delaware, and Ottawa counties in Oklahoma. Gray bats feed on flying insects over bodies of water.

Indiana bat (Myotis sodalist): The Indiana bat is a medium sized bat (2.9 – 3.9 inches long) with dull gray to brown fur with hind feet that appear small and delicate. The Indiana bat is a migratory bat that hibernates in cool caves and mines in the winter and wooded areas in the spring and summer. Pregnant females join maternity colonies during the summer which can be found under the bark of exfoliating and often dead trees. Indiana bats forage for insects along forest edges, over ponds and along streams. The Indiana bat primarily in the eastern and Midwestern United States and is rare in eastern Oklahoma.

Ozark big-eared bat (Corymorhinus townsendii ingens): The Ozark big-eared bat is a medium sized bat (1.2 – 1.5 inches long) with long dark brown to black dorsal fur. Ozark big-eared bats inhabit caves year-round. These caves are typically located in oak-hickory hardwood forests. Both sexes hibernate together in clusters. In the spring, pregnant females will leave the hibernation cave and seek out maternity colonies and rear their young during the summer months. Ozark big-eared bats will generally to the same maternity caves each year. These bats forage along edge and forested habitats, eating primarily moths but will eat other flying insects. Their current distribution includes the Ozark Highlands and Boston Mountains ecoregions of northeastern Oklahoma and northwestern and north-central Arkansas.

Migratory Birds: Migratory bird pathways, stopover habitats, wintering areas, and breeding areas may be associated and utilized with Sallisaw No. 36 reservoir, adjacent wetlands, and woodlands. The USFWS Information for Planning and Consultation Resource (IPaC) does not list any USFWS migratory birds of concern within the vicinity of the proposed rehabilitation project (Appendix A). Birds on the migratory species resource report are listed because they either occur on the USFWS Birds of Conservation Concern

(BCC) list or warrant special attention. Although not specifically listed by USFWS as BCC, migratory birds are likely to occur within the project action area.

Bald and Golden Eagles: No eagle, or eagle nests were observed during site visits, but are found within this region. During the primary breeding season, fringe wetlands and open water habitat associated with the conservation pool would support a variety of birds including Killdeer (*Charadrius vociferus*) and Great blue heron (*Ardea Herodias*), with a variety of shorebirds and waterfowl during the non-breeding or migratory season.

Humans

Flood Damages: The current annual flood damage benefit for FWRS Sallisaw Creek No. 36 is $67,500.

Cultural Resources and Historic Properties: Through previous verbal consultation with the Oklahoma Archaeological Survey (OAS), Oklahoma State Historic Preservation Office (SHPO), and tribal entities (on similar rehabilitation projects) an Aera of Potential Effect (APE) formula and Section 106 field survey methodology and strategy for dam rehabilitation projects was established. Based on these prior consultation meetings, an APE and survey strategy template is built upon for each project. For FWRS No. 36, the APE was defined as the maximum level that water behind the dam would reach (top of dam) as well as a beach zone on the back side of the dam using the top of dam elevation. Obviously, the top of dam elevation included the auxiliary spillway, and the linear extent of the breach zone stopped at the limits of the easement held by the local conservation district. As is the case with most rehabilitation projects in Oklahoma, the equipment staging area and borrow area are contained within the bounds of the top of dam elevation. Therefore, the borrow and staging areas were surveyed as part of this project. Additionally, the ingress/egress for the rehabilitation is an established two-track road. It was surveyed on-foot, however no subsurface probes were performed. The APE serves as the area of project impact or affected environment for the Cultural Resources and Historic Properties section of this environmental document.

Pre-field research of historic and prehistoric archaeological sites recorded with the OAS in and surrounding (one-mile radius) the APE were reviewed. Oklahoma National Register places, Determination of Eligibility properties, and Oklahoma Landmarks Inventory sites, all maintained by the SHPO, were also reviewed. When available (or even documented) Traditional Cultural Places locations were taken into account. Even unique landscape or topographic features were considered since they may reflect import to residents. Additionally, Bureau of Land Management, General Land Office notes and maps were investigated as were historic aerial photographs. Finally, cultural, ecological, and temporal trends were reviewed to determine what sort of artifacts and features have a high probability of being present in the APE. The above research revealed that no historic properties (archaeological sites/cultural resources) were recorded in the APE. The above serves as a brief cultural and historical overview for the Cultural Resources and Historic Properties section of this environmental document.

No sign of artifacts or features were detected in the shovel tests (set at 30 meters apart on a 30 meter transect interval) or on the ground surface (pedestrian survey) in the APE. Therefore, no archaeological resources were identified. Since FWRS No. 36 was built in 1965, the earthen structure and its associated features were identified as an historic resource during the Section 106 field investigation. NRCS determined that FWRS No. 36 did not meet criteria A-D to warrant listing on the National Register of Historic Places. NRCS determined that any form of structural rehabilitation would have “no effect on historic properties”. Thus are the conditions, concerns, and attributes of the resource. No forecasted effects or factors influencing a change in the resource are noted other than possible alterations to the dam—which would have “no effect”.

Since the dam is not eligible for the National Register, any modification short of removal is acceptable. Concurrence with this determination, that there will be "no effect on historic properties", was received from the OAS on December 7, 2021, SHPO on September 2, 2021 and December 7, 2021, Osage Nation on May 2, 2022, and Cherokee Nation on May 10, 2024. Therefore, the forecasted effects or factors that would influence change in the resource, based on the archaeological and architectural surveys, are none regarding the National Historic Preservation Act. The conditions of the resource in the future are expected to be the same as they are currently. These correspondences are in Appendix A.

During ongoing consultation, the SHPO believed FWRS No. 36 was eligible for the National Register of Historic Places (February 12, 2021). In a letter dated August 24, 2021, NRCS disagreed with the SHPO's "opinion". In that same correspondence, NRCS determined that Sallisaw Creek Watershed merited being designated an Historic District with contributing and non-contributing properties. The non-contributing properties of the historic district are those already rehabilitated (FWRS Nos. 15, 16, 18, 20, 26, 28, 29, 30, 32, 33 and 34) as well as FWRS No. 36. These correspondences are in Appendix A.

Since the project began and initial consultations letters were sent in October 2020, the Cherokee Nation bought most of the land encompassing the APE in January 2021. The purchased land was designated as the Sequoyah Hunting Preserve. Without knowledge of the ownership change, NRCS performed archaeological and architectural surveys. A single Section 106 report, combining the results of the archaeological and architectural surveys, was produced and submitted to our consultation partners, including the Cherokee Nation. The project and consultation continued throughout 2021 and 2022 as if the land was still held by private, non-Indian landowners. In April of 2024 when NRCS was notified of the change in ownership, NRCS made provisions to negotiate with the Cherokee Nation about the change in title. Concurrence with the initial Section 106 archaeological and architectural reports was received in May 2024. Regarding Cherokee Nation ownership, the Tribal Historic Preservation Officer (THPO) had a single stipulation. The Cherokee Nation requested that construction activities be coordinated with their Wildlife Conservation Manager, Lane Kindle. Coordination would ensure that there would be no interference with the preserve's scheduled cultural activities. Also in May of 2024, NRCS acknowledged receipt of the concurrence letter and provided assurance that the Cherokee Nation's request would be fulfilled. These correspondences are in Appendix A.

Public Health and Safety: FWRS Site No. 36 protects 29 houses, two mobile homes, one apartment building, five businesses, two state highways (OK 101, US-64), one Interstate Highway (I-40), and five county roads. These locations are located within the breach inundation zone and would be at risk from a catastrophic failure of the dam. The roadways serve as primary school and emergency access routes for residents.

Socioeconomics: Socioeconomic factors describe the local demographics, income characteristics, and employment in the region that could be affected by the proposed project. Table 6 compares demographic and economic data for the county to data for the State and the Nation.

Table 6. Population and Demographic Data for Sequoyah County, Oklahoma

	Sequoyah County [2/]	Oklahoma [2/]	Nation [2/]
Population	40,291	4,053,824	334,914,895
Median per capita income	$24,708	$33,630	$41,261
Median household income	$47,494	$61,364	$75,149
Median value owner-occupied housing units	$118,600	$170,500	$281,900
	School District [1/]	Oklahoma [1/]	Nation [1/]
Families living below the poverty level	21.2%	15.7%	11.5%
Caucasian Population	60.8%	73%	75.5%
Native American Population	23.4%	9.5%	1.3%(2)
Black Population	2.0%	7.9%	13.6%(2)
Hispanic Population	5.5%	12.1%	19.1%(2)
Asian Population	0.9%	2.6%	6.3%(2)
Two or More Races Population	9.4%	6.7%	3.0%(2)

[1/]School district community data – 2019 District School Reports from the Education Oversight Board Office
[2]2023 Data from https://www.census.gov/quickfacts

Scenic Beauty: Sequoyah County is a relatively rural county. The primary landcover types are forest with limited pasture and grassland, which provide a natural and somewhat undisturbed look to the viewshed in the county.

Ecosystem Services

FWRS No. 36 has been providing the major ecological service of flood protection to residents and businesses downstream since it was constructed in 1965. Rehabilitation of the dam will extend the dam life and provide continued flood protection downstream. FWRS No. 36 sits on private land and is not open for public use. Therefore, the ecological services to the public are limited to food, flood protection and nutrient cycling.

Food and water: Sallisaw No. 36 dam and reservoir are located on land owned by the Cherokee Nation, Sequoyah Hunting Preserve. Water in the reservoir can be utilized for recreation (swimming and fishing).

Flood Protection: Sallisaw No. 36 was constructed for the purpose of flood control to protect downstream residents, homes, and roads from flooding events. The construction of the dam has limited the frequency and extent of flooding events and maintains safety to residents downstream. FWRS Site No. 36 protects 29 houses, two mobile homes, one apartment building, five businesses, two state highways (OK 101, US-64), one Interstate Highway (I-40), and five county roads. These locations are located within the breach inundation zone and would be at risk from a catastrophic failure of the dam. The roadways serve as primary school and emergency access routes for residents.

Nutrient Cycling: The addition or removal of vegetation due to some alternative would have an impact on nutrient cycling. Land use in the watershed is predominantly well-established vegetation in forest land. The change in the extent of vegetation for each alternative will be analyzed. The lake provides aquatic nutrient cycling. The change in impoundment area (lake size) for each alternative will be analyzed.

Recreation: Sallisaw No. 36 dam and reservoir are located on land owned by the Cherokee Nation, Sequoyah Hunting Preserve. Water in the reservoir can be utilized for recreation (swimming and fishing).

Aesthetic Value: The landscape surrounding Sallisaw 36 is covered by high, rolling hills, elevated plateaus, and panoramic vistas with a mosaic of thick forests and woodlands, with pasture and forage land within the valley floors.

Tribal Values/Education: Land surrounding Sallisaw 36 reservoir owned by the Cherokee Nation and is referred to as the Sequoyah Hunting Preserve. Cherokee Nation uses this land for recreation and education purposes.

Inspiration/ Spiritual: The landscape surrounding Sallisaw 36 is covered by high, rolling hills, elevated plateaus, and panoramic vistas with a mosaic of thick forests and woodlands, with pasture and forage land within the valley floors. This topography provides opportunities for leisure enjoyment and introspection.

Forecast Future Conditions

Forecasting future resource conditions within the Sallisaw Creek watershed will focus on the impacts of environmental changes. Long-term environmental changes will substantially alter ecological and physical conditions within the watershed, resulting in changes throughout both the natural and human environment.

Environmental conditions within the State are predicted to include historically unprecedented warming and an increase in extreme precipitation events, which will lead to an increase in the intensity of future droughts and may increase the risk of flooding. Environmental resources including aquatic and terrestrial habitats are likely to be stressed by these changing conditions, which may result in species changes favoring those that are more capable of exploiting these conditions. Increased droughts and flooding are likely to increase soil erosion. The presence of highly vegetated systems including forests, grasslands, and pastures within this watershed will help to alleviate issues with erosion. Changes in weather patterns, sedimentation, and water quality due to environmental change will also likely affect WOTUS and other aquatic resources in the future.

Background and Current Status of Dam

FWRS No. 36 was constructed in 1965 as a low hazard class (a) dam, a hazard classification given to dams that do not pose a threat to loss of life, but could cause damage to agricultural lands, fences, livestock, farm equipment, and county roads and bridges. The dam has operated for 57 years exceeding its 50-year design life.

FWRS No. 36 was planned with a drainage area of 5,978 acres (9.34 mi.2). Current GIS data shows the drainage area to be 5,397 acres (8.43 mi.2). Since the current GIS data is the most recent and accurate data for this site, the drainage area is considered to be 5,397 acres for this site. The condition II runoff curve number (CN) was shown as 83, but current information shows that it would be computed as 81. The site was planned to have capacity to pass the 25-year storm event (a storm with a 4% chance of occurrence in any given year) without flow through the auxiliary spillway. Due to the error in the measurement of the drainage area, and the computation of the CN, the site has an actual capacity to control just less than the 37.5-year storm (2.67 % chance) without auxiliary spillway flow.

FWRS No. 36 as constructed is shown on the as-built plans to have a dam height of 87 feet, the length of the embankment is about 1,200 feet, and contains about 398,930 cubic yards of fill. The auxiliary spillway has a width of 250 feet, with a planned maximum discharge of 5,325 cubic feet per second (cfs). The principal spillway consists of a 27-inch diameter reinforced concrete conduit. Twelve anti-seep collars were installed on the conduit. The plans do not show a foundation drain but does show an embankment drainage system. There do not appear to be any significant seepage problems with the site. Total storage

in the site at the auxiliary spillway crest elevation is 3,861 acre-feet, of which 249 acre-feet are sediment storage (214 submerged, and 35 aerated), and 3,612 acre-feet are detention storage. The as-built surface area was planned as 16 acres at the principal spillway crest. Because the 27-inch diameter principal spillway conduit does not drain the detention pool within 10 days, during the original design process, additional detention storage was added to account for the storage not evacuated within the 10-day period.

Potential damage locations (PDLs) downstream of FWRS No. 36 that were investigated for the breach analysis study included 116 structures, two highways, one interstate, two railroads, and six county roads. Locations impacted by the breach include 29 houses, two mobile homes, one apartment building, five businesses, two highways (OK-101, US-64), an Interstate Highway (I-40) and five county roads; these locations would sustain breach flood damage.

Figure No. 1 – FWRS No. 36 Existing Principal Spillway Inlet

Figure No. 2- FWRS No. 36 Auxiliary Spillway

Status of Operation and Maintenance (O&M)

Operation and maintenance (O&M) is the responsibility of Sequoyah County Conservation District. They have operated and maintained the dam in accordance with the operation and maintenance agreement. This has been verified during site visits. The vegetation cover on the dam is good.

