USDA United States Department of Agriculture

Supplemental Watershed Plan and Environmental Assessment

for

Floodwater Retarding Structure No. 2

Scraper Hollow Creek Watershed

Adair County, Oklahoma

DRAFT PLAN

January 2026

Oklahoma Natural Resources Conservation Service

nrcs.usda.gov

Prepared by

USDA Natural Resources Conservation Service

IN COOPERATION WITH

Adair County Conservation District

Finding of No Significant Impact

For

Rehabilitation of Floodwater Retarding Structure No. 2 of the Scraper Hollow Creek Watershed

Adair County, Oklahoma

I. AGENCY ROLE AND RESPONSIBILITY – United States Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS).

In accordance with the NRCS regulations (7 CFR Part 650) implementing the National Environmental Policy Act (NEPA), NRCS has completed an Environmental Assessment (EA) for the following proposed action:

Dam rehabilitation of Floodwater Retarding Structure (FWRS) Scraper Hollow Creek No. 2 in Adair County, Oklahoma.

II. NRCS DECISION TO BE MADE

To determine if the preferred alternative (Rehabilitation of the dam to High Hazard Criteria) will or will not be a major Federal Action significantly affecting the quality of the human environment. The EA accompanying this finding has provided the analysis needed to assess the significance of the potential impacts from the selected alternative.

III. PURPOSE AND NEED FOR ACTION

The purpose of the proposed project is to reduce the risk of loss of life due to catastrophic dam failure, maintain the level of flood protection for life and property upstream and downstream of the dam that is currently provided by the dam's ability to attenuate flood, and reduce flooding by bringing the dam into compliance with current NRCS and Oklahoma safety performance standards to extend the service life of the dam another 100 years through the project action.

FWRS Scraper Hollow Creek No. 2 was constructed in 1969 as a low-hazard dam for the purpose of flood control. The original design life of the dam was 50 years, which has been exceeded. The dam has since been re-classified as a high-hazard (Class C) dam. As a result of changes in dam safety criteria and development in the downstream breach inundation area, this dam does not have sufficient spillway and freeboard capacity to meet State of Oklahoma and NRCS dam safety criteria for a high-hazard dam.

IV. ALTERNATIVES CONSIDERED IN THE EA

Five alternatives were analyzed in the EA and are characterized as follows:

No Action Alternative: The No Action Alternative is "an estimation of the most probable future condition expected to occur in the absence of the study's alternative plans" (NWPM Part 506, Section 506.50 Glossary). Under the No Action Alternative, the dam would remain in the existing unsafe condition with no action to improve the dam from its original design or to correct safety deficiencies beyond maintenance or replacements performed in accordance with its operation and maintenance plan. The dam is assumed to eventually fail and not be subsequently rebuilt or rehabilitated.

Alternative 1 – Decommissioning: Decommissioning is a mandatory alternative that must be considered under the NRCS policy for dam rehabilitation. Decommissioning FWRS Scraper Hollow Creek No. 2 would require removing a portion of the existing dam embankment, to eliminate all storage capacity and reconnect and stabilize the historic stream channel and floodplain alignment. The amount of dam embankment removed would allow the 100-year, 24-hour flood event to safely pass through the embankment area. All principal and auxiliary spillway components would be removed, and the historic channel would be restored and connected to the existing downstream channel. Impacted roads will need to be modified to prevent overtopping during flooding events. Residences located within the breach inundation area would have to be bought out or floodproofed. Approximately 233 acres of land within the breach inundation area would need to be regulated to prevent future development.

Alternative 2 – New RCC Auxiliary Spillway (Preferred Alternative): The Preferred Alternative would include replacing the existing auxiliary spillway with a new stepped roller-compacted concrete (RCC) spillway. Due to land constraints, the new auxiliary spillway would cut through the dam embankment, and the current auxiliary spillway filled in. Additionally, the auxiliary spillway crest would be lowered. These modifications are designed to match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm.

Alternative 3 – New RCC Auxiliary Spillway, Lower High-Stage Principal Spillway Crest: This alternative would focus on structural upgrades to the dam to increase capacity by replacing the existing auxiliary spillway with a new stepped RCC spillway. The new auxiliary spillway would cut through the dam embankment, the auxiliary spillway crest would be lowered, and the current auxiliary spillway filled in. Additionally, the high-stage crest of the principal spillway's dual-stage inlet tower would be lowered, with the low-stage crest remaining at its current elevation, with no change to the normal pool elevation. These modifications are designed to match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm.

Alternative 4 – New RCC Auxiliary Spillway, Eliminate High-Stage Principal Spillway Crest: This alternative would focus on structural upgrades to the dam to increase capacity by replacing the existing auxiliary spillway with a new stepped RCC spillway. The new auxiliary spillway would cut through the dam embankment, the auxiliary spillway crest would be lowered, and the current auxiliary spillway filled in. Additionally, the principal spillway's dual-sage inlet tower would be replaced with a single-stage tower. The high-stage crest of the principal spillway would be eliminated. The low-stage crest would remain the same, so there would be no impact to the normal pool elevation. These modifications are designed to match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm.

V. NRCS' DECISION AND FACTORS CONSIDERED IN THE DECISION

Based on the evaluation in the EA, NRCS and the Sponsor selected Alternative 2 (New RCC Auxiliary Spillway) as the preferred alternative. NRCS has taken into consideration all of the potential impacts of the proposed action, incorporated herein by reference from the EA and balanced those impacts with consideration of the agency's purpose and need for action.

NRCS acknowledges that based on the EA, potential impacts to soil, water, air, plants, animals, energy and humans were considered in account of a public need. As a result, the agency's preferred alternative

(Alternative 2: New RCC Auxiliary Spillway) would result in benign short-term and long-term negative impacts while addressing the need for rehabilitation to high hazard to reduce risk of loss of life.

VI. FINDING OF NO SIGNIFICANT IMPACT

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, NRCS finds that neither the proposed action nor any of the alternatives is a major Federal Action significantly affecting the quality of the human environment. Therefore, preparation of an Environmental Impact Statement (EIS) on the final action is not required under the NEPA, or NRCS environmental review procedures (7 CFR Part 650). This finding is based on the following factors:

1) Temporary short-term adverse impacts to streams and the conservation pool, due to limited sedimentation and conservation pool drawdown during construction activities. These environmental consequences of construction activities will be insignificant due to proposed mitigation, avoidance, and minimization put in place by a required Storm Water Pollution Prevention Plan (SWPPP). The SWPPP will be in place prior to and during all construction activities.

2) An additional Aquatic Resources Protection Plan, required by 404 permitting due to impacts to jurisdictional waters, will be in place prior to and during all construction activities. This plan will outline strategies to conserve and manage aquatic ecosystem specific areas, including rivers, lakes, streams, wetlands, and marine ecosystems adjacent to the action area of the project.

3) No compensatory mitigation is anticipated with the rehabilitation of the dam. The preferred alternative will keep the permanent conservation pool elevation the same as the existing pool elevation. If wetland loss exceeds 1/10 of an acre, mitigation at a minimum of 1:1 ratio will be required along with a pre-construction notification to the U.S. Army Corps of Engineers (USACE). Consultation with USACE will be ongoing throughout the dam rehabilitation process.

4) Consultation with United States Fish and Wildlife Service (USFWS) resulted in a "no effect" for the Piping plover, Rufa red knot and Ozark big-eared bat and a "may affect, not likely to adversely affect" conclusion for the Monarch butterfly, Alligator snapping turtle, Gray bat, Indiana bat, Northern-long-eared bat, and Tri-colored bat. Consultation with USFWS will be ongoing throughout the dam rehabilitation process.

5) There will be temporary, short-term adverse impacts to vegetation (trees/shrubs) within the project action area. Trees will be felled prior to construction activities and will occur outside of the primary nesting season for migratory birds (May 1 to July 1), and during local bat species inactive period (Nov 15 – Mar 15). Upon construction completion, vegetation will be allowed to be reestablished within the action area.

6) Permanent impacts are associated with the roller-compacted concrete auxiliary spillway over the dam embankment. Approximately one acre will be converted to a concrete spillway. This

action will not have long-term adverse effects on any threatened or endangered species or critical habitat.

7) The proposed alternative does not significantly impact public health. Dam rehabilitation will reduce the risk associated with a potential catastrophic dam failure, reducing the risk of loss of life.

8) NRCS regulations (7 CFR Part 650) and policy (Title 420, GM Part 401) require that NRCS identify, assess, and avoid effects to historic or cultural resources, park lands, prime farmlands, wetlands, or ecologically critical areas (Title 190 National Compliance Handbook). NRCS made the determination of "no historic properties (including archaeological sites) affected" by the proposed Alternative 4. The Oklahoma Archaeological Survey, the Oklahoma State Historic Preservation Office, and the Cherokee Nation, have concurred with this determination.

9) The proposed action does not violate Federal, State, or local law requirements imposed for protection of the environment. The major laws identified with the selection of Alternative 2 include the Clean Water Act, Clean Air Act, Endangered Species Act, National Historic Preservation Act, and Migratory Bird Treaty Act. Alternative 2 is consistent with the requirements of these laws. Based on the information presented in the attached EA, NRCS finds, in accordance with 40 CFR Section 1508.13, that the selection of the agency preferred alternative (Alternative 2: New RCC Auxiliary Spillway) is not a major Federal Action significantly affecting the quality of the human environment; therefore, not requiring preparation of an EIS.

1/27/26

JEANNE JASPER
State Conservationist, Oklahoma
USDA-NRCS

Date

DRAFT Supplemental Watershed Plan No. 1 and Environmental Assessment for the Rehabilitation of Floodwater Retarding Structure No. 2 in the Scraper Hollow Creek Watershed in Adair County, Oklahoma

Prepared By:

USDA Natural Resources Conservation Service

In Cooperation With:

Adair County Conservation District

Adair County, Oklahoma

Congressional District No. 2

AUTHORITY

The original work plan was prepared, and the works of improvement installed, under the authority of the Watershed Protection and Flood Prevention Act (Public Law 83-566), as amended (16 U.S.C. Section 1001 et. seq.), 1965. The rehabilitation of Structure No. 2 is authorized under Public Law 83-566 (as amended), and as further amended by Section 313 of Public Law 106-472.

ABSTRACT

The purpose of this project is to bring the Scraper Hollow Creek Watershed Floodwater Retarding Structure Scraper Hollow FWRS No. 2 into compliance with current State and United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) dam safety and performance standards.

The proposed action (preferred alternative) involves structural upgrades to the dam to increase capacity by replacing the existing auxiliary spillway with a new stepped roller-compacted concrete (RCC) spillway. The new spillway would be widened from 50 feet to 250 feet and would be moved to the center of the dam embankment due to land constraints with the existing auxiliary spillway. The spillway crest would be lowered 3.9 feet, to an elevation of 998.1 feet. Additionally, the existing principal spillway, which is a 33-inch reinforced concrete pipe conduit, would be reinforced with a 3-foot x 9-foot x 25-foot dual-stage inlet tower. The existing principal spillway conduit would be slip lined with a 30-inch high-density polyethylene (HDPE) pipe. These modifications are designed to match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm.

Total cost for the proposed action would be $10,943,600, of which Federal cost would be $7,669,600 and Sponsor cost would be $3,273,900. The cost of preparation of the watershed plan and environmental assessment totaled $712,715 and was covered entirely with Federal funding.

COMMENTS and INQUIRIES

Comments and inquiries must be received by XX, 2025. Submit comments and inquiries by mail or email to: Valerie Glasgow, Acting Assistant State Conservationist for Water Resources; USDA/NRCS, 100 USDA, Suite 206, Stillwater, Oklahoma 74074; (405) 742-1220; Valeri.glasgow@usda.gov.

Non-Discrimination Statement:

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, 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.

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Ancestral Land Acknowledgement

Adair County, Oklahoma, formerly part of Indian Country as set forth in the 1834 Indian Intercourse Act, is in northeast Oklahoma. Indian Country included the current central United States and was described in 1834 as “all that part of the United States west of the Mississippi (River) and not within the states of Missouri and Louisiana or the Territory of Arkansas”. Indian Country was later reduced with the organization of Wisconsin, Iowa, Minesota, and Dakota territories as well as by the Kansas-Nebraska Act of 1854. After the Civil War, the Southern Treaty Commission reduced Indian Country even further to what is now the State of Oklahoma (minus the Panhandle and Old Greer County) and designated it as Indian Territory. Indian Territory was

reduced by the Oklahoma Organic Act of 1890, whereby the western part of Indian Territory became Oklahoma Territory while modern eastern Oklahoma was all that remained of the original Indian Country described in 1834. The Twin Territories were eventually merged and became the State of Oklahoma in 1907.

The precontact Agricultural Villagers period (roughly 750 and 1000 years ago) of the plains and plains-prairie marks the first time when prehistoric groups can be linked to historically known Native societies (or "tribes"). Based on a continuity of dwelling architecture, habitation patterns, and ceramic styles and varieties, the Agricultural Villagers became those known today as the Caddo Nation and the Wichita and Affiliated Tribes. Through time, the Wichita became associated primarily with the plains, while the Caddo appear to have lived on the prairie-plains edge; Adair County is part of the latter. Eventually, the Osage Nation and Quapaw Nation, amongst others, made their way into eastern Oklahoma through direct or indirect contact with Europeans. The first documented land cessions in what is now eastern Oklahoma was by the Osage Nation in 1818. This land was later assigned to the Cherokee Nation in 1828 (adjusted in 1833) and later codified in 1835. Some 31 years later, in 1866, the Cherokee Nation relinquished portions of their holdings to “settle friendly Indians” in the northeast of their reserve. As noted in the previous paragraph, the Cherokee Nation lands were incorporated into the State of Oklahoma in 1907.

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SCRAPER HOLLOW CREEK WATERSHED

Supplemental Watershed Plan Agreement No. 1

between the

Adair County Conservation District,

State of Oklahoma

(Referred to herein as the sponsor)

and the

UNITED STATES DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

(Referred to herein as NRCS)

Whereas, the original Watershed Plan Agreement for Scraper Hollow Creek Watershed, State of Oklahoma, executed by the Sponsors and NRCS, became effective in 1958; and

Whereas, in order to extend the watershed plan for said Floodwater Retarding Structure (FWRS) No. 2 beyond its original evaluated life and to 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 Scraper Hollow Creek Watershed, State of Oklahoma, under the authority of the Watershed Protection and Flood Prevention Act, as amended (16 U.S.C. Sections 1001 to 1008, 1010, and 1012); and

Whereas, there has been developed through the cooperative efforts of the Sponsor and NRCS a watershed project plan and environmental assessment for works of improvement for the Scraper Hollow Creek Watershed, State of Oklahoma, hereinafter referred to as the watershed project plan or plan, which plan is annexed to and made a part of this agreement;

Now, therefore, in view of the foregoing considerations, the Secretary of Agriculture, through NRCS, and the sponsor hereby agree on this supplemental watershed 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 installation period (2 years) plus the evaluated 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. The 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 sponsor will acquire such real property as will be needed in connection with the works of improvement. The amounts and percentages of the real property acquisition cost to be borne by the sponsor and NRCS are as shown in the cost-share table in item 5 hereof.

   The sponsor agrees that all land acquired for measures, other than land treatment practices, with financial or credit assistance under this agreement will not be sold or otherwise disposed of for the evaluated life of the project except to a public agency, which will continue to maintain and operate the development in accordance with the operation and maintenance agreement.

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 CFR Part 24 and 7 CFR 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. **Cost-share for Watershed Project Plan.** The percentages of total rehabilitation project costs to be paid by the sponsor and by NRCS are as follows:

TABLE 1. COST-SHARE BREAKDOWN

Scraper Hollow Creek Watershed, Oklahoma (Dollars)[1/]

Works of Improvement	NRCS		Sponsors		Total
Cost Sharable Items	**%**	**Cost**	**%**	**Cost**	**Cost**
Construction Costs	65	$5,863,400	35	$2,988,700	$8,852,100
Mitigation	100	$0	0	$0	$0
Real Property Acquisition Cost	-	$0	-	$1,500	$1,500
Relocation	-	$0	-	$0	$0
Sponsor's Engineering[2/]	-	$0	100	$135,000	$135,000
Subtotal: Cost-Share Costs	-	**$5,863,400**	-	**$3,125,200**	**$8,988,600**
Non-Cost-Sharable Items[3/]	**%**	**Cost**	**%**	**Cost**	**Cost**
NRCS Tech Assist/Engineering	100	$885,300	0	$0	$885,300
Project Administration[4/]	NA	$1,030,300	NA	$32,000	$1,062,300
Water Rights	-	$0	-	$0	$0
Permits	0	$0	100	$0	$0
Real Property Rights[5/]	0	$0	100	$0	$0
Relocation beyond Decent, Safe, Sanitary[6/]	-	$0	100	$0	$0
Non-Project Costs (O&M)	-	$0	100	$7,400	$7,400
Subtotal: Non-Cost-Sharable	-	**$1,915,600**	-	**$39,400**	**$1,955,000**
TOTAL:		**$7,779,000**		**$3,164,600**	**$10,943,600**

1/ Price base: 2024. Prepared July 2024.

2/ Cost-sharable at 100% NRCS if Sponsor hires an engineer for structural design. Not cost-sharable if Sponsor's engineering is for elements required for real property rights (road improvements, power line modification, livestock water supply line, etc.).

3/ If actual non cost-sharable item expenditures vary from these figures, the responsible party will bear the change.

4/ The sponsor and NRCS will each bear the costs of project administration that each incurs.

5/ The sponsor 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 sponsor's share of the works of improvement costs. In no case will the amount of the in-kind contribution exceed the sponsor's share of the cost for works of improvement. The maximum cost eligible for in-kind credit is the same as that for cost sharing.

6/ Relocation payments for the cost of improvements beyond decent, safe, and sanitary requirements is a non-project cost ineligible for assistance under the act.

6. **Land Treatment Agreements.** The sponsor 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.

7. **Floodplain Management.** Before construction of any project for flood prevention, the sponsor 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.

8. **Water and Mineral Rights.** The sponsor 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.

9. **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 sponsor's cost-share.

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 sponsor 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 sponsor has 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 sponsor in writing of the determination and the reasons for the de-authorization of project funding, together with the effective date. Payments made to the sponsor 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 sponsor 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 sponsor 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 O&M. 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 sponsor acknowledges that continued liabilities and responsibilities associated with works of improvement may exist beyond the evaluated life. A specific O&M plan will be prepared for FWRS No. 12 before issuing invitations to bid for construction, using the NRCS National Operation and Maintenance Manual.

15. **Emergency Action Plan.** Prior to construction, the sponsor 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 sponsor annually.

16. **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, 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-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.

17. Certification Regarding Drug-Free Workplace Requirements. (7 CFR Part 3021). By signing this watershed agreement, the sponsor is providing the certification set out below. If it is later determined that the sponsor 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).

18. Certification

A. The sponsor certifies that it 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 10 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 sponsor 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.

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

A. The sponsor certifies to the best of its 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.

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

A. The sponsor certifies to the best of its knowledge and belief, that it and its principals:

(1) Are not 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 3-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 3-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 sponsor is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this agreement.

21. 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 organization 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 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 its 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 subagreement.

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.

22. 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 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.

23. 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.

24. Signatures

Adair County Conservation District
468670 Hwy 100
Stilwell, OK 74960

The signing of this supplemental agreement was authorized by a resolution of the governing body of the Adair County Conservation District adopted at a meeting held on _____, 2025, in Stilwell, Oklahoma.

_____ Date: _____

(name)
District Board Chair

United States Department of Agriculture - Natural Resources Conservation Service

Approved by:

_____ Date: _____

Jeanne Jasper, State Conservationist
100 USDA, Suite 206
Stillwater, OK 74074

SUMMARY OMB FACT SHEET

SUPPLEMENTAL WATERSHED PLAN NO. 1 AND ENVIRONMENTAL ASSESSMENT DOCUMENT FOR THE REHABILITATION OF FLOODWATER RETARDING STRUCTURE NO. 2, SCRAPER HOLLOW CREEK WATERSHED ADAIR COUNTY, OKLAHOMA

2ND CONGRESSIONAL DISTRICT

Prepared by: United States Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS).

Authorization: The original Work Plan For The Scraper Hollow Creek Hydrologic Unit was prepared in 1958, under the authority of the Resource Conservation and Development Program. Scraper Hollow FWRS No. 2 was constructed by the Adair County Conservation District with assistance of the NRCS and funding through the Resources Conservation and Development Program (RC&D). The rehabilitation of Scraper Hollow FWRS No. 2 is authorized under Public Law 83-566, as amended by Section 313 of Public Law 106-472.

Sponsor: Adair County Conservation District

Proposed Action: Alternative 2 - Dam Rehabilitation with New Auxiliary Spillway. The Proposed Action (Preferred Alternative) includes the following planned measures:

- The existing principal spillway is a 33-inch reinforced concrete pipe conduit with a 3-foot x 9-foot x 25-foot dual-stage inlet tower. Proposed improvements include slip-lining the pipe with a 30-inch HDPE pipe.
- Abandon the existing auxiliary spillway and cut a new stepped roller compacted concrete (RCC) spillway with a width of 250 feet into the dam embankment. The auxiliary spillway would be lowered 3.9 feet, to an elevation of 998.1 feet. The top of the dam would be extended into the existing auxiliary spillway footprint to fill it in.
- Provide alternative route for landowner access.

Purpose and Need for Action

Purpose: To reduce the risk of loss of life due to catastrophic dam failure, maintain the level of flood protection for life and property upstream and downstream of the dam that is currently provided by the dam's ability to attenuate flood, and reduce flooding by bringing the dam into compliance with current NRCS and Oklahoma safety performance standards to extend the service life of the dam another 100 years through the project action.

Need: Floodwater Retarding Structure (FWRS) No. 2 was originally constructed as a Class A low hazard dam. Development downstream of the dam has resulted in the reclassification of the dam

to Class C high hazard. The proposed action is needed to address public health and safety concern that FWRS No. 2 does not meet NRCS or State of Oklahoma dam safety criteria due to downstream development within the breach inundation area. No immediate need for action associated with flood protection was identified beyond rehabilitation of the structure to high-hazard potential standards.

Description of the Proposed Action: The Proposed Action (Preferred Alternative) is Alternative 2. Under this alternative, Scraper Hollow FWRS No. 2 would be rehabilitated to meet NRCS and State dam safety and performance standards by replacing the existing auxiliary spillway with a new stepped roller-compacted concrete spillway, The auxiliary spillway will be widened and placed in the dam embankment and will have a lower crest. The existing principal spillway conduit will be slip-lined with an HDPE pipe.

Resource Information:

Location: Latitude: 35.9077 Longitude: -94.7051

8-Digit Hydrologic Unit Number: 11110103

National Inventory of Dams (NID) No.: OK00090

	Watershed	FWRS No. 12
Watershed Size (acres):	221,344	1,314
Land Use (acres):		
Agriculture (Cultivated Crops)	-	-
Pasture/Rangeland	83,787	183
Forested	115,463	961
Herbaceous (Grassland)	4,078	28
Developed	11,620	44
Open Water	275	6
Wetlands	821	1

Land Ownership: County = 0%; State = 0%; Federal = N/A; Private = 100%

Number of Farms (Adair County): 928

Minority Farmers: 678
Average Farm Size (acres): 232
Limited Resource Farmers: 209

Climate and Topography: Adair County has a humid, subtropical climate with hot summers and mild winters. Average temperatures are near 85°F in summer and are near 30°F in winter. Precipitation is abundant throughout the year, with an approximate yearly average of 50 inches. Topography is mostly plains broken by sandstone hills and broad, gentle valleys.

Population and Demographics:

TABLE S-1. POPULATION AND DEMOGRAPHIC DATA

Adair County, Oklahoma

	Adair County[1/]	Oklahoma[1/]	Nation[1/]
Population	19,839	3,948,136	329,725,481
Median per capita income	$18,486	$30,976	$37,638
Median household income	$37,940	$56,956	$69,021
Median value owner-occupied housing units	$92,000	$150,800	$244,900
Families living at or below the poverty level	24%	15%	12%
Native American population	43%	7%	1%
Black population	N/A	7%	12%
Asian population	1%	2%	6%
Hispanic population	7%	11%	18%

[1/] *2021 Data from https://www.mysidewalk.com/*

Resource Concerns: The scoping process reviewed a broad range of resource concerns to be evaluated during the watershed planning process. Resource concerns are included in Table S-3 in the Environmental Effects/Impacts section of this summary.

Alternative Plans Considered: In addition to the no-action alternative, seven alternative plans were considered. Two alternatives that involved raising the dam were rejected by the sponsor due to cost and environmental footprint concerns. Therefore, the sponsor directed the team to only study the alternatives listed below.

No-Action – This plan is also considered the future without federal investment (FWOFI), in which no federal funds are expended on the project. This is a true no-action alternative, in which no rehabilitation measures take place. The dam would remain in its current configuration with regular maintenance continuing. The dam would not comply with the NRCS or Oklahoma Water Resources Board criteria for a high-hazard dam, and the embankment would remain in place with an elevated breach risk. There would be no mitigation measures implemented.

Alternative No. 1: Decommissioning – This alternative would remove a portion of the existing dam embankment, to eliminate all storage capacity and reconnect and stabilize the historic stream channel and floodplain alignment. The amount of dam embankment removed would allow the 100-year, 24-hour flood event to safely pass through the embankment area. All principal and auxiliary spillway components would be removed, and the historic channel would be restored and connected to the existing downstream channel.

Alternative No. 2: New stepped roller-compacted concrete (RCC) auxiliary spillway – This alternative would focus on structural upgrades to the dam to increase capacity by replacing the existing auxiliary spillway with a new stepped RCC spillway. The new spillway would be wider than the existing spillway and have a lower crest. The modifications are designed to

match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm.

Alternative No. 3: New RCC auxiliary spillway, lower high stage principal spillway crest – This alternative would focus on structural upgrades to the dam to increase capacity by replacing the existing auxiliary spillway with a new stepped RCC spillway. The new spillway would be wider than the existing spillway and have a lower crest. The principal spillway high-stage crest would be lowered. These modifications are designed to match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm.

Alternative No. 4: New RCC auxiliary spillway, eliminate high stage principal spillway crest – This alternative would focus on structural upgrades to the dam to increase capacity by replacing the existing auxiliary spillway with a new stepped RCC spillway. The new spillway would be wider than the existing spillway and have a lower crest. The principal spillway dual-stage inlet tower would be replaced with a single-stage tower. These modifications are designed to match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm.

Project Costs: The proposed action (Alternative No. 2) maximizes the benefits, with a benefit-cost ratio of 0.4:1.0. The proposed action is the sponsor-preferred alternative. Table S-2 illustrates the cost breakdown for NRCS and the Sponsor.