Problems

FWRS No. 36 was constructed in 1965 as a low hazard class (a) dam, a hazard classification given to dams that do not pose a threat to loss of life, but could cause damage to agricultural lands, fences, livestock, farm equipment, and county roads and bridges. As a result of changes in dam safety criteria and development downstream of the dam, which includes 29 houses, two mobile homes, and one apartment building, FWRS No. 36 does not meet current safety criteria and performance standards for a high hazard dam, a hazard classification given to dams that do pose a threat to loss of life. Minimum NRCS criteria for a high hazard dam includes a 30-inch-diameter principal spillway pipe, the ability to safely convey 100 percent of the Probable Maximum Precipitation (PMP) through the auxiliary spillway without overtopping the dam, and the capacity to safely contain the 100-year, 10-day storm without flowing over the crest of the earthen auxiliary spillway. FWRS No. 36 will overtop during passage of the PMP. Further development within the breach zone of this dam, which includes the structures listed previously, have increased the hazard classification of the dam to high hazard. The dam does not meet the high hazard safety and performance criteria.

Breach Analysis and Hazard Classification

FWRS No. 36 was designed and constructed as a low hazard class (a) structure, but due to changes in dam safety criteria and development that has occurred downstream of the dam, a review of the hazard classification of FWRS No. 36 was required. A breach analysis was conducted on the site to determine the potential risk to loss of life if the dam suddenly failed under the following defined conditions: "Sunny Day Conditions" with the water surface at top of dam (TOD) elevation and no inflow. The results of the breach analysis are shown on the Breach Inundation Map, Appendix C, which shows the location and extent of the potential breach inundation area and damage locations. FWRS No. 36 is located north of Sallisaw, Oklahoma. One hundred-sixteen structures, 2 highways, 1 interstate, 2 railroads, and 6 country roads located below FWRS No. 36 were evaluated for potential breach impacts.

Actual breach damage locations below FWRS No. 36 include 29 houses, two mobile homes, one apartment building, five businesses, two highways (OK-101, US-64), an Interstate Highway (I-40) and five county roads. The depth of inundation of the houses due to a breach would range from 0.5 to 9.1 feet in depth and the mobile homes would be inundated with depths from 1.7 to 2.8 feet. A breach event would also overtop Interstate 40 by 0.4 feet, US-64 by 2.4 feet, OK-101 by 9.0 feet, and 5 local and county roads between 3.2 and 15.3 feet in depth. It is the potential for loss of life during a breach event of Sallisaw Creek FWRS No. 36 that requires a classification upgrade to high hazard. This determination has been made by the NRCS State Conservation Engineer (2006). The State of Oklahoma classifies Sallisaw Creek FWRS No. 36 as an intermediate sized high hazard dam.

Analysis of Sediment Accumulation

A Bathymetric survey was performed on this site to determine the existing available sediment storage and to determine the sedimentation rate. This site has accumulated sediment at a rate close to that which was originally forecast.

FWRS No. 36 was initially planned with a total of 0.50 inches of sediment storage for 50 years. This computes to a total of 249 acre-feet. An additional 120 acre-feet of sediment pool storage was provided by borrow excavation. The actual accumulation for the life of the structure has been 175 acre-feet in 54 years, a total of 0.39 inches. The existing submerged sediment pool has a remaining capacity of 159 acre-feet. Analysis of the historic sediment yield and the historic and current land use and cover conditions indicate that this is reasonably accurate. For the purpose of rehabilitation planning, a total yield of 513 acre-feet of sediment (1.14 inches) will be used for a 100-year life. This will be divided out as 159 acre-feet submerged and 354 acre-feet aerated.

Evaluation of Potential Failure Modes

As noted in the previous section, both the NRCS and the State of Oklahoma classify Sallisaw Creek FWRS No. 36 as a high hazard dam with the potential for loss of life if the dam were to suddenly fail. As a result of increased concern, the following potential modes of failure were evaluated:

Sedimentation: Sediment surveys show that FWRS No. 36 is capturing sediment at a rate close to that forecasted in the original work plan. Sedimentation presents a low risk of failure in the future due to increased use of the auxiliary spillway.

Hydrologic Capacity: The existing auxiliary spillway is considered to have a moderate resistance to erosion.

The dam embankment is earthen with fair to good vegetal cover. The existing structure will pass the runoff from a 24-hour storm of 14.91 inches of rainfall, without overtopping the dam. This is the required freeboard storm for a large-sized low-hazard dam. To meet NRCS criteria for a high hazard dam the site is expected to pass the 24-hour PMP storm of 33.54 inches without overtopping. The overall potential for hydrologic failure of the dam is high.

Seepage: FWRS No. 36 does not have a foundation drainage system, but it does have an embankment drainage system consisting of a chimney drain and a blanket drain. There are no signs of excessive seepage along the downstream toe of the dam. Seepage presents a low risk for failure.

Seismic: The Sallisaw Creek Watershed is located in an area of low potential seismic activity. The embankment has a large bulk and a well consolidated foundation. Therefore, seismic activity presents a low potential mode of failure for FWRS No. 36.

Material Deterioration: A video inspection of the principal spillway pipe was not available for FWRS No. 36. However, the conduit for this site does have concrete anti-seep collars, which have been shown to cause cracking in pipes of similar age and construction. The concrete riser is beginning to show signs of deterioration, as is the hardware. Material deterioration presents a moderate risk for failure.

Consequences of Dam Failure: The evaluation of potential failure modes indicates that overall, the embankment is in good condition. The most likely source of a potential dam failure is the inadequate hydraulic capacity of the earthen auxiliary spillway to safely pass high hazard hydrologic loadings for the revised hazard classification, and/or the deterioration of the principal spillway conduit. Sediment accumulation in the detention pool could further enhance the potential for failure due to inadequate hydraulic capacity. Even though the risk of dam failure from overtopping of the dam due to inadequate spillway capacity, or from internal erosion due to principal spillway conduit failure may be high, the exact mode and timing of a dam failure is extremely difficult to predict. Nevertheless, the consequences of dam failure, if it occurred, could be catastrophic. A sudden failure of the dam could potentially cause loss of life to residents of 29 houses, two mobile homes, one apartment building, and five businesses below FWRS No. 36 and motorists traveling on the two highways (OK-101, US-64), Interstate Highway (I-40), and five county roads. Large amounts of fill material (sediment) that make up the embankment of the dam would be released into the stream system, impairing water quality, degrading aquatic habitat, and ultimately increasing downstream flooding by reducing channel capacity. The productivity of cropland, pasture, and hay meadows would be impaired or destroyed because of sedimentation. Fences and farm equipment could be damaged or destroyed and livestock may be endangered. Two cultural resources have the potential to be impacted, one 1.87 miles downstream near State Highway 101, and one 3.92 miles downstream in an open pasture. Reducing the risk of loss of human life and meeting the current dam safety criteria and performance standards are the underlying reasons for the rehabilitation of FWRS No. 36. The population-at-risk (PAR) downstream of FWRS No. 36 is 139, according to the risk assessment.

Alternatives

Formulation of Alternatives

Concerns to be addressed in the formulation process are the potential deterioration of the principal spillway inlet and conduit, and the potential overtopping of the dam during passage of design storms. Alternatives that meet NRCS high hazard dam criteria will pass at least the 100-year storm (1% chance of occurrence) without auxiliary spillway flow.

Defining the Future Without Project Condition for Rehabilitation

The No Action/Future Without Federal Project (FWOP) alternative describes conditions that are most likely to exist over the evaluated life of the project in lieu of any Federal action. This alternative defines the baseline condition against which all other alternatives are evaluated. No federal funds would be expended beyond the designed life of the FWRS. Sallisaw Creek FWRS No. 36 was originally classified as a low hazard class (a) dam. However, the existence of 29 houses, two mobile homes, one apartment building, five businesses, two highways, I-40, and five county roads – all within the breach impact area, requires either reclassification of the dam to high hazard, or relocation and flood proofing to remove the potential hazards and maintain the current low hazard classification. FWRS No. 36 does not have the required auxiliary spillway capacity to pass the OWRB freeboard storm for a high hazard dam. Based on discussions with the Oklahoma Water Resources Board (OWRB), which coordinates the Oklahoma Dam Safety Program, on what actions would occur in the absence of local, state, or federal funding for dam rehabilitation, it is most likely that unless the dam meets state criteria for a high hazard dam the OWRB would issue an order to the project sponsors to address structural deficiencies and safety concerns of the unsafe dam. In response to that order, the project sponsors must weigh several options considering their long-term goals and objectives, laws, liability, public health and safety, and costs.

- Goals and Objectives

The goals and objectives of the sponsors are to operate and maintain the flood protection capability of FWRS No. 36 for the remaining service life, while ensuring the dam meets current safety criteria in order to reduce the risk for loss of life. They are also concerned about the liability associated with dam ownership.

- Options

Upgrade Dam to Meet State Criteria: Without Federal assistance, which the sponsors have benefited from for the last 57 years, the options available to them to achieve their objectives may come at a higher cost because they would need to retain the professional engineering services from other sources. To achieve some of or all their objectives the sponsors could upgrade the existing dam to meet Oklahoma Water Resources Board (State) dam safety criteria, or they could fully rehabilitate the dam to meet NRCS criteria, but without Federal assistance. There is little difference between State and NRCS criteria for dam design. The NRCS criteria require larger principal spillway pipes, and greater flood detention without flow through the auxiliary spillway. Upgrading the dam to meet State criteria would satisfy the State's order. The estimated cost of upgrading the dam to meet State criteria, which includes the cost of a private engineering firm for planning and design, is about $438,000. There are also the added costs of future O&M ($1,200 per year) and technical assistance (TA) associated with private engineering firms. This option would not provide as high a level of flood damage reduction as upgrading to meet NRCS criteria. Since upgrading the

dam to meet Oklahoma criteria only raises the top of dam and does not replace the principal spillway, add sediment storage, improve the auxiliary spillway, and other improvements as needed, this option would not extend the life of the dam.

Rehabilitate Dam to Meet NRCS Criteria: For the sponsors to achieve their objectives utilizing NRCS criteria, but without the Federal assistance which they have benefited from over 57 years, the sponsors would need to retain the professional engineering services from other sources. This would result in higher rehabilitation costs and the added costs of future O&M and technical assistance associated with private engineering firms. To meet the NRCS criteria, the site would have a wider auxiliary spillway with additional freeboard, provided either by raising the top of dam elevation or lowering the existing auxiliary spillway crest. The principal spillway would be replaced to provide structural integrity for an additional 100 years of service life. The estimated cost of rehabilitating the dam to NRCS criteria and extending the life for 100 years is $5,898,200. The estimated cost for annual O&M is $15,200.

Relocation/Floodproofing: Removing the hazards downstream in order to maintain the existing low hazard classification would involve relocating and/or flood-proofing homes, and businesses, addressing the impacts to interstate, US, State, and county roads and obtaining conservation flood easements to prevent future housing development on the breach impact area.

For FWRS No. 36, this would require relocating and/or flood-proofing 37 locations and obtaining conservation easements on about 4,110 acres in the breach impact area to prevent future development. The heavily traveled interstate, US and state highways and county roads could not be moved, and motorists would be at risk if there was a catastrophic breach of the dam, i.e., there would still be the potential for loss of life. The estimated cost for relocation/flood-proofing and conservation flood easements for FWRS No. 36 is $16,200,700.

Sponsor Breach: The sponsors could choose to breach the dam to eliminate the possibility of a catastrophic failure of the dam and potential loss of life. Breaching the dam would remove the flood detention capacity of the site. This alternative would not meet the sponsor's goals of continued flood protection.

Federal permitting requirements would prohibit the sponsors from merely performing a simple breach of the dam to eliminate the hazard because of the environmental impacts that it could create. A section of the dam would be removed down to the valley floor with a bottom width sufficient in size to safely pass the 100-year 24-hour storm event without causing significant erosion. The excavated fill would be placed in the auxiliary spillway and sediment pool area. A stable channel would be excavated through the stored sediment pool area to reconnect and restore the hydrologic functions of the stream system. Riparian habitat would be restored along the excavated stream channel and vegetation of all disturbed areas and the sediment pool area would be done to restore natural habitat and prevent erosion. Removal of the embankment and restoration of the riparian area, along with flood-proofing structures in the downstream floodplain would cost $5,033,700.

- Sponsor's Action_ No Federal Assistance

Costs and liability associated with the various options are important issues for the sponsors. Discussions with the sponsors indicate that they value their partnership with NRCS in the flood control program. Breaching the dam would result in loss of flood protection downstream. Upgrading the dam to meet State standards would extend the service life of the structure, but the sponsors could possibly lose NRCS technical assistance in the future if the dam was not built to NRCS criteria. Because of costs and liability issues, the

sponsors have indicated that they would upgrade the dam to meet Oklahoma Water Resources Board Criteria in the absence of federal assistance to rehabilitate the dam.

Alternatives Considered but Eliminated from Detailed Study

Non-structural measures to remove the breach hazard would consist of relocating or floodproofing 29 houses, two mobile homes, an apartment, five businesses and obtaining conservation easements on about 4,110 acres in the breach impact area to prevent future development. Bridges on interstate 40, US Highway 64, and State Highway 101 would need to be upgraded to pass the uncontrolled runoff. The estimated cost for this would be $18,200,700. This alternative would not extend the life of the dam. Due to the high cost this alternative was not considered for detailed study.

Rehabilitation of the dam to high hazard criteria by using an RCC spillway was considered, but the cost of $6,091,200 for the RCC chute exceeded the cost of the excavation and installation of ACB protection in the excavated spillway.

Description of Alternatives Considered for Detailed Study

- Decommissioning

Decommissioning, or removing the embankment to remove the hazard, would consist of removing a section of the embankment, re-establishing the stream channel through the sediment pool and embankment footprint, installing a rock riprap grade control structure to stabilize the sediment pool and prevent head-cutting and revegetating the sediment pool and other disturbed areas. Relocation and/or floodproofing and restrictive easement would be needed to prevent induced flooding damages on the areas no longer protected by the dam. The cost of this work, along with relocation and/or flood proofing of 23 structures and restrictive easements on about 319 acres would be about $8,163,600. Annual O&M costs would be about $5,800 per year. Decommissioning would also result in the loss of flood damage reduction benefits on agricultural lands by removing the flood detention capabilities of the site.

- Rehabilitation to Low Hazard Criteria (with Floodproofing and Relocation)

Rehabilitation of FWRS No. 36 to current low hazard criteria was considered during the planning process. This would require relocating and/or flood-proofing 29 houses, two mobile homes, an apartment, five businesses and obtaining conservation easements on about 4,110 acres in the breach impact area to prevent future development. The heavily traveled highway and county roads could not be moved, and motorists would be at risk if there was a catastrophic breach of the dam, i.e., there would still be the potential for loss of life. The estimated cost for relocation/flood-proofing and conservation flood easements alone is $16,200,700. This would not address the rehabilitation of the existing dam. The estimated cost for upgrading the site to meet current low hazard criteria and extend the service life would be another $2,388,300, bringing the total cost to 18,589,000. Operation and Maintenance costs would be another $6,100 annually.

- Rehabilitation to High Hazard Criteria (NEE)

This alternative describes a plan to extend the service life of FWRS No. 36 for another 100 years and meet applicable safety and performance standards for a high hazard dam. This alternative will provide storage to contain the 100-year storm event (1% chance in any given year) routed through the principal spillway with

no flow through the auxiliary spillway. The principal spillway would be replaced with a new 36-inch diameter RCP conduit, with a standard NRCS design riser. The capacity of the principal spillway would be increased to about 209 cfs. A concrete impact basin would be installed to dissipate energy at the outlet of the conduit. The principal spillway crest would remain at the existing elevation of 674.6, and the sediment pool would have a surface area of 15 acres. The larger principal spillway would reduce the detention pool drawdown time to less than 10 days, eliminating the need for the compensatory detention pool. The auxiliary spillway will be maintained at a width of 250 feet and will be lined with Articulating Concrete Blocks (ACB) to provide erosion control and stability. As a result of the larger principal spillway which provides drawdown of the detention pool within 10 days, and the corrections to the drainage area, the auxiliary spillway crest elevation could be lowered 6.4 feet to elevation 722.8, resulting in a 32-acre decrease in detention pool area, from 153 to 121 acres. The top of dam would remain at elevation 733.9 and the dam height would be 73 feet to average valley floor. The total cost to rehabilitate the dam would be $5,468,900. The annual O&M costs would be $15,200.

A storm water pollution prevention plan would be developed to mitigate for erosion during project construction. The existing pool would be lowered enough for the new principal spillway to be installed and would remain drawn down only long enough to complete the installation. An Emergency Action Plan (EAP) for FWRS No. 36, which designates responsible parties and appropriate actions to be taken in the event of a potential dam failure, would be developed by the project sponsors prior to any rehabilitation construction.

- National Economic Efficiency (NEE)

The NEE alternative is the alternative that reasonably maximizes net national economic benefits consistent with protecting the Nation's environment. The NEE alternative may be one of the other alternatives or a combination of alternatives. To avoid seeking individual exceptions in those cases where human life is at risk in the event of catastrophic failure of an existing dam, the NEE plan is the federally assisted alternative with the greatest net economic benefits. This removes the FWOFI (no-action) alternative as a NEE plan option where human life is at risk in the event of catastrophic failure of an existing dam. The NEE alternative identified in this plan is the Rehabilitation to High Hazard Criteria.

- No Action/ Future Without Project (FWOP)

This alternative describes the future of the site with no action taken for any remediation. The site was evaluated for the storm event that would cause an overtopping failure and a failure of the auxiliary spillway. The overtopping failure for this site occurs at the 1250-year storm event (0.08% chance in a given year). The storm event that caused an auxiliary spillway failure was the 7000-year event (a 0.015% chance in a given year). Since the top of dam failure event has a higher chance of occurring in a given year, the top of dam storm event was used in the analysis. Since the top of dam failure was greater than 1000 years, the 1000-year event was used.

Environmental Consequences: Evaluate Alternatives

Alternative plans of action can result in a multitude of potential effects on resources upstream and downstream of the dam. This section of the Plan-EA evaluates and compares alternatives based on their performance against planning criteria, environmental impacts, and ecosystem services. Comparing the alternatives resolve the identified problems, as well as meeting the evaluation criteria of completeness, acceptability, efficiency, and effectiveness. These criteria are defined by the Principles, Requirements, and Guidelines (PR&G) comprehensive policy and guidance for Federal investments.

Four alternative plans were considered and evaluated in detail.

- Decommissioning
- Rehabilitation to high hazard. Upgrade the dam to meet current NRCS safety criteria and performance standards for a high hazard dam.
- Rehabilitate to low hazard criteria. Relocating and/or floodproofing structures and roads.
- No Action (FWOFI). No action will be taken.

Effects of Individual Alternatives Relative to Resource Concerns:

Soil (Including Prime Farmland)

Decommissioning: Soil disturbance would be related to notching the dam to remove storage function and capacity. Soils excavated from the dam embankment to create the notch would be redistributed on site, and disturbed areas would be stabilized using BMPs common to construction projects, especially those consistent with NRCS practices and policies. In the short term, adverse effects would be minimized using BMPs. In the long term, streambank erosion would be reduced by channel restoration to pre-dam conditions, resulting in effects that would be negligible.

Rehabilitate to high hazard criteria: Short-term soil disturbance would be related to construction activities for rehabilitation and subsequent operation and maintenance of the dam. Disturbed areas would be stabilized using BMPs common to construction projects, especially those consistent with NRCS practices and policies. In the short term, adverse effects would be minimized by use of BMPs. In the long-term effects from ongoing operation and maintenance of the dam would be negligible.

Rehabilitate to low hazard criteria: The short-term effects to soils may include temporary disruption from equipment and vehicles during floodproofing construction work. Disturbed areas would be stabilized using BMPs common to construction projects, especially those consistent with NRCS practices and policies.

No Action: Site conditions would remain the same with limited effects from soil erosion and sedimentation at the principal spillway discharge. In the event of dam failure, erosion and sedimentation would drastically increase during breach events, as well as during future flooding events due to loss of flood protection by the dam.

Water

Water Quality (Including WOTUS)

Decommissioning: Implementation of BMPs is important to minimize impacts to water quality during construction and stabilization of disturbed areas, and to ensure future flooding doesn't result in impacts to water quality due to additional sediment loading and pollutants from stormwater runoff. In the short term, adverse effects will be negligible. In the long-term, effects would be beneficial due to stabilization of disturbed sites and revegetation of the riparian corridor. Dam removal can have long-term benefits on riverine systems. These systems can regain structure and function to the stream segments itself, as well as the surrounding riparian areas. Decommissioning, however, would not meet the purpose and need of the proposed project. Flood protection would no longer exist downstream. This alternative would require 404 permitting due to impact to WOTUS.

Rehabilitation to high hazard criteria: Construction work may temporarily impact water quality by increasing the total suspended solid loads/turbidity of the intermittent stream during construction related activities. BMPs (e.g., turbidity curtain, silt fence, straw bales, etc.) would be utilized during construction to mitigate the release of material to the stream. A Stormwater Pollution Prevention Plan would be developed prior to the beginning of construction. Adverse effects would be short-term and negligible, with retention of the impoundment having long-term benefits as it continues to trap sediment and pollutants. This alternative would require 404 permitting due to impact to WOTUS.

Rehabilitate to low hazard criteria: The dam would not release sediment or pollutants into Little Wewoka Creek that would change the designation of the stream, which is currently under TMDL requirements for the Lower Northern Canadian River. Permitting may be required with this alternative, if relocating and floodproofing would impact WOTUS.

No-Action: Project area conditions would remain the same as existing conditions until the dam fails. Downstream of FWRS No. 36 is Robert S Kerr Reservoir, which is listed as an 303(d) impaired stream. Upon dam failure, additional sediment and pollutants could be discharged into Little Sallisaw Creek. Downstream of FWRS No. 36 is Robert S Kerr Reservoir, which is listed as an 303(d) impaired stream. If the dam fails, the increase in sediment and pollutants would need to be addressed if enough reach Kerr Reservoir and exceed TMDL requirements. No 404 permitting would be required.

Water Quantity

Decommissioning: There would be a loss of approximately 15 surface acres of lake habitat.

Rehabilitate to high hazard criteria: The principal spillway would remain at the existing elevation, keeping the ordinary high-water mark of the conservation pool the same.

Rehabilitation to low hazard criteria: This alternative would affect water quantity the same as rehabilitation to high hazard.

No Action: The principal spillway would remain at the existing elevation, keeping the ordinary high-water mark of the conservation pool the same. Dam failure would lead to a loss of approximately 15 surface acres of lake habitat.

Floodplain Management

Decommissioning: Decommissioning of the dam would lead to an increase in the occurrence of flooding downstream. The function of the floodplain would be partially restored overtime.

Rehabilitation to high hazard criteria: Rehabilitating the dam to high hazard will have no impact to the FEMA regulated floodplain.

Rehabilitation to low hazard criteria: Rehabilitating the dam to low hazard will have no impact to the FEMA regulated floodplain.

No Action: Under this alternative, there would be no changes to the function of the existing floodplain. Short-term flooding would occur downstream following dam failure. There would be a long-term increase of flooding occurrences downstream within the floodplain. Over time the function of the floodplain would be partially restored.

Wetlands

Decommissioning: Construction to decommission the dam and restore the original stream channel and surrounding habitat would have short-term, adverse impacts that would be mitigated using BMPs and with the implementation of the SWPPP. There would be long-term adverse impacts to existing wetlands as connectivity to the mainstream channel would be interrupted. Decommissioning the dam would have long-term positive effects to the newly formed stream channel, comparatively returning flow to pre-impoundment characteristics and increasing wildlife habitat as the riparian corridor returns to the stream channel.

Rehabilitation to high hazard criteria: There would be minor, short-term, adverse impacts during construction due to drawdown of the conservation pool, equipment access to the spillway and dam, and removal of vegetation necessary for proposed construction.

Rehabilitation to low hazard criteria: There may be minor, short-term, adverse impacts during relocating and floodproofing activities, if wetlands are located in those areas.

No Action: The No Action alternative would have no new effect on WOTUS and adjacent wetlands. Operation and maintenance would continue as needed. In the event of a catastrophic dam failure, long-term adverse impacts would occur on existing wetlands and connectivity to the main stream channel would be interrupted. A dam breach would have positive effects on the newly formed stream channel, returning flow to pre-impoundment characteristics and increasing wildlife habitat as the surrounding riparian corridor returns to the stream channel.

Air (Clean Air Act)

Decommissioning: There is potential for short-term temporary increase in PM-10 or other potential emissions with some alternatives. Currently Oklahoma has no listed Nonattainment Counties for all Criteria Pollutants. Pollutant emissions consistent with construction equipment (vehicles) will likely increase the emission rate of PM-10 but not reach levels of concern. This increase in PM-10 will be temporary (approximately 12 – 16 months), upon rehabilitation completion, PM-10 emissions will discontinue.

Rehabilitation to high hazard criteria: Oklahoma has no listed nonattainment counties for all criteria pollutants. There is potential for short-term temporary increase in PM-10 or other potential emissions with some alternatives. Currently Oklahoma has no listed Nonattainment Counties for all Criteria Pollutants.

Pollutant emissions consistent with construction equipment (vehicles) will likely increase the emission rate of PM-10 but not reach levels of concern. This increase in PM-10 will be temporary (approximately 12 – 16 months), upon rehabilitation completion, PM-10 emissions will discontinue.

Rehabilitation to low hazard criteria: There is potential for short-term temporary increase in PM-10 or other potential emissions from relocating or floodproofing activities. Currently Oklahoma has no listed Nonattainment Counties for all Criteria Pollutants. Pollutant emissions consistent with construction equipment (vehicles) will likely increase the emission rate of PM-10 but not reach levels of concern. This increase in PM-10 will be temporary until project completion.

No Action: A catastrophic dam breach would have no impact on air quality.

Plants

Invasive Species

Decommissioning: BMPs, including inspection and washing of equipment on-site, should be implemented to avoid the potential for spreading invasive plant materials off site during construction. This alternative would have a negligible effect. If excavated fill from the project area is used on-site, and not removed, construction of the proposed project would not contribute to the spread of vegetative invasive species.

Rehabilitation to high hazard criteria: Implementation of construction BMPs to minimize the spread of existing invasive species would have negligible effects. Existing conditions present with the dam would continue in the long term.

Rehabilitation to low hazard criteria: This alternative would have similar effects as rehabilitation to high hazard.

No Action: Invasive species present will continue to be present and will need to be managed by landowners to prevent their spread to other sites. Land disturbances should be monitored for the potential to spread invasives within the project area and to adjoining landscapes. This alternative would have a negligible effect.

Natural Areas

Decommissioning: Removal of the dam and restoration of the stream channel and adjoining riparian vegetation would change the natural area from open water to stream and woodland, resulting in no net change in the overall surrounding natural areas.

Rehabilitation to high hazard criteria: Construction activities involving tree and brush removal and drawdown of the conservation pool would have minor, short-term, adverse impacts on natural areas surrounding the dam. Rehabilitation of the dam would preserve the existing natural areas, therefore would have no effect.

Rehabilitation to low hazard criteria: The ongoing operation and maintenance of the dam as well as flooding proofing structures and roads, would have no effect on the natural area surrounding the dam.

No Action: The ongoing operation and maintenance of the dam would have no effect on the surrounding natural areas. Dam failure would result in long-term, adverse effects due to the loss of the reservoir and the impacts resulting from increased flooding.

Riparian Areas

Decommissioning: This alternative would impact the riparian habitat surrounding the conservation pool. Decommissioning the dam would permanently drain the conservation pool, altering habitat along the pool edge. New riparian habitat (corridor) would re-establish along Little Sallisaw Creek over time.

Rehabilitation to high hazard criteria: The proposed rehabilitation will not permanently change the conservation pool elevation, therefore no long-term impacts to riparian habitat is anticipated. Construction activities related to rehabilitation would be limited to the area surrounding the existing dam and auxiliary spillway. Clearing riparian vegetation below the dam may be necessary to implement auxiliary spillway changes and slip lining the principal spillway pipe. BMPs should be implemented to protect trees and other riparian vegetation from construction equipment and project implementation. Construction activities and drawing down of the reservoir would have short-term adverse effects. The existing conditions would be maintained in the long term, resulting in no effects.

Rehabilitation to low hazard criteria: The proposed rehabilitation will not permanently change the conservation pool elevation, therefore no long-term impacts to riparian habitat is anticipated.

No Action: This alternative would impact the riparian habitat surrounding the conservation pool. Dam failure or intended breach would permanently drain the conservation pool, altering habitat along the pool edge. New riparian habitat (corridor) would re-establish along Little Sallisaw Creek over time.

Land Use

Decommissioning: Increased flooding in the absence of the dam could have minor, short-term, adverse effects on land use but is not likely to have an effect in the long term given the rural and natural character of the landscape.

Rehabilitation to high hazard criteria: There will be no changes in land use within the project area due to rehabilitation of the dam.

Rehabilitation to low hazard criteria: There will be no changes in land use within the project area due to relocation or floodproofing structures.

No Action: Ongoing operation and maintenance of the dam would have no effect on land use. Catastrophic dam failure could have minor, long-term, adverse effects on land use upstream and downstream of the dam site due to increased flooding increasing the width of the floodplain.

Forest Resources

Decommissioning: This alternative would have minor adverse impacts on forest resources surrounding the conservation pool. Decommissioning the dam would permanently drain the conservation pool, altering habitat along the pool edge. New riparian habitat (corridor) would re-establish along Little Sallisaw Creek over time, likely increasing the quantity of forest resources in the project area.