TABLE S-2. ESTIMATED PROJECT COSTS

Scraper Hollow Creek Watershed, Oklahoma (Dollars)[1/]

Works of Improvement	PL 83-566 Funds		Other Funds		Total
Cost Sharable Items	**Cost**	**%[2/]**	**Cost**	**%[2/]**	**Cost**
Construction Costs	$5,863,400	65	$2,988,700	35	$8,852,100
NRCS Tech Assist/Engineering	$885,300	100	$0	0	$885,300
Relocation[6/]	$0	0	$0	100	$0
Real Property Acquisition	$0	0	$1,500	100	$1,500
Real Property Rights[3/]	-	NA	$0	100	$0
Project Administration[4/]	$1,030,431	NA	$32,000	NA	$1,062,300
Sponsor's Engineering[5/]	-	NA	$135,000	100	$135,000
Annual O&M (non-Fed)	-	NA	$7,400	100	$7,400
Permits	$0	0	$0	100	$0
TOTAL:	**$7,779,000**		**$3,164,600**		**$10,943,600**

1/ Price base: 2024. Table prepared July 2024.

2/ As per NWPM Section 500.42 and Figure 500-E2, PL-566 cost share rates depend on the authorized purposes of the particular watershed plan. For rehabilitation, PL-566 pays 65% of construction and engineering with a 35% Sponsor cost share. Installation of compensatory mitigation is considered part of the construction of the flood control measure (per text between Figures 500-E1 and 500-E2). Real property rights acquisition is 100% sponsor cost for most PL-566 activities. However, acquisition of property rights for mitigation and recreation may be cost-shared (see referenced sections).

3/ Construction elements required to satisfy real property rights are 100% sponsor cost.

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

5/ Cost-sharable at 100% NRCS if sponsor hires an engineer for structural design. Not cost-shareable if sponsor's engineering is for elements required for real property rights (road improvements, power line modification, livestock water supply line, etc.).

6/ Relocation payments for the cost of improvements beyond decent, safe, and sanitary requirements is a non-project cost ineligible for assistance under the act.

Project Benefits: The proposed action would allow the sponsor to comply with applicable State and NRCS dam safety and performance standards, reduce the potential for loss of life due to catastrophic failure of the dam, and continue to protect existing property and infrastructure downstream of the dam. The proposed measures maximize public benefit. Average annual monetary benefits are estimated to be $12,700. Average annual cost is estimated to be $328,300, resulting in average annual net benefits of ($315,600).

Net Beneficial Effects (Non-Monetary): Maintains existing protection of streams, wetlands, riparian and upland landscapes, and fish and wildlife habitats.

Number of Direct Beneficiaries: Three residences and four roads are at direct risk from a catastrophic failure of the dam.

Other Beneficial Effects: Reduction in population at risk by 17 people.

Benefit to Cost Ratio (Current Rate): 0.04:1.0

Net Beneficial Monetary Effects: ($315,600)

Funding Schedule:	Year 2026	Year 2027	Year 2028	Year 2029
Federal Funds:	$442,650	$442,650	$4,136,220	$2,757,480
Non-Federal Funds:	$0	$136,500	$1,816,860	$1,211,240

Evaluation Period (Project Life): 102 years (including 2 years for project implementation)

Project Life: 100 years

Environmental Effects/Impacts: Table S-3 lists the resources of concern and environmental consequences associated with the proposed action. Resources that would not be affected by the project are not listed in this table.

TABLE S-3: SUMMARY OF RESOURCE CONCERNS AND IMPACTS

No-Action Alternative	Alt. 1 -Decommission Dam	Alt. 2 – New Auxiliary Spillway	Alt. 3 – Lower Principal Spillway Crest	Alt. 4 – Single Stage Principal Spillway Crest
Soils				
Negligible effects with dam. Minor, long-term, and adverse with dam failure.	Minor short-term due to construction disturbance mitigated by best management practices (BMPs). Negligible long-term effects due to stream channel stabilization and riparian corridor restoration.	Minor short-term due to construction disturbance mitigated by BMPs. Negligible long-term.	Minor short-term due to construction disturbance mitigated by BMPs. Negligible long-term.	Minor short-term due to construction disturbance mitigated by BMPs. Negligible long-term.
Water Resources				
Water Quality				
No effect with the dam in place. Long-term adverse with dam failure due to additional sediment and pollutant loading in streams.	Minor, short-term effects with construction activities mitigated by use of BMPs. Long-term benefits with stream stabilization and riparian restoration.	Minor, short-term effects with construction activities mitigated by use of BMPs. Long-term benefits would be the same as existing, with the dam trapping sediment and pollutants.	Minor, short-term effects with construction activities mitigated by use of BMPs. Long-term benefits would be the same as existing, with the dam trapping sediment and pollutants.	Minor, short-term effects with construction activities mitigated by use of BMPs. Long-term benefits would be the same as existing, with the dam trapping sediment and pollutants.
Waters of the United States (WOTUS), Wetlands, and Special Aquatic Sites				
No effect with dam in place. Long-term adverse effects without the dam due to increased flooding.	Minor, short-term adverse effects during construction that would be mitigated by use of BMPs. Long-term benefits with newly established stream channel, flow regime, and riparian corridor restoration.	Minor, short-term adverse effects during construction that would be mitigated by use of BMPs. No long-term effects, as conditions would revert to existing conditions after construction.	Minor, short-term adverse effects during construction that would be mitigated by use of BMPs. No long-term effects, as conditions would revert to existing conditions after construction.	Minor, short-term adverse effects during construction that would be mitigated by use of BMPs. No long-term effects, as conditions would revert to existing conditions after construction.

No-Action Alternative	Alt. 1 -Decommission Dam	Alt. 2 – New Auxiliary Spillway	Alt. 3 – Lower Principal Spillway Crest	Alt. 4 – Single Stage Principal Spillway Crest
Floodplain Management				
No effect.	Long-term adverse effects due to increased flooding and enlargement of the 100-year floodplain.	No effect, as structures and roads would continue to be protected.	No effect, as structures and roads would continue to be protected.	No effect, as structures and roads would continue to be protected.
Air Resources				
Climate				
No short-term effects. Minor, long-term, adverse effects without dam due to increased flooding.	Negligible effect on atmospheric CO_2 levels.	Negligible effect on atmospheric CO_2 levels.	Negligible effect on atmospheric CO_2 levels.	Negligible effect on atmospheric CO_2 levels.
Plants and Animals				
Fish and Wildlife				
No effect with the dam in place. Long-term, adverse without the dam due to increased flooding impacting habitats.	Construction activities would have minor short-term, adverse effects, mitigated with BMPs. Long-term benefits with the addition of stream and riparian corridor habitats.	Minor short- and long-term effects due to construction activities, which would be mitigated with BMPs.	Minor short- and long-term effects due to construction activities, which would be mitigated with BMPs.	Minor short- and long-term effects due to construction activities, which would be mitigated with BMPs.
Threatened and Endangered Species				
No effect with dam in place. Potential long-term adverse without dam due to increased flooding impacting habitats.	Negligible, short-term adverse effects during construction mitigated with BMPs. Long-term benefits with increased habitat due to stream and riparian restoration.	Negligible, short-term adverse effects during construction mitigated with BMPs.	Negligible, short-term adverse effects during construction mitigated with BMPs.	Negligible, short-term adverse effects during construction mitigated with BMPs.

No-Action Alternative	Alt. 1 -Decommission Dam	Alt. 2 – New Auxiliary Spillway	Alt. 3 – Lower Principal Spillway Crest	Alt. 4 – Single Stage Principal Spillway Crest
Migratory Birds				
No effect with dam in place. Dam failure could result in minor, long-term adverse impacts due to increased flooding impacts on habitats.	Minor, short-term effects during construction would be mitigated with BMPs. Long-term benefits resulting from stream and riparian restoration providing additional habitat.	Minor, short-term effects during construction would be mitigated with BMPs. No effect long-term as birds would resume using existing habitats.	Minor, short-term effects during construction would be mitigated with BMPs. No effect long-term as birds would resume using existing habitats.	Minor, short-term effects during construction would be mitigated with BMPs. No effect long-term as birds would resume using existing habitats.
Invasive Species				
No effect with dam in place. Dam failure could result in minor, long-term adverse impacts due to increased flooding potentially spreading invasives.	Negligible effects.	Negligible effects.	Negligible effects.	Negligible effects.
Riparian Areas				
No effect with dam in place. Dam failure would result in minor, long-term adverse effects due to increased flooding.	Minor short-term adverse effects during construction due to clearing of vegetation. Long-term benefits due to riparian corridor restoration of 100 feet on each side of the stream.	Minor short-term adverse effects during construction due to clearing of vegetation. No long-term effects due to establishment of native vegetation similar to existing conditions.	Minor short-term adverse effects during construction due to clearing of vegetation. No long-term effects due to establishment of native vegetation similar to existing conditions.	Minor short-term adverse effects during construction due to clearing of vegetation. No long-term effects due to establishment of native vegetation similar to existing conditions.

No-Action Alternative	Alt. 1 -Decommission Dam	Alt. 2 – New Auxiliary Spillway	Alt. 3 – Lower Principal Spillway Crest	Alt. 4 – Single Stage Principal Spillway Crest
Humans				
Land Use				
No effect with dam in place. Dam failure would result in minor, long-term adverse effects with increased flooding.	Minor long-term effects with change from open water to stream and riparian woodland.	No effect.	No effect.	No effect.
Cultural Resources				
No effect with dam in place. Potential to adversely affect historic properties due to prolonged exposure to increased flooding after dam failure.	No effects. No historic properties or cultural resources are present within the project area. OKSHPO provided a letter of concurrence on October 22, 2024. In correspondence dated March 27, 2025, the Cherokee Nation Tribal Historic Preservation Office (THPO) approved the project and concurred with the project findings.	No effects. No historic properties or cultural resources are present within the project area. OKSHPO provided a letter of concurrence on October 22, 2024. In correspondence dated March 27, 2025, the Cherokee Nation Tribal Historic Preservation Office (THPO) approved the project and concurred with the project findings.	No effects. No historic properties or cultural resources are present within the project area. OKSHPO provided a letter of concurrence on October 22, 2024. In correspondence dated March 27, 2025, the Cherokee Nation Tribal Historic Preservation Office (THPO) approved the project and concurred with the project findings.	No effects. No historic properties or cultural resources are present within the project area. OKSHPO provided a letter of concurrence on October 22, 2024. In correspondence dated March 27, 2025, the Cherokee Nation Tribal Historic Preservation Office (THPO) approved the project and concurred with the project findings.
Public Health and Safety				
No effect with dam in place. Long-term adverse effects with dam failure due to increased flooding.	No effect due to floodproofing or buyout of three residences and modifications to four roads.	No effect.	No effect.	No effect.

No-Action Alternative	Alt. 1 -Decommission Dam	Alt. 2 – New Auxiliary Spillway	Alt. 3 – Lower Principal Spillway Crest	Alt. 4 – Single Stage Principal Spillway Crest
Socioeconomics				
No effect.	Minor short-term benefits with construction on local economy.	Minor short-term benefits with construction on local economy.	Minor short-term benefits with construction on local economy.	Minor short-term benefits with construction on local economy.
Scenic Beauty				
No effect with dam in place. Long-term adverse effects with dam failure due to loss of lake and increased flooding.	Short-term adverse effects during construction. Negligible long-term effects, as open water would be replaced with stream and riparian woodland.	Short-term adverse effects during construction. Negligible long-term effects.	Short-term adverse effects during construction. Negligible long-term effects.	Short-term adverse effects during construction. Negligible long-term effects.
Recreation				
No effect with dam in place. Long-term adverse effects to water related recreation with dam failure.	Long-term adverse effects to water-related recreation with dam removal.	Negligible short- term adverse effects to incidental recreation during construction. No long-term effects.	Negligible short-term adverse effects to incidental recreation during construction. No long-term effects.	Negligible short-term adverse effects to incidental recreation during construction. No long-term effects.
Provisioning Services				
Grassland/Pasture (non-monetized)				
Dam would continue to protect grassland and pasture in the project area. Dam failure could have minor, long-term adverse effects due to increased flooding.	Removal of dam would result in an increase in flooding, which would have long-term adverse effects on grassland and pasture upstream and downstream of the dam.	No effect, as grassland and pasture would continue to be protected from flooding.	No effect, as grassland and pasture would continue to be protected from flooding.	No effect, as grassland and pasture would continue to be protected from flooding.

No-Action Alternative	Alt. 1 -Decommission Dam	Alt. 2 – New Auxiliary Spillway	Alt. 3 – Lower Principal Spillway Crest	Alt. 4 – Single Stage Principal Spillway Crest
Regulating Services				
Direct Flood Risk Management (monetized)				
Average annual flood damages of $140,800, including damages attributable to dam failure.	Total benefits compared to No Action are $113,900, with net NED benefits of ($504,900).	Total benefits compared to No Action are $12,700, with net NED benefits of ($315,600).	Total benefits compared to No Action are ($12,000), with net NED benefits of ($314,000).	Total benefits compared to No Action are ($2,600), with net NED benefits of ($382,600).
Water Filtration (non-monetized)				
Water quality would be the same as with the dam. Long-term adverse effects with dam failure due to increased flooding resulting in additional sediment and pollutants entering streams.	Short-term adverse effects from construction that would be mitigated by the use of BMPs. There would be long-term benefits provided by riparian corridor restoration with woodland plantings stabilizing soils.	Short-term adverse effects from construction that would be mitigated by the use of BMPs. Long-term would be the same as existing with dam in place.	Short-term adverse effects from construction that would be mitigated by the use of BMPs. Long-term would be the same as existing with dam in place.	Short-term adverse effects from construction that would be mitigated by the use of BMPs. Long-term would be the same as existing with dam in place.
Cultural Services				
Aesthetic Value of Scenic Resources (non-monetized)				
Aesthetics would remain with the dam in place. Long-term adverse effects on aesthetics with dam failure and increased flooding.	Short-term adverse effects during construction. Long-term benefits with stream and riparian corridor restoration.	Short-term adverse effects during construction. Long-term benefits with stream and riparian corridor restoration.	Short-term adverse effects during construction. Long-term benefits with stream and riparian corridor restoration.	Short-term adverse effects during construction. Long-term benefits with stream and riparian corridor restoration.

Major Conclusions: The rehabilitation of FWRS No. 2 meets the purpose and need of the project to upgrade the dam to meet current NRCS and Oklahoma safety and performance standards for a high-hazard dam, thereby reducing the risk to loss of life due to dam failure. Additionally, the service life of the dam would be extended for 100 years.

Areas of Controversy: None

Issues to Be Resolved: The following issues will need to be addressed for this project to move forward:

- Funding for initial sponsor cost-share amounts and estimated annual operations and maintenance (O&M).
- Sponsor obtaining all necessary state and federal permits.
- NRCS obtaining Federal funding for project design and construction.

Evidence of Unusual Congressional or Local Interest: No

Compliance Certification: This report complies with Executive orders, public laws, and other statutes governing the formulation of water resource projects.

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APPENDICES

1.0 CHANGES REQUIRING PREPARATION OF A SUPPLEMENT

This supplemental watershed plan only addresses Floodwater Retarding Structure Scraper Hollow FWRS No. 2, located in Adair County, Oklahoma (Figure 1 and Appendix B). Scraper Hollow FWRS No. 2 was completed in 1969 as a low-hazard dam and is currently classified as a high-hazard dam. This classification is given to dams that pose a threat to life. As a result of changes in dam safety criteria and development in the downstream breach inundation area, this dam does not have sufficient spillway and freeboard capacity to meet State of Oklahoma and NRCS dam safety criteria for a high-hazard dam. The dam was originally constructed to provide flood mitigation and sediment control within the Scraper Hollow watershed. Development below the dam resulted in the need to change the hazard classification of the dam. The continuing purpose of the dam has not changed from the original purpose, which is flood control.

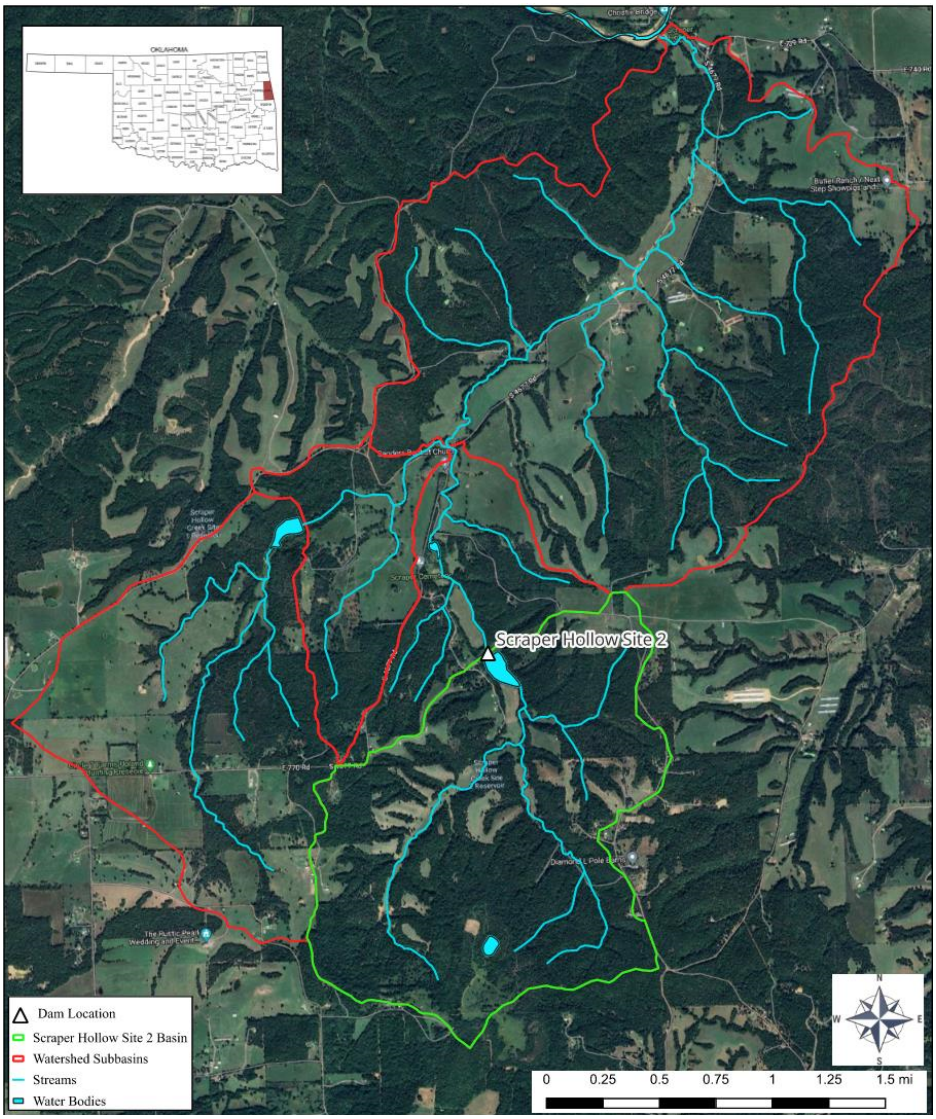

Figure 1: Location of Scraper Hollow FWRS No. 2 in Adair County, Oklahoma

This supplemental watershed plan-environmental assessment (Plan-EA) describes the existing conditions; develops alternatives; evaluates those alternatives' economic, social, and environmental impacts; and recommends a proposed action (the preferred alternative). The Plan-EA documents the process by which the NRCS provided technical assistance to the sponsor and the public in addressing resource issues and concerns within the Scraper Hollow Creek watershed. It also documents how the process complied with the requirements of the National Environmental Policy Act (NEPA).

2.0 PURPOSE AND NEED FOR ACTION

The purpose and need is to remedy structural deficiency in the FWRS No. 2 dam. The proposed action is needed to address dam safety related to hazard classification concerns by implementing rehabilitation repairs.

2.1.1 PURPOSE

The project purpose is to reduce the risk of loss of life due to catastrophic dam failure; maintain the level of flood protection for property upstream and downstream of the dam that is currently provided by the dam's ability to attenuate flood; and reduce flooding by bringing the dam into compliance with current NRCS and Oklahoma safety performance standards to extend the service life of the dam another 100 years through the proposed action.

2.1.2 NEED

FWRS No. 2 was constructed as a low-hazard dam for the purpose of flood control. It has since been re-classified as a high-hazard (class C) dam. However, the vegetated earthen spillway and dam embankment do not meet NRCS or Oklahoma Water Resources Board (OWRB) dam safety program standards for a Class C high-hazard dam. The proposed action is needed to address public health and safety concerns that FWRS No. 2 does not meet NRCS or State of Oklahoma dam safety criteria because of downstream development within the breach inundation area. No immediate need for action associated with flood protection was identified beyond rehabilitation of the structure to high-hazard potential standards.

2.1.3 PROBLEMS

FWRS No. 2 was designed in 1969 as a low-hazard potential dam, as defined by both NRCS and the State of Oklahoma. Dams in Oklahoma are classified according to NRCS definitions in the National Engineering Manual Part 520, Subpart C – Dams (NEM 520), and according to the Oklahoma dam safety program, coordinated by the Oklahoma Water Resources Board, as defined in O.S 785:25. It is currently classified as a high-hazard potential dam by both standards and is out of compliance with NRCS TR-60 design criteria (TR-60) and performance standards for principal spillway capacity and freeboard capacity. Because this dam was constructed prior to June 13, 1973, it must be in compliance with §785:3-6(e)(1) of the Oklahoma state dam safety criteria, which

states that the dam must pass a minimum design flood of 50% of the probable maximum flood with one foot of freeboard (O.S. 785:25). The dam currently does not meet this criterion.

There is potential for loss of life from a catastrophic dam failure due to potential significant flooding impacts to three residential structures. Additionally, dam failure could flood four roads downstream of FWRS No. 2, impeding emergency access during flood events.

2.1.4 OPPORTUNITIES

There are goals and benefits that can be achieved by a given project ancillary to its authorized purpose. The following opportunities may be realized while addressing the problem of breach hazards in the watershed:

- Enhance community resilience to flooding risks through the best fit of project measures,
- Incorporate nature-based solutions,
- Enhance quality of life and environmental values, and
- Enhance outdoor recreational opportunities.

2.1.4.1 FEDERAL OBJECTIVE

Investments in this proposed action reflect national priorities, encourage economic development, and protect the environment by:

- Seeking to maximize sustainable economic development;
- Seeking to avoid the unwise use of floodplains and flood-prone areas and minimizing adverse impacts and vulnerabilities in any case in which these areas must be used; and
- Protecting and restoring the function of natural systems and mitigating any unavoidable damages to these systems.

2.1.4.2 PROJECT OBJECTIVES

Project objectives were developed to address problems and realize opportunities within the watershed. NRCS and the sponsor, in coordination with stakeholder agencies and the public, established the following objectives for this project:

- Address dam safety compliance problems with FWRS No. 2;
- Address recognized breach and flood hazards for residences and critical infrastructure located downstream of FWRS No.2;

3.0 SCOPE OF THE PLAN

A scoping process was conducted early in the planning process to determine the sponsor's objectives and primary concerns and to identify other relevant issues and concerns related to FWRS No. 2. Issues of economic, environmental, cultural, and social importance within the watershed were discussed in planning and public meetings. Factors affecting soil, water, air, plants, animals, and human resources were identified by an interdisciplinary team with expertise in engineering, resource conservation, biology, archeology, soils, and geology. Table 1 shows the resource concerns discussed during the agency and public scoping meetings, along with their relevance to the proposed action.

TABLE 1. SUMMARY OF RESOURCE CONCERNS

Resource Concern	Relevant to Proposed Action		Rationale for relevance vs. non-relevance
	Yes	**No**	
SOILS			
Soils	X		Increase in 375 tons/year (0.86 acre-feet/year) of sediment to the stream system with some alternatives. Potential for soil disturbance is present for all alternatives. Best management practices (BMPs) should be used to minimize soil loss, erosion and sedimentation during construction.
Prime and Unique Farmland		X	Soils rated as prime farmland within the watershed are predominantly used for grassland/hay and pasture/rangeland with no crop land present. Consistent vegetative cover assists in protecting these soils from erosion. These land uses are not likely to change in the future. See map E-1 in Appendix E.
WATER RESOURCES			
Sole Source Aquifer		X	No sole source aquifers are present within the project area or the greater Scraper Hollow Creek-Graves Creek Watershed. See resource map E-2 in Appendix E.
Water Quality	X		The project area is subject to total maximum daily load (TMDL) requirements for the Lower Canadian River subbasin. Potential decrease in water quality in the stream below the dam due to turbidity with some alternatives.
Waters of the United States, Wetlands and Special Aquatic Sites	X		Potential loss of 11.33 acres of potential jurisdictional waters of the United States (streams, lakes, and wetlands) and 0.01 acres of emergent, shrub, and forested wetlands with some alternatives.

Resource Concern	Relevant to Proposed Action		Rationale for relevance vs. non-relevance
	Yes	No	
Floodplain Management	X		The project area is within a regulatory floodplain. See FEMA Firmette map E-3 in Appendix E. Three residential structures and four roads would have increased flooding with some alternatives.
Coastal Zone Management Areas (CZMA)		X	The state of Oklahoma does not have a Coastal Zone Management Program and is not subject to coastal policies under the CZMA. See Program website: https://coast.noaa.gov/czm/mystate/
Coral Reefs		X	According to the U.S. Geological Survey (USGS) National Map, Adair County is land locked with no waterways draining into marine environments. See USGS National Map E-4 in Appendix E.
Regional Water Resource Plans		X	No regional water resource plans have been developed for the region.
AIR RESOURCES			
Wild and Scenic Rivers		X	According to the National Park Service (NPS) geographic information system (GIS), there are no Wild and Scenic Rivers designated within the state of Oklahoma. See resource map E-5 in Appendix E.
Air Quality		X	The project area is in an attainment area for all criteria pollutants. Construction activities related to any of the alternatives are expected to result in no more than a *de minimis* impact on air quality. See resource map E-6 in Appendix E.
Climate	X		The contribution of greenhouse gas (GHG) emissions from any of the alternatives to aggregate state and national global GHG emissions would be negligible. Future changes in climate could potentially impact local resources like hydrology.
PLANT AND ANIMAL RESOURCES			
Fish and Wildlife Habitat	X		There are many common species of fish and wildlife present within the project area. While there are no commercial fisheries within the area, there may be recreational fishing.
Threatened and Endangered Species	X		The U.S. Fish and Wildlife Service (USFWS) lists nine threatened and endangered wildlife species, and the state lists two additional species that may be present within the project area. A “not likely to adversely affect/modify” determination by USFW was received through the online review conducted by NRCS.