Rehabilitation to high hazard criteria: The proposed rehabilitation will not permanently change the conservation pool elevation, therefore no long-term impacts to forest resources is anticipated. Construction activities related to rehabilitation would be limited to the area surrounding the existing dam and auxiliary spillway. Clearing trees and vegetation below the dam will be necessary to implement auxiliary spillway changes and slip lining the principal spillway pipe. Construction activities and drawing down of the reservoir would have short-term adverse effects. The existing conditions would be maintained in the long term, resulting in minor effects.

Rehabilitation to low hazard criteria: No long-term impacts to forest resources is anticipated with this alternative. Clearing a few trees and vegetation may be required for floodproofing structures, resulting in short-term adverse impact to those cut individuals.

No Action: This alternative would have similar effects to the decommissioning alternative, if dam were to fail.

Animals

Fish and Wildlife Habitat

Decommissioning: Construction activities could disrupt wildlife behavior in the area for one to two years. Aquatic and terrestrial habitats would be disturbed during and immediately after construction, with changes to vegetation and topography. Little to no mortality of wildlife should occur, as most species can move out of the way. Implementation of BMPs, including the restriction of earth-moving activities during nesting seasons and replanting native species in disturbed areas to the greatest possible extent, would be required. Habitat structure would shift towards riparian with restoration of the stream corridor. This alternative would result in minor, long-term benefits as the natural flow regime of the creek was restored and riparian habitat was established.

Rehabilitation to high hazard criteria: Construction activities could disrupt wildlife behavior in the area for one to two years. Aquatic and terrestrial habitats would be during and immediately after construction. There would be minor, short-term, adverse effects during and immediately after construction. In the long term, effects would be minimal, as fish and wildlife would use the habitat areas they likely had prior to rehabilitation of the dam. Trees will need to be felled before construction; however, the quantity of woodland would not be expected to increase resource competition or decrease habitat availability for terrestrial species. Long-term, woodland species removed for construction purposes will be allowed to grow back.

Rehabilitation to low hazard criteria: Construction activities associated with floodproofing or relocating structures may disrupt wildlife behavior in the area. There would be minor, short-term, adverse effects during these activities, with no long-term adverse effects anticipated.

No Action: Ongoing operation and maintenance of the dam would have no effect on fish and wildlife, as aquatic and terrestrial habitats would remain relatively undisturbed. Fish and wildlife in the area would continue to exist under current conditions. Upon dam failure, this alternative would have a long-term adverse effect on wildlife species if flooding in the area increases and results in adverse impacts to aquatic and terrestrial habitats present within the floodplain.

Threatened and Endangered Species

Decommissioning: Construction activities related to rehabilitation of the dam will be limited to the area immediately surrounding the existing dam and associated accoutrements. Construction activities may have a short-term adverse impact on habitat for the American burying beetle and the monarch butterfly. Stream channel restoration and riparian corridor vegetation would have long-term benefits by providing additional habitat for all listed species.

Rehabilitation to high hazard criteria: Construction activities for dam rehabilitation are not likely to have an adverse effect on threatened and endangered species. As noted in the IPAC Consultation Packet included in Appendix A (March 21, 2025), the USFWS concurs with this determination. Retention of the impoundment would provide long-term benefits by maintaining existing habitats.

Rehabilitation to low hazard criteria: This alternative would have the same effects as rehabilitation to high hazard.

No Action: Ongoing operation and maintenance of the dam would have no effect on threatened and endangered species. This alternative could have long-term adverse impacts on threatened and endangered species if flooding in the area increases upon catastrophic failure of the dam.

If trees need to be felled for this project, tree felling will take place between Nov. 15 – March 15 during the inactive period for bat species. Trees will also be felled outside of the primary nesting season for migratory birds. The project is also within rage of the monarch butterfly, a candidate species, with potential habitat located in the action area. Moist soil condition from temporary dewatering of the conservation pool may increase preferred nectar sources short-term. Timing construction to avoid the migratory bird primary nesting season and/or habitat alterations prior to construction will also minimize potential monarch impacts that will not jeopardize the population (NECH 610.26). Downstream dam may limit the migration of juvenile alligator snapping turtles. No evidence of an abundance of structure (logs, undercut of bank) has been noticed within the conservation pool. No critical habitat for any listed species is found within the project area, therefore activities involved with dam rehabilitation “may affect, not likely to adversely affect” all listed species. (Species Conclusion Table Appendix A).

Migratory Birds, and Bald and Golden Eagles

Decommissioning: Migratory birds are likely to nest within the project area. Implementation of BMPs to reduce the potential for the incidental take of migratory birds can include (1) clearing or grading of the site during the non-breeding season, or (2) conducting migratory bird nest surveys shortly before project construction to confirm the absence of nesting birds. While migratory birds are likely to avoid active construction areas, regular monitoring of areas within the project site should be done given that construction activities may take up to a year to complete. Restoration of the stream channel and revegetation of the corridor with native riparian woodland species would provide long-term benefits in increased habitat suitable for many migratory bird species.

Rehabilitation to high hazard criteria: This alternative would have short-term impacts due to construction noise. Initial trees and brush removal, due to construction activities will be allowed to grow back, providing long-term habitat for various bird species.

Rehabilitation to low hazard criteria: This alternative would have short-term impacts due to construction noise during relocation or floodproofing activities. Initial trees and brush removal, due to construction activities will be allowed to grow back, providing long-term habitat for various bird species.

No Action: Ongoing operation and maintenance of the dam would have no effect on migratory birds and their use of the project area for breeding and nesting. Dam failure could result in minor adverse impacts due to increased flooding and loss of habitat. It is likely most birds would simply move to other areas with suitable habitat.

Humans

Public Health and Safety

Decommissioning: Removal of the dam would result in 29 homes, two mobile homes, one apartment building, five businesses, two highways (US 64 and State Hwy 101), Interstate 40, and five county roads in the breach zone being at risk from flooding during the 100-year storm. Floodproofing or buyout of these structures and modifications (roads can't be moved) to the two highways, I-40 and five county roads downstream of the dam would provide short-term benefits. Long-term adverse impacts could incur due to increased flooding and the expansion of the floodplain, which could result in impacts to structures and roads not previously in a flood zone.

Rehabilitation to high hazard criteria: There would be no new effects as the same level of protection from a breach would be provided as it is under existing conditions. The 29 homes, two mobile homes, one apartment building, five businesses, two highways (US 64 and State Hwy 101), Interstate 40, and five county roads present within the breach zone would continue to experience flooding during some storm events.

Rehabilitation to low hazard criteria: This alternative would have the same effects as high hazard criteria alternative.

No Action: Interstate 40, US 64, State Hwy 101, and five county roads located below the dam within the breach zone serve as primary routes for residents, school attendees, and emergency services. Flood protection would be maintained for these facilities during flood events with the ongoing operation and maintenance of the dam. Catastrophic dam failure resulting in loss of flood protection for infrastructure and structures located downstream of the dam would have long-term adverse effects. Motorists would be at risk if they were traveling along these heavily traveled highways and county roads and there was a catastrophic breach of the dam.

Socioeconomics/ Social Issues

Decommissioning: Decommissioning the dam could create short-term, local employment opportunities and demand for supplies that would likely be sourced from local suppliers. Construction would have minor, short-term benefits to the socioeconomics of the area.

Rehabilitation to high hazard criteria: Rehabilitation of the dam could create short-term, local employment opportunities and demand for supplies that would likely be sourced from local suppliers. Construction would have minor, short-term benefits to the socioeconomics of the area.

Rehabilitation to low hazard criteria: This alternative would have the same effects as the high hazard criteria alternative.

No Action: Operation and maintenance of the dam would continue and may generate limited short-term employment, resulting in minimal effects on the local economy. Upon dam failure, the recurring, short-term employment opportunities related to the dam would cease but could potentially occur related to flood damage clean up.

Scenic Beauty

Decommissioning: Removal of the dam and restoration of the stream channel and adjoining riparian vegetation would change the aesthetics from open water to stream and woodland, resulting in no net change in the overall scenic beauty of the area.

Rehabilitation to high hazard criteria: Construction activities and drawdown of the conservation pool would have minor, short-term, adverse effects on aesthetics. Rehabilitation of the dam would preserve existing aesthetics and views within the project area and, therefore, would have no effect.

Rehabilitation to low hazard criteria: This alternative would have the same effects as rehabilitation to high hazard.

No Action: The ongoing operation and maintenance of the dam would have no effect on the aesthetics of the area. Dam failure would result in long-term, adverse effects due to the loss of the reservoir and the impacts resulting from increased flooding.

Cultural Resources and Historic Properties

Decommissioning and No Action Alternatives: The No Action alternative, like the Decommissioning alternative, has the possibility to affect unrecorded historic properties/archaeological sites/cultural resources (36 CFR 800.16(l)(1), GM 420401.2(14)) downstream should catastrophic failure of FWRS No. 36 occur—via abandonment and subsequent degradation of construction materials. Considering the impact of a catastrophic breach, on known historic properties/archaeological sites/cultural resources, there are six recorded archaeological sites along Little Sallisaw Creek (floodplain) between FWRS No. 36 and its junction with the Arkansas River, via the R.S. Kerr Reservoir, a distance of approximately 15 miles. There are 2 sites 1.7 miles downstream, another site is 3.5 miles farther downstream, an additional 2 sites are 7 miles downstream and the final site approximately 11 miles distant from FWRS No. 36. The exact locations of these archaeological sites have been withheld in accordance with Section 304 of the National Historic Preservation Act. It should be noted that Little Sallisaw Creek passes through eastern parts of Sallisaw, Oklahoma. There are four National Register sites in Sallisaw (Hines Round Barn, Sallisaw High School, First Presbyterian Church, and Judge Franklin Faulkner's home), yet all are in the western part of Sallisaw, outside the floodplain. There is a 1933 concrete culvert in the city limits of Sallisaw, Oklahoma, but it was determined not eligible for the National Register of Historic Places (National Register) by the Oklahoma Department of Transportation. Moreover, the culvert is in the western part of town, outside the floodplain. There are also three Government Land Office-mapped structures (GLO) along Little Sallisaw Creek between FWRS No. 36 and R.S. Kerr Reservoir. All but one are on hilltops overlooking the creek and thus will not be affected by a breach. The remaining GLO is captured by one of the six archaeological sites mentioned previously. Should the preferred alternative be No Action, consultation will need to be revisited with the consultation partners to discuss direct, indirect, or cumulative effects. It is quite possible the

development of a Memorandum of Agreement (MOA) will be necessary. The MOA will likely include a mitigation plan to account for the eventual catastrophic breach of the dam and any damage that might occur downstream of the structure. Keeping in mind that FWRS No. 36 is not eligible for the National Register, discussing the effects to the dam is moot. Regarding historic properties that are Traditional Cultural Places, or Traditional Cultural Landscapes and the like, consultation will need to be revisited as well. Moreover, these alternatives will need to be addressed with the Cherokee Nation since the majority of the dam site and pool have been incorporated into the Cherokee Nation's Sequoyah Hunting Preserve. Finally, even though FWRS No. 36 is a non-contributing element in the Sallisaw Creek Watershed Historic District, consultation with the SHPO will need to be revisited (perhaps in cooperation with the Cherokee Nation.

Rehabilitation to high hazard criteria: No recorded historic properties (archaeological sites or Traditional Cultural Places) eligible for listing on the National Register of Historic Places are present in the Area of Potential Effect (APE) based on archaeological and architectural surveys and Section 106 communications with consultation partners. As a contingency, consultation was conducted based on the probability that structural rehabilitation would be the preferred alternative. Taking the possible structural rehabilitation into consideration during consultation, as reflected in the field surveys and subsequent report of finding and determination, concurrence was received from the consultation partners. NRCS determined that Sallisaw Creek Watershed merits designation as an Historic District with contributing and non-contributing properties. Based on verbal conversation with the SHPO, the non-contributing properties of the historic district are those already rehabilitated by NRCS (FWRS Nos. 15, 16, 18, 20, 26, 28, 29, 30, 32, 33 and 34) as well as FWRS No. 36.

Rehabilitation to low hazard criteria: This alternative would have the same effects as the high hazard alternative.

Ecosystem Services

Food

Decommissioning: Decommissioning the dam would remove the current reservoir, reducing habitat for fish species, and eliminating fish as a recreational food source. The change from lacustrine habitat to riverine habitat would maintain a source of water for local wildlife, likely leading to minor impacts to terrestrial species, providing the opportunity for recreational hunting.

Rehabilitation to high hazard criteria and rehabilitation to low hazard criteria: The proposed rehabilitation will keep the existing conditions of the conservation pool. No long-term impacts to fish and wildlife resources are anticipated. Hunting and fishing recreation opportunities would stay the same.

No Action: Continued operation and maintenance of the dam would have no effect on the existing incidental recreation. Dam failure would result in long-term, adverse effects on recreation by removing the reservoir, may be used for fishing. The change from lacustrine habitat to riverine habitat would maintain a source of water for local wildlife, likely leading to minor impacts to terrestrial species, providing the opportunity for recreational hunting.

Regulating – Flood Control

Decommissioning: The increase in flooding without the dam would have long-term adverse impacts on properties and infrastructure due to increased flooding and enlarged floodplain.

Rehabilitation to high hazard criteria: Dam rehabilitation would maintain the existing level of flood protection. The current annual flood damage benefit for FWRS Sallisaw Creek No. 36 is $67,500.

Rehabilitation to low hazard criteria: Floodproofing structures and road modification would provide minor, short-term benefits.

No Action: Flood damage reduction would remain the same as exiting conditions, until the dam fails. Ongoing dam operation and maintenance would maintain the existing level of flood protection. Upon dam failure, 29 homes, two mobile homes, one apartment, five businesses, I-40, two highways and five county roads would be inundated during the 100-year storm. The current annual flood damage benefit for FWRS Sallisaw Creek No. 36 is $67,500.

Nutrient Cycling

Decommissioning: Decommissioning the dam would short-term impact vegetation along the embankment and increase sedimentation downstream during flooding events. The 15-acre reservoir would be lost after decommissioning activities.

Rehabilitation to high hazard criteria: The short-term effects to vegetation and nutrient cycling may include temporary impacts from heavy construction equipment and general construction activities.

Rehabilitation to low hazard criteria: The short-term effects to vegetation and nutrient cycling may include temporary impacts from heavy construction equipment and general construction activities.

No Action: Site conditions would remain the same as existing conditions until the dam fails. Dam failure would impact vegetation along the embankment and transport large amounts of sediment downstream, potentially impacting vegetation within the floodplain. The 15-acre reservoir would be lost upon dam failure.

Recreation

Decommissioning: Removal of the dam and the reservoir would have long-term adverse effects on incidental, water-related recreation. Removal of the dam and reservoir may result in long-term, adverse effects on hunting, if local wildlife use the reservoir as a primary source of water.

Rehabilitation to high hazard criteria: The proposed rehabilitation will not permanently change the conservation pool elevation, therefore no long-term impacts to fish and wildlife resources is anticipated. There will be short-term disruption from hunting and fishing recreation opportunities during construction from construction noise and the drawdown of the lake. Hunting and fishing recreation would return to existing conditions once construction is completed.

Rehabilitation to low hazard criteria: Continued operation and maintenance of the dam and flooding proofing structures downstream would have no effect on the existing incidental recreation.

No Action: Continued operation and maintenance of the dam would have no effect on the existing incidental recreation. Dam failure would result in long-term, adverse effects on recreation by removing the reservoir, which is used for fishing.

Aesthetic Viewshed

Decommissioning: Decommissioning the dam would result in changes in the viewshed, as the reservoir would drain permanently, returning to a riverine system. There would be short-term impacts to the aesthetic viewshed after dam failure. The wooded rolling hills and panoramic views would not be negatively impacted long-term.

Rehabilitation to high hazard criteria and rehabilitation to low hazard criteria: Site condition would remain the same as existing conditions resulting in no effect to the aesthetic viewshed.

No Action: Site conditions would remain the same as existing conditions until the dam fails. Dam failure would result in changes in the viewshed, as the reservoir would drain permanently, returning to a riverine system. There would be short-term impacts to the aesthetic viewshed after dam failure. The wooded rolling hills and panoramic views would not be negatively impacted long-term.

Tribal Values/ Education

Decommissioning: Decommissioning would result in long-term, effects on recreational and educational opportunities by removing the reservoir, which may be used for fishing. Land surrounding the reservoir would still retain tribal value and educational opportunities. Decommissioning construction would be scheduled around tribal cultural activities at the request of the Cherokee Nation.

Rehabilitation to high hazard criteria and rehabilitation to low hazard criteria: These rehabilitation alternatives will not permanently change the conservation pool elevation, therefore no long-term impacts to fish and wildlife resources is anticipated. There will be short-term disruption from hunting and fishing recreation and education opportunities during construction. No long-term impacts to land value or educational opportunities. Rehabilitation would be scheduled around tribal cultural activities at the request of the Cherokee Nation.

No Action: Site conditions would remain the same as existing conditions until the dam fails. Dam failure would result in long-term effects on recreation by removing the reservoir, which may be used for fishing. Land surrounding the reservoir would still retain tribal value and educational opportunities.

Inspiration/ Spiritual

Decommissioning: Decommissioning would result in changes in the viewshed, as the reservoir would drain permanently, returning to a riverine system. The wooded rolling hills and panoramic views would not be negatively impacted long-term, but this could alter the spiritual nature of this area.

Rehabilitation to high hazard criteria and rehabilitation to low hazard criteria: These rehabilitation alternatives will not permanently change the conservation pool elevation, therefore no long-term impacts to fish and wildlife resources is anticipated. The area will be maintained as a setting for leisure and introspection.

No Action: Site conditions would remain the same as existing conditions until the dam fails. Dam failure would result in changes in the viewshed, as the reservoir would drain permanently, returning to a riverine system. The wooded rolling hills and panoramic views would not be negatively impacted long-term, but this could alter the spiritual nature of this area.

Table 7. Sallisaw Site 36 Environmental Assessment for Watershed Planning and Summary and Comparison of Alternatives and Associated Ecosystem Services

	No Action (FWOFP)	Rehabilitation to high hazard criteria	Rehabilitation to low hazard criteria	Decommissioning
Major Features	No remedial action taken – Dam eventually fails	Rehabilitate to high hazard criteria	Rehabilitate to low hazard criteria. Purchase right-to-build easements downstream.	Decommission
Alternatives				
Locally Preferred		√		
Non-Structural				√
Environmentally Preferable		√		
National Economic Efficiency		√		
Socially Preferred		√		
Brief Description of Major Project Features	No remedial action taken – Dam eventually fails	Principal Spillway will be replaced to meet requirements for high hazard dams. Auxiliary spillway will be enlarged and armored with articulated concrete blocks to provide stability and integrity. Sediment storage will be added to provide 100-year service life.	Principal spillway will be replaced to ensure structural stability and to reduce drawdown time. Potential damage locations in breach area will be floodproofed or relocated. Easements will restrict land use in breach inundation area.	Section of embankment will be removed to prevent impoundment of water. Channel will be re-established through pool area. Grade will be stabilized to prevent erosion of sediment accumulation. Structures in enlarged downstream floodplain will be floodproofed

	No Action (FWOPI)	Rehabilitation to high hazard criteria	Rehabilitation to low hazard criteria	Decommissioning
Total Project Investment		$5,468,900	$18,589,000	$8,163,600
Monetized Net Benefits[a]		$2,400	(-$303,800)	(-$204,600)
Guiding Principles				
Healthy and Resilient Ecosystems	Does not meet guiding principle of protecting and restoring ecosystem functions.	Meets guidance by protecting existing aquatic and terrestrial habitats.	Meets guidance by protecting existing aquatic and terrestrial habitats.	Meets guidance by restoring aquatic and riparian habitats.
Sustainable Economic Development	Does not address the risk of economic damage under a potential dam failure event. Therefore, it doesn't meet guiding principles.	Meets the guiding principle as short-term socioeconomic spending would increase during construction, and the rehabilitated dam would provide downstream flood protection to roads and structures.	Minimally meets the guiding principle as short-term socioeconomic spending would increase during construction and floodproofing. Roads would still be subject to flooding during severe storm events, as roads are unable to be moved.	Minimally meets the guiding principle as short-term socioeconomic spending would increase during construction. However, decommissioning the dam would result in increased flood damage downstream.
Floodplains	Meets the guiding principle in the short term as there would be no change to the current levels of flooding or floodplain function. Upon dam failure, this alternative would no longer meet the guiding principle as 29 houses, 2 mobile homes, 1 apt. building, 5 businesses, 2 state hwys, 1 Interstate Hwy, and 5 county roads are located within the downstream floodplain.	Meets the guiding principle as the current levels of flooding and floodplain function would remain the same.	Meets the guiding principle as the current levels of flooding and floodplain function would remain the same.	Minimally meets the guiding principle. Structures would be re-located outside of the 100-year floodplain, but roads would remain within the floodplain, subject to flooding during severe storm events.
Public Safety	Does not meet the guiding	Meets the guiding	Meets the guiding	Meets the guiding principle

	principle as it leaves deficiencies in place.	principle by addressing the deficiencies of the dam.	principle by addressing the deficiencies of the dam.	as this alternative removes the breach risk of the dam and removes infrastructure from flooding.
Watershed Approach	Does not meet the guiding principle as it does not address upstream and downstream impacts.	Meets the guiding principle as this alternative addresses upstream and downstream impacts.	Meets the guiding principle as this alternative addresses upstream and downstream impacts.	Meets the guiding principle as this alternative addresses upstream and downstream impacts.
Provisioning Services				
Sedimentation	Increase of sedimentation downstream	Temporary short-term increase in sedimentation downstream during construction	No effect	Increase of sedimentation downstream
Wetlands	Dam failure would lead to the loss of 15-acres of lacustrine wetlands surrounding the conservation pool	Maintain existing resources with temporary loss during construction	Maintain existing resources with temporary loss during construction	Loss of 15- acres of lacustrine wetlands
Wetland Mitigation Cost	Unknown	$0	$0	unknown
Prime Farmland	Reduced flood protection	Maintain flood protection to 249 acres	Maintain flood protection to 249 acres	Reduced flood protection to levels prior to construction
Streams/corridors Enhanced/protected	Re-establishes stream corridor with short-term negative effect due to dam failure	Maintain existing protection, short-term negative via construction activities. Long-term no effect	Maintain existing, short-term negative via construction activities. Long-term no effect	Maintain existing protection, short-term negative via construction activities. Long-term positive
Lakes/reservoirs/enhanced protected (surface acres)	Loss of 15-acres of impounded water	Short-term reduction of surface acres with no effect on long-term.	Short-term reduction of surface acres with no effect on long-term.	Loss of 15-acres of impounded water
Water Quality	Decrease in stream quality below dam from increased sediment loading	Short-term minor decrease due to construction activities, long-term no effects	Short-term minor decrease due to construction activities, long-term no effects	Short-term decrease in stream below dam from sediment loading, eventual recovery yield long-term no effect.
Upland/riparian habitat created/enhanced (acres)	Restore approximately 15-acres of sediment pool to riverine habitat	Maintain existing resources	Maintain existing resources	Restore approximately 15-acres in sediment pool

	No Action (FWOPI)	Rehabilitation to high hazard criteria	Rehabilitation to low hazard criteria	Decommissioning
Regulating Services				
Flood Prevention		1% Flood	2.67 % Flood	
Flood remaining damage[a/b/]		$139,200	$139,200	$289,300
Floodplain acres	Increase by 319 acres	Maintain Existing	Maintain Existing	Increase by 319
Clean Water Act	N/A	Nationwide Permit – 4 was awarded	404 permit may be required	404 permit may be required, NWP-27 may be applicable.
Clean Air Act	No effect No effect	Permits may be required, short-term impacts possible during construction but affects will be temporary with no long-term effect.	Permits may be required, short-term impacts possible during construction but affects will be temporary with no long-term effect.	Permits may be required, short-term impacts possible during construction but affects will be temporary with no long-term effect.
Threatened and Endangered Species	Dam failure is not likely to adversely affect listed species except the American burying beetle. Potential loss of individuals inhabiting dam loss area. Dam failure should not adversely affect ABB population long-term.	For protected species of which potential habitat exist, the USFWS has concurred the proposed activities are Not-Likely-To-Adversely-Affect provided potential Indiana bat roost trees are removed prior to spring emergence (removed 11/15 – 3/15).	For protected species of which potential habitat exist, the USFWS has concurred the proposed activities are Not-Likely-To-Adversely-Affect provided potential Indiana bat roost trees are removal prior to spring emergence (removed 11/15 – 3/15).	Not likely to adversely affect listed species other than American burying beetle for which potential take is not prohibited per a 4(d) rule. NLAA for Indiana bat requires potential roost tree removal (11/15 – 3/15).
Migratory Bird/Bald and Golden Eagle	Short-term disruption of available habitat expected	Potential for short-term disruption of available habitat with no long-term impacts. Scheduling initiation of construction outside the primary nesting season (Apr 1 – Jun 30) will attempt to avoid direct impacts.	Potential for short-term disruption of available habitat with no long-term impacts. Scheduling initiation of construction outside the primary nesting season (Apr 1 – Jun 30) will attempt to avoid direct impacts.	Potential for short-term disruption of available habitat with long-term impacts from restoration practices. Scheduling initiation of construction outside the primary nesting season (Apr 1 – Jun 30) will attempt to avoid direct impacts.
Invasive Plant Species	Flooding from dam failure may move invasive plants	Mitigate potential effect by cleaning equipment	Mitigate potential effect by cleaning equipment	Mitigate potential effect by cleaning equipment prior to

	and seeds downstream and become established in new locations within the floodplain.	prior to arriving on site. No effect or change in Sericea lespedeza is already spread throughout.	prior to arriving on site. No effect or change in Sericea lespedeza is already spread throughout.	arriving on site. No effect or change in Sericea lespedeza is already spread throughout.
Cultural Services				
Recreation	Loss of water-oriented recreation	Maintain existing incidental recreation.	Maintain existing incidental recreation.	Loss of water-oriented recreation
Health and Safety		See Comments	See Comments	See Comments
Impact to Disadvantaged Persons		See Comments	See Comments	See Comments
Impact to Rural Development	Loss of flood protection	Maintain Existing Flood Protection	Maintain Existing Flood Protection	Loss of Flood Protection
Risk of Loss of Life	High	Low	Low	Moderate
Farms and Ranches Benefited	None	71 Farms Benefited	71 Farms Benefited	None
Bridges/Roads Benefited	None	2 highways (OK-101, US-64), an Interstate Highway (I-40) and 5 county roads	2 highways (OK-101, US-64), an Interstate Highway (I-40) and 5 county roads	None
Business/Homes/Public Facilities Benefits	None	29 houses, 2 mobile homes, 1 apartment building, 5 businesses	29 houses, 2 mobile homes, 1 apartment building, 5 businesses	None
Cultural Resources/ and Historic Properties	Consultation will need to be revisited with consultation partners to discuss a mitigation plan and possible development of a MOA.	No concerns/conditions, effects, or impacts. Concurrence received from consultation partners.	No concerns/conditions, effects, or impacts. Concurrence received from consultation partners.	No concerns/conditions, effects, or impacts. Concurrence received from consultation partners.

a/ Monetary cost and benefits are in average annual values over evaluated life, the No Action FWOP damages for this analysis revert back to before project conditions after 30 years. It is predicted that there is 30 years of sediment storage remaining. The FWOP Alternative does not extend the life of the structure.
b/There is a very minimal difference in the flood damage remaining for the 1% vs 2.67%, the difference was not calculated for this analysis

Cumulative Effects of Each Alternative

Cumulative impacts are the combined incremental effects of human activities (the proposed action) on the environment when added to the effects of other past, present, and reasonably foreseeable actions. Cumulative effects can result from individually minor but collectively significant actions taking place over time. Cumulative effects must be addressed because their environmental impacts may combine with the impacts of the alternatives. The Affected Environment section provides an inventory of existing resources potentially impacted, and the Environmental Consequences section analyzes the potential environmental impacts to those resources by each alternative.

Past Actions

Throughout history, natural and manmade events have altered aquatic and terrestrial habitats within the Little Sallisaw Creek watershed. Prior to construction of FWRS No. 36, Little Sallisaw Creek was a natural, free-flowing stream with associated riparian habitats, which sustained terrestrial wildlife commonly found within the watershed. As a result of the construction of FWRS No. 36, riverine habitat was converted to an open water reservoir maintained by the dam. Implementation of the dam had effects on the Little Sallisaw Creek watershed, resulting in modification of flow and function.

Cumulative Impacts Analysis

The following section provides an assessment of cumulative impacts related to the alternatives being considered, as required by NEPA.

Soils (Stream bank erosion and sedimentation)

There would be no cumulative effects under the decommissioning alternative, high hazard alternative, and low hazard alternative.

No Action: There would be no cumulative effects with the dam in place. Catastrophic failure of the dam would result in deposition of sediment in areas of the creek downstream of the dam where it had not previously occurred. This would result in cumulative effects that are long-term, direct, adverse, and major in intensity.

Prime and Unique Farmland

There would be no cumulative effects to prime and unique farmland under the decommissioning alternative, rehabilitation to high hazard alternative, and rehabilitation to low hazard alternative.

No Action: Catastrophic dam failure would likely damage or destroy agricultural land downstream short-term.