Resource Concern	Relevant to Proposed Action		Rationale for relevance vs. non-relevance
	Yes	No	
Migratory Birds	X		Some migratory bird species were observed in the project area. While no migratory bird nests were observed, migratory birds are likely to nest in the area. Short-term adverse impacts can be minimized by implementing best management practices (BMPs) like removing trees and conducting project construction outside of the primary nesting season.
Bald and Golden Eagles		X	No eagles or their nests were observed during the pedestrian survey. Eagles are unlikely to use the project area due to the absence of large trees and agricultural land use surrounding the reservoir.
Essential Fish Habitat		X	Essential fish habitat is not present within the Scraper Hollow Creek watershed. See USGS National Map E-4 in Appendix E.
Invasive Species	X		While invasive plant species were observed during the pedestrian survey, no state listed noxious weed species were observed. No evidence of invasive animals, fungi, or microbial organisms was observed within the project area during the pedestrian survey. Implementing BMPs, including contractor requirements to clean equipment prior to arriving on site and before leaving the site, will minimize potential spread and introduction of invasive species to and from the site.
Riparian Areas	X		There could be changes to riparian areas with some alternatives. However, no change in the conservation pool elevation would result in no impacts to riparian resources on the upstream portion of the project area. Impacts to riparian resources downstream of the dam would be minimized to what is necessary for rehabilitation with some alternatives.
Forest Resources		X	Forests make up 52 percent of the resources within the HUC 8 watershed and 73 percent of the FWRS No. 2 drainage basin. These forest resources are located in uplands and not likely to be impacted by any of the alternatives.
Natural Areas		X	There are no records of designated natural areas within the project area.
Ecologically Critical Areas		X	According to USFWS, there are no critical habitats present within the project area. See IPAC report in the Ecological Resources Inventory and Analysis memo in Appendix E.
HUMANS			

Resource Concern	Relevant to Proposed Action		Rationale for relevance vs. non-relevance
	Yes	No	
Land Use	X		Potential change of 9 acres of water area to riparian habitat or grassland with some alternatives. Flooding could impact land use with some alternatives.
Cultural Resources and Historic Properties	X		Through consultation or background research, no National Register of Historic Places (NRHP) properties, Oklahoma landmarks inventory properties, traditional cultural properties, properties of religious and cultural significance, or cultural landscapes are documented in the area of potential effect (APE). Section 106 consultation was conducted with the Oklahoma State Historic Preservation Office (OKSHPO), Oklahoma Archaeological Survey (OAS), Cherokee Nation, Osage Nation, and the United Keetowah Band of Cherokee. The dam was evaluated for NRHP eligibility and determined not eligible for listing under Criteria A, B, C, or D. No archaeological sites were identified within the APE.
Public Health and Safety	X		Potential loss of protection to three residences and four roads downstream of the dam resulting in disruption of emergency vehicle access, school bus routes, and access to town with some alternatives.
Potable Water Supply		X	FWRS No. 2 is not used as a source of potable water.
Social Issues		X	There were no social issues or controversy identified with any of the alternatives beyond public safety.
Socioeconomics	X		Potential loss of flood protection with some alternatives and increased costs for flood damages.
Hazardous Materials		X	There are no hazardous materials sites located anywhere within several miles of the reservoir. See resource map E-7 in Appendix E.
Recreation	X		Potential loss of opportunities for incidental recreation, like fishing, with some alternatives.
Scenic Beauty	X		Temporary or permanent loss of water feature from landscape with some alternatives.
Parklands		X	There are no local, State, or Federal parklands within the project area. Land ownership is 100 percent private.
Significant Scientific Resources		X	According to USGS and NPS, there are no significant scientific resources present in the project area. See map figure E-4 in Appendix E.
Ecosystem Services			
Provisioning	X		Grassland production and pasture for livestock production are the primary land uses of interest to landowners.
Regulating	X		Flood attenuation of dam, water quality filtration of reservoir and wetlands.
Cultural	X		Public safety and scenic beauty of resources.

The project team evaluated alternatives with and without Federal assistance. The alternatives without Federal assistance included the No Federal Action, which is the action that the sponsor would take if no Federal funds were provided. The alternatives with Federal assistance included decommissioning the dam and three structural rehabilitation alternatives. The alternatives are discussed in detail in Section 5.

4.0 AFFECTED ENVIRONMENT

4.1 PROJECT SETTING

FWRS No. 2 was planned and implemented under Public Law 83-566 (as amended), the Watershed Protection and Flood Prevention Act of 1954. The dam was built on an unnamed tributary of Scraper Hollow Creek. The Scraper Hollow Creek watershed is approximately 221,344 acres (345.85 square miles) in size. The original workplan was authorized in 1962 and called for construction of 2 floodwater retarding structures (Figure 2 and Appendix B).

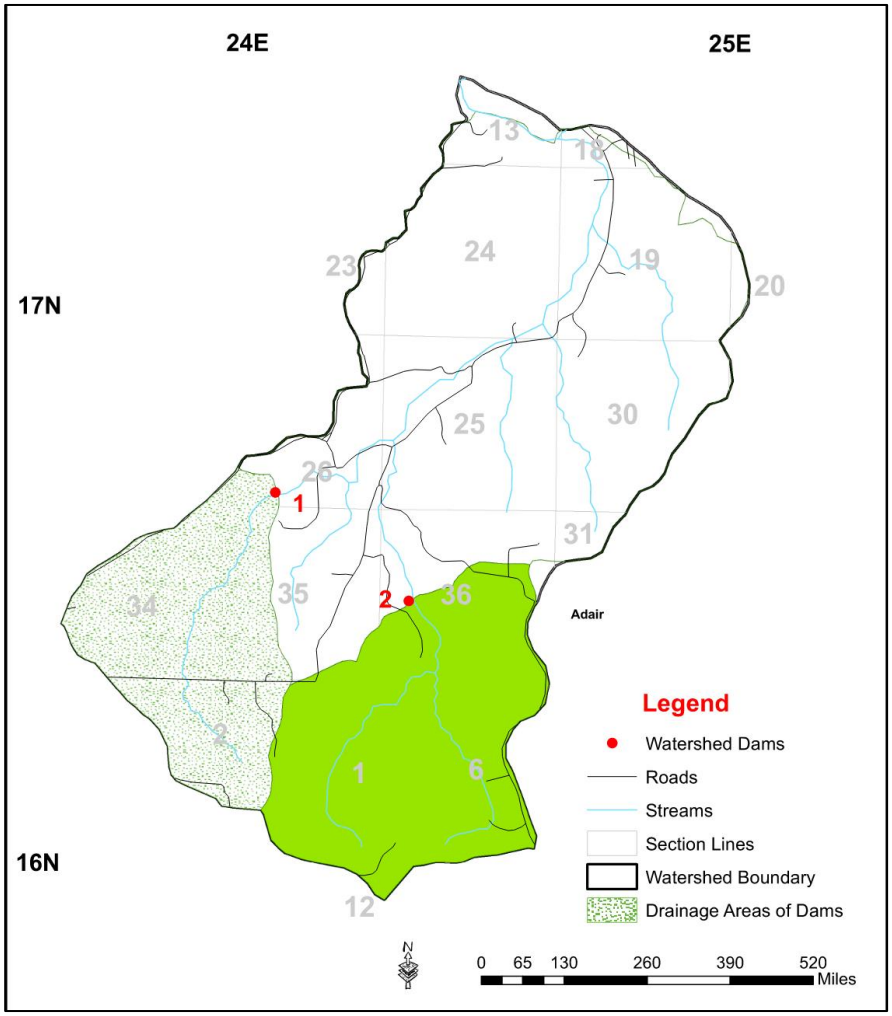

Figure 2: Works of improvement constructed in the Scraper Hollow Creek watershed

Scraper Hollow FWRS No. 2 is approximately 5 miles west and 7 miles north of Stilwell, Oklahoma. It is a single purpose floodwater retarding structure designed and constructed in 1969 as a low-hazard dam, a hazard classification given to dams that do not pose a threat to life but could cause damage to agricultural lands and county roads and bridges. The dam was reclassified as high-hazard due to development downstream that has the potential for loss of life or serious damage to homes, buildings, public utilities, highways, or railroads due to a catastrophic dam failure. The original drainage area for Scraper Hollow FWRS No. 2 was 1,254 (1.96 sq. mi.).

4.2 CURRENT STATUS OF RESOURCES

The Scraper Hollow Creek watershed lies within the Dissected Springfield Plateau – Elk River Hills ecoregion of the Ozark Highlands. This ecoregion is composed of narrow ridgetops and intervening, steep V-shaped valleys with characteristic carbonate rock and karst features. Upland vegetation is characterized by oak-hickory and oak-hickory-pine forests and woodlands. Today, livestock and poultry farming, woodland grazing, logging, recreation, and quarrying are the main land uses. Cherty limestone of the Mississippian Boone Formation is extensive, but older shales, limestone, and dolomite are also exposed in valley bottoms. Bank and hillslope erosion results in aggradation within streams, filling them with gravel and promoting subsurface flow.

4.2.1 SOILS

Soils are the only resource considered in this plan, as prime farmland was dismissed during scoping.

Soil series present within the FWRS No. 2 drainage basin include Clarksville very gravelly silt loam, 20 to 50 percent slopes, stony; Waben gravelly silt loam, 1 to 3 percent slopes; Waben gravelly silt loam, 3 to 8 percent slopes; Elsah gravelly silt loam, 0 to 1 percent slopes, frequently flooded; and Water. According to the NRCS list of hydric soils, none of the soil series within the proposed LOI are classified as hydric. See Appendix E for the soil survey report on hydric ratings.

4.2.2 WATER RESOURCES

Resources evaluated under existing conditions include water quality, waters of the Unites States (WOTUS), wetlands, and floodplain management. Sole source aquifers, special aquatic sites, coastal zone management areas, coral reefs, wild and scenic rivers, and regional water resource plans were dismissed during scoping.

4.2.2.1 WATER QUALITY

The Oklahoma Department of Environmental Quality maintains a list of impaired water through the National Pollutant Discharge Elimination System. The 303(d) and 305(b) lists were used to identify surface water quality concerns to Public Health and Safety. The lists identified impaired surface waters within the Illinois River watershed (HUC 11110103), but not within the Scraper

Hollow 2 project limits; however, the Scraper Hollow 2 project limits are hydraulically connected to the identified impaired surface waters and TMDLs. For this evaluation, hydraulically connected is defined as the flow path to the last stream with an Oklahoma Waterbody Identification number, or classified segment, within the Hydraulic Unit Code (HUC) 12 watershed. Discharges from the Scraper Hollow 2 project site eventually reach the following classified segments within Baron Fork Creek (HUC 12):

- Scraper Hollow Creek (OK121700050130_00)
- Baron Fork Creek (OK121700050010_00)

Scraper Hollow Creek flows through the FWRS No. 2 project site from south to north toward Baron Fork Creek. Scraper Hollow Creek receives discharge directly from the project site. According to the 2022 305(b) list, Scraper Hollow Creek has either not been assessed or insufficient information is available to determine designated uses but is recognized for Outstanding Resource Water (ORW), which is defined as a water of the state that constitutes an outstanding resource or is of exceptional recreational and/or ecological significance and must receive special protection against degradation. While additional protections for ORWs are required by the Oklahoma Administrative Code (OAC), stormwater discharges from temporary construction activities are an exception in accordance with OAC 252:730-5-25(1). However, construction activities must still abide by the general permit OKR10 for Stormwater Discharges from Construction Activities within the State of Oklahoma. Currently surface waters within the Illinois Subbasin Watershed are not subject to TMDL, and impairments have not been identified on the 2022 303(d) list

If construction activities discharge stormwater directly to an impaired segment or discharge stormwater indirectly to a segment with a TMDL, the entire watershed is subject to the TMDL requirements. Neither the Illinois River Subbasin (HUC 11110103) nor the Baron Fork Creek watershed, are subject to TMDL requirements at this time. Figure 3 shows the location of FWRS No. 2 in relation to the Illinois River, which is listed as an impaired water in the state.

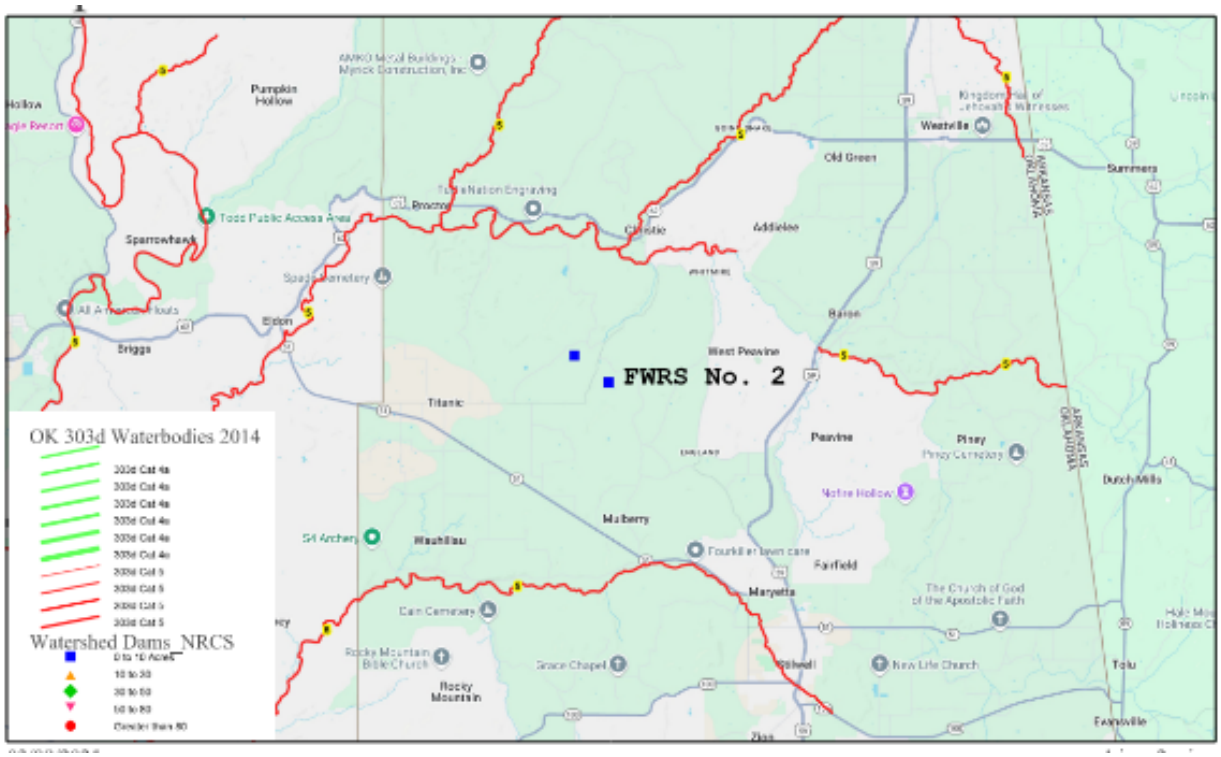

Figure 3. Map of impaired waters in central Oklahoma.

4.2.2.2 WATERS OF THE UNITED STATES (WOTUS), WETLANDS, AND SPECIAL AQUATIC SITES

Waters of the U.S.

The U.S. Army Corps of Engineers regulates the discharge of dredged and fill material into waters of the United States, including wetlands, under Section 404 of the Clean Water Act. Results of desktop mapping and a pedestrian survey indicated the presence of two open water body features (Figure 4), 10 streams, and one wetland within the project area. Stream 1 is a tributary of the Baron Fork, which is a perennial tributary of the Arkansas River, listed as a traditional navigable water by the Corps of Engineers. Therefore, due to the presence of a downstream surface hydrologic connection to a traditional navigable water, Stream 1, its tributaries, and any adjacent wetlands or impoundments would be considered Waters of the United States by the Army Corps of Engineers and subject to Section 404 jurisdiction.

Wetlands

Nine wetlands (one forested, two shrub, and six emergent) were identified within the project area through desktop mapping and a pedestrian survey. Figure 4 shows wetlands within the project area. The wetlands range in size from 0.05 acres to 0.28 acres. Only one wetland (Emergent Wetland 4), a depressional wetland located on a hill slope west of the reservoir, was noted as potentially non-jurisdictional due to location and lack of apparent connectivity to any streams. The

remaining wetlands are adjacent to streams and potentially jurisdictional WOTUS, and subject to Section 404 permitting regulations.

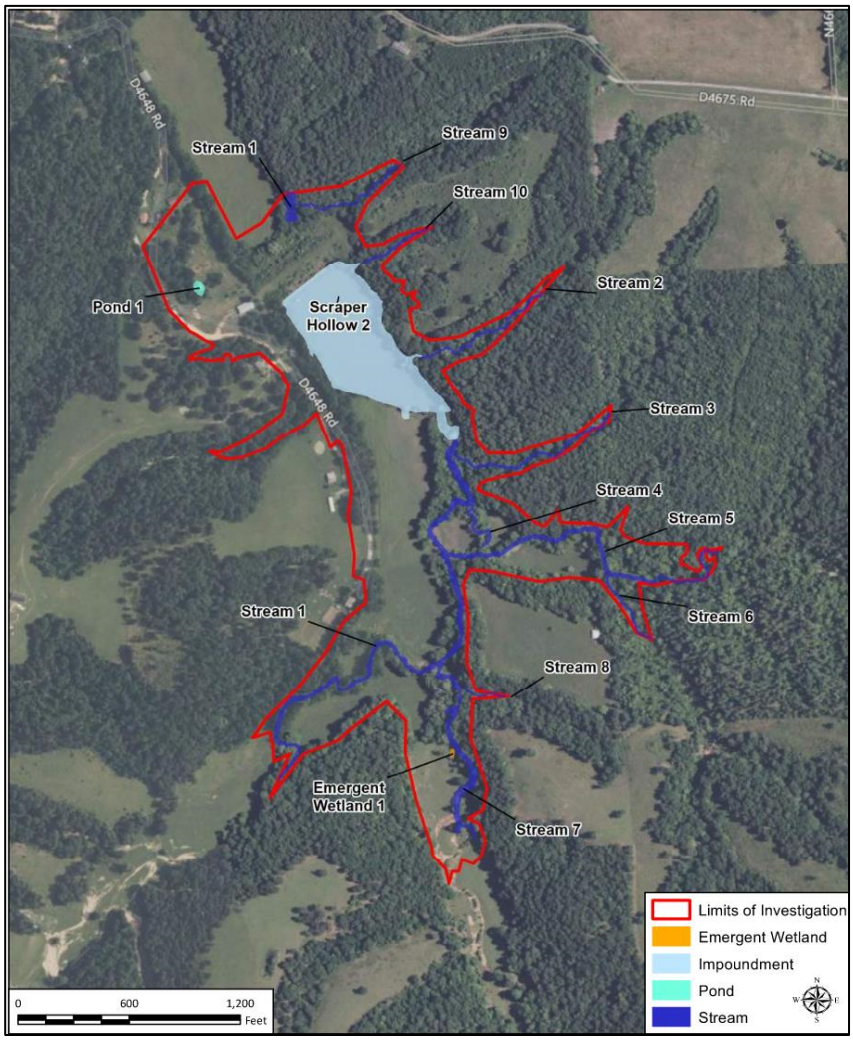

Figure 4. Map of WOTUS and wetlands within the project area for FWRS No. 2.

4.2.2.3 FLOODPLAIN MANAGEMENT

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) 40001C0200D, the proposed project site would be constructed within the floodplain of Stream 1 (Figure 5). As such, the local floodplain administrator should be contacted prior to construction for the proposed project to acquire floodplain-related authorizations, if needed. See FEMA Firmette map E-3 in Appendix E.

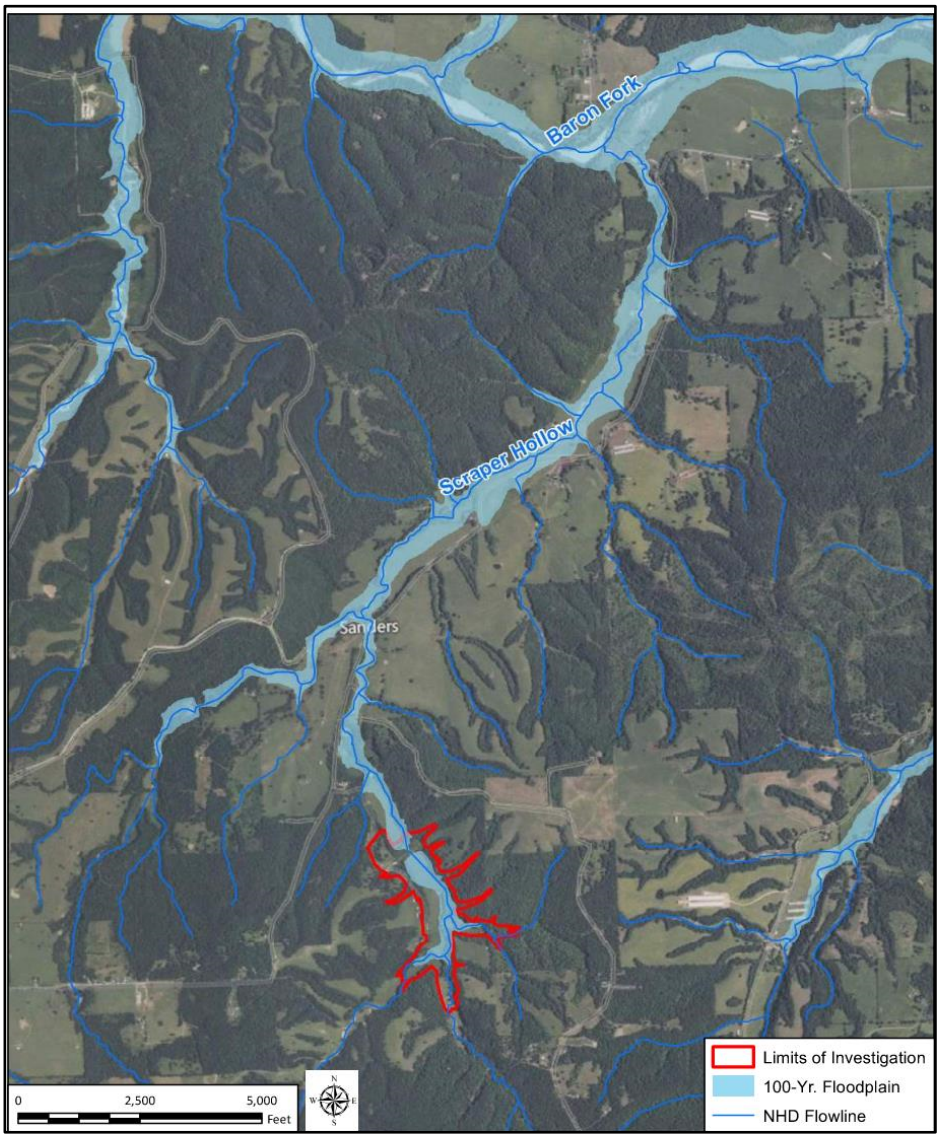

Figure 5. Map of 100-year floodplain within the project area for FWRS No. 2.

4.2.3 AIR RESOURCES

Climate is the only resource considered in this plan, as air quality was dismissed in scoping.

The state of Oklahoma lies within the Great Plains, straddling the transition from relatively abundant precipitation (more than 50 inches per year) in the southeast to semiarid conditions (less than 20 inches per year) in the west. Due to its location in the interior of the United States and its distance from the moderating effects of any oceans, the state experiences a wide range of average daily temperatures, averaging from the upper 30s to low 40s in the winter and the upper 70s to low 80s in the summer (National Oceanic and Atmospheric Administration 2022).

According to the National Oceanic and Atmospheric Administration's 2022 state climate summary for the state of Oklahoma, temperatures have risen by about 0.6ºF since the beginning of the 20th century. Future climate conditions within the state are predicted to include historically unprecedented warming; higher temperatures that will increase the rate of soil moisture loss, leading to an increase in the intensity of future naturally occurring droughts; and an increase in extreme precipitation events, which may increase the risk of flooding and associated soil erosion and nonpoint source runoff into streams and lakes.

Adair County has a humid subtropical climate with hot summers and cool winters. Average summer temperatures are near 77°F and are near 40°F during the winter. Precipitation is abundant throughout the year, with an approximate yearly average of 50 inches. The county receives a fair amount of snow during colder months, with an average annual snowfall of 4 inches.

Adair County has a humid, subtropical climate with hot summers and mild winters. Average summer temperatures are near 90ºF and near 25ºF in winter. July and August are the hottest months, with average high temperatures of 91ºF, and December and January have the coldest temperatures of 25ºF. Precipitation is abundant throughout the year (50 days per year), with an approximate yearly average of 46 inches of precipitation. May is the wettest month, with 6.11 inches of rain, and January is the driest, with 1.85 inches.

4.2.4 PLANT AND ANIMAL RESOURCES

The following resource concerns were dismissed during scoping: bald and golden eagles, essential fish habitat, forests, natural areas, and ecologically critical areas.

4.2.4.1 FISH AND WILDLIFE HABITAT

According to the Oklahoma Department of Wildlife Conservation (ODWC), a variety of mammals, reptiles and amphibians, birds, and fish species are commonly found within this part of Oklahoma.

Common terrestrial vertebrates found in this area of Oklahoma include: fox squirrel (*Sciurus niger*), whitetail deer (*Odocoileus virginianus*), American black bear (*Ursus americanus*), American beaver (*Castor canadensis*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), eastern chipmunk (*Tamias striatus*), eastern cottontail (*Sylvilagus floridanus*), eastern gray squirrel (*Sciurus carolinensis*), eastern mole (*Scalopus aquaticus*), eastern woodrat (*Neotoma floridana*), gray fox (*Urocyon cinereoargenteus*), nine-banded armadillo (*Dasypus novemcinctus*), racoon (*Procyon lotor*), red fox (*Vulpes vulpes*), striped skunk (*Mephitis mephitis*), and woodchuck (*Marmota monax*).

Common amphibians and reptiles found in this area of Oklahoma include: American bullfrog (*Lithobates catesbeianus*), American toad (*Anaxyrus* americanus), Blanchard's cricket frog (*Acris blanchardi*), Cajun chorus frog (*Pseudacris fouquettei*), cave salamander (*Eurycea lucifuga*), dark-

sided salamander (*Eurycea longicauda*), eastern narrow-mouthed toad (*Gastrophryne carolinensis*), eastern newt (*Notophthalmus viridescens*), gray tree frog (*Hyla versicolor*), green frog (*Lithobates clamitans*), pickerel frog (*Lithobates palustris*), small-mouthed salamander (*Ambystoma texanum*), spotted salamander (*Ambystoma maculatum*), spring peeper (*Pseudacris crucifer*), western slimy salamander (*Plethodon albagula*), common five-lined skink (*Plestiodon fasciatus*), Dekay's brownsnake (*Storeria dekayi*), eastern copperhead (*Agkistrodon contortrix*), eastern hog-nosed snake (*Heterodon platirhinos*), eastern racer (*Coluber constrictor*), little brown skink (*Scincella lateralis*), ornate box turtle (*Terrapene ornate*), plain-bellied watersnake (*Nerodia erythrogaster*), prairie kingsnake (*Lampropeltis calligaster*), prairie lizard (*Sceloporus consobrinus*), red-eared slider (*Trachemys scripta elegans*), ring-necked snake (*Diadophis punctatus*), river cooter (*Pseudemys concinna*), rough greensnake (*Opheodrys aestivus*), six-lined racerunner (*Aspidoscelis sexlineatus*), speckled kingsnake (*Lampropeltis* holbrooki), timber rattlesnake (*Crotalus horridus*), western milksnake (*Lampropeltis gentilis*), western ribbonsnake (*Thamnophis proximus*) and western wormsnake (*Carphophis vermis*).

Common fish include: bluegill (*Lepomis macrochirus*), redear sunfish (*Lepomis microlophus*), southern redbelly dace (*Chrosomus erythrogaster*), western mosquitofish (*Gambusia affinus*), black crappie (*Pomoxis nigromaculatus*), cardinal shiner (*Luxilus cardinalis*), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictis olivaris*), golden shiner (*Notemigonus crysoleucas*), green sunfish (*Lepomis cyanellus*), largemouth bass (*Micropterus salmoides*), longear sunfish (*Lepomis megalotis*), orangethroat darter (*Etheostoma spectabile*), redspot chub (*Nocomis asper*), smallmouth bass (*Micropterus dolomieu*), spotted bass (*Micropterus punctulatus*), white bass (*Morone chrysops*), and white crappie (*Pomoxis annularis*). The project area is inland and not located in or adjacent to areas designated as essential fish habitat.

4.2.4.2 THREATENED AND ENDANGERED SPECIES

The U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPAC) resource list (January 2025) notes that three threatened and endangered species and one candidate species potentially occur within the watershed and the project area. The Indiana bat and northern long-eared bat are listed as endangered. The tricolored bat species is listed as proposed endangered. The monarch butterfly is a candidate species. Figure 6 shows habitat areas for species that may occur within the project area.

Federally Listed Species

The **gray bat** (*Myotis grisescens*) is federally listed as endangered in Adair County. Gray bats occupy caves or cave-like structures year-round, and summer colonies have been documented using dams, mines, quarries, concrete box culverts, and the undersides of bridges. No caves/structures, which may serve as roosting habitat, were identified within the project area. Therefore, no alternatives may affect the gray bat.

The **Indiana bat** (*Myotis sodalis*) is federally listed as endangered in Adair County. Indiana bats hibernate during winter in hibernacula, such as caves or abandoned mines. During the summer, Indiana bats migrate to habitat in wooded areas where they usually roost under loose tree bark on dead or dying trees. While no individuals were identified during the pedestrian survey, preferred summer habitat for this species was identified within the project area. Therefore, alternatives that would impact trees within the project area may affect the Indiana bat.

The **northern long-eared bat** (*Myotis septentrionalis*) is federally listed as endangered in Adair County. Northern long-eared bats hibernate during winter in hibernacula, such as caves or abandoned mines. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both living and dead trees, and have been found rarely roosting in structures, like barns and sheds. While no individuals were identified during the pedestrian survey, preferred summer habitat for the species was identified within the project area. Therefore, alternatives that would impact trees within the project area may affect the northern long-eared bat.

The **Ozark big-eared bat** (*Corynorhinus townsendii ingens*) is federally listed as endangered in Adair County. Ozark big-eared bats use limestone and sandstone caves surrounded by oak-hickory hardwood forest. No caves which may serve as roosting habitat were identified within the project area. Therefore, no alternatives may affect the Ozark big-eared bat.

The **tricolored bat** (*Perimyotis subflavus*) is proposed for federal listing as endangered in Adair County. Tricolored bats roost in deciduous hardwood forests, pine trees, eastern red cedar (*Juniperus virginiana*), Spanish moss (*Tillandsia usneoides*), and structures such as barns, beneath porch roofs, bridges, and concrete bunkers during the spring, summer, and fall. They prefer mature deciduous hardwood forests which provide more structural diversity for roosting sites. Winter hibernacula in the southern United States frequently include road-associated culverts and other human-built structures; caves and tree cavities may also be used. While no individuals were identified during the pedestrian survey, preferred summer habitat for this species was identified within the project area. Therefore, alternatives that would impact trees within the project may affect the tricolored bat.

The **piping plover** (*Charadrius melodus*) is federally listed as threatened in Adair County. In the interior United States, piping plovers nest on the unvegetated shorelines of alkaline lakes, reservoirs, or river sandbars. No shorelines/sandbars, which may serve as nesting habitat, were identified within the project area. Therefore, no alternatives may affect the piping plover.

The **rufa red knot** (*Calidris canutus rufa*) is federally listed as threatened in Adair County. In the interior United States, rufa red knots use saline lakes, and possibly large wetlands and riverine sandbars as stopover habitat. No potential stopover habitats were identified within the project area. Therefore, no alternatives may affect the rufa red knot.

The **alligator snapping turtle** (*Macrochelys temminckii*) is a species proposed for federal listing as threatened in Adair County. Alligator snapping turtles are bottom-dwellers, which generally occupy the deeper waters of large rivers and major tributaries but are also found in fresh waterbodies with high canopy cover and aquatic structures (tree root masses, stumps, submerged trees, etc.). No freshwater areas, which may serve as habitat for alligator snapping turtles, were identified within the project area. Therefore, no alternatives may affect the alligator snapping turtle.

The **monarch butterfly** (*Danaus plexippus*) is a species proposed for federal listing as threatened in Adair County. Monarch butterflies undergo long-distance migrations throughout North America and lay their eggs on obligate milkweed host plants in a variety of forested and grassland habitats. While no individuals were identified during the pedestrian survey, grassland and forested habitats that is are regularly mowed or maintained, which may serve as habitat for the monarch butterfly, was identified within the project area. Therefore, alternatives that would impact these habitats within the project area may affect the monarch butterfly.

State Listed Species

According to the Oklahoma Department of Wildlife Conservation (ODWC) list of State Threatened and Endangered Species, the following state listed threatened or endangered species may occur within Adair County, Oklahoma. Table 2 below summarizes the status of threatened and endangered species that may occur within the project area.

The **blackside darter** (*Percina maculata*) is state listed as threatened in Oklahoma. Blackside darters have been found in the Mountain Fork, Poteau, Kiamichi, and Little River watersheds in Oklahoma and their associated tributaries and records exist for its presence in the Sallisaw and Lee Creek watersheds. This species most likely prefers streams with high water quality and substrates containing a mix of gravel and larger cobble. This species has not been recorded within the watershed of the proposed project site and no high quality streams were identified within the LOI. Therefore, there is no preferred habitat for the species within the LOI and impacts to the species are not expected.

The **longnose darter** (*Percina nasuta*) is state listed as endangered in Oklahoma. Longnose darters have been found in Lee Creek and Little Lee Creek, as well as the Poteau River and its major tributaries. This species most likely prefers streams with high water quality and substrates containing a mix of gravel and larger cobble. This species has not been recorded within the watershed of the proposed project site and no high quality streams were identified within the LOI. Therefore, there is no preferred habitat for the species within the LOI and impacts to the species are not expected.

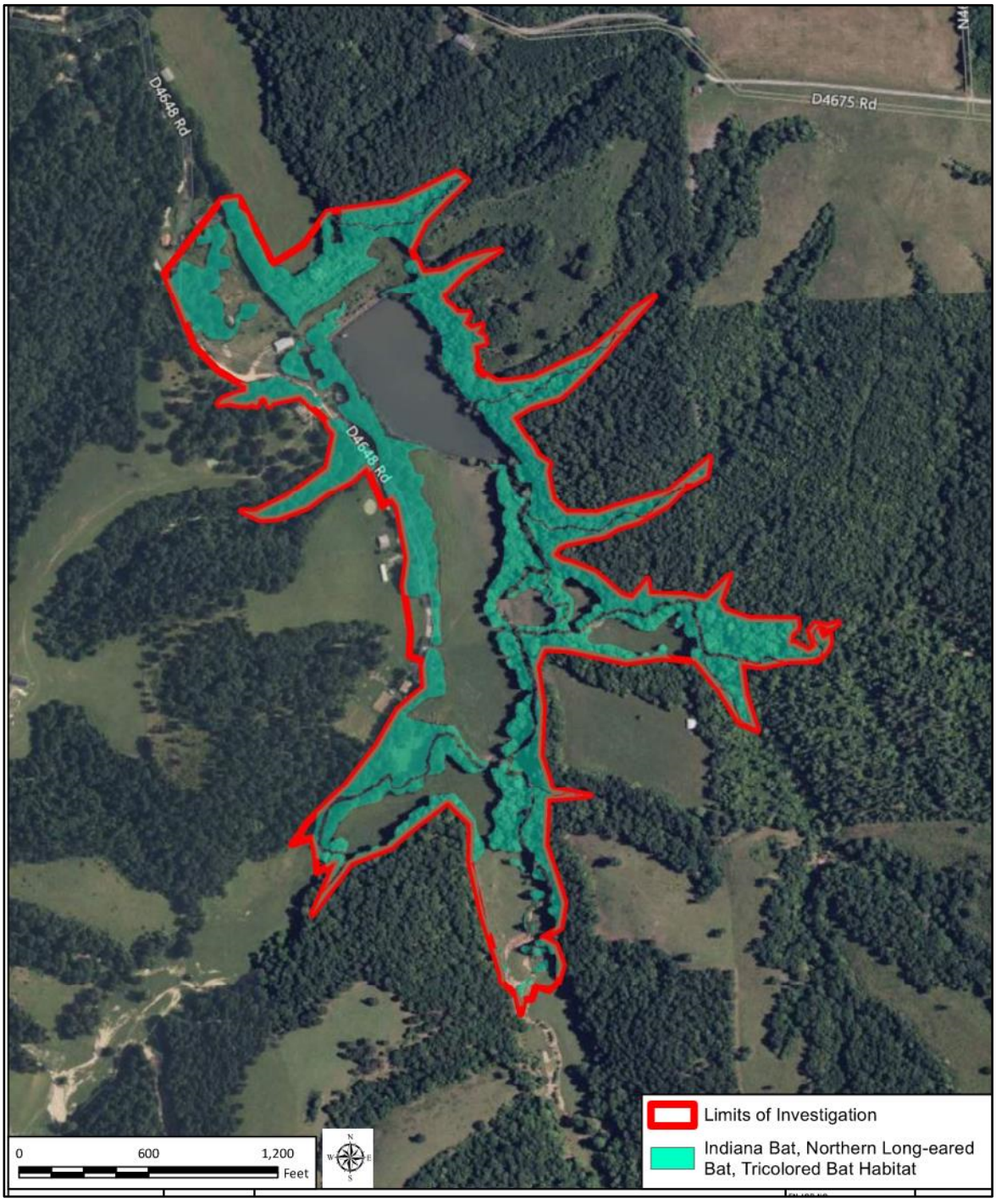

Figure 6. Map of threatened and endangered species' habitats within the project area.

TABLE 2. STATE AND FEDERAL LISTED T& E SPECIES[1/]

Common Name	Scientific Name	Federal Status[2/]	State Status[2/]	Effects Determination
Gray bat	*Myotis grisescens*	E	E	No effect
Tricolored bat	*Perimyotis subflavus*	PE	-	May effect
Indiana bat	*Myotis sodalis*	E	E	May effect
Northern long-eared bat	*Myotis septentrionalis*	E	E	May effect
Ozark big-eared bat	*Corynorhinus townsendii ingens*	E	E	No effect
Piping plover	*Charadrius melodus*	T	T	No effect
Rufa red knot	*Calidris canutus rufa*	T	T	No effect
Alligator snapping turtle	*Macrochelys temminckii*	PT	-	No effect
Monarch butterfly	*Danaus plexippus*	C	-	-
Blackside darter	*Percina maculata*	-	T	No effect
Longnose darter	*Percina nasuta*	-	E	No effect

1/ According to ODWC (2025) and USFWS (2025).

2/ E = Endangered; T = Threatened; PE = Proposed Endangered; PT = Proposed Threatened; C = Candidate

4.2.4.3 MIGRATORY BIRDS

The Migratory Bird Treaty Act of 1918 prohibits the "take" (e.g., pursue, hunt, shoot, wound, kill, trap, capture, or collect) or possession of migratory birds, as well as the parts, nests, or eggs of migratory birds. A take can be further defined as an "incidental take," according to the U.S. Department of the Interior Director's Order No. 225, which includes the taking or killing of migratory birds that results from an activity, even if the taking was not the activity's purpose.

The following migratory birds were observed during the site visit: brown-headed cowbird (*Molothrus ater*), Carolina wren (*Thryothorus ludovicianus*), eastern phoebe (*Sayornis phoebe*), great blue heron (*Ardea herodias*), indigo bunting (*Passerina cyanea*), Louisiana waterthrush (*Parkesia motacilla*), mourning dove (*Zenaida macroura*), northern cardinal (*Cardinalis cardinalis*), northern parula (*Setophaga americana*), painted bunting (*Passerina ciris*), red-headed woodpecker (*Melanerpes erythrocephalus*), red-winged blackbird (*Agelaius phoeniceus*), black-and-white warbler (*Mniotilta varia*), red-shouldered hawk (*Buteo lineatus*), and yellow-billed cuckoo (*Coccyzus americanus*).

No migratory bird nests were observed during the survey; however, migratory birds are likely to nest within the location of interest or the immediate vicinity. Thus, the project may impact migratory birds. Two common avoidance practices to reduce the potential for the incidental take of migratory birds are (1) clearing or grading of the site during the non-breeding season, or (2) conducting migratory bird nest surveys shortly before project construction.

Coordination with USFWS would be required by the Bald and Golden Eagle Protection Act of 1940 if proposed project activities would take or disturb a protected eagle or its nest. It is generally not considered disturbance if construction activities occur greater than 660 feet from a protected nest. Bald and golden eagles or their nests were not observed during the pedestrian survey and are unlikely to use the proposed location of interest due to the absence of large trees and agricultural land use.

4.2.4.4 INVASIVE SPECIES (FLORA AND FAUNA)

Vegetative invasive species observed during the site visit include Japanese brome (*Bromus japonicus*), Johnsongrass (*Sorghum halapense*), and perennial rye (*Lolium perenne*) throughout uplands in the project area, while Japanese stiltgrass (*Microstegium vimineum*) was identified within wetlands adjacent to the reservoir.

No evidence of invasive animals, fungi, or microbial organisms was observed during the site visit, and no areas at risk for future invasions were identified.

4.2.4.5 RIPARIAN AREAS

Riparian areas adjacent to Streams 1-10 and the FWRS No. 2 reservoir are located within the project area. These areas contribute to floodplain function, streambank stability and integrity, nutrient cycling, pollutant filtering, sediment retention, and biological diversity of these habitats. NRCS policy requires project alternatives to maintain or improve water quality benefits of riparian areas as a result of project construction. If preferred alternatives do not maintain or improve water quality benefits, the NRCS must discontinue assistance on those portions of the plan impacting riparian areas.

4.2.5 HUMAN ENVIRONMENT

The human environment relates to concerns defined by human interactions with the environment, and includes land use/landcover, cultural resources, public health and safety, socioeconomics, scenic beauty, and recreation. The following concerns were dismissed during scoping: potable water supply, social issues, hazardous materials, parklands, and significant scientific resources.

4.2.5.1 LAND USE

Landcover within the drainage area for FWRS No. 2 is dominated by three main cover types: forest, pasture/rangeland, and herbaceous grassland, which are also the predominant landcover types within the larger Scraper Hollow Creek Watershed (Figure 7).

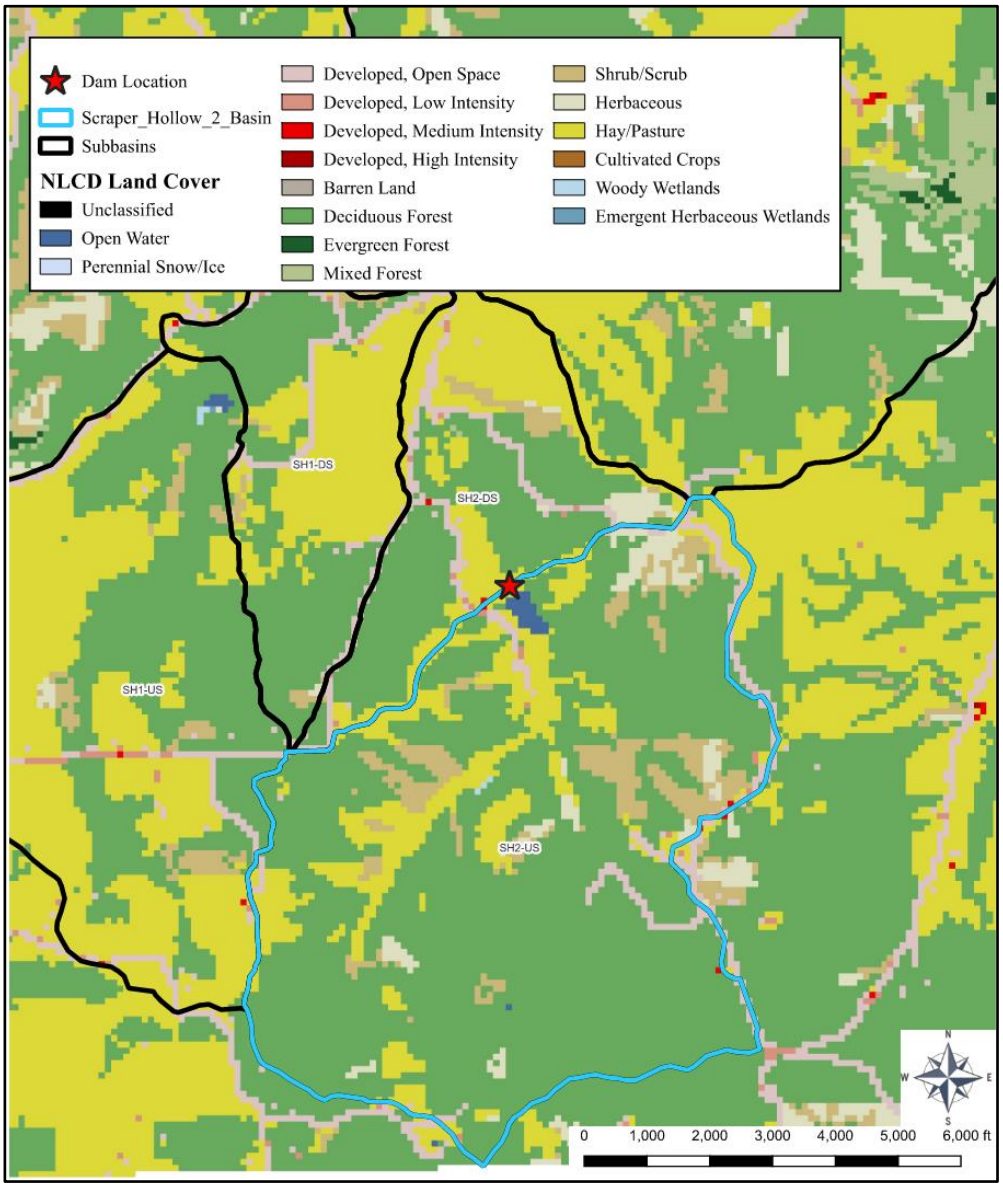

Figure 7. Landcover classification within the watershed and project area.

4.2.5.2 CULTURAL RESOURCES, HISTORIC PROPERTIES, AND TRIBAL CONSULTATION

According to the Oklahoma State Historic Preservation Office (OKSHPO) and survey databases, there are no documented National Register of Historic Places (NRHP)-listed properties, landscapes, or districts, no Oklahoma Landmarks Inventory properties, and no Depression-era bridges or road segments within the Area of Potential Effect (APE) or within a one-mile radius of Scraper Hollow FWRS 2. There are two previously recorded archeological sites outside of, but within 1 mile of the APE. . See Figure 8 below. Scraper Cemetery is currently being assessed for inclusion on the NRHP. The other archeological site has not been assessed for inclusion on the NRHP.

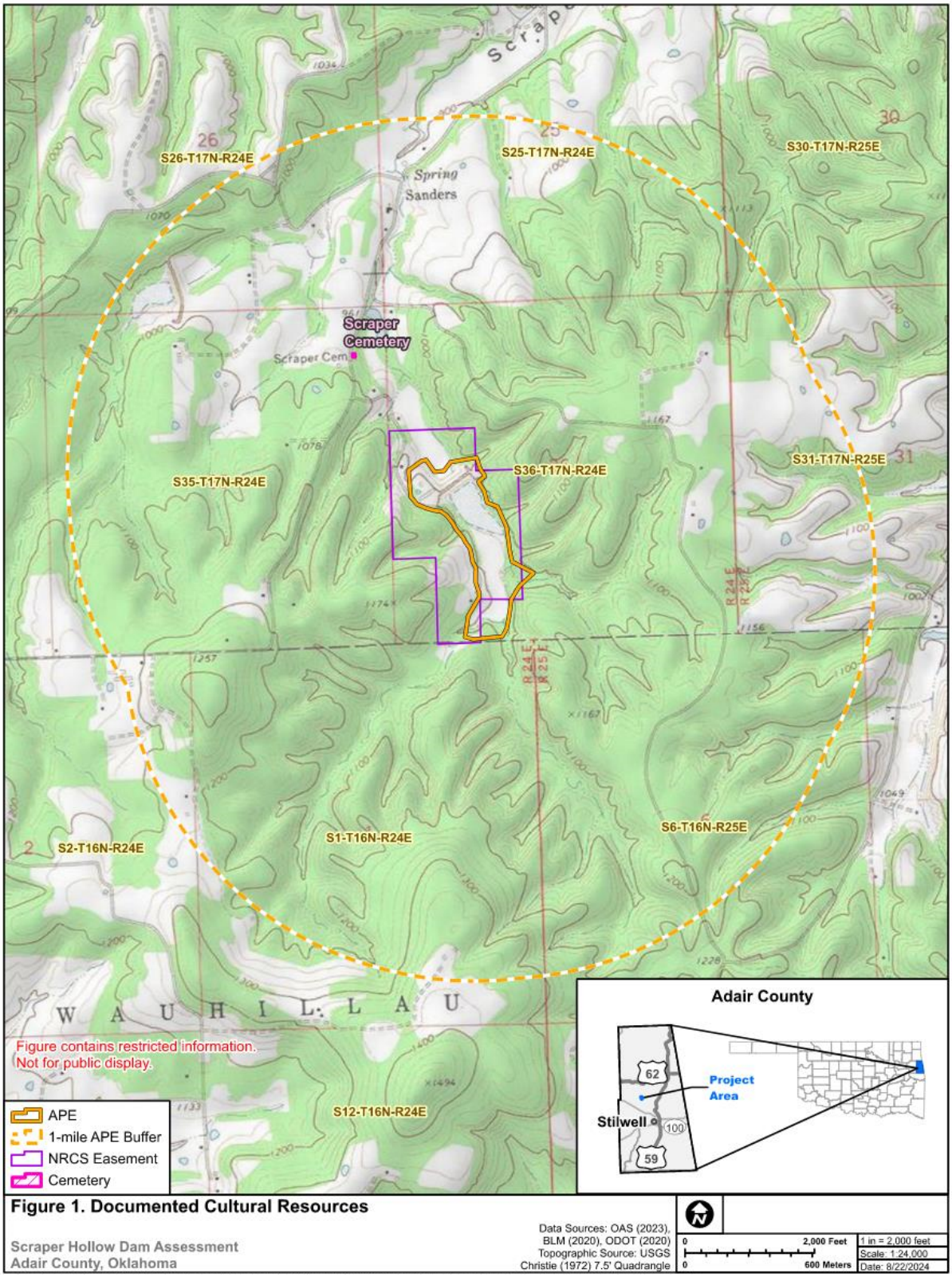

Figure 8. Map of the APE for Section 106 consultation.

The NRCS initiated consultation with the OKSHPO and Oklahoma State Archaeologist, the Cherokee Nation, the Osage Nation, and the United Keetowah Band of Cherokee on March 8, 2023, outlining the nature of the project, defining the project APE and proposed cultural resources survey, and requesting concurrence or comments on the project. In total, the project APE encompasses approximately 50 acres and was defined by the NRCS in initial consultation letters dated March 8, 2023, as the maximum extent of the flood pool (top of dam elevation) and the breach area (to the extent of NRCS easement limits). The APE is located within the reservation boundaries of the Cherokee Nation and is therefore on tribal lands as defined in the National Historic Preservation Act (NHPA) and Section 106 (36 CFR Part 800). Additional correspondence and requests for comments were sent to the OKSHPO and above mentioned tribes on February 28, 2024, further defining the scope of the project and the APE. The Cherokee Nation responded on March 14, 2024, concurring with the project scope for the cultural resources survey. The OKSHPO responded initially on March 24, 2023, requesting additional information regarding Scraper Cemetery and items related to the proposed cultural resources survey. NRCS responded on April 18, 2024, and the OKSHPO concurred with those responses and thus the APE on May 3, 2024. The Osage Nation and United Keetowah Band of Cherokee have not responded to requests for consultation.

The Cherokee Nation THPO and OKSHPO were engaged collaboratively for Section 106 consultation and APE development. Since the 2020 *McGirt* decision by the US Supreme Court (140 S Ct 2452), NRCS has continued the pre-2020 status quo form of consultation. This protocol was adopted in the absence of the Cherokee THPO asserting all Section 106 or historic preservation decision-making responsibilities for "all lands within the exterior boundaries of any Indian Reservation", per the NHPA (54 USC 300319(1); 54 USC 302702). The *McGirt* decision about the Major Crimes Act (18 USC 1153) jurisdiction has created complex issues, which in turn created more complex issues well beyond state sovereignty versus tribal sovereignty. The majority justices noted that there would be a period of adjustment. The dissenting justices saw *McGirt* having a destabilizing effect on the state government of Oklahoma and all that touched Indian affairs, including regulatory. This is so to a certain degree with Section 106 consultation. NRCS, Cherokee Nation THPO, and OKSHPO are working through one of these complex issues in the absence of a formal Section 106 consultation protocol between these parties. The Cherokee Nation THPO was consulted on 8 March 2023, 29 February 2024, and 17 September 2024. To substantiate the presence of the existing collaborative consultation protocol, the Cherokee Nation THPO requested a copy of the OKSHPO's Section 106 comments as part of their review (Appendix A, THPO letter dated March 14, 2024).

OKSHPO noted the proximity of Scraper Cemetery to the dam site and the APE and requested additional information on potential project impacts. After reviewing additional information, the OKSHPO provided concurrence that the Scraper cemetery is outside of the breach zone and would not be affected by flooding within the breach zone, therefore, it could be removed from the APE. See Appendix A for documentation. There is ongoing consultation with the OKSHPO regarding

Scraper Cemetery and eligibility for listing on the NRHP. As noted, the cemetery is outside of the APE and would not be affected by the proposed rehabilitation project. The Cherokee Nation has provided concurrence that the Scraper Cemetery is outside of the APE and is eligible for listing for its association with the Trail of Tears. See Appendix A for documentation.