Water Quality

Decommissioning alternative, rehabilitation to high hazard alternative and rehabilitation to low hazard alternative would not contribute to cumulative effects on water quality of Little Sallisaw Creek.

No Action: Dam failure may impair the water quality downstream as sediment that has deposited behind the dam would not be stabilized and run downstream, especially following severe storm events. These storm events could contribute to cumulative adverse effects to water quality.

Under all alternatives, overall net cumulative effects on water quality would likely be direct, adverse, negligible, and long-term.

Surface Water Quantity

Decommissioning: The cumulative effects of decommissioning on water quantity would be long-term and direct, and major, with a reduction in water quantity as the dam no longer functions as a flood water retarding structure.

Rehabilitation to high hazard alternative and rehabilitation to low hazard alternative would have no change in cumulative effects to water quantity with rehabilitation and floodproofing.

No action: There would be no change in cumulative effects with the dam in place. Upon dam failure, the cumulative effects would be long-term, direct, and major, with a reduction in water quantity as the dam no longer functions as a flood water retarding structure.

Floodplain Management

Decommissioning: Cumulative effects on floodplain management would be direct, adverse, and long-term.

Rehabilitation to high hazard and rehabilitation to low hazard: Cumulative effects on floodplain management would continue to be direct, beneficial, and minor to the floodplain as the risk of flood damages would be reduced for downstream homes, businesses, and roads.

No Action: Would potentially contribute cumulative adverse effects to floodplain management due to extreme storm events and increased flooding resulting in an enlarged floodplain. Catastrophic breach cumulative impacts would be long-term, direct, adverse, and major.

Wetlands

Decommissioning: Would potentially contribute cumulative adverse effects to adjacent wetlands due to extreme storm events and increased flooding downstream leading to an increase in sedimentation and decrease in water quality.

Rehabilitation to high hazard criteria and rehabilitation to low hazard criteria: Would potentially contribute cumulative adverse effects during extreme storm events. These effects would be direct, long-term, and minor.

No Action: The no action alternative would have little cumulative effects on wetlands if the dam is in place. A breach would contribute cumulative adverse effects to wetlands as connectivity is removed, removing wetlands, returning the stream to pre-construction conditions.

Air Quality (Clean Air Act)

No alternatives would have a cumulative impact on air quality. Any emissions from construction will be direct, minor and short-term.

Endangered and Threatened Species (Plants): No cumulative effects with any alternative.

Invasive Species (Plants)

As with the Decommissioning alternative, rehabilitation to high hazard alternative, and the rehabilitation to low hazard alternative, BMPs in place during construction would contribute negligible cumulative effects to the project site or for invasive species populations.

No Action: The no action alternative would not contribute to cumulative effects related to invasive species, with the dam in place. BMPs and mitigation actions that would discourage the spread of invasive species would potentially contribute cumulative benefits. Dam failure could contribute to the presence or spread of invasive species as these species can spread during dam breach, and establish/ colonize in new undisturbed areas.

Riparian Areas and Natural Areas

Decommissioning: Decommissioning the dam would remove the riparian and natural area impacts created when the dam was constructed in 1965 and would restore historic stream function and associated riparian habitat.

The rehabilitation to high hazard alternative and the rehabilitation to low hazard alternative would not contribute to cumulative effects as riparian habitat impacts and natural area impacts would remain the same.

No Action: The no action alternative would not contribute to cumulative effects as long as the dam is in place. Dam failure would adversely impact established riparian and natural areas.

Land Use and Forest Resources

Decommissioning: Decommissioning the dam would have a cumulative beneficial effect, as this alternative would reverse the landcover and use from reservoir, back to woody riparian vegetation.

The rehabilitation to high hazard alternative and the rehabilitation to low hazard alternative would not contribute to cumulative effects as the dam would continue to function as is, keeping land use and forest resources the same.

No Action: The no action alternative would not contribute to cumulative effects if the dam remained in place, as the dam would continue to function as is, keeping land use and forest resources the same. Dam failure would adversely impact the downstream breach inundation areas, leading to short-term and potential long-term changes in land use and forest resources.

Fish and Wildlife Habitat

Decommissioning: Restoration of the stream and associated riparian habitat with decommissioning would have long-term beneficial cumulative impacts on wildlife habitat with the increased diversity of habitat being created.

Rehabilitation to high hazard criteria and low hazard criteria: Both alternatives would protect existing habitats and therefore, would not contribute to cumulative effects to fish and wildlife.

No Action: Under the no action alternative, with the dam in place, there would be no cumulative effects, as existing habitats would remain. Dam failure would result in adverse cumulative impacts due to degradation of downstream aquatic and riparian habitats from the breach event, as well as increased flooding. The overall reduction in suitable habitat is likely to be small in comparison to the available habitats present within the project area and watershed.

Endangered and Threatened Species

Cumulative effects for all alternatives would be similar to those described above for fish and wildlife habitats. The alternatives in tandem with other cumulative actions would contribute negligible cumulative impacts to threatened and endangered species.

Migratory Birds and Bald and Golden Eagles

Cumulative effects for all alternatives would be similar to those described above for fish and wildlife habitats. The alternatives in tandem with other cumulative actions would contribute negligible cumulative impacts to threatened and endangered species.

Cultural Resources and Historic Properties - No cumulative effects with any alternative.

Public Health and Safety

Decommissioning: Decommissioning the dam would provide short-term benefits through buyout of the residence and floodproofing of the roads, but it would have long-term cumulative adverse impacts due to increased flooding and an enlarged floodplain, which could adversely affect other structures and roads not currently in the breach zone.

The rehabilitation to high hazard alternative and the rehabilitation to low hazard alternative would contribute minor to moderate effects by continuing to provide existing flood protection to the residence and roads within the downstream breach inundation area.

No Action: No action alternative would contribute minor to moderate effects by continuing to provide existing flood protection to the residence and roads within the downstream breach inundation area until failure. Dam failure would adversely affect public health and safety due to breach flooding. Breach flows would inundate 29 homes, two mobile homes, one apartment building, five businesses, two state highways, one Interstate Highway, and five county roads resulting in substantial damage to the home and preventing emergency responder access along roads until floodwaters had receded. These cumulative effects would be adverse and additive.

Socioeconomics

Decommissioning alternative, rehabilitation to high hazard alternative and rehabilitation to low hazard criteria would contribute negligible cumulative beneficial effects to the local economy. These projects would result in capital expenditures and would most likely benefit local labor sources and material suppliers. Local businesses would experience a temporary increase in demand from construction workers. Cumulatively, these projects would be short-term effects and would not noticeably influence the socioeconomics of the area long-term.

No Action: The no action alternative would have no cumulative effects on local or regional socioeconomics if they dam remains. Dam failure would result in minor cumulative adverse effects due to costs incurred for cleaning and repair after failure.

Scenic Beauty

Decommissioning: Decommissioning the dam would change the character of the landscape by removing the dam and reservoir and replacing it with stream and riparian woodland habitats. There would be no cumulative effects, as the rural and natural character of the area would be maintained.

The rehabilitation to high hazard alternative and the rehabilitation to low hazard alternative would not contribute to cumulative effects on scenic beauty. Actions taken to preserve the rural and natural character of the project area would potentially contribute cumulative beneficial effects, while other actions that alter the landscape for agricultural development or community development would potentially contribute negligible cumulative adverse effects.

No Action: The no action alternative would not contribute to cumulative effects on scenic beauty if the dam remains functional. Dam failure would result in a breach wave that could damage downstream areas and alter the existing viewshed. The extent of the damage would depend on the severity of the dam failure. In the long-term, downstream vegetation would grow back and resemble the natural character of the area. This alternative would contribute negligible cumulative impacts to scenic beauty.

Risk and Uncertainty

Preliminary engineering designs were completed using recent surveys for topography and bathymetry, and LiDAR surveys for further topographic data. Geotechnical explorations were not conducted, and designs relied on minimal soil mechanics data from the as-built plans and field observations. A slope stability analysis of the proposed cross section has not been performed. The time of concentration (Tc) calculations were developed using digital USGS 7.5 - minute quadrangle maps and ArcMAP software and were found to closely match the data in the original watershed plan.

Drainage area for FWRS No. 36 was originally measured at 5,978 acres, and ArcMAP software estimated the drainage area at 5,397 acres. The drainage area of 5,397 acres is used for planning. The condition II runoff curve number of 81 was developed using Web Soil Survey data and found to be less than the original plan number of 83. The combination of these two corrections and the larger principal spillway conduit allows for the auxiliary spillway crest to be lowered while still passing the runoff from the 100 - year storm without auxiliary spillway flow.

The original structural design and layout was performed using elevations based on NAD27 datum. Field surveys were compared to existing control points, and it was determined that an adjustment to the as-built elevations of +0.2 feet is needed to reflect the updated datum. The plan elevations were adjusted to meet the updated datum.

Sediment and storage surveys were performed on the site to determine the existing available storage and to estimate sedimentation rates. As-built data provided estimated borrow excavation volumes. A percentage of this borrow volume was added to the original storage volume to estimate total available sediment storage capacity. Since no intermediate surveys were performed on this site, the results were compared to the 2019 bathymetric surveys. Land-use changes could result in changes to sedimentation rates, which could possibly change the effective life of the structure. The current trend is toward more permanent vegetation, which would reduce the sediment yield, and extend the life of the structure.

A 2010 assessment report based on HEC-RAS 1D and 10mDEM was utilized as a base for this study. A new HEC-RAS 2D model was created using 2m LiDAR elevation data, an updated minimum peak breach Q, and any other appropriate updates as needed. A review of aerial photography using Google Earth Pro was conducted to check and update potential damage locations.

Geologic investigation and soil mechanics information were not available for the area of the proposed auxiliary spillway, so detailed analysis of spillway integrity and stability were not performed. More detailed information may show the need for modification to the spillway design. However, it is not anticipated that these changes would have a significant effect on the cost of the project.

The economic analysis uses an indexing approach to calculate benefits. However, the uncertainty in the price of inputs, outputs, and world demand for agronomic crops produced will vary in the future. Because so much has changed in agriculture over the period of time since this project was analyzed, the single value/index most likely to reflect the wide range of changes in the value of flood damage prevented would appear to be the change in land value; it reflects the changes in the land's use for various crops, reflecting changes in price and productivity. Therefore, the original benefits for the project were indexed to present dollars using the land value index. A re-analysis of the flood damage reduction benefits may be higher or lower than indicated in the updated figures due to uncertainty in the price of inputs, outputs and world demand.

Conclusion:

Based on the evaluation of existing conditions and the anticipated structural measures to be installed, it is the judgment of the team that conducted the environmental assessment that rehabilitation of Sallisaw Creek FWRS No. 36 will not result in significant effects to the human environment.

To determine the significance of the action analyzed in the EA, the agency is required by NEPA regulations at 40 CFR Section 1501 and NRCS regulations at 7 CFR Part 650 to consider the context and intensity of the proposed action. In response to the analysis of the EA, at this time NRCS finds that neither the proposed action nor any of the alternatives is a major Federal action significantly affecting the quality of the environment. Therefore, preparation of an environmental impact statement (EIS) is not required.
Should project plans change or should the project be implemented in such a way that impacts to habitat resources not considered during this evaluation could occur, compensatory mitigation and the development of an EIS would need to be reconsidered.

Consultation, Coordination, and Public Participation

Agency Coordination

As the lead agency, the NRCS engaged appropriate Federal, state, and local agencies during the implementation of the Plan-EA process. Through agency consultation and coordination, the NRCS solicited comments regarding the sponsor's project from Federal, state, and local agencies having jurisdiction or special expertise with respect to a pertinent environmental issue.

NRCS invited the following agencies with jurisdiction, elected officials and organizations to participate in the NEPA process by providing assistance and advice that would facilitate the development of the Plan-EA and expedite the review process:

- U.S. Army Corps of Engineers, Tulsa District
- U.S. Department of the Interior, Fish and Wildlife Service
- U.S. Forest Service
- U.S. Environmental Protection Agency, Region 6
- Bureau of Reclamation
- Federal Emergency Management Agency, Region 6
- Oklahoma Archaeological Survey
- Oklahoma Conservation Commission
- Oklahoma Department of Wildlife Conservation
- Oklahoma Water Resources Board
- Oklahoma Department of Environmental Quality
- Oklahoma Department of Transportation
- Oklahoma Department of Emergency Management
- Oklahoma State Historic Preservation Office
- Sequoyah County Emergency Management

In accordance with the Council on Environmental Quality, regulations implementing the National Environmental Policy Act (NEPA), Endangered Species Act (ESA) Section 7 consultation, and regulations in part of the Watershed Protection and Flood Prevention Act (PL- 83-566). Public Law 83-566 requires NRCS to notify USFWS, requesting agency consultation for dam rehabilitation projects. A formal letter of request was sent to USFWS to provide agency input and/or consultation on the rehabilitation of Sallisaw Creek No. 36 (Appendix A).

Coordination with the Tulsa District Corps of Engineers regarding Clean Water Act Section 404 permitting requirements for the project is on-going. The proposed action was authorized by Nationwide Permit 43 (NWP) (SWT-2023-00480) for stormwater management and was issued January 11, 2022 (Appendix A). If permitting expires, a new application will be submitted to USACE as this project progresses through design. If any design changes fall outside of the scope of the NWP permit 43, compensatory mitigation may be required.

Correspondence with OCC and ODWC can be found in Appendix A.

Environmental/Wildlife Consultation *

United States Fish and Wildlife Service	☒Yes	☐No	Date: 12-31-20

Section 7 T&E Species Consultation (Project # 2023-0055271) – Sallisaw Creek 36 Date: 03/03/2025

The following species are listed as having a range of occurrence that overlaps the project location: Piping plover (Threatened) = may affect, not likely to adversely affect, Rufa red knot (Threatened) = may affect not likely to adversely affect, Monarch butterfly (Candidate) = may affect, not likely to adversely affect, American burying beetle (Threatened) = may affect, not likely to adversely affect, Alligator snapping turtle (Proposed Threatened) = may affect, not likely to adversely affect, Gray bat (Endangered) = no effect, Indiana bat (Endangered) = may affect, not likely to adversely affect, Northern long-eared bat (Endangered) = may affect, not likely to adversely affect, Ozark big-eared bat (Endangered) = may affect, not likely to adversely affect and Tri-colored bat (Proposed endangered) = may affect, not likely to adversely affect. IPaC Project Code # 2023-0055271

Oklahoma Department of Wildlife Conservation	☒Yes	☐No	Date: 10-13-20
United States Army Corps of Engineers	☒Yes	☐No	Date: 01-11-22
Oklahoma Conservation Commission	☒Yes	☐No	Date: 09-17-20

Consultation with USACE was carried out for this project and was deemed the project scope fell under NWP 43 (Stormwater Management Facilities). Department of Army Permit was received on January 11, 2022, and will expire March, 2026. (Permit # SWT-2022-00480). Further permits required by ODEQ such as the National Pollutant Discharge Elimination System (NPDES) program will be acquired before project initiation.