Following the initiation of consultation, an intensive archaeological survey was conducted within the APE for Scraper Hollow FWRS No. 2.No archeological resources were observed in the APE during the cultural resources survey and no further archaeological work was recommended. A historic architectural survey was also conducted resulting in a recommendation that, with the exception of Scraper Cemetery, no historic resources were eligible for listing in the NRHP. This survey included the Scraper Hollow FWRS Dam No. 2 due to its construction date of 1969 being more than 45 years of age at the time of the survey. Scraper Hollow FWRS No. 2 and its fixtures were evaluated using the NRHP criteria. The dam and complex were documented as five separate but related parts (the dam and reservoir – Structure 1A; the primary intake – Structure 1B; the plunge basin – Structure 1C; the auxiliary spillway – Structure 1D; and a plaque – Object 1E) are part of the mid-twentieth century development of soil conservation and water impoundment projects to control flooding and provide potential irrigation and recreation opportunities to rural areas. Additionally, one former storage facility (Building 3) was surveyed because it was in the APE. As requested by the OKSHPO, three other building complexes comprising twelve resources (Building 2A, Building 2B, Building 2C, Structure 2E, Building 4A, Building 4B, Building 4C, Building 5A, Building 5B, Building 5C, Building 5D, and Building 5E) were surveyed because they were adjacent to the APE. Scraper Cemetery, although outside the APE, was also surveyed at the request of the OKSHPO due to its location downstream of the project (Figure 9).

As a result of the cultural resources surveys, the NRCS determined, and the OKSHPO concurred, that the resources surveyed, with exception of the Scraper Cemetery, were determined not to meet the threshold for significance under NRHP criteria A, B, C, or D to warrant inclusion on the NRHP. Based on fieldwork and subsequent research, As stipulated by the OKSHPO, a Historic Property Resource Inventory form was completed. The OKSHPO provided concurrence on October 22, 2024, that the properties noted in Figure 9, not including the cemetery, are not eligible for inclusion on the NRHP. See Appendix A for documentation.

The Cherokee Nation, in correspondence dated March 27, 2025, also concurred with the NRCS' determinations of eligibility and also that the Scraper Cemetery was eligible for listing in the NRHP for its association with the Trail of Tears. The Cherokee Nation correspondence further noted that the Scraper Cemetery is outside of the project APE. The Cherokee Nation also concurred that no additional archaeological work was warranted but did stipulate that all work on the project should halt in the event of an unanticipated discovery to allow for appropriate consultation and review.

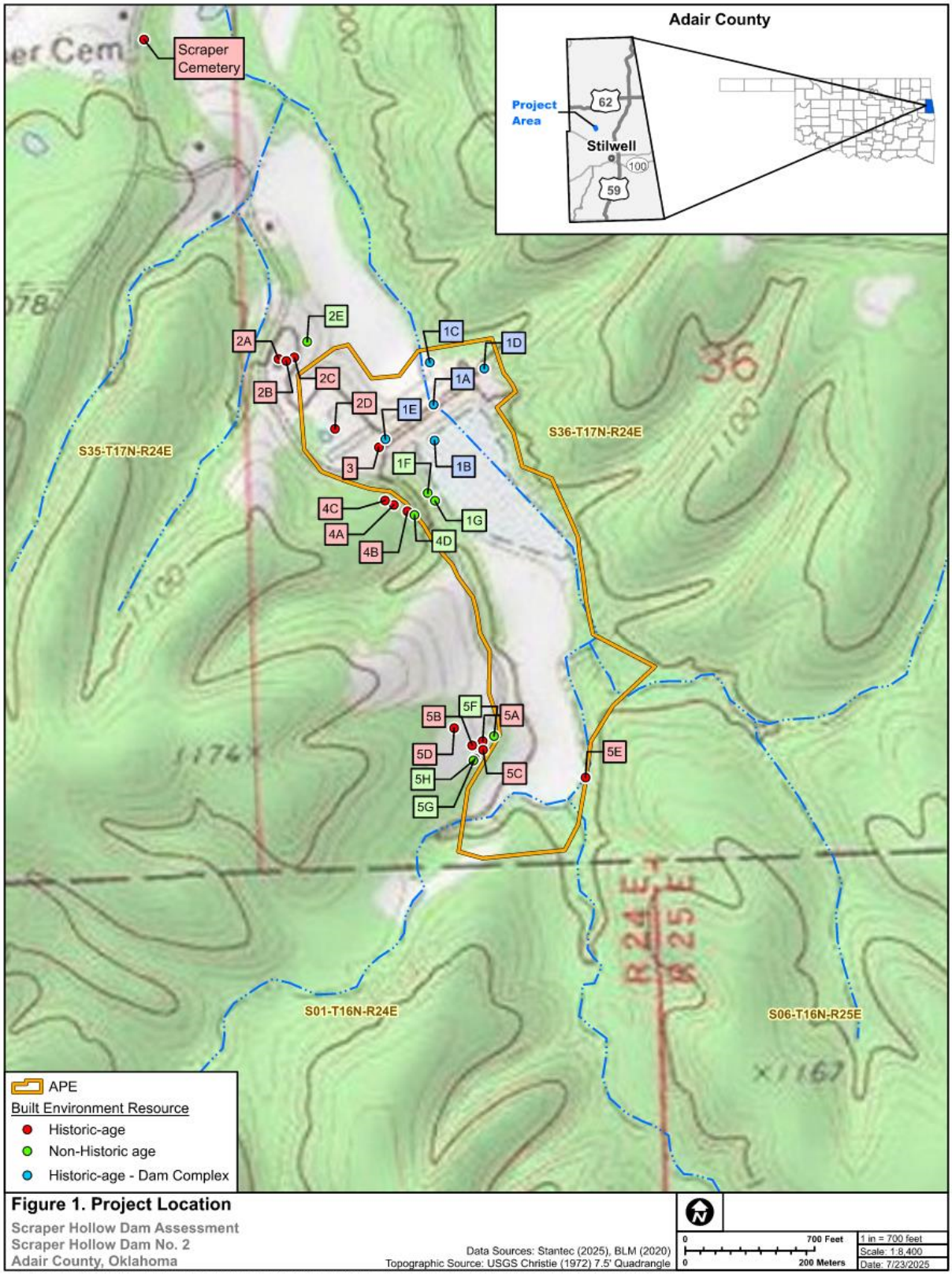

Figure 9. Map of built environment structures identified in the architectural survey.

4.2.5.3 PUBLIC HEALTH AND SAFETY

Three residences and four roads 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 rural residents. Flooding currently does not overtop these roads, barring failure of the dam.

4.2.5.4 SOCIOECONOMICS

Socioeconomic factors describe the local demographics, income characteristics, and employment in the region that could be affected by the proposed project. Table 3 compares demographic and economic data for the county to data for the State and the Nation.

TABLE 3. POPULATION AND DEMOGRAPHIC DATA FOR ADAIR COUNTY, OKLAHOMA

	Adair County[1/]	Oklahoma[1/]	Nation[1/]
Population	19,839	3,948,136	329,725,481
Median per capita income	$18,486	$30,976	$37,638
Median household income	$37,940	$56,956	$69,021
Median value owner-occupied housing units	$92,000	$150,800	$244,900
Families living at or below the poverty level	24%	15%	12%
Native American population	43%	7%	1%
Black population	N/A	7%	12%
Asian population	1%	2%	6%
Hispanic population	7%	11%	18%

[1/] 2021 Data from https://www.mysidewalk.com/

Total Population and Households: Based on data from the U.S. Census American Community Survey 5-Year Estimate (2019-2023), approximately 19,595 people and 6,926 households reside in Adair County. There are 3,995,260 people and 1,542,780 households living in Oklahoma. Adair County residents make up 0.49% of the state's population. The greatest concentration of Adair County residents live south of Stilwell, to the east and west of the southern half of the county and concentrate around US-59. Overall, the population in Adair County is projected to increase 1% by 2032. Oklahoma's population is anticipated to grow nearly 8% over the same period.

People of Color (POC): Census estimates indicate about 71.3% of the total population in Adair County consists of POC. More POC live in Adair County, Oklahoma at 71.3% and 36.6%, respectively. Today, their concentrations are greatest in the lower southeast around the Bell and Elohim City areas.

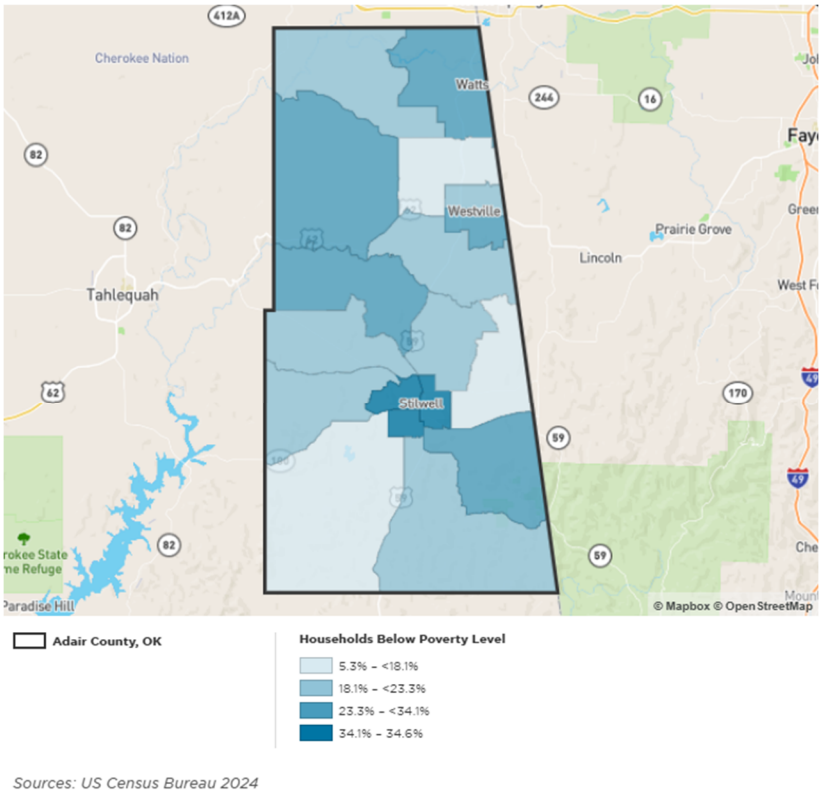

Figure 10. Concentrations of POC populations in Adair County.

Languages Spoken: The two most common languages spoken in Adair County are English and Spanish. Approximately 92.8% of residents speak English at home and 2.8% Spanish. Other Indo-European Languages (0.2%), Asian and Pacific Islander (1.2%, and Other languages (3.0%) make up the remainder. English (88.7%) and Spanish (7.9%) are also the two most common languages spoken in Oklahoma overall. The USDA's Rural Development Limited English Proficiency Implementation Strategy for Federally Assisted Programs indicates that if the size of the language group is smaller than 5% of the eligible beneficiaries or population and fewer than 1,000 in number, written translation of project materials is not required (USDA 2025). The average household size in Adair County is 3.48 people, which is greater than the state average (3.09 people). An estimated 36 Adair County residents live in limited English-speaking households, while an estimated 31,810 Oklahoma residents live in limited English-speaking households.

Households Below Poverty: When compared to Oklahoma, more Adair County households are in poverty at 23.3% and 14.8%, respectively. The greatest concentrations live around Stilwell. Approximately 34% live in the Stilwell area and 25% are scattered throughout northeast, northwest, and southeast portions of the county. Information from the Census indicates education, training, and library; manufacturing; retail trade; arts, entertainment, and recreation, and food service; and public administration are the top five occupations where Adair County residents are employed.

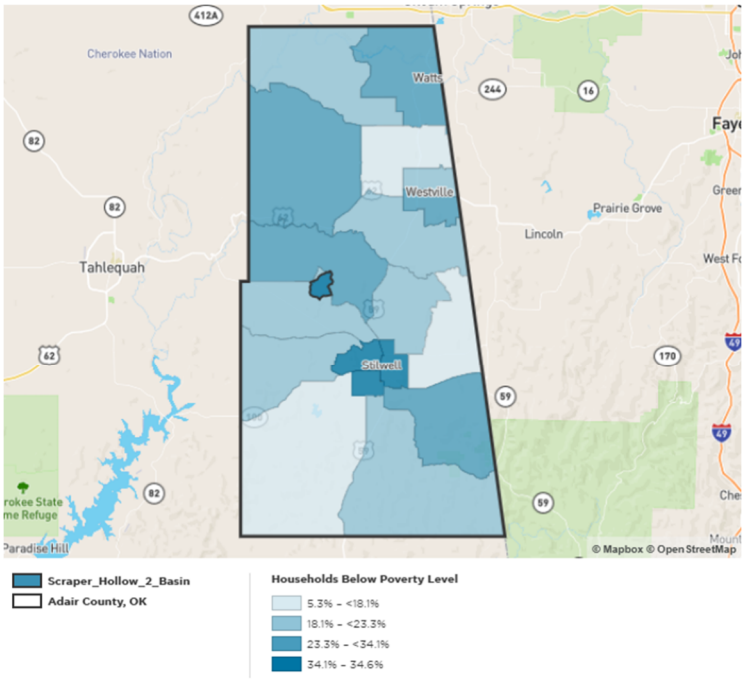

Figure 11. Concentration of households below poverty in Adair County.

Persons without a High School Diploma: There are more people over the age of 25 in Adair County (15.13%) who lack a high school diploma than in Oklahoma (9.69%) as a whole. Generally, both the county and state's percentages of residents without a high school diploma are anticipated to decrease by 2032.

4.2.5.5 RECREATION

FWRS No. 2 is located on and surrounded by private land. Information gathered during scoping indicated that incidental recreation includes fishing and deer hunting.

4.2.5.6 SCENIC BEAUTY

Adair County is a relatively rural county. The primary landcover types are forest, pasture, and grassland, which provide a natural and relatively undisturbed look to the viewshed in the county. During scoping, rural nature and scenic beauty were resources of importance valued by landowners.

4.2.6 ECOSYSTEM SERVICES

Within the Scraper Hollow Creek Watershed and the project area, ecosystem service benefits are largely derived from grasslands, hay and livestock pasture, and natural stream systems. The benefits from these resources are derived by their direct consumption or use, regulation of natural and human processes, and the cultural value of their existence.

The provisioning services result from the pasture and hay fields and direct use of the water for livestock and incidental recreation. Hay fields and livestock pasture are the predominant agricultural uses. Thus, these areas produce direct benefits from harvested values, while indirectly contributing to the production of meat products. Water in the reservoir is utilized for watering livestock and for recreation (swimming and fishing).

The natural stream system present is the predominant driver of ecosystem service benefits. Wetlands and aquatic vegetation filter water, attenuate floods, and remove pollutants and sediment, which in turn improves water quality and aquatic habitat for fish and wildlife. The societal benefits include flood control, incidental recreational use, and aesthetic condition. It is important to note that FWRS No. 2 reservoir is not used for potable water for the public or livestock, and provides incidental recreation; the primary purpose is regulatory in nature in providing flood control.

Cultural ecosystem services within the project area are primarily provided by the aesthetic value of the natural systems and the grasslands used for hay and pasture. Residents within the project area value the natural and rural character of the watershed.

4.2.7 FORECAST FUTURE CONDITIONS

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

As noted in Section 4.2.3, climate 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 climate change will also likely affect WOTUS and other aquatic resources.

Climate change will also affect human health and safety, with the potential for increased flooding due to extreme precipitation events, which is anticipated to expand floodplain areas and render existing floodplains even more prone to floods. These changes are likely to result in greater flood risk in local communities and levels of flood damage to infrastructure and structures. Increased flooding will also have an economic impact, as expenditures for recovery are expected to increase, which may have adverse economic effects within communities.

4.3 PHYSICAL FEATURES OF FWRS NO. 2

The as-built drawings for FWRS No. 2 show a dam height of 50.8 feet and an embankment length of 606.5 feet, with approximately 98,447 cubic yards of fill. The principal spillway consists of a 33-inch diameter reinforced concrete conduit. The auxiliary spillway has a width of 50 feet, with a planned minimum discharge of 133 cubic feet per second. Maximum storage at top of dam is 701 acre-feet, of which 447 acre-feet is detention storage and 137 acre-feet is sediment storage.

4.3.1 STATUS OF OPERATIONS AND MAINTENANCE

Operation and maintenance (O&M) of the dam is the responsibility of the sponsor. A watershed operation and maintenance agreement was entered into by NRCS and Adair County in 1969. The O&M plan defines the sponsor's responsibilities for operating and inspecting the structure. The 2010 Dam Assessment Report (OK Conservation Commission and USDA-NRCS 2010) stated, "Operation and maintenance is considered to be adequate." Items noted in the assessment report included woody vegetation growth on the front and back slopes of the dam, and monitoring of gully erosion on the left end of the dam. All are considered to be routine O&M activities.

The sponsor has been maintaining the dam and conducting annual inspections, with the last inspection on June 9, 2023. No additional items were identified to be addressed.

4.3.2 EMERGENCY ACTION PLAN

The purpose of an emergency action plan (EAP) is to outline appropriate actions and to designate parties responsible for those actions in the event of a potential failure of the dam. The 2019 EAP for FWRS No. 2 defines the purpose of the plan as reducing the risk of human life loss and injury and minimizing property damage during an unusual or emergency event at the dam site. It defines responsibilities and procedures to identify conditions that might endanger the dam, to notify appropriate emergency personnel, and to take possible mitigation actions. The EAP for FWRS No. 2 is reviewed by the Adair County Conservation District annually and updated as needed.

4.3.3 ANALYSIS OF SEDIMENT ACCUMULATION

A sedimentation analysis was performed for this site to determine the current rate of sedimentation. The storage capacity of the original design was calculated using stage storage information, sediment pool elevation, and sediment storage elevations. Current storage capacity was determined using a surface developed from a 2023 bathymetric survey conducted by NRCS. There is a significant difference in elevation between the design contours shown on the as-builts and the contours generated from the bathymetric survey. An excavated pool, likely resulting from a borrow source for construction of the dam, has a lower elevation of 957.62 feet than the as-built floor elevation of 966.42 feet, resulting in a negative sedimentation rate. The 1968 design volume for the normal pool (978.12 feet) is 59.00 acre-feet (25,700 tons). Design volume with excavation is

127.21 acre-feet (55,413 tons). The 2023 calculated volume for the normal pool is 86.99 acre-feet (37,893 tons), which is a sediment rate of 0.72 acre-feet per year.

4.3.4 EVALUATION OF POTENTIAL FAILURE MODES

FWRS No. 2 was built for conditions that existed or could be reasonably anticipated at the time of its original design. These conditions can change over time, which can increase the risk of dam failure. Several modes of failure were evaluated for FWRS No. 2.

4.3.4.1 SEDIMENTATION

Decreased detention storage due to excessive sediment accumulation would result in more frequent auxiliary spillway function and increase the risk of failure due to increased use of the auxiliary spillway. The sediment analysis shows that FWRS No. 2 is capturing sediment at a lower rate than forecasted in the original work plan, as noted in Section 4.3.3; therefore, sedimentation presents a low risk of failure.

4.3.4.2 HYDROLOGIC CAPACITY

There are several identified deficiencies with FWRS NO. 2 involving the hydraulic capacity of the dam and the integrity and stability of the auxiliary spillway. These deficiencies are discussed in detail below.

The existing dam does not meet the current NRCS hydraulic capacity criteria, as defined in TR-60. The following items are out of compliance:

- Dam must pass the 6-hour freeboard hydrograph without overtopping.
- Dam must pass the 24-hour freeboard hydrograph without overtopping.
- Principal spillway must pass the 100-year, 24-hour storm without activating the auxiliary spillway.
- Principal spillway conduit minimum diameter must be 30 inches (TR-60 criteria). The current principal spillway conduit diameter is 18 inches.
- Principal spillway capacity must empty at least 85 percent of the principal spillway hydrograph routed through the retarding pool within 10 days or less.

4.3.4.3 INTEGRITY AND STABILITY

An integrity analysis was performed on the auxiliary spillway using the 6-hour and 24-hour freeboard hydrographs in the updated SITES model. The integrity analysis showed significant erosion throughout the auxiliary spillway, with the spillway being breached for both hydrographs. The flow depth through the auxiliary spillway was 14.0 feet for the 6-hour freeboard hydrograph, with a maximum velocity of approximately 20.8 feet per second.

An auxiliary spillway stability analysis was also performed within the SITES model using soil parameters provided within geotechnical boring information, completed by NRCS. For the stability analysis, the maximum allowable soil and vegetal stress are 0.040 pounds per square foot (psf) and 4.20 psf, respectively. The 6-hour stability design hydrograph computations resulted in a soil effective stress value of 0.589 psf and a vegetal stress value of 3.28 psf. Therefore, Scraper Hollow FWRS No. 2 does not meet the TR-60 auxiliary spillway stability requirements due to soil erosion.

The potential risk for hydraulic failure of the dam is considered to be high.

4.3.4.4 SEEPAGE

FWRS No. 2 does have a foundation drainage system. There were no seepage or wet areas observed on the downstream slopes or abutments during the 2010 rehabilitation assessment (Oklahoma Conservation Commission 2010). No seepage has been noted in the annual inspection reports. Seepage presents a low risk of failure.

4.3.4.5 SEISMIC

The Scraper Hollow Creek Watershed is located in an area of low potential seismic activity; therefore, seismic activity presents a low potential risk of failure.

4.3.4.6 MATERIAL DETERIORATION

A visual inspection was completed in April 2023 for this project and noted the following conditions:

- Tree growth on the downstream slope.
- Fence obstruction in the auxiliary spillway upstream and downstream of the control section.
- An abandoned chicken building, with foundations present within the west abutment area.
- A video inspection of the outfall pipe completed by the Oklahoma Conservation Commission revealed no issues of concern.

Material deterioration presents a low risk of failure.

4.3.5 BREACH ANALYSIS

The inundation area resulting from a potential breach of FWRS No. 2 impacts roads and residents. The breach analysis was terminated at the location where the breach inundation water surface was contained in the channel and not impacting structures. Four roads and three structures would be impacted if the modeled hydrologic breach or static breach occurred. The hydrologic breach extended approximately 3.4 miles downstream along a tributary to Baron Fork, just before the confluence with Baron Fork, just north of East 739 Road. Only one road, D4675 Road, would be

impacted if the seismic breach occurred. The lowest elevations of the hazards were approximated from 2013 USGS digital elevation model data. The breach inundation maps for the hydrologic breach scenario are in Figure C-1 Appendix C.

4.3.6 HAZARD CLASSIFICATION

The results of the breach inundation analysis provide the information needed to complete the hazard classification evaluation. The analysis included evaluating the existing downstream area for potential hazards caused by a dam breach. Based on the inundation mapping (Figure C-1 in Appendix C), it is recommended that the dam remains classified as a high-hazard potential, because a dam failure may cause loss of life or serious damage to homes and roads located within the downstream breach zone.

4.3.7 CONSEQUENCES OF DAM FAILURE

The most likely source of a potential dam failure is the inadequate hydraulic capacity of the earthen auxiliary spillway to safely pass hydrologic loadings for this high-hazard dam classification, and the inadequate size of the principal spillway conduit.

A sudden failure of the dam could potentially cause loss of life to residents of three homes downstream of the dam, as well as motorists traveling the four roads also located within the breach zone. Additionally, large amounts of fill material present within the existing embankment of the dam would be released into the stream system, impairing water quality, decreasing aquatic habitat, and increasing downstream flooding. Sedimentation would destroy the productivity of pastureland and hay meadows located downstream. From the risk assessment, the population at risk downstream of Scraper Hollow Creek FWRS No.2 is 17. Reducing the loss of human life and meeting the current dam safety and performance criteria are the primary reasons for the rehabilitation of FWRS No. 2.

5.0 PLAN FORMULATION

Formulation of the alternative rehabilitation plan for FWRS No. 2 followed procedures outlined in the NRCS National Watershed Program Manual (NWPM). Other guidance incorporated into the formulation process included O.S. 785:25**.**

5.1 FORMULATION OF ALTERNATIVES

5.1.1 FORMULATION PROCESS

Several alternatives were considered, including two rehabilitation options that were carried through in a detailed study. The purpose and need for FWRS No. 2 shall comply with the safety criteria in the NWPM and O.S. 785:25.

5.1.1.1 GUIDING PRINCIPLES

Principles, Requirements, and Guidelines were used to guide the identification of measures and formulation and evaluation of alternatives. The guiding principles include:

- Healthy and resilient ecosystems
- Sustainable economic development
- Floodplains
- Public safety
- Watershed approach

5.1.1.2 PLAN CRITERIA

Planning criteria include completeness, effectiveness, efficiency, and acceptability, which are used as targets during plan formulation but are not used as screening criteria during evaluation of environmental impacts. The full definitions of these criteria and the results of this initial screening process are presented in Section 6.1.

5.1.1.3 RISK AND UNCERTAINTY

Analyzed benefits under the proposed alternatives were limited to flood damage reduction, including damages to structures, crops, pastures, bridges, culverts, and railroads, as well as erosion and sedimentation damages. Data from the Adair County appraisal district was used to determine the 2023 value of affected structures. Data from the USDA's National Agricultural Statistics Service was used in the analysis of agricultural damages (USDA 2021). Data on replacement unit costs for bridge and culvert projects, from the U.S. Department of Transportation Federal Highway Administration, was adjusted to 2023 dollars and used to determine costs associated with damages to bridges and culverts. Erosion and sedimentation damages, including damages associated with agricultural production, were not independently estimated for this study, to maintain consistency with the original watershed plan. These damages were included by taking the proportion of the damages from the original work plan for the dam based on contribution to the total Scraper Hollow Creek Watershed and adjusting the prices to 2023 dollars using the gross domestic product implicit price deflator.

Federal agencies are required by the Water Resources Development Act of 1974 to use a specified discount rate in the formulation and evaluation of water and related land resource plans for the purpose of discounting future benefits and computing costs. The discount rate is established by Section 80 of the act and is tied to yields on government securities with more than 15 years to maturity. The fiscal 2024 discount rate is 2.75 percent. It was assumed that the project lifespan would be 102 years.

The objective of this project is to meet applicable NRCS and State of Oklahoma safety and performance standards for a high-hazard potential dam.

Based on the evaluation of existing conditions and the anticipated structural measures to be installed, it is the judgement of the team that conducted the environmental evaluation that the rehabilitation of Scraper Hollow FWRS No. 2 will not result in significant effects on the human environment that have not been identified in the 2002 rehabilitation EIS written for this type of action in this location. No compensatory mitigation of resources would be warranted or required. Should project plans change, or should the project be implemented in such a way that impacts to resources not considered during this evaluation could occur, mitigation requirements would need to be reconsidered.

5.2 ALTERNATIVES

The formulation process began with formal discussions between the sponsors and NRCS. The alternative plans that were considered included:

- No-Action Alternative, or future without federal investment (FWOFI)
- Alternative No. 1 – Decommissioning
- Alternative No. 2 – New Roller-Compacted Concrete Auxiliary Spillway
- Alternative No. 3 – New Roller-Compacted Concrete Auxiliary Spillway, Lower High Stage Principal Spillway Crest
- Alternative No. 4 – New Roller-Compacted Concrete Auxiliary Spillway, Eliminate High Stage Principal Spillway Crest
- Alternative No. 5 – Dam Raise
- Alternative No. 6 – Dam Raise with New Auxiliary Spillway
- Alternative No. 7 – Non-Structural, Downstream Flood Protection

All the alternatives address the deficiencies under TR-60; however, only Alternatives No. 1, No. 2, No. 3, and No. 4 were studied in depth. The Sponsor directed Ad Astra not to study Alternatives No. 5 or No. 6 due to the dam raise component, which landowners opposed. Existing dam footprint easements prohibit borrow from being taken from on site. Therefore, the cost of importing the borrow material needed for a potential dam raise was considered prohibitively expensive, and there were additional concerns from landowners about the dam's footprint. Therefore, the Sponsor directed Ad Astra to only take Alternatives No. 1, No. 2, No. 3, and No. 4 for an in-depth study. Alternative No. 7 was not studied in depth due to the high cost of construction.

A hydraulic analysis used the SITES software to perform the routing of the dam and stability analysis per TR-60. The rating curves for the existing principal spillway, the existing auxiliary spillway, the proposed principal spillways, and the proposed auxiliary spillway were developed

using the SITES software. The hydrology for the hydraulic assessment was provided from the existing SITES model and HEC-HMS files used as part of the Phase 1 evaluation.

5.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Additional measures considered, but not studied in depth, included bringing the dam into compliance as a low-hazard dam through right-of-way and inundated building buy-out. Purchasing of inundated right-of-way and buildings was determined unfeasible and unacceptable to the sponsor due to lack of interest by property owners and concern that it would likely increase flood risk.

5.3.1 ALTERNATIVE NO. 5 – DAM RAISE

This alternative focuses on structural upgrades to the dam to increase capacity by raising the top of the dam and lowering the auxiliary spillway crest. This alternative was not studied in depth due to landowner concerns. Additionally, the cost of hauling in offsite borrow for the dam embankment was considered prohibitive.

The existing auxiliary spillway is composed of an earthen spillway near the right dam abutment. The crest of the existing auxiliary spillway would be lowered 2.8 feet to 998.33 feet. The existing spillway would also need to be hard armored with roller-compacted concrete to address stability concerns.

Hydrologic analyses in SITES showed that the top of the dam would need to be raised 6.84 feet, to an elevation of 1011.80 feet to accommodate the 6-hour and 24-hour freeboard hydrographs. This alternative was not explored in depth due to NRCS Oklahoma's concerns about the additional construction cost of sourcing offsite borrow for raising the dam embankment.

5.3.2 ALTERNATIVE NO. 6 – DAM RAISE WITH NEW AUXILIARY SPILLWAY

This alternative focuses on structural upgrades to the dam to increase capacity by raising the top of the dam and widening the auxiliary spillway. This alternative was not studied in depth due to landowner concerns. Additionally, the cost of hauling in offsite borrow for the dam embankment was considered prohibitive.

The existing auxiliary spillway is composed of an earthen spillway near the right dam abutment. Widening the auxiliary spillway would require expanding into the dam embankment; as with the previous three alternatives, rather than widening the existing auxiliary spillway, a new stepped roller-compacted concrete spillway would be constructed in the embankment. The new width would be 250 feet. Under this alternative, the auxiliary spillway crest would remain the same as the existing auxiliary spillway crest (1002.02 feet). The existing auxiliary spillway would be abandoned.

Hydrologic analyses in SITES showed that the top of the dam would need to be raised 3.36 feet to an elevation of 1008.38 feet to accommodate the 6-hour and 24-hour freeboard hydrographs. Under this alternative, an existing drive access across the top of the dam would be eliminated. This alternative was not explored in depth due to NRCS Oklahoma's concerns about the additional construction cost of sourcing offsite borrow for raising the dam embankment.

5.3.3 ALTERNATIVE NO. 7 – NON-STRUCTURAL FLOOD PROTECTION

This alternative is similar to the decommission alternative in that it provides downstream flood protection by removing properties from the floodplain and raising roads to prevent flooding during the 100-year storm. This alternative assumes the dam is left in place. A cost estimate was completed during the assessment of the decommission alternative and was used for estimating the approximate cost of this alternative. The cost for this alternative would be $9,952,400 with an annual cost of $299,500.

Under this alternative, the property located downstream of the structure would be bought out and the four roads impacted by the 100-year floodplain would be raised to prevent overtopping. A concept cost estimate was developed to determine how feasible this alternative would be. Raising the four roads is a significant construction cost of approximately $15.3 million. The high construction cost is due to the significant increase in height needed for many of these roads, which increases the amount of fill needed to raise the roads. Also included in this cost is the price of new bridges and culverts for the impacted roads. While this alternative would alleviate flooding concerns and potential loss of life in the breach zone downstream of the dam, it would not meet the purpose and need for maintaining flood protection in the greater watershed.

5.4 DESCRIPTION OF ALTERNATIVES CONSIDERED FOR DETAILED STUDY

The following section describes the alternatives that were studied in detail. See Figures C-3 through C-6 in Appendix C for the action alternatives plan details.

5.4.1 NO ACTION ALTERNATIVE (FWOFI)

One of the alternatives that must be included in the plan is the "no-action" alternative, also referred to as the future without project or future without federal investment (FWOFI). For the rehabilitation program, the no-action alternative is "an estimation of the most probable future condition expected to occur in the absence of the study's alternative plans" (NWPM Part 506, Section 506.50 Glossary). For the purposes of this plan, it is assumed that no action would be taken to address current safety concerns and hazards. The sponsor would continue to operate and maintain the dam as it always has. The dam is assumed to fail and not be subsequently rebuilt or rehabilitated.

As noted in Section 4.3.4, the no-action alternative considers two modes of failure: overtopping of the dam and failure of the auxiliary spillway. An integrity analysis was performed for the auxiliary

spillway using the 6-hour and 24-hour freeboard hydrographs routed through SITES. Using the 6-hour hydrograph, it was determined that the auxiliary spillway would fail at the 0.04 percent annual exceedance probability or the 2,500-year storm. A frequency analysis was performed to determine the return periods of these two modes of failure. The annual exceedance probability of the dam overtopping is less frequent than 0.1 percent, or the 1,000-year storm. Therefore, this dam falls under Case 2 of Part 303.

> *If a dam is in an area of forecasted low-damage potential (rural and sparsely developed) and it is judged that an increment of damage for an annual probability less frequent than 0.1% (more than a 1,000-year recurrence) is inconsequential to the plan decision, then use the 0.1% annual probability.*

Because the annual exceedance probability for overtopping the dam is less than 0.1percent, the worst possible flood damage was estimated with the 1,000-year storm. Total flood damages for the 1,000-year storm are $1,733,514.

The no-action alternative does not meet the sponsor's goal of maintaining the existing level of flood protection for downstream properties.

5.4.2 ALTERNATIVE NO. 1 - DECOMMISSIONING

Decommissioning is a mandatory alternative that must be considered under the NRCS policy for dam rehabilitation. This alternative must be brought into the final array of alternatives and cannot be eliminated simply because of sponsor preferences or the subjective determination that it may be too costly.

Decommissioning FWRS No. 2 would require removing the flood detention capacity of the dam by cutting a 100-foot-wide trapezoidal notch in the existing embankment down to the valley floor. A trapezoidal channel with a bottom width of 12 feet would be established in this notch, with 2-to-1 side slopes and the valley floor at a slope of 0.0050 feet/feet to reconnect the existing embankment down to the valley floor. This alternative would eliminate all storage capacity and reconnect and stabilize the historic stream channel and floodplain alignment. The amount of dam embankment removed would allow the 100-year, 24-hour flood event to safely pass through the embankment area. All principal and auxiliary spillway components would be removed, and the historic channel would be restored and connected to the existing downstream channel.

The decommissioning alternative must include addressing the purpose and need for flood protection. There is no regulatory 100-yr floodplain established in the channel downstream of the dam; therefore, a two-dimensional HEC-RAS model was developed to establish the 100-year floodplain extents and elevation. There is one habitable structure and four roads in the currently determined effective regulatory 100-year floodplain. The downstream culverts and roads would have to be protected. If the dam were removed, the five locations identified in the hydrologic and static breach zones would be at risk from flooding during the 100-year storm. Water surface

elevations would increase approximately 3 feet near West 130 Road, and water surface elevations downstream would increase. Mitigation of induced damages to the buildings includes relocation or floodproofing the impacted structures, home buyouts, or purchasing easements.

The residences located within the breach inundation area would have to be bought out or floodproofed. In addition, approximately 233 acres of land within the breach inundation area would need to be regulated to prevent future development in the area.

Three local roads would also be inundated during the 100-year storm without the dam. These roads need to be modified, either by raising the road, upsizing the existing culvert, or a combination of these two, to prevent overtopping of the roads.

Notching the dam embankment would require the removal of about 43,000 cubic yards of material, which equates to about 40 percent of the embankment. The remaining fill material would be stabilized and vegetated. The submerged sediment would be stabilized or removed. The function and stability of the stream channel would be restored. Removal of the principal spillway structures would also be necessary. Some of these unneeded materials could be buried on site or hauled to an appropriate disposal site. Stabilizing the reservoir footprint once the dam is breached would require hydro-mulching/hydro-seeding approximately 8.5 acres, as well as establishing a wooded riparian corridor along both sides of the proposed stream channel (Figure 14, C-3 in Appendix C).

The cost for decommissioning the dam is $21,019,300, without O&M, which makes this alternative unfeasible. The cost estimate for decommissioning the dam includes property acquisition within the breach zone below the dam to prevent future flood damage.

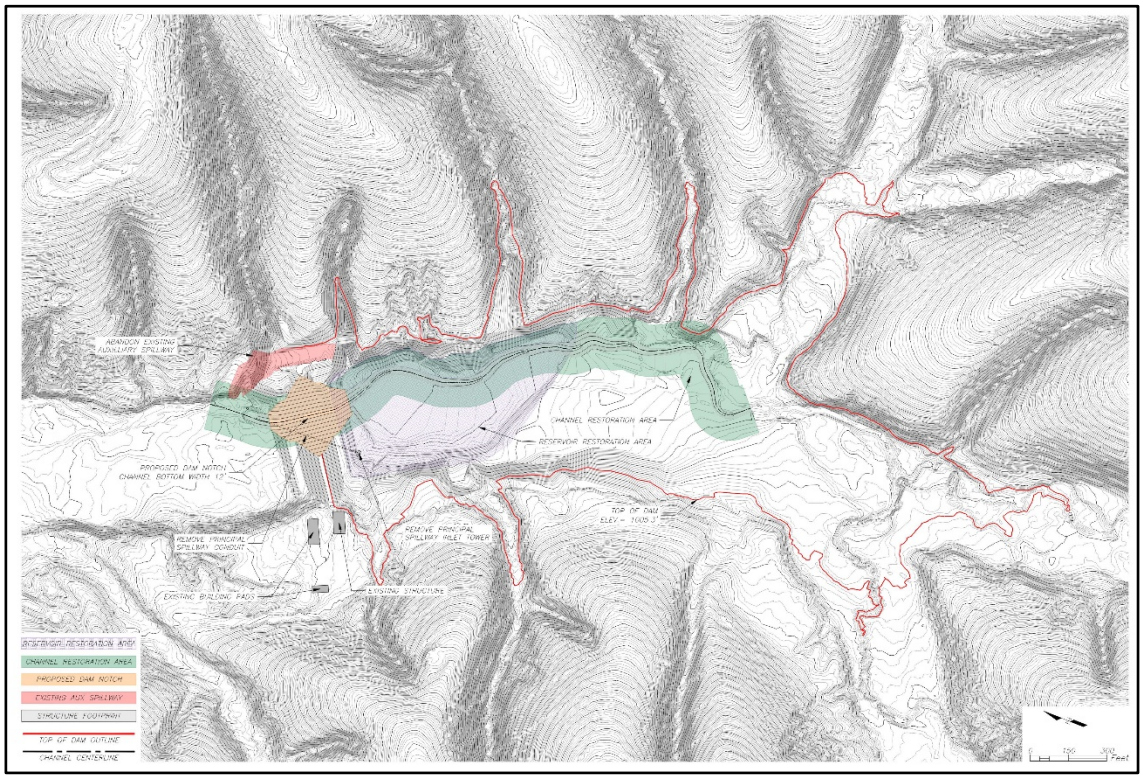

Figure 14. Plan view of decommission and restoration extents within Alternative 1.

5.4.3 ALTERNATIVE NO. 2 – NEW RCC AUXILIARY SPILLWAY

This alternative focuses on structural upgrades to the dam to increase capacity by replacing the existing auxiliary spillway with a new stepped roller-compacted concrete (RCC) spillway (Figure 15, C-4 in Appendix C). The new spillway would be wider than the existing spillway and have a lower crest. Due to land constraints, the new spillway would cut through the dam embankment, and the current spillway filled in. The existing principal spillway conduit would be slip lined with a 30-inch high-density polyethylene (HDPE) pipe. These modifications are designed to match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm. A dam and pool would remain with this alternative.

This alternative also proposes reinforcing the existing principal spillway, which is a 33-inch reinforced concrete pipe conduit, with a 3-foot x 9-foot x 25-foot dual-stage inlet tower.

This alternative would include modifying the existing auxiliary spillway, composed of an earthen spillway near the right dam abutment. The proposed modifications include widening the auxiliary spillway from a width of 50 feet to 250 feet. Because there is not enough space to widen the auxiliary spillway within its current footprint, a new RCC spillway would be installed in the middle of the dam. Additionally, the spillway crest could be lowered 3.9 feet, to an elevation of 998.1 feet. The top of the dam would be extended into the existing auxiliary spillway footprint to fill it in.

Geotechnical and structural aspects were not evaluated as part of this analysis and will need to be completed as part of design.

The total cost to implement these measures for the dam and its accoutrements would be $10,936,200, without O&M.

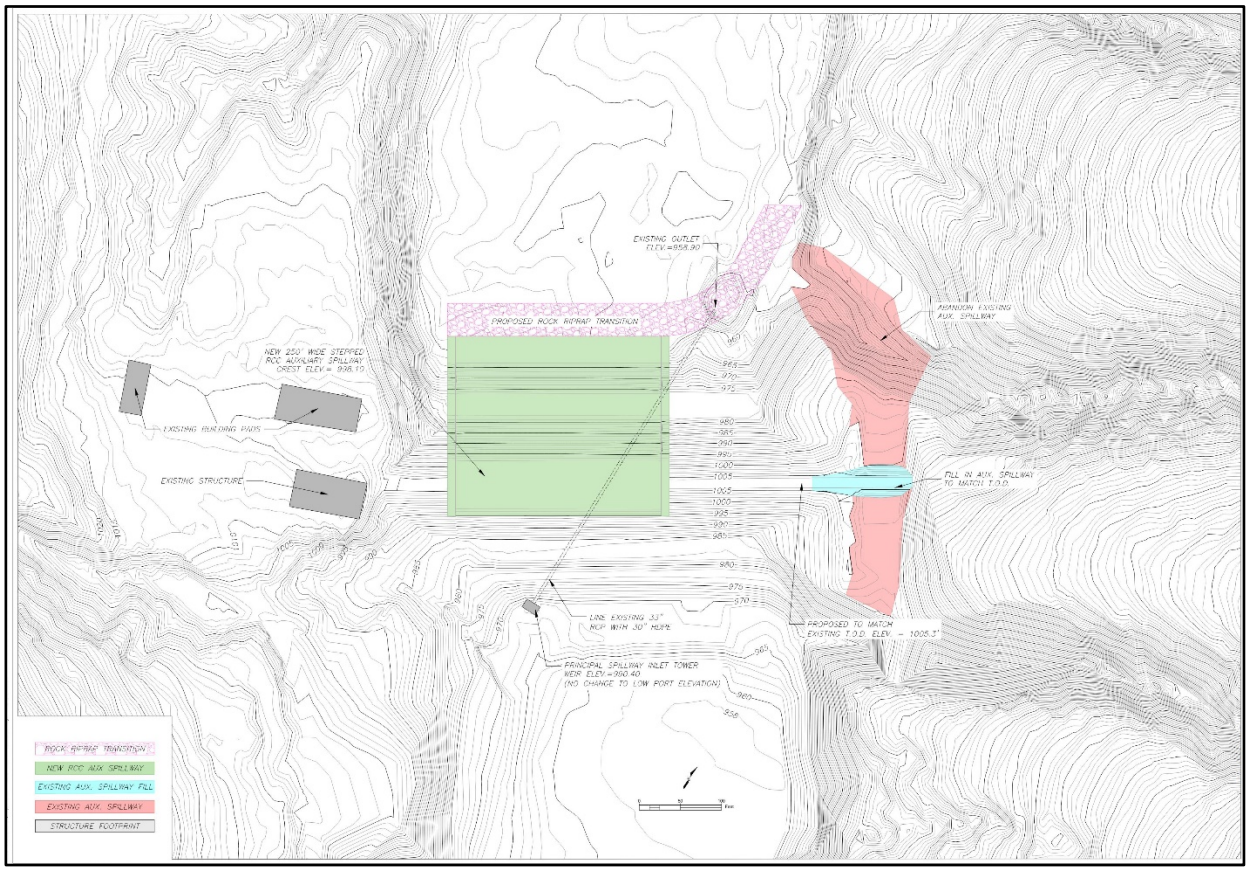

Figure 15. Plan view of a widened auxiliary spillway in Alternative 2.

5.4.4 ALTERNATIVE NO. 3 – NEW RCC AUXILIARY SPILLWAY, LOWER PRINCIPAL SPILLWAY CREST

This alternative focuses on structural upgrades to the dam to increase capacity by replacing the existing auxiliary spillway with a new stepped RCC spillway (Figure 16, C-5 in Appendix C). The new spillway would be wider than the existing spillway and have a lower crest. Due to land constraints, the new spillway would cut through the dam embankment. This alternative would slip line the existing principal spillway conduit with a 30-inch HDPE pipe and lower the high stage spillway crest. These modifications would be designed to match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm. A dam and pool would remain with this alternative.

The existing principal spillway is a 33-inch reinforced concrete pipe conduit with a with a 3-foot x 9-foot x 25-foot dual-stage inlet tower. Proposed improvements include slip-lining the pipe with a 30-inch HDPE pipe. Additionally, the high-stage crest of the principal spillway's dual-stage inlet tower would be lowered 9.7 feet, to an elevation of 980.7 feet. The low-stage crest would remain the same at 978.1 feet, so there would be no impact to the normal pool.

Under this alternative, the proposed modifications include widening the auxiliary spillway from a width of 50 feet to 210 feet. The existing auxiliary spillway is composed of an earthen spillway near the right dam abutment. Because there is not enough space to widen the auxiliary spillway within its current footprint, a new RCC spillway would be installed in the middle of the dam. Additionally, the spillway crest would be lowered 4.5 feet, to an elevation of 997.5 feet. The top of the dam would be extended into the existing auxiliary spillway footprint to fill it in.

Geotechnical and structural aspects were not evaluated as part of this analysis and will need to be completed as part of design.

The total cost to rehabilitate the dam and its accoutrements would be $10,040,300, without O&M.

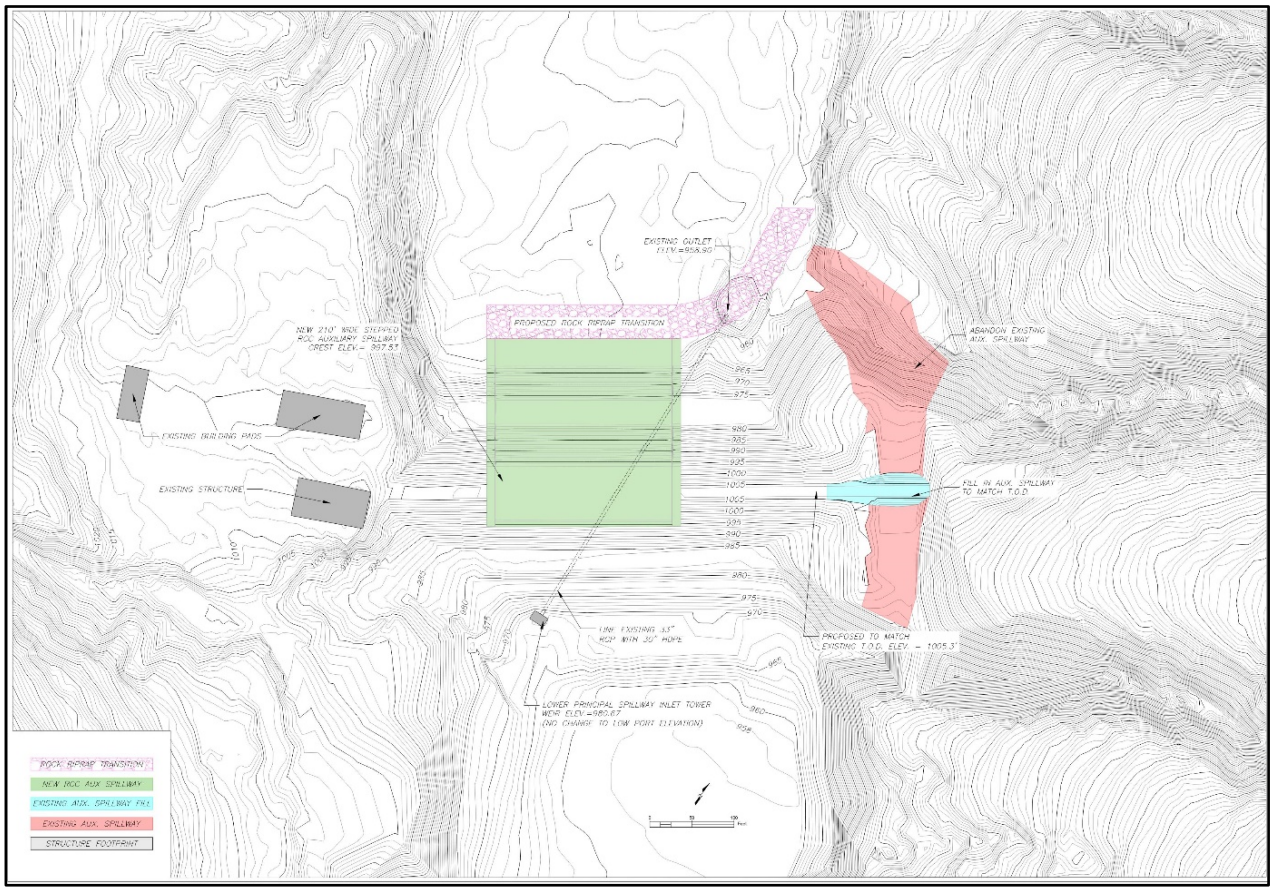

Figure 16. Plan view of new auxiliary spillway in Alternative 3.

5.4.5 ALTERNATIVE NO. 4 - NEW RCC AUXILIARY SPILLWAY, SINGLE STAGE PRINCIPAL SPILLWAY CREST

This alternative focuses on structural upgrades to the dam to increase capacity by replacing the existing auxiliary spillway with a new stepped RCC spillway (Figure 17, C-6 in Appendix C). The new spillway would be wider than the existing spillway and have a lower crest. Due to land constraints, the new spillway would cut through the dam embankment. This alternative would slip line the existing principal spillway conduit with a 30-inch HDPE pipe and replace the dual-stage inlet tower with a single-stage. These modifications would be designed to match the existing 100-year water surface elevation, to not increase the discharge of the 100-year storm. A dam and pool would remain with this alternative.

The existing principal spillway is a 33-inch reinforced concrete pipe conduit with a 3-foot x 9-foot x 25-foot dual-stage inlet tower. Proposed improvements include slip-lining the pipe with a 30-inch HDPE pipe. Additionally, this alternative proposes replacing the current dual-stage inlet tower with a single-stage tower. The high-stage crest of the principal spillway would be eliminated. This alteration would lower the principal spillway crest 5.3 feet to the low-stage crest, 978.1 feet. The low-stage crest would remain the same (978.1 feet), so there would be no impact to the normal pool. Replacing the principal spillway inlet tower would require increasing the sediment storage of the dam. Approximately 44,000 cubic yards of material would need to be dredged from the pool to provide adequate storage for the dam. The dredged material would need to be dewatered and disposed of offsite.

Under this alternative, the proposed modifications include widening the auxiliary spillway from a width of 50 feet to 170 feet. The existing auxiliary spillway is composed of an earthen spillway near the right dam abutment. Because there is not enough space to widen the auxiliary spillway within its current footprint, a new RCC spillway would be installed in the middle of the dam. Additionally, the spillway crest would be lowered 5.3 feet, to an elevation of 996.7 feet. The embankment would be extended through the existing auxiliary spillway at the current top of dam elevation.

Geotechnical and structural aspects were not evaluated as part of this analysis and will need to be completed as part of design.

The total cost to rehabilitate the dam and its accoutrements would be $12,698,100, without O&M.