* Consultation correspondence resides in Appendix A

Cultural Resources and Historic Properties Consultation *

Pedestrian Survey conducted by NRCS Archaeologist	☒Yes	☐No	Date: 2/22-24/2021
Cultural Resources identified: FWRS No. 36	☒Yes	No Not Eligible	
Consultation with Oklahoma Archaeological Survey	☒Yes	☐No	Date: 10/1/2020
Consultation with State Historic Preservation Office	☒Yes	☐No	Date: 11/2/2020
Consultation with tribes	☒Yes	☐No	Date: 10/5/2021

Tribes Contacted: Cherokee, Kaw, Muscogee, Osage, Otoe-Missouria, Pawnee, Ponca, Tonkawa, and United Keetoowah Band of Cherokee

* Consultation correspondence resides in supporting document files.

Comments:

Regarding consultation, NRCS, the State Historic Preservation Officer, the State Archaeologist (Oklahoma Archaeological Survey), and tribes with ancestral lands in Oklahoma, have a standard operating procedure when it comes to NRCS' rehabilitation program. Based on verbal conversations, and past consultation on other watershed rehabilitation projects, the area of potential effect and survey strategy has been standardized as are consultation communications/procedures. The agreed to APE is defined as the maximum level that water behind the dam would reach (top of dam) as well as a beach zone on the back side of the dam, using the top of dam elevation. Consequently, equipment staging areas and borrow areas are contained within the bounds of the top of dam elevation. Unique to the FWRS No. 36 undertaking, ingress/egress will use an established two-track road. The entirety of the APE is 48.4 acres. A map of the APE is included in Appendix C.

Given the local protocol, official consultation with the SHPO and OAS was initiated with letters dated October 1, 2020. The previously agreed survey strategy consisted of subsurface probing every 30 meters, set on 30-meter transects of the above-mentioned APE. On November 2, 2020, the Oklahoma

Archaeological Survey (OAS) requested additional information while the SHPO followed suit with its own questions on November 24, 2020. NRCS responded to the OAS on November 12, 2020, and responded to the SHPO on January 21, 2021. The opinion of the SHPO, dated February 12, 2021, was that FWRS No. 36 was eligible for listing on the National Register of Historic Places. NRCS responded to the SHPO on August 24, 2021, with a determination, including rationale and documentation, that FWRS No. 36 was not eligible. However, NRCS determined that Sallisaw Creek Watershed merited being designated an Historic District with contributing and non-contributing properties. The non-contributing properties of the historic district are those already rehabilitated (FWRS Nos. 15, 16, 18, 20, 26, 28, 29, 30, 32, 33 and 34) as well as FWRS No. 36. NRCS received concurrence from the SHPO to the State Conservationist's determination on September 2, 2021, and sent a follow-up concurrence letter to the Assistant State Conservationist on December 7, 2021. The OAS concurred with NRCS' determination on December 7, 2021 (also). Concurrently with the SHPO and OAS dialog, various tribal entities were contacted about the NRCS undertaking. Consultation with tribes, to address the presence of possible cultural properties (identified during background research) was initiated on October 25, 2021, with the intention of marking such areas as exclusion zones during subsequent construction. If culturally sensitive areas would have been identified by tribal conservation partners, consultation would have continued until a resolution and/or a Memorandum of Agreement were executed. The tribes contacted by NRCS included the Cherokee Nation, Kaw Nation, Muscogee Nation, Osage Nation, Otoe-Missouria Tribe of Indians, Pawnee Nation of Oklahoma, Ponca Tribe of Indians of Oklahoma, Tonkawa Tribe of Oklahoma, and the United Keetoowah Band of Cherokee Indians in Oklahoma. On November 17, 2021, NRCS searched additional tribal ancestral land database (other than that originally utilized) and determined that the initial consultation invitations to the Kaw Nation, Muscogee Nation, Pawnee Nation of Oklahoma, Ponca Tribe of Indians of Oklahoma, and Tonkawa Tribe of Oklahoma were not necessary. The Cherokee Nation and United Keetoowah Band of Cherokee Indians in Oklahoma did not respond to the initial invitation to be consultation partners.

After consultation, background research, and concurrences from the OAS, SHPO, and Osage Nation, FWRS No. 36 and surrounding property was purchased by the Cherokee Nation and incorporated into the Cherokee Nation reservation (designated as Sequoyah Hunting Reserve) although not held in trust by U.S. Department of Interior for the benefit of the tribe. Consultation regarding the property transfer was initiated on April 8, 2024. Telephone and email communications supplemented the formal letter submitted in April 2024. Concurrence for the proposed NRCS undertaking was received on May 10, 2024; in the same letter, the issue of ownership change was acknowledged. The Cherokee Nation requested that construction activities be coordinated with the Nation's Wildlife Conservation Manager to ensure that there would be no interference with the land's scheduled cultural activities. A follow-up invitation to be a consultation partner was sent to the United Keetoowah Band of Cherokee Indians in Oklahoma (UKB) on April 11, 2024. Since no response to the 2024 letter was received from the UKB, another invitation was extended to the tribe on April 22, 2025. NRCS is awaiting a response from the UKB.

Public Meetings

June 11, 2019 – A meeting was held with the sponsors to discuss the rehabilitation process.

December 14, 2021 – A meeting was held with the sponsors to discuss the development of alternatives.

August 19, 2025 – A final public meeting will be held to review the draft rehabilitation plan.

Throughout the planning process the NRCS ensured that public meetings were held by the project sponsors with special emphasis given to bring in all the affected landowners in order to inform and gather input into the planning process. These meetings were held by the local project sponsors with assistance from NRCS. TNRCS will continue this effort through the engineering detailed design phase and land rights phase of this project to make sure that all individuals are informed and fairly treated.

The Preferred Alternative

Rationale for Plan Selection

Sallisaw Creek site 36 is an existing, safety-deficient dam which poses a potential risk for loss of human life in the event of a catastrophic failure of the dam. It therefore meets the criteria outlined in the National Watershed Program Manual 505.35 B (1) (iv) which identifies the NEE Plan as the federally assisted alternative with the greatest net economic benefits. Under this definition, the rehabilitation of site 36 to meet current NRCS safety criteria and performance standards for a high hazard dam is the preferred alternative.

Preferred Alternative Measures to be Installed

Summary: The preferred alternative, which is the NEE plan, consists of the structural rehabilitation of one floodwater retarding structure to meet current NRCS safety criteria and performance standards for a high hazard dam. The designed life of the dam will be 100 years.

Corrections to the drainage area measurements and the curve number computations allow the auxiliary spillway crest to be lowered while still containing the 100-year, 10-day rainfall event without flow through the auxiliary spillway.

Principal Spillway: The principal spillway will consist of a 36-inch-diameter reinforced concrete pipe, with a standard NRCS design riser. The new principal spillway will have a capacity of 209 cfs, which is about 89 cfs greater that the existing principal spillway. The capacities of the channel and road crossings downstream of the site were checked and will be adequate to pass the principal spillway discharge within the existing channel. The principal spillway crest elevation will remain at 674.6, and additional aerated-sediment storage will be added. This will result in no change in the surface area of the permanent pool. The new spillway will be installed using the boring and jacking method. The existing principal spillway inlet will be removed, and the conduit will be abandoned in place. A concrete impact basin will be installed.

Auxiliary Spillway: The existing spillway crest will be lowered 6.2 feet, to an elevation of 722.8 feet msl. The spillway crests and outlet channel will be lined with articulated concrete blocks (ACB) to provide erosion resistance and structural stability. Excavation from the spillway which is not needed for fill material will be wasted on site.

Embankment: The top of dam elevation will increase 0.6 feet, to 733.9 ft msl, to meet the requirements that the spillway pass 75% of the PMF with 3.0 feet of freeboard, resulting in a dam height of 87 feet. It is anticipated that suitable borrow material may be obtained from the excavation for the auxiliary spillway to provide fill for the embankment.

Other: Excavation from the auxiliary spillway should be wasted on-site. The disposal areas should be outside the detention pool area.

Permitting and Consultations: After consultation with Army Corps of Engineers, it was determined that the scope of the rehabilitation project (Preferred Alternative) falls under Nation Wide Permit 43 (Stormwater Management Facilities) provided the condition therein are met. This project received 404 permitting on

January 11, 2022 and was given the identification number SWT-2022-00480. Copy of the USACE permit can be found in Appendix A.

After consultation with other State agencies, as well as consultation through USFWS, it has been determined that the project "may affect, not likely to adversely affect" all listed species (NECH 610.26). The U.S. fish and Wildlife Service (USFWS) has concurred in this determination and documentation is provided in Appendix A (IPaC Project Review Code: 2023-0055271).

Mitigation: Mitigation includes erosion control measures, vegetation measures, and limited reduction of pool elevation during construction to the minimum necessary to complete the project. An Aquatic Resources Protection Plan will be required and approved by USACE before initiating construction. Potential roosting trees, for bat species will be removed during their non-active season (11/15 – 3/15) prior to or in association with construction activities. Construction activities will commence outside of the primary nesting season (PNS) (Apr 1 – Jun 30) in an attempt to avoid direct impacts to migratory birds. If construction activities must begin during the PNS and vegetative cover remains, a biologist will survey for active and establish buffers to avoid or otherwise delay construction. No historic property or tribal concerns will require mitigation.

Installation Sequence: The sequence of installation will include a two-year design period, a one-year land rights acquisition period in conjunction with obtaining necessary permits followed by an estimated one-year construction period.

Costs: The sponsors will be responsible for 35% of project costs which includes all necessary land rights with an estimated total of $1,642,600. NRCS will be responsible for the technical assistance for engineering design and 65% of project costs with an estimated total of $3,862,300. Table 1 on page 68 provides a detailed breakout of the estimated costs to be incurred by NRCS and the sponsors.

Method of Contracting: Projects are normally locally awarded contracts.

Financing of the Project: NRCS technical and financial assistance for carrying out the project is contingent on the appropriation of funds for this purpose. The sponsors have the needed authorities to carry out the plan and have agreed to use them.

Actions Required Prior to Project Installation

- Oklahoma NRCS' Post-Review Discovery and Monitoring Plan: Outlined here is the process that NRCS and its representatives will implement to address potential adverse effects if cultural resources are encountered during construction (even though adequate identification efforts were made before construction began). The post-review discoveries clause contained in the Section 106 report (Appendix E) will be relayed to the contractor when the contract is awarded. NRCS Contracting Officer's Representative (COR) and NRCS Construction Inspectors have been trained in Oklahoma cultural resources procedures, which includes provisions for the discovery of cultural materials and human remains. This statement is prepared in accordance with 36 CFR 800.13. In brief, the NRCS Cultural Resources Coordinator (CRC) will be contacted, and all construction will cease in a 50' radius of the discovery. The CRC will examine the discovery location to determine if the discovery requires further assessment. Simultaneously, the Advisory Council on Historic Preservation (ACHP), Oklahoma SHPO (SHPO), Oklahoma State Archaeologist, and appropriate tribal entities will be contacted within 48 hours of the discovery. With these partners, NRCS will determine the actions to

resolve the adverse effects. If the finding of the effect for the project is likely to be "no adverse effect", a finding of "no adverse effect" document will be prepared and shared with the consultation partners. If the effects are unknown, NRCS will enter into an agreement document with the consultation partners for identification, evaluation, and assessment of the effects. The agency official will provide the ACHP/SHPO/State Archaeologist/tribes a report of the remedial actions when they are completed.

- Coordination with the Cherokee Nation Wildlife Conservation Manager, Lane Kindle will need to be performed prior to construction by email at lane-kindle@cherokee.org and by phone at 918.525.2955. This coordination will ensure that there will be no interference with the Sequoyah Hunting Preserve's scheduled cultural activities.

- The sponsors will acquire all land rights, easements, or rights-of-way as will be needed in connection with the works of improvement. This includes all necessary easements for an access road on the east abutment. The sponsors acknowledge the potential risk of flood damages for the real property between the flowage rights elevation and the top of dam elevation. The minimum land rights area upstream from the dam must be for all areas below the elevation of the top of dam, if the sponsors are unable to obtain the land rights to top of dam elevation, they will assume the potential risk of flood damage for the real property between the flowage rights elevation and the top of dam elevation.
- The sponsors will obtain all necessary water, mineral, and other resource rights, and all necessary Federal, State, and local permits that may be required for the installation and operation of the dam. This includes coordinating with NRCS in developing a Aquatic Area Protection Plan and marking area boundaries prior to construction activities to satisfy 404 permitting requirements
- Sponsor will be responsible for seeing that trees within the area of impact are felled in the time between November 15 and March 15, to avoid potential take of the Indiana bat and Northern long-eared bat.
- Sponsors are responsible for drawing the pool down prior to construction.
- The selected contractor for the project will obtain a Storm Water Discharge Permit from the Oklahoma Department of Environmental Quality. The selected contractor will also comply with special provisions elements concerning prevention of invasive species introduction.
- The sponsors will enter into a Memorandum of Understanding with the NRCS, which establishes a maximum value of the non-federal in-kind contribution.
- The sponsors will enter into an Operation and Maintenance Agreement with the NRCS for the life expectancy of the project, which is 100 years.
- The sponsors will develop an Emergency Action Plan (EAP) for the dam, which designates responsible parties and appropriate actions to be taken in the event of a potential dam failure. 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, 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. EAPs shall be reviewed and updated by the sponsors annually.

Operation, Maintenance, Repair, and/or Replacement

The sponsors will be responsible for the operation, maintenance, and repair of the works of improvement

by actually performing the work, or arranging for such work, in accordance with the Operation and Maintenance Agreement. A specific Operation and Maintenance Plan will be prepared for each structural measure before issuing invitations to bid for construction, utilizing the NRCS National Operation and Maintenance Manual. The term of the agreement will be for 100 years, the life expectancy of the project. The annual O&M cost for FWRS No. 36 is estimated at $15,200.

Table 8. Comparison of Structural Physical Data

Item	As-Built Conditions[1/]	Existing Conditions[2/]	Recommended Plan[2/]
FWRS No. No. 36			
Top-of-dam Elevation	733.1	733.3	733.9[5/]
Auxiliary Spillway Crest Elevation	729	729	722.8
Detention Pool Surface Area (ac)	145	153	120
Principal Spillway Crest Elevation	674.5	674.6	674.6
Principal Spillway Crest Surface Area (ac)	16	15	15
Storage (acre-feet)			
Sediment Submerged	205	159	159
Sediment in Detention Pool	44		353
Total Sediment Storage	249	159	512
Detention Storage [3/]	3612	3580	2388
Total Storage (Auxiliary Spillway Crest) [4/]	3861	3739	2900
Total Storage (Effective top-of-dam)	4475	4451	4559
Principal Spillway Diameter (in)	27	27	36
Principal Spillway Capacity (cfs)	112	112	209
Auxiliary Spillway Width (Feet)	250	259	250

[1/] Elevations based on NAD27 Datum
[2/] Surface area and storage volume based on survey data obtained May 2019 (NAVD 1988)
[3/] Flood storage at auxiliary spillway crest elevation
[4/] Flood and sediment storage at auxiliary spillway crest elevation
[5/] Top of Dam elevation set by OWRB criteria

National Watershed Manual Prime Tables

Table 1- Estimated Installation Cost
Sallisaw Creek Watershed, Oklahoma
(Dollars) [1/]

	Estimated Cost (Dollars)		
Installation Cost Item	PL-83-566 Funds	Other Funds	Total
Structural Measures			
FWRS 36 Project Cost	$3,826,300	$1,642,600	$5,468,900
TOTAL PROJECT COST	$3,826,300	$1,642,600	$5,468,900

[1/] Price base 2021. December 2021

Table 2- Estimated Cost Distribution - Structural Measures
Sallisaw Creek Watershed, Oklahoma
(Dollars) [1/]

	Public Law 83-566 Funds[2/]			Total	Other Funds				Total	Total Installation
Evaluation Unit	Construction	Engineering	Admin.	PL-83-566	Construction	Engineering	Landrights	Admin.	Other[3/]	Costs
Structural Measures										
FWRS 36	$3,050,600	$689,900	$85,800	$3,826,300	$1,401,800	$0	$240,000	$800	$1,642,600	$5,468,900
GRAND TOTAL	$3,050,600	$689,900	$85,800	$3,826,300	$1,401,800	$0	$240,000	$800	$1,642,600	$5,468,900

[1/] Price base 2021. December 2021
[2/] 65% of total project cost, NTE 100% of construction cost. Federal technical assistance for installation is not cost-shared by the local sponsor.
[3/] 35% of total project cost less Federal technical assistance.

Table 3 – Structural Data - Dams with Planned Storage Capacity
Sallisaw Creek Watershed, Oklahoma

Item	Unit	Structure No.
		36
Class of structure		High
Peak Ground Acceleration (pga)	g	0.06099
Uncontrolled drainage area	sq mi	8.34
Controlled drainage area	sq mi	-
Total drainage area	sq mi	8.34
Runoff curve No. (1-day) (AMC II)		81
Time of concentration (Tc)	hours	3.97
Elevation top dam [4/ 5/]	ft	733.9
Elevation crest auxiliary spillway [4/]	ft	722.8
Elevation crest high stage inlet [4/]	ft	674.6
Elevation crest low stage inlet	ft	-
Auxiliary spillway type		ACB
Auxiliary spillway bottom width	ft	250
Auxiliary spillway exit slope	percent	
Maximum height of dam	ft	87
Volume of fill [1/]	yd^3	
Total capacity [2/]	acre-ft	
Sediment submerged	acre-ft	159
Sediment aerated	acre-ft	353
Beneficial use (identify use)	acre-ft	-
Floodwater retarding	acre-ft	2588
Between high and low stage	acre-ft	-
Surface area	acres	-
Sediment pool	acres	15
Beneficial use pool (identify use)	acres	-
Floodwater retarding/	acres	120
Principal spillway design		
Rainfall volume (1-day)	in	8.37
Rainfall volume (10-day)	in	13.70
Runoff volume (10-day)	in	9.01
Capacity of low stage (maximum)	ft^3/s	
Capacity of high stage (maximum)	ft^3/s	209
Dimensions of conduit	in	36
Type of conduit		RCP
Frequency operation-auxiliary spillway	% chance	1
Auxiliary spillway hydrograph		
Rainfall volume	in	14.91
Runoff volume	in	12.42
Storm duration	hours	24
Velocity of flow (Ve)	ft/s	10.6
Max. reservoir water surface elevation [4/]	ft	727.3
Freeboard hydrograph		
Rainfall volume	in	33.54
Runoff volume	in	30.88
Storm duration	hours	24
Max. reservoir water surface elevation [4/]	ft	732.3
Capacity equivalents		
Sediment volume	in	1.14
Floodwater retarding volume	in	5.37
Beneficial volume (identify use)	in	-

[1/] Estimated Fill needed for Rehabilitation. December 2021
[2/] Crest of Auxiliary Spillway.
[3/] 100 year capacity.
[4/] Elevations shown are feet above mean sea level, NAVD 1988.
[5/] Top of Dam elevation based on OWRB Criteria

Table 4 - Estimated Average Annual NEE Costs
Sallisaw Creek Watershed, Oklahoma
(Dollars) [1/]

Evaluation Unit	Amortized Installation	O&M & Replacement	Total
Rehabilitation			
FWRS 36	$132,500	$15,200	$147,700
GRAND TOTAL	$132,500	$15,200	$147,700

[1/] Discount rate is 2.25% with a 104-year period of analysis. Price base 2021. December 2021

Table 5- Estimated Average Annual Flood Damage Reduction Benefits
Sallisaw Creek Watershed, Oklahoma [4/]
(Dollars) [1/]

FWRS 36	Average Annual Damages Without Project		Average Annual Damages With Project		Average Annual Benefits	
Item	Ag Related [2/]	Non-Ag Related	Ag Related [2/]	Non-Ag Related	Ag. Related [2/]	Non-Ag Related
Floodwater Damage						
Crop and Pasture	$44,500	-	$10,100	-	$34,400	-
Other Agricultural	$7,500	-	$1,000	-	$6,500	-
Urban	$126,500		$119,600		$6,900	
Subtotal	**$178,500**	**-**	**$130,700**	**-**	**$47,800**	**-**
Sediment/Erosion Damage						
Sediment Deposition	$3,200	-	$1,600	-	$1,600	-
Flood Plain Scour	$12,800	-	$4,200	-	$8,600	-
Road and Bridge	$4,900	-	$800	-	$4,100	-
Subtotal	**$20,900**	**-**	**$6,600**	**-**	**$14,300**	**-**
Indirect Damage[3/]	$7,300	-	$1,900	-	$5,400	-
GRAND TOTAL	**$206,700**	**-**	**$139,200**	**-**	**$67,500**	-

[1/] Discount rate is 2.25% with a 104-year period of analysis. Price base 2021. December 2021
[2/] Agriculture-related damage includes damage to rural communities with a population less than 50,000, per Watershed Projects Division letter of February 22, 1993. Sallisaw Creek FWRS No. 36 is located southwest of Brushy, which has a population less than 5,000.
[3/] Indirect benefits were calculated as 25% for road and bridge benefits, 15% for Urban and 10% for all other benefits in table, as shown in Economics Guide, page 32, dated 1964.
[4/] Both alternatives provide the same level of flood protection benefits but the with project alternative is built to a higher safety criteria.

Table 6 - Comparison of NEE Benefits and Costs
Sallisaw Creek Watershed, Oklahoma
(Dollars) [1/]

Evaluation Unit	Average Annual Benefits					Average Annual Cost [4/]	Benefit-Cost Ratio
	Damage Reduction [2/]		Other [3/]		Total		
	Agricultural	Non-Agricultural	Agricultural	Non-Agricultural			
FWRS 36	$67,500		$0		$67,500	$147,700	0.5:1.0
TOTAL	$67,500		$0		$67,500	$147,700	0.5:1.0

[1/] Discount rate is 2.25% with a 104-year period of analysis; all values are updated to 2021. December 2021

REFERENCES

1. County Land Values, www.nrcs.usda.gov/wps/portal/nrcs/main/national/technical/econ/. Accessed: February 2025.

2. Oklahoma Education Oversight Board. *Oklahoma School Profiles*. www.schoolreportcard.org/ .

3. Engineering News-Record, www.enr.com. March 2025.

4. EPA Stormwater Best Management Practice – Polycyclic Aromatic Hydrocarbons, Coal-Tar Sealcoat, and Stormwater Pollution. www.epa.gov/sites/default/files/2018-02/documents/pah_-coal-tar_sealcoat-swpoll.pdf . Accessed: February 2025.

5. EPA Green Book - Current Nonattainment Counties for all Criteria Pollutants. www.epa.gov/green-book . Accessed: February 2025.

6. Morris, J., C. Goins, and E. McReynolds. 1986. *Historical Atlas of Oklahoma*, Third Edition, Updated from the 1980 Census, University of Oklahoma Press, Norman, Oklahoma.

7. Multi-Resolution Land Characteristics Consortium. *National Land Cover Database Enhanced Visualization and Analysis Tool*. www.mrlc.gov/eva/ . Accessed: April 2025.

8. National Wild and Scenic River Systems. - www.rivers.gov/. Accessed: March 2025.

9. Nationwide Rivers Inventory. www.nps.gov/subjects/rivers/nationwide-rivers-inventory.htm. Accessed: March 2025.

10. Oklahoma Water Resources Board, 1967. *Appraisal of the Water & Related Land Resources of Oklahoma – Region One. Pub. No. 17*, Impress Printing. Oklahoma City, Oklahoma.

11. University Center for Water Research Oklahoma State University, 1983. *Water Atlas of Oklahoma*, Oklahoma State University Printing.

12. University of Oklahoma, Oklahoma Geological Survey, 1979. *Geology and Earth Resources of Oklahoma*.

13. Source Aquifer Mapper - www.epa.gov/dwssa/map-sole-source-aquifer-locations . Accessed: March 2025.

14. U.S. Census Bureau, www.census.gov/quickfacts/fact/table/US/. Accessed: June 2024.

15. USDA- Natural Resources Conservation Service, 2010. *National Engineering Manual*. Third Edition.

16. USDA-Natural Resources Conservation Service, 2024. *National Soil Survey Handbook*. www.nrcs.usda.gov/resources/guides-and-instructions/national-soil-survey-handbook .

17. USDA-Natural Resources Conservation Service. 2014. *National Watershed Program Handbook* (2nd ed.). Washington, D.C. www.nrcs.usda.gov/resources/guides-and-instructions/national-watershed-program-manual-and-handbook .

18. USDA- Natural Resources Conservation Service, 2014. *National Watershed Program Manual*. www.nrcs.usda.gov/resources/guides-and-instructions/national-watershed-program-manual-and-handbook .

19. USDA-Natural Resources Conservation Service, 2019. *Technical Release 60 Earth Dams and Reservoirs*. directives.nrcs.usda.gov//sites/default/files2/1720451490/TR-210-60%2C%20Earth%20Dams%20and%20Reservoirs.pdf .

20. USDA-Natural Resources Conservation service, 1985. *Technical Release 66 Simplified Dam-Breach Routing Procedure.* directives.nrcs.usda.gov/sites/default/files2/1720451567/TR-210-66,%20Simplified%20Dam-Breach%20Routing%20Procedure.pdf.

21. USDA-Natural Resources Conservation Service, 1998. *Water Resources Handbook for Economics Part 611*. nrcspad.sc.egov.usda.gov/DistributionCenter/pdf.aspx?productID=558 .

22. USDA – Natural Resources and Environment, DM 9500-013, *Guidance For Conducting Analysis Under the Principles, Requirements, and Guidelines for Water and Land Related Resources* Implementation Studies and Federal Water Resource Investments. www.usda.gov/sites/default/files/documents/DM9500-013_final.pdf .

23. USDA – Natural Resources Conservation Service, 1981. *Land Resource Regions and Major Land Resource Areas of the United States.* www.nrcs.usda.gov/resources/data-and-reports/major-land-resource-area-mlra .

24. USDA-Natural Resources Conservation Service. Web Soil Survey. https://websoilsurvey.nrcs.usda.gov/app/ . Accessed: March 2025.

25. USDA, Soil Conservation Service, 1981. *Soil Survey of Sequoyah County*, Oklahoma, U.S. Government Printing Office, December.

26. U.S. Fish and Wildlife Service (USFWS). 2023a. *Information for Planning and Consultation (IPaC) Project IPaC Resource List*. ecos.fws.gov/ipac/. Accessed: March 2025.

27. U.S. Fish and Wildlife Service (USFWS). 2023b. *National Wetlands Inventory Wetland Mapper*. www.fws.gov/program/national-wetlands-inventory/wetlands-mapper . Accessed January 2023.

28. U.S. Water Resources Council, 1983. *Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies.*

List of Preparers

NRCS

Name	Current Position-years	Education	Experience-years
Michael Sams	State Biologist-9	B.S. Wildlife Ecology M.S. Wildlife Ecology	Wildlife Biologist -26
Melissa Jones	Biologist - 3	B.S. Zoology M.S. Wildlife Ecology PhD Aquatic Resources	Wildlife Biologist - 13
Richard L. Lane	Planning Engineer-30	B.S. Agricultural Engineering	Project Engineer-2 Area Engineer-7
K.C. Kraft	Archaeologist –24	B.A. Anthropology M.A. Anthropology PhD Anthropology	Archaeologist-38
Mark W. Kelly	Historic Archaeologist - 4	B.A. History M.A. History J.D. Historic Preservation Law ABD Anthropology	Archaeologist - 24
Ted Kersten	Civil Engineer – 19	B.S. Ag Engineering M.S. Ag Engineering	Civil Engineer - 19
April Burns	Water Resources Planning Coordinator-10	B.S. Ag Economics	Ag Economist – 6
Valerie Glasgow	Planning Engineer -1	B.S. Bioenvironmental Science M.S. Agricultural Engineering	Design Engineer – 18 Planning Engineer -1
Jessica Nichols	Geologist	B.S. and M.S. Geology	Geologist- 6

Other Agencies

Name	Agency	Education	Position
Jonathan C. Fisher	U.S. Fish & Wildlife Service	NA	Fish & Wildlife Biologist
David Carraway	U.S. Army Corps of Engineers	N/A	Regulatory Project Manager
Mark Howery	Oklahoma Dept. Wildlife Conservation	B.S. Zoology M.S. Zoology	Wildlife Diversity Biologist
Brooks Tramell	Oklahoma Conservation Commission	N/A	Director of Monitoring, Assessment, and Wetlands Program

Distribution List

United States Army Corps of Engineers

United States Environmental Protection Agency, Region 6

Federal Emergency Management Agency

United States Forest Service

United States Fish and Wildlife Service

Bureau of Reclamation

Oklahoma Conservation Commission

Oklahoma Department of Wildlife Conservation

Oklahoma Department of Environmental Quality

Oklahoma Water Resources Board

Oklahoma Department of Transportation

Oklahoma Department of Agriculture

Oklahoma Groundwater Association

Oklahoma State Historic Preservation Office

Oklahoma Archaeological Survey

Cherokee Nation

Osage Nation

United Keetoowah Tribe of Cherokee Indians in Oklahoma

Governor of Oklahoma, The Honorable Kevin Stitt

Unites States Senate, The Honorable Markwayne Mullin

United States Senate, The Honorable James Lankford

Unites States House of Representatives, The Honorable Frank Lucas