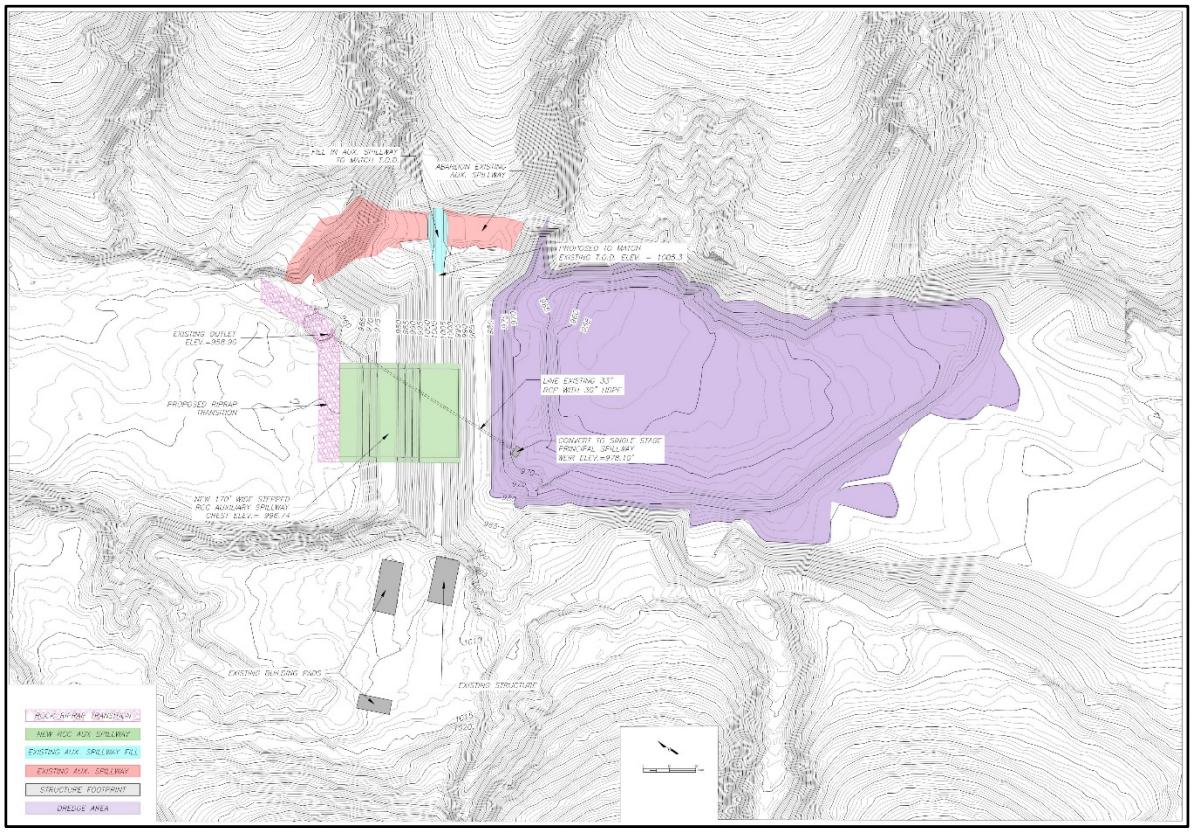

Figure 17. Plan view of new auxiliary spillway in Alternative 4.

5.4.6 PROPOSED ACTION (PREFERRED ALTERNATIVE)

The proposed action, otherwise referred to as the preferred alternative, is the Federally assisted alternative that maximizes net economic benefits consistent with protecting the Nation's environment. The no action or FWOFI alternative is removed as proposed action where human life is at risk in the event of catastrophic failure of an existing dam. Alternative 2 described above is the proposed action plan. This rehabilitation alternative with Federal assistance is the most locally acceptable and best serves the sponsor in achieving the purpose and need for this rehabilitation.

6.0 ENVIRONMENTAL CONSEQUENCES

This section of the Plan-EA evaluates and compares alternatives based on their performance against planning criteria, environmental impacts, and ecosystem services.

6.1 PLANNING CRITERIA

A mandatory comparison of alternatives evaluates how well the alternatives resolve the identified problems, as well as how well they meet the evaluation criteria of completeness, acceptability,

efficiency, and effectiveness (Table 4). These criteria are defined by the Principles, Requirements, and Guidelines comprehensive policy and guidance for Federal investments in water resources:

- Completeness is the extent to which an alternative provides and accounts for all features, investments, and/or other actions necessary to realize the planned effects, including any necessary actions by others. It does not necessarily mean that alternative actions need to be large in scope or scale.
- Effectiveness is the extent to which an alternative alleviates the specified problems and achieves the specified opportunities.
- Efficiency is the extent to which an alternative alleviates the specified problems and realizes the specified opportunities at the least cost.
- Acceptability is the viability and appropriateness of an alternative from the perspective of the Nation's general public and consistency with existing Federal laws, authorities, and public policies. It does not include local or regional preferences for particular solutions or expediency.

TABLE 4. SUMMARY AND COMPARISON OF ALTERNATIVES – PLANNING PROCESS

Evaluation Criteria	No Action Alternative	Alt. 1 Decommission	Alt. 2 New RCC Auxiliary Spillway	Alt. 3 Lower Principal Spillway Crest	Alt. 4 Single Stage Principal Spillway Crest
Completeness	Incomplete – doesn't account for the features, investments, or other actions necessary to realize the planned effect of addressing the watershed problems.	Incomplete – doesn't account for the features, investments, or other actions necessary to realize the planned effect of addressing the watershed problems.	Complete – rehabilitating the dam to high-hazard standards would address the compliance problem while protecting downstream infrastructure.	Complete – rehabilitating the dam to high-hazard standards would address the compliance problem while protecting downstream infrastructure.	Complete – rehabilitating the dam to high-hazard standards would address the compliance problem while protecting downstream infrastructure.
Effectiveness	Ineffective – doesn't address problems or realize opportunities.	Ineffective – doesn't address problems or realize opportunities.	Effective – addresses problems and opportunities.	Effective – addresses problems and opportunities.	Effective – addresses problems and opportunities.

Evaluation Criteria	No Action Alternative	Alt. 1 Decommission	Alt. 2 New RCC Auxiliary Spillway	Alt. 3 Lower Principal Spillway Crest	Alt. 4 Single Stage Principal Spillway
Efficiency	Efficiency does not exist in the absence of effectiveness.	Inefficient - A benefit cost ratio (BCR) of 0.18 and monetized net average annual benefits of ($507,100).	A BCR of 0.04 and monetized net average annual benefits of ($316,900). Although not monetarily efficient, it does address other elements.	A BCR of -0.04 and monetized net average annual benefits of ($315,000). While not monetarily efficient it does address other elements and does maximize net public benefits.	A BCR of -0.01 and monetized net average annual benefits of ($383,900). While not monetarily efficient it does address other elements and does maximize net public benefits.
Acceptability	Doing nothing is a viable alternative from a National perspective and is consistent with Federal laws, policies, and authorities. However, doing nothing is not an appropriate alternative as it leaves considerable risk to life and property and is a violation of State law.	Acceptable.	Acceptable.	Acceptable.	Acceptable.

6.2 ENVIRONMENTAL EVALUATION FOR WATERSHED PLANNING AND COMPARISON OF ALTERNATIVES

Table 5 provides a summary and comparison of the benefits, costs, and ecosystem services framework for each alternative evaluated in detail in this study.

TABLE 5. ENVIRONMENTAL EVALUATION COMPARISON OF ALTERNATIVES

USDA NRCS	Watershed: Scraper Hollow Creek County/State: Adair County, Oklahoma ID Number: OK00090			Watershed Project Number: FWRS Number 2	
Alternatives	**No Action Alternative (FWOFI)**	**Alt 1 - Decommission**	**Alt 2 – New RCC Auxiliary Spillway**	**Alt 3 – Lower Principal Spillway Crest**	**Alt 4 – Single-Stage Principal Spillway**
Major Features	Sponsor takes no action to reduce flooding	Remove a portion of the dam and eliminate all storage capacity	New extended stepped RCC auxiliary spillway w/lower crest, and slip line existing principal spillway with 30" HDPE pipe	New stepped RCC for auxiliary spillway w/lower crest, 30" HDPE pipe, and lower high stage inlet tower crest	New stepped RCC auxiliary spillway w/lower crest, 30" HDPE pipe, and install single-stage principal spillway inlet tower
Sponsor Goals	Scraper Hollow FWRS No. 2 was constructed in 1969 as a low-hazard dam, but today, is a high-hazard potential dam and is out of compliance with NRCS TR-60 design criteria. These alternatives were explored to bring the dam back into compliance and to avoid negative impacts to residents, roads, crossings, and the environment.				
Optimizing Criteria					
Non-Structural	X				
Locally Preferred				X	
Environmentally Preferred			X	X	X
Proposed Action			X		
Socially Preferred			X		

Alternatives	No Action Alternative (FWOFI)	Alt 1 - Decommission	Alt 2 – New RCC Auxiliary Spillway	Alt 3 – Lower Principal Spillway Crest	Alt 4 – Single-Stage Principal Spillway
Guiding Principles and Ecosystem Services Benefits					
Healthy, Resilient Ecosystems			X	X	X
Watershed Approach			X	X	X
Sustainable Economic Development			X	X	X
Floodplains			X	X	X
Public Safety			X	X	X
Provisioning – Food, fiber, freshwater, timber, genetic resources, etc.					
Ecosystem Productivity	Maintains existing	Reduces protection due to flooding	Maintains existing protection	Maintains existing protection	Maintains existing protection
Surface Water Quality	Maintains existing	Decrease in stream below dam due to increased sediment loading.	Maintains existing protection	Maintains existing protection	Maintains existing protection
Wetlands	Maintains existing		Maintains resources	Maintains resources	Maintains resources
Upland/Riparian Areas Created or Enhanced	Maintains existing	Potential increase of 9 acres in area of sediment pool.	Short-term and minimal. Disturbed areas to be revegetated with native riparian vegetation.	Short-term and minimal. Disturbed areas to be revegetated with native riparian vegetation.	Short-term and minimal. Disturbed areas to be revegetated with native riparian vegetation.
Pasture/Grassland	Expected annual damage to pastureland is $35.	Expected annual damage to pastureland is $60.	Expected annual damage to pastureland is $35.	Expected annual damage to pastureland is $37.	Expected annual damage to pastureland is $37.

Alternatives	No Action Alternative (FWOFI)	Alt 1 - Decommission	Alt 2 – New RCC Auxiliary Spillway	Alt 3 – Lower Principal Spillway Crest	Alt 4 – Single-Stage Principal Spillway
Regulating – air, climate, disease, erosion, natural hazards and pests, water purification (Market values)					
Floodplain Acres	Maintains Existing	Increase of 9 acres of area currently inundated within the sediment pool.	Maintains Existing	Maintains Existing	Maintains Existing
Clean Water Act	404 Permit may be required	Nationwide Permit 27 applicable	Nationwide Permit 3 applicable	Nationwide Permit 3 applicable	Nationwide Permit 3 applicable
Clean Air Act	Permit may be required	Permit may be required	Permit may be required	Permit may be required	Permit may be required
Threatened and Endangered Species	No effect to threatened and endangered species that may be present.	Not likely to affect any threatened and endangered species that may be present. USFWS concurrence provided Nov. 11, 2024.	Not likely to affect any threatened and endangered species that may be present. USFWS concurrence provided Nov. 11, 2024.	Not likely to affect any threatened and endangered species that may be present. USFWS concurrence provided Nov. 11, 2024.	Not likely to affect any threatened and endangered species that may be present. USFWS concurrence provided Nov. 11, 2024.
Invasive Species	No effect	No effect	No effect	No effect	No effect
Migratory Birds Bald and Golden Eagles	No effect	No effect	No effect	No effect	No effect
Flood Prevention	0.04 percent flood	N/A	1.0 percent flood	1.0 percent flood	1.0 percent flood
Flooding – Remaining Damages	Would result in $140,800 of average annual flood damages due to dam failure	Would provide $113,900 of average annual flood damage reduction benefits	Would provide $12,700 of average annual flood damage reduction benefits	Would provide ($12,000) of average annual flood damage reduction benefits	Would provide ($2,600) of average annual flood damage reduction benefits

Alternatives	No Action Alternative (FWOFI)	Alt 1 - Decommission	Alt 2 – New RCC Auxiliary Spillway	Alt 3 – Lower Principal Spillway Crest	Alt 4 – Single-Stage Principal Spillway
Cultural – Aesthetics, recreation, ecotourism, personal values					
Public Health and Safety	See comments	See comments	See comments	See comments	See comments
Impact to Rural Development	Maintains flood protection for life of structure	Loss of flood protection	Maintains existing flood protection	Maintains existing flood protection	Maintains existing flood protection
Risk of Loss of Life	Moderate	Moderate	Low	Low	Low
Businesses/Homes/Public Facilities Benefitted	Three residences with the dam present.	Three residences and associated outbuildings.	Three residences and associated outbuildings.	Three residences and associated outbuildings.	Three residences and associated outbuildings.
Recreation	Maintains Existing	Loss of water related recreation	Maintains existing incidental recreation	Maintains existing incidental recreation	Maintains existing incidental recreation
Cultural Resources/Tribal Interests	Maintains existing with dam in place. May affect resources with dam failure.	OKSHPO, OAS, and the Cherokee Nation have provided concurrence that properties within the APE are not eligible for listing on the NRHP. In the event of an unanticipated discovery per 36 CFR 800.13 additional consultation with consulting parties would be required.	OKSHPO, OAS, and the Cherokee Nation have provided concurrence that properties within the APE are not eligible for listing on the NRHP. In the event of an unanticipated discovery per 36 CFR 800.13 additional consultation with consulting parties would be required.	OKSHPO, OAS, and the Cherokee Nation have provided concurrence that properties within the APE are not eligible for listing on the NRHP. In the event of an unanticipated discovery per 36 CFR 800.13 additional consultation with consulting parties would be required.	OKSHPO, OAS, and the Cherokee Nation have provided concurrence that properties within the APE are not eligible for listing on the NRHP. In the event of an unanticipated discovery per 36 CFR 800.13 additional consultation with consulting parties would be required.

Alternatives	No Action Alternative (FWOFI)	Alt 1 - Decommission	Alt 2 – New RCC Auxiliary Spillway	Alt 3 – Lower Principal Spillway Crest	Alt 4 – Single-Stage Principal Spillway
Economic Analysis					
Project Investment					
Construction Cost	-	$16,428,800	$8,852,100	$8,117,800	$10,296,300
Total Project Investment	-	$21,020,000	$10,937,000	$10,041,000	$12,699,000
Average Annual Benefits	-	$113,900	$12,700	($12,000)	($2,600)
Average Annual Costs	-	$618,800	$328,300	$302,000	$380,000
O&M Annualized	$7,400	$2,000	$7,400	$7,400	$7,400
Net Benefit	-	($504,900)	($315,600)	($314,000)	($382,600)
Benefit/Cost Ratio	-	0.18	0.04	-0.04	-0.01

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6.3 ENVIRONMENTAL CONCERNS

The potential effects of the alternatives on the following resources were evaluated in detail in this section. Resources eliminated from detailed evaluation were noted in Table 1.

6.3.1 SOILS

No-Action Alternative: Would result in no substantial repairs or rehabilitation. Limited effects from soil erosion and sedimentation would continue with current dam operation and then be exacerbated by flooding after dam failure. In the short term, this alternative would have negligible effects from ongoing operation and maintenance of the current dam. In the long-term, there would be direct adverse effects due to an increase in streambank erosion and sedimentation resulting from increased flooding.

Alternative 1 – Decommission Dam: 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 by use of BMPs. In the long term, streambank erosion would be reduced by channel restoration to pre-dam conditions, resulting in effects that would be negligible.

Alternative 2 – New Auxiliary Spillway/Proposed Action: Soil disturbance would be related to construction activities for rehabilitation and subsequent operation and maintenance of the dam. Soils excavated from the dam embankment to widen the auxiliary spillway 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 by use of BMPs. In the long term, effects from ongoing operation and maintenance of the dam would be negligible.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.2 WATER QUALITY

No-Action Alternative: The impoundment would not release sediment or pollutants into Scraper Hollow Creek that would change the designation of the stream, which is currently under TMDL requirements for the Lower Northern Canadian River. Upon catastrophic failure of the dam, additional sediments and pollutants could be discharged to Scraper Hollow Creek and would need to be addressed to meet TMDL requirements. In the short term, there would be no effects. Long-

term effects from dam failure would be direct and adverse due to increased sediment and pollutants entering the streams.

Alternative 1 – Decommission Dam: 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 would be negligible. In the long-term, effects would be beneficial due to stabilization of disturbed sites and revegetation of the riparian corridor.

Alternative 2 – New Auxiliary Spillway/Proposed Action: The impoundment would experience temporary disturbances from construction activities at the area of the dam embankment and in the upstream area from drawdown of the reservoir. Downstream erosion that could happen due to sediment starved water leaving the impoundment should be minimized by maintaining the vegetated riparian corridor adjacent to the stream during construction. Effects would be short-term, adverse, and negligible. Retention of the impoundment would have long-term benefits, with the impoundment continuing to trap sediment and pollutants.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.3 WOTUS, WETLANDS, AND SPECIAL AQUATIC SITES

No-Action Alternative: This alternative would have no new effect on WOTUS and wetlands under continued operation and maintenance of the dam. There would be long-term direct adverse impacts to these resources upon catastrophic failure of the dam due to the disconnect between the streams and the wetlands and increased flooding.

Alternative 1 – Decommission Dam: Construction to decommission the dam and restore the stream channel and adjoining riparian corridor would have short-term, adverse impacts due to construction. There would be long-term adverse impacts to existing wetlands adjacent to the reservoir due to loss of connectivity to the main water body and benefits due to the newly established stream channel that had been previously inundated and increased habitat due to riparian corridor restoration.

Alternative 2 – New Auxiliary Spillway/Proposed Action: 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 to widen the spillway. Widening the spillway from 50 feet to 250 feet with placement in the dam would minimize impacts outside of the footprint for the dam. Implementation of construction BMPs and revegetation of the dam and

areas adjacent to the auxiliary spillway with native species would minimize impacts resulting from construction activities.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.4 FLOODPLAIN MANAGEMENT

No-Action Alternative: Under this alternative there would be no changes to the floodplain function. According to the FEMA FIRM panel, there are no structures within the 100-year flood zone downstream of the dam within the area of analysis. Dam failure would result in an enlarged floodplain and increased flooding that could engulf structures and roads not previously within the floodplain.

Alternative 1 – Decommission Dam: The hydraulic modeling indicates that if this alternative were implemented, three residences and four roads located within the breach inundation zone would be inundated during the 100-year storm. Floodproofing or buyout and modifications to the roads would provide minor, short-term benefits. The increase in flooding without the dam would have long-term adverse impacts on properties and infrastructure in the watershed due to increased flooding and an enlarged floodplain.

Alternative 2 – New Auxiliary Spillway/Proposed Action: There would be no change in effects on floodplain management resulting from rehabilitation. Flood protection in the overall watershed would be maintained, and the residence and roads within the downstream breach zone would continue to experience flooding during certain storm events.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.5 CLIMATE

No-Action Alternative: This alternative would not contribute additional GHGs. However, climate change could have potential impacts due to increased frequency and the severity of storms and flooding. Climate change would have no short-term effects, but could have minor, long-term, adverse effects after dam failure due to increased flooding.

Alternative 1 – Decommission Dam: Construction activities would result in the generation of GHGs. However, the level of activity would be minimal and the total GHG emissions would be

undetectable in comparison to emissions of the State and the Nation. The long-term effects would be similar to the no action, with increased flooding having minor, long-term, adverse effects.

Alternative 2 – New Auxiliary Spillway/Proposed Action: Construction activities would have similar effects as Alternative 1 prior to dam failure. Rehabilitation of the dam would retain the protective function within the watershed against increased flooding due to climate change.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.6 FISH AND WILDLIFE HABITAT

No-Action Alternative: 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.

Alternative 1 – Decommission Dam: Construction activities could disrupt wildlife behavior in the area for 1 to 2 years, as 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.

Alternative 2 – New Auxiliary Spillway/Proposed Action: Construction activities would result in similar effects as in Alternative 1 prior to dam failure. They would have 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 used prior to rehabilitation of the dam. The shift of the auxiliary spillway to the dam would allow vegetation within the abandoned spillway to transition to grassland or woodland habitat. There would be minor, long-term benefits with this alternative.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.7 THREATENED AND ENDANGERED SPECIES

No-Action Alternative: 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 and impacts surrounding habitats.

Alternative 1 – Decommission Dam: Construction activities related to rehabilitation of the dam would be limited to the area immediately surrounding the existing dam and associated accoutrements. Activities would be unlikely to adversely impact the alligator snapping turtle, as its habitat areas are located at the southern end of the project area. Construction activities may have a short-term adverse impact on habitat for the American burying beetle and the monarch butterfly. See comment below regarding the American burying beetle. Stream channel restoration and riparian corridor vegetation would have long-term benefits by providing additional habitat.

Alternative 2 – New Auxiliary Spillway/Proposed Action: Construction activities for dam rehabilitation would not likely have an adverse effect on threatened and endangered species. As noted in the IPAC Consultation Packet included in Appendix A (January 6, 2025), the USFWS concurred with the NRCS online review/determination. Retention of the impoundment would provide long-term benefits by maintaining existing habitats.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.8 MIGRATORY BIRDS

No-Action Alternative: Ongoing operation and maintenance of the dam would not have an 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.

Alternative 1 – Decommission Dam: 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 2 years 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.

Alternative 2 – New Auxiliary Spillway/Proposed Action: This alternative would have the same effects as Alternative 1 for construction activities. The shift of the auxiliary spillway to the dam would allow vegetation within the abandoned spillway to transition to grassland or woodland habitat. There would be minor, long-term benefits with this alternative.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.9 INVASIVE SPECIES

No-Action Alternative: Invasive species present would continue to be present and would 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.

Alternative 1 – Decommission Dam: Because the species noted are ubiquitous within the project area, if excavated fill from the project area were not removed but used on-site for project related earthwork, construction of the proposed project would not contribute to the spread of vegetative invasive species within or outside the project area. However, 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.

Alternative 2 – New Auxiliary Spillway/Proposed Action: 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.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.10 RIPARIAN AREAS

No-Action Alternative: Operation and maintenance of the dam would result in no effect. Under this alternative, catastrophic failure of the dam and increased flooding within the drainage area would have long-term adverse impacts on riparian areas.

Alternative 1 – Decommission Dam: Construction activities to decommission the dam would have minor, short-term, adverse effects on riparian resources. Restoration of the stream channel and the addition of 100 feet of riparian corridor on each side of the restored stream would have long-term benefits by increasing riparian habitat.

Alternative 2 – New Auxiliary Spillway/Proposed Action: 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 construction of the new auxiliary spillway 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.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.11 LAND USE

No-Action Alternative: 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.

Alternative 1 – Decommission Dam: 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.

Alternative 2 – New Auxiliary Spillway/Proposed Action: There would be no changes in land use within the project area due to rehabilitation of the dam.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.12 CULTURAL RESOURCES AND HISTORIC PROPERTIES

No-Action Alternative: The no action alternative would have the potential to adversely affect historic properties. Potential direct effects resulting from the no action alternative would include the potential for physical damage to both known and unknown archaeological sites and above-

ground historic properties within the APE and potential changes in viewshed that would directly impact a historic property's significance. The potential for indirect effects could include long term effects to currently unknown archaeological sites or historic architectural resources through prolonged exposure to flooding, changes in the overall landscape, and potential destruction within an area that has not been previously inventoried for historic properties. Through the consultation process, no known traditional cultural properties or properties of religious and cultural significance have been identified; however, under the no action alternative the potential for effects could be far reaching and therefore affect currently unidentified resources. Past, present, or reasonably foreseeable actions, such as continued flooding, occasional dam repairs, or no repair to the dam structure at all, could result in a cumulative effect to historic properties resulting in changes to the physical structure, environment, or nature of identified historic properties.

Alternative 1 – Decommission Dam: Within this APE, a historic architectural survey, including an assessment of the dam structure and its accoutrements, and an archaeological survey were undertaken. Through coordination efforts, it was also found that there were no traditional cultural properties or properties of religious and cultural significance within the APE. The NRCS has determined that there are no historic properties meeting the NRHP criteria within the APE and therefore there would be no effect to historic properties or cultural resources resulting from this alternative.

Alternative 2 – New Auxiliary Spillway/Proposed Action: This alternative would have the same effects as Alternative 1 with the dam in place.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 1 with the dam in place.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 1 with the dam in place.

Comment:

Section 106 consultation was conducted with the OKSHPO, OAS, Cherokee Nation, Osage Nation, and the United Keetowah Band of Cherokee. The negotiated APE was defined and a methodology for the completion of cultural resources survey was developed. No traditional cultural properties, properties of religious and cultural significance, cultural landscapes, or culturally significant plants were noted through consultation. The NRCS, in consultation with the OKSHPO, determined that due to the construction date of 1969, FWRS No. 2 and accoutrements warranted historic property documentation FWRS No. 2, and its fixtures were evaluated using NRHP criteria. NRCS determined that FWRS No. 2 did not meet the threshold for significance under NRHP Criteria A-D to warrant listing on the NRHP. As stipulated by the OKSHPO, a Historic Property Resource Inventory form was completed. The preferred alternative involves a structural upgrade (rehabilitation). The cultural resources surveys did not identify resources eligible for or listed in the NRHP within the APE. These findings were coordinated with the

consulting parties to the project including the OKSHPO, the OAS, and the Cherokee Nation. Based on this information, NRCS has determined that there are no historic properties within the APE and the project would therefore have no effect to historic properties. The Cherokee Nation has provided concurrence that no components related to culturally sensitive resources are located within the APE, and do not object to the project proceeding. The OKSHPO also concurred, in correspondence dated November 19, 2024, with the project findings and the NRCS determination that there would be No Historic Properties Affected as a result of project implementation.

If cultural resources were to be discovered during implementation, then policies and procedures found in NRCS General Manual 420 part 401, and the National Cultural Resources Procedures Handbook (H_190_601) would be initiated.

6.3.13 PUBLIC HEALTH AND SAFETY

No-Action Alternative: The four 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.

Alternative 1 – Decommission Dam: Removal of the dam would result in the seven locations identified in the breach zones being at risk from flooding during the 100-year storm. Floodproofing or buyout of the three residential structures and modifications to the four roads downstream of the dam would provide short-term benefits. Long-term adverse impacts could be incurred 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.

Alternative 2 – New Auxiliary Spillway/Proposed Action: There would be no new effects, as the same level of protection from a breach would be provided as under existing conditions. The three residences and four roads present within the breach zone would continue to experience flooding during some storm events.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.14 SOCIOECONOMICS

No-Action Alternative: 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.

Alternative 1 – Decommission Dam: 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.

Alternative 2 – New Auxiliary Spillway/Proposed Action: 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 of the dam would provide flood protection, which would have long-term, beneficial impacts to downstream structures and roads.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.15 SCENIC BEAUTY

No-Action Alternative: 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.

Alternative 1 – Decommission Dam: 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.

Alternative 2 – New Auxiliary Spillway/Proposed Action: 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.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.3.16 RECREATION

No-Action Alternative: 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 swimming and fishing.

Alternative 1 – Decommission Dam: Removal of the dam and the reservoir would have long-term adverse effects on incidental, water-related recreation.

Alternative 2 – New Auxiliary Spillway/Proposed Action: Construction activities and drawdown of the impoundment would have minor, short-term, adverse effects on recreational activities dependent upon timing of construction. There would be no long-term effects on recreation with rehabilitation of the dam.

Alternative 3- New Auxiliary Spillway, Lower High Stage PSC: This alternative would have the same effects as Alternative 2.

Alternative 4 - New Auxiliary Spillway, Single Stage PSC: This alternative would have the same effects as Alternative 2.

6.4 CUMULATIVE EFFECTS

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. PR&G (DM 9500-13) requires cumulative effects must be addressed because their environmental impacts may combine with the impacts of the alternatives. Section 4.2 provides an inventory of existing resources potentially impacted, and Section 6.3 analyzes the potential environmental impacts to those resources by each alternative.

6.4.1 PAST ACTIONS

Throughout history, natural and manmade events have altered aquatic and terrestrial habitats within the Scraper Hollow Creek Watershed. Prior to construction of FWRS No. 2, Scraper Hollow 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. 2, riverine habitat was converted to an open water reservoir maintained by the dam. Implementation of the dam and changes in land use to support agriculture had effects on the Scraper Hollow Creek Watershed, resulting in modification of flow, habitat loss, and introduction of invasive species.

6.4.2 ONGOING AND PRESENT ACTIONS

Section 4.2 describes the current condition of the Scraper Hollow Creek watershed. Conditions noted in this section capture past cumulative effects given that these actions and their effects have contributed to the current conditions of the resources.

6.4.3 FUTURE ACTIONS UNDER CURRENT O&M

FWRS No. 2 does not meet current State and NRCS high-hazard dam safety criteria, and there is potential for dam failure under current O&M conditions. There are identified deficiencies involving the hydraulic capacity of the dam and integrity and stability of the auxiliary spillway. The existing dam cannot pass the 6-hour and the 24-hour freeboard hydrograph without

overtopping, and it would fail to pass 50 percent of the probable maximum flood without infringing on the State-required minimum freeboard requirement of 1 foot.

Integrity analysis performed on the auxiliary spillway using the 6-hour and 24-hour freeboard hydrographs in an updated SITES model also showed significant erosion throughout the auxiliary spillway, with the auxiliary spillway being breached for both hydrographs. The flow depth through the auxiliary spillway was 14.0 feet for the 6-hour freeboard hydrograph with a maximum velocity of approximately 20.8 feet per second. The 6-hour stability design hydrograph computations resulted in a soil effective stress value of 0.589 psf and a vegetal stress value of 3.28 psf, both above the TR-60 limits of 0.040 psf and 4.20 psf, respectively. Therefore, FWRS 2 does not meet the TR-60 auxiliary spillway stability requirements due to soil erosion.

6.4.4 CUMULATIVE IMPACTS ANALYSIS

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

6.4.4.1 SOILS

Under the no action alternative, 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.

There would be no cumulative effects under alternative 1 (decommissioning), alternative 2 (new auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC).

6.4.4.2 WATER QUALITY

Under the no action alternative, there would be no cumulative effects with the dam in place. Dam failure could result in impairment to water quality of downstream reaches, as sediment from the breach of the earthen dam would be released and would migrate downstream. Additional sediment could occur during storm events, which would result in increased flooding. This could potentially contribute cumulative adverse effects to water quality. Alternative 1 (decommissioning) would benefit water quality through restoration of riparian buffers adjacent to the restored reach of stream.

For alternative 2 (new auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC), the cumulative effects would be the same as the no action alternative with the dam present, as these would not contribute to the release of additional sediment or pollutants into Scraper Hollow Creek that could cause impairment to downstream waters with the dam and reservoir in place.

The overall net cumulative effects on water quality by all of the alternatives would likely be long-term, direct, adverse, and minor.

6.4.4.3 WOTUS, WETLANDS, AND SPECIAL AQUATIC SITES

Under the no action alternative, 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 loss of connectivity to water and increased flooding.

The cumulative effects of alternative 1 (decommissioning) would be long-term, direct, and beneficial, with the restoration of the stream channel and adjacent riparian habitat.

Cumulative effects of alternative 2 (new auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) would be the same as the no action alternative with the dam in place. There would be no change to cumulative effects than what has happened with construction of the dam.

6.4.4.4 FLOODPLAIN MANAGEMENT

The no action alternative and alternative 1 (decommissioning) would potentially contribute cumulative adverse effects to floodplain management due to extreme storm events and increased flooding resulting in an enlarged floodplain. Cumulative impacts would be long-term, direct, adverse, and major.

Under alternative 2 auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) cumulative effects would be direct, long-term, minor, and localized to the downstream floodplain, as the long-term risk of flood damages to the downstream residence and roads would be reduced in the absence of a breach.

6.4.4.5 CLIMATE

None of the alternatives would contribute directly to cumulative GHG emissions. Over the 100-year lifespan of the project, the increasing accumulation of GHGs and associated global warming are projected to have pronounced effects on regional climate and hydrology. While cumulative effects related to climate change are anticipated to be moderate to major in the long term, none of these alternatives would make detectable contributions to these projected climate change impacts.

6.4.4.6 FISH AND WILDLIFE HABITAT

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 and climate change. Cumulative impacts from climate change could affect fish and wildlife in a variety of ways, including habitat destruction due to more intense and frequent

storm events, droughts and heat stress, invasive species, pathogens and diseases, and shifts in habitat ranges due to changing climate conditions. However, the overall reduction in suitable habitat is likely to be small in comparison to the available habitats present within the project area and the watershed.

Restoration of the stream and associated riparian habitat in alternative 1 (decommissioning) would have long-term beneficial cumulative impacts with the increased diversity of habitat created. Cumulative impacts related to climate change would be the same as the no action alternative.

Alternative 2 (auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) would protect existing habitats and, therefore, would not contribute cumulative effects to fish and wildlife. As with the no action alternative, climate change could adversely impact habitats and species. Both of these alternatives would contribute minor cumulative impacts to fish and wildlife.

6.4.4.7 THREATENED AND ENDANGERED 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.

6.4.4.8 MIGRATORY BIRDS

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 migratory birds.

6.4.4.9 INVASIVE SPECIES

The no action alternative with the dam in place would not contribute to cumulative effects related to invasive species. BMPs and actions that would discourage the spread of invasive species and support native vegetation and wildlife would potentially contribute cumulative beneficial effects. Other actions like changes in land use, loss of habitat due to flooding, and climate change would potentially contribute cumulative adverse effects. Climate change could contribute to invasives by potentially fostering the arrival of new and exotic species in the region. Dam failure could contribute to the presence of invasives by presenting opportunities for invasive species to colonize new areas damaged by the breach and increased flooding. However, the amount of disturbed space would likely be relatively small, and the chance of invasive species being introduced is low.

As with the no action alternative, alternative 1 (decommissioning), alternative 2 (auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) in tandem with other cumulative actions would contribute negligible cumulative effects to invasive species.

6.4.4.10 RIPARIAN AREAS

The no action alternative with the dam in place, alternative 2 (auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) would not contribute to cumulative effects, as impacts to riparian areas due to the original placement of the dam and reservoir would remain.

Dam failure under the no action alternative would adversely impact established riparian areas.

Alternative 1 (decommissioning) would remove impacts from construction of the original dam and be complemented by restoration of the stream and associated riparian habitat.

Climate change could likely adversely impact riparian habitats regardless of the actions of any of these alternatives.

6.4.4.11 LAND USE

The no action alternative with the dam in place, alternative 2 (auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) would not contribute to cumulative effects, as they would continue past impacts related to conversion of pasture, grasslands, and forests to the dam and its associated accoutrements and the reservoir.

Dam failure under the no action alternative would adversely impact areas in the downstream breach inundation area, which are primarily grassland, pasture, and forest.

Alternative 1 (decommissioning) would have a cumulative beneficial effect, as it would reverse the landcover and use from the initial dam and reservoir and convert it to woody riparian vegetation. Existing grasslands and pastures would remain.

6.4.4.12 CULTURAL RESOURCES AND HISTORIC PROPERTIES

Through the consultation process, no known traditional cultural properties or properties of religious and cultural significance have been identified; however, under the no action alternative the potential for effects could be far reaching and, therefore, affect currently unidentified resources. Past, present, or reasonably foreseeable actions, such as continued flooding, occasional dam repairs, or no repair to the dam structure at all, could result in a cumulative effect to historic properties resulting in changes to the physical structure, environment, or nature of identified historic properties.

Through coordination efforts, it was also found that there were no traditional cultural properties or properties of religious and cultural significance within the APE. As determined through consultation, there are no historic properties meeting NRHP criteria within the APE. Therefore, there would be no historic properties affected resulting from alternative 1 (decommissioning).

Alternative 2 (auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) would have the same cumulative effects as the no action alternative with the dam in place.

6.4.4.13 PUBLIC HEALTH AND SAFETY

The no action alternative with the dam in place, alternative 2 (auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) would potentially contribute to adverse cumulative impacts related to public health and safety due to past, present, or reasonably foreseeable activities within the watershed. However, the dam would contribute minor to moderate effects by continuing to provide existing flood protection to the residence and roads within the downstream breach inundation area.

Dam failure under the no action alternative would adversely affect public health and safety due to breach flooding. Breach flows would inundate one residence and four roads within the breach zone, resulting in substantial damage to the home and preventing emergency responder access along the roads until floodwaters had receded. These cumulative effects would be adverse and additive.

Alternative 1 (decommissioning) 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.

6.4.4.14 SOCIOECONOMICS

The no action alternative with the dam would have no cumulative effects on local or regional socioeconomics. Dam failure would result in minor cumulative adverse effects due to costs incurred for cleaning and repair after failure.

Alternative 1 (decommissioning), alternative 2 (auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) 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 with the increased demand for goods and services. Local businesses (retail, restaurant, etc.) would experience a temporary increase in demand from construction workers. However, given the scale of this project, cumulatively it would not noticeably influence immigration, housing availability, or earnings. Beneficial effects experienced would not persist beyond the construction of the project and would not be significant.

6.4.4.15 SCENIC BEAUTY

The no action alternative with the dam, alternative 2 (auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary

spillway, single stage PSC) 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.

Dam failure under the no action alternative would result in a breach wave that could damage downstream areas and alter the existing viewshed. The extent of damage would depend on the severity of the dam failure. In the long term, downstream vegetation and habitats would grow back resembling the rural, natural character that is present. As noted above, this alternative would contribute negligible cumulative impacts to scenic beauty.

Alternative 1 (decommissioning) 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.

6.4.4.16 RECREATION

The no action alternative with the dam, alternative 2 (auxiliary spillway/proposed action), alternative 3 (new auxiliary spillway, lower high stage PSC), and alternative 4 (new auxiliary spillway, single stage PSC) would have no cumulative effects on recreation, as opportunities for incidental recreational activities would continue as they are under existing conditions.

Dam failure under the no action alternative and alternative 1 (decommissioning) would have long-term cumulative adverse effects on water-related incidental recreation with the loss of the dam and the reservoir.

7.0 CONSULTATION, COORDINATION, AND PUBLIC PARTICIPATION

The local sponsor held all agency and public meetings throughout the planning process, with assistance from NRCS. Public engagement efforts will continue throughout the engineering detailed design and land rights phase of this project, to ensure all individuals are informed and treated fairly.

7.1 AGENCY COORDINATION AND CONSULTATION

An agency scoping meeting and site visit was held on September 26, 2023. Approximately 15 people attended. Meeting participants provided additional information on the history of record flood events, current uses of the reservoir for agriculture (livestock and hay), safety concerns for area roads used as school bus routes, and flooding of downstream structures, including a church and road bridge. They expressed concern about losing land should the pool size increase with the project. Participants also expressed a desire to maintain the structure for continued function of flood reduction, erosion reduction, downstream roads protection, bus routes maintenance, and

future development. They also expressed interest in the potential for recreation or public water supply uses.

The following is a list of agencies with which the team conducted project coordination and consultation. Consultation correspondence is in Appendix A.

7.1.1 ENVIRONMENTAL/WILDLIFE CONSULTATION

US Fish and Wildlife Service Section 7 T&E Species Consultation is an ongoing process, which NRCS staff initiated early in the planning process. NRCS sent a letter to USFWS on September 6, 2023, inviting staff to participate in an agency scoping meeting during the initial planning stage of this project. No USFWS staff attended the agency scoping meeting held on September 26, 2023, at the Adair County Conservation District office.

Agency input and consultation was initiated by NRCS staff with a letter dated July 5, 2024. Staff initiated an online project review through USFWS IPAC on the same date. The USFWS responded on November 7, 2024, with an online project review concurrence letter. The conclusions resulted in a "not likely to adversely affect/modify" determination for listed species and critical habitat in relation to potential effects of the proposed project. USFWS sent confirmation of the validation of the concurrence letter on November 25, 2024. See Appendix A for the USFWS project review package. NRCS staff will reinitiate consultation with USFWS if affects to currently listed species change or new species or critical habitats become listed within the proposed project area (50 CR 402.16).

US Army Corps of Engineers consultation is also an ongoing process. NRCS sent a letter to USACE on September 6, 2023, inviting staff to participate in an agency scoping meeting during the initial planning stage of this project. No USACE staff attended the agency scoping meeting held on September 26, 2023, at the Adair County Conservation District office. USACE provided initial project correspondence dated September 21,2023. The correspondence noted general permit requirements and follow up actions, if needed. See Appendix A for USACE correspondence. NRCS staff will continue to consult with USACE staff as needed throughout project design and construction to ensure regulatory compliance and permit requirements are met.

In addition to the Federal agencies noted above, NRCS and the district regularly corresponded with the following State agencies.

- Oklahoma Conservation Commission. A member of the Oklahoma Conservation Commission regularly attended project meetings.
- Oklahoma Department of Wildlife Conservation

7.1.2 CULTURAL RESOURCES CONSULTATION

Section 106 consultation was conducted with the OKSHPO, OAS, Caddo Nation, Choctaw Nation, Muscogee Nation, Osage Nation, Quapaw Nation, and the Wichita and Affiliated Tribes. Section

106 consultation was initiated by the NRCS on March 8, 2023. Initial consultation letters were sent to the following agencies and Tribes (Appendix A):

- Oklahoma State Historic Preservation Office
- Oklahoma Archaeological Survey
- Cherokee Nation
- Osage Nation
- Quapaw
- United Keetowah Band of Cherokee

In these letters, the NRCS defined a proposed scope of work to include a historic architectural survey of the dam and a pedestrian survey with shovel testing to address the potential for archaeological deposits. The APE was defined as the maximum extent of the pool (using the top of dam elevation) and potential breach area (to the NRCS easement limits), where pedestrian surveys would be performed using 30 meter transect-spacing with shovel test pits every 30 meters. OKSHPO provided a letter of concurrence on May 3, 2024, which included exclusion of Scraper cemetery from the APE.

A second consultation package was submitted to the above-documented parties on February 29, 2024, following up on the initial consultation from March 2023. The Cherokee Nation provided a letter of concurrence regarding the need to conduct a cultural resource survey. A third consultation letter was sent to the Cherokee Nation, Osage Nation, Quapaw, and United Keetowah Band on September 17, 2024. The Quapaw provided a letter on September 25, 2024, that the project area is outside of their tribal area of interest. OKSHPO provided a letter of concurrence on October 22, 2024, which noted the eligibility of the Scraper cemetery for listing on the National Register of Historic Places. OAS provided a letter of concurrence on November 19, 2024, and deferred opinion on overall project effect to the OKSHPO. The Cherokee Nation provided a letter on March 27, 2025, concurring with OKSHPO on the eligibility of the Scraper Cemetery for its association with the Trail of Tears, and concurred that the cemetery is outside of the APE and would not be affected by the proposed rehabilitation project.

The Cherokee Nation THPO and OKSHPO were engaged collaboratively for Section 106 consultation and APE development. Since the 2020 *McGirt* decision by the US Supreme Court (140 S Ct 2452), NRCS has continued the pre-2020 status quo form of consultation. This protocol was adopted in the absence of the Cherokee THPO asserting all Section 106 or historic preservation decision-making responsibilities for “all lands within the exterior boundaries of any Indian Reservation”, per the NHPA (54 USC 300319(1); 54 USC 302702). The *McGirt* decision about the Major Crimes Act (18 USC 1153) jurisdiction has created complex issues, which in turn created more complex issues well beyond state sovereignty versus tribal sovereignty. The majority justices noted that there would be a period of adjustment. The dissenting justices saw *McGirt* having a destabilizing effect on the state government of Oklahoma and all that touched Indian

affairs, including regulatory. This is so to a certain degree with Section 106 consultation. NRCS, Cherokee Nation THPO, and OKSHPO are working through one of these complex issues in the absence of a formal Section 106 consultation protocol between these parties. The Cherokee Nation THPO was consulted on 8 March 2023, 29 February 2024, and 17 September 2024. To substantiate the presence of the existing collaborative consultation protocol, the Cherokee Nation THPO requested a copy of the OKSHPO's Section 106 comments as part of their review (Appendix A, THPO letter dated March 14, 2024). In correspondence dated 27 March 2025, The Cherokee RHPO approved the project and concurred with the project findings.

No additional agency or Tribal correspondence has been received.

7.2 PUBLIC MEETINGS

A public participation plan was developed and approved at the initiation of this project and has been followed throughout the planning process. The goal of the plan was to integrate public involvement and input throughout the planning process.

A public scoping meeting was held on September 26, 2023, following the agency scoping meeting and site visit. A total of 13 people participated in the open house meeting, in which participants were provided information on the project purpose and need, planning process and schedule, and existing conditions. Meeting participants expressed an interest in the specific project location, the planning process and funding, and impacts to agriculture.

The second public meeting was held on April 3, 2024, to present the results of the dam rehabilitation alternatives analysis and to obtain input on potential issues or concerns. Nine people attended the open house meeting. Participants expressed concerns about the necessity of maintaining access for landowners to property on both sides of the dam, property damage above and below the dam, and the importance of not removing any agricultural land for the project.

8.0 PROPOSED ACTION (PREFERRED ALTERNATIVE)

8.1 RATIONALE FOR PROPOSED ACTION (PREFERRED ALTERNATIVE)

Alternative No. 2 is the proposed action (preferred alternative), which is to rehabilitate the dam to meet current NRCS and State of Oklahoma safety and performance standards for a high-hazard potential dam. The selected plan meets the identified purpose and need for the project and significantly reduces the potential risk to human life. The project sponsor prefers the selected plan for the following reasons:

- Provides downstream flood protection for agricultural producers and landowners for an additional 100 years.
- Reduces the threat to loss of life and property damage to one residence and four roads identified within the static breach zone.

- Provides a structure that is manageable by the Adair County Conservation District in regard to maintenance capacity and cost.
- Retains the existing aquatic and terrestrial habitats in and around the reservoir.
- Leverages Federal resources to implement the planned works of improvement.

8.2 MEASURES TO BE INSTALLED

The proposed action (preferred alternative) consists of structural rehabilitation of Scraper Hollow FWRS No. 2 to meet current NRCS and State of Oklahoma safety criteria and performance standards for a high-hazard dam. The designed life of the dam would be 100 years. Structural features and costs for the proposed action are presented in Economic and Structural Tables 1 through 6.

8.2.1 PRINCIPAL SPILLWAY

The existing principal spillway is a 30-inch reinforced concrete pipe conduit with a 3-foot x 9-foot x 25-foot dual-stage inlet tower. Proposed improvements include slip-lining the pipe with a 30-inch HDPE pipe. The principal spillway crest would remain unchanged at 764.2 feet.

8.2.2 AUXILIARY SPILLWAY

The existing auxiliary spillway is composed of an earthen spillway near the right dam abutment. Under this alternative, the proposed modifications would include widening the auxiliary spillway from a width of 50 feet to 250 feet. Because there is not enough space to widen the auxiliary spillway within its current footprint, a new stepped RCC spillway would be installed in the middle of the dam. Additionally, the spillway crest would be lowered 3.9 feet, to an elevation of 998.1 feet. The top of the dam would be extended into the existing auxiliary spillway footprint to fill it in. Geotechnical and structural aspects were not evaluated as part of this analysis and will need to be completed as part of design.

8.2.3 MITIGATION

Mitigation measures include erosion control measures and revegetation of all disturbed areas and reduction of the conservation pool elevation during construction to the minimum level necessary to complete the project. Implementation of the preferred alternative would require the following permits:

- Section 404 of the CWA permit;
- Section 401 State Water Quality Certification;
- Section 402 NPDES permit;
- Land disturbance permit with stormwater pollution prevention plan and/or erosion and sedimentation control plan; and
- All required local and state construction permits.

If the project is verified by nationwide permit or authorized by individual permit and would result in over 0.1 acre of loss to jurisdictional wetlands or open waters, or over 0.03 acre of loss to streams, compensatory mitigation would generally be required for unavoidable impacts to WOTUS. Acceptable forms of mitigation would include the purchase of mitigation bank credits from a private mitigation bank or in-lieu fee bank that services the Lower North Canadian HUC-8 Watershed (11100303) with sufficient stream and wetland bank credits. The USACE Tulsa District uses the Oklahoma stream mitigation method to calculate the required number of mitigation credits to offset losses to jurisdictional streams.

As required by NEPA and NRCS planning policy, Section 7 Endangered Species Act consultation and Section 106 of the National Historic Preservation Act have been completed for the planning phase of this project and documented throughout the Plan-EA. Ongoing consultation would be carried out in accordance with 36 CFR 800.13, Post Review Discoveries..

8.2.4 INSTALLATION SEQUENCE

The sequence of installation will include a 2-year design period and a 1-year land right acquisition period in conjunction with obtaining necessary permits. Construction is estimated to be 1 year.

Installation/construction sequence of the proposed dam improvements following the completion of the design and construction documents is anticipated as follows:

- Advertise project for bid (4 weeks)
- Select construction contractor and get under contract (4 weeks)
- Mobilize construction equipment (2 weeks)
- Install temporary erosion and sediment control measures (4 days)
- Lower reservoir level (2 weeks)
- Install new principal spillway inlet tower (7 weeks)
- Raise dam and construct new auxiliary spillway (12 weeks)
- Install permanent erosion control measures and restore project site (1 week)

8.2.5 COSTS

NRCS will be responsible for technical assistance for engineering design and 65 percent of project costs, with an estimated total of $7,669,590. The sponsor would be responsible for 35 percent of the project costs, including all necessary land rights, for an estimated total of $3,274,000. Economic Table 2 provides a detailed breakout of the estimated costs to be incurred by NRCS and the sponsor.

8.2.6 METHOD OF CONTRACTING

Projects are normally locally awarded contracts.

8.2.7 FINANCING OF THE PROJECT

Federal funding for providing technical and financial assistance for implementation of this project is dependent upon appropriation of funds for this purpose. The sponsor has the needed authority from the State to carry out the plan.

8.3 ACTIONS REQUIRED PRIOR TO PROJECT IMPLEMENTATION

There are a number of actions that the sponsor will need to take prior to project implementation, including:

- Enter into a memorandum of understanding with the NRCS, which establishes a maximum value for non-Federal in-kind contributions.
- Enter into an O&M agreement with the NRCS for the life of the project.
- Update the 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 the NRCS National Operation and Maintenance Manual Part 500, Subpart F, and meet applicable Oklahoma dam safety requirements. The EAP will be prepared prior to execution of fund-obligating documents for construction and shall be reviewed and updated by the sponsor annually.
- Acquire all land rights, easements, or rights-of-way needed in connection with the works of improvement. The minimum land rights area upstream of the dam must be for all areas below the elevation of the top of dam. If the sponsor is unable to obtain the land rights to the top of dam elevation, it will assume the potential risk of flood damage to the real property between the flowage rights and the top of dam elevation.
- Obtain all necessary water, mineral, and other resource rights, and all necessary local, State and Federal permits that may be required for installation and operation of the dam.
- Relocate the dam road to provide landowner access for agricultural purposes and to provide dam maintenance.
- Develop a post review discovery and monitoring plan that follows the Oklahoma NRCS' post-review discovery and monitoring plan. The plan should describe 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 instructions will be relayed to the contractor when the contract is awarded. NRCS contracting officer's representative and NRCS construction inspectors have been trained in Oklahoma cultural resources procedures, which include provisions for the discovery of cultural materials and human remains. In accordance with 36 CFR 800.13, the NRCS cultural resources coordinator would be contacted, and all construction would cease in a 50-foot radius of the discovery upon detection. The coordinator would examine the discovery location to determine if the discovery requires further assessment. Simultaneously, the Advisory

Council on Historic Preservation, OKSHPO, Oklahoma State Archaeologist, and appropriate Tribal entities would be contacted within 48 hours of the discovery. With these partners, NRCS would determine the actions to resolve the adverse effects. If the finding of the effect for the project were likely to be "no adverse effect," a finding of "no adverse effect" document would be prepared and shared with the consultation partners. If the effects are unknown, NRCS would enter into an agreement document with the consultation partners for identification, evaluation, and assessment of the effects. The agency official would provide the ACHP/SHPO/State Archaeologist/Tribes a report of the remedial actions when they were completed.

8.4 OPERATION, MAINTENANCE, REPAIR, AND/OR REPLACEMENT

Operation, maintenance, and repair of the works of improvement are the responsibility of the sponsor. Work will be performed in accordance with the O&M agreement. An O&M plan will be prepared using the NRCS's National Operation and Maintenance Manual prior to issuing invitations to bid for construction. The term of the O&M agreement will be for 100 years, the life of the project. The annual O&M cost is estimated to be $7,400.

TABLE 4. COMPARISON OF STRUCTURAL PHYSICAL DATA

Item	As-Built[1/]	Existing[2/]	Proposed Plan
FWRS No. 12			
Top-of-dam Elevation	1,005.02	1005.02	1005.02
Auxiliary Spillway Crest Elevation	1,002.02	1,002.02	998.33
Detention Pool Surface Area (ac)	38.1	38.1	32
Principal Spillway Crest Elevation	978.12	978.12	978.12
Principal Spillway Crest Surface Area (ac)	9.2	9.2	9.2
Storage (acre-feet) [3/]			
Sediment Submerged	N/A	N/A	N/A
Aerated Sediment	N/A	N/A	N/A
Total Sediment Storage	59	94.2	94.2
Detention Storage [4/]	530.82	495.62	480.27
Total Storage (Auxiliary Spillway Crest) [5/]	589.82	589.82	574.47
Total Storage (Effective top-of-dam)	706.7	741.9	742.2
Principal Spillway Diameter (in)	33	33	30
Principal Spillway Capacity (cfs)	120.7	120.7	86.1
Auxiliary Spillway Width (Feet)	50	50	250

[1/] Values from 1968 as-built plans, elevations assumed to be NGVD 29, datum adjusted by +0.52'.

[2/] Surface area and storage volume based on survey data obtained May 2024 (NAVD 1988).

[3/] Aerated sediment volumes were not included in the 1957 workplan or as-builts. 10 percent aerated sediment assumed.

[4/] Flood storage at auxiliary spillway crest elevation.

[5/] Flood and sediment storage at auxiliary spillway crest elevation

[6/] Top of dam elevation based on OWRB criteria

8.5 ECONOMIC AND STRUCTURAL TABLES

The following economic and structural tables summarize the watershed project information for the proposed action (Alternative 2).

ECONOMIC TABLE 1: ESTIMATED INSTALLATION COST

Scraper Hollow Creek Watershed, Oklahoma (Dollars)[1/]

Works of Improvement	Estimated Costs		
Alt. 2 FWRS No. 2	**PL 83-566 Funds**	**Other Funds**	**Total**
Project Cost	$7,779,000	$3,164,600	$10,943,600
Total Project	**$7,779,000**	**$3,164,600**	**$10,943,600**

[1/] Price base: 2024. Prepared July 2024.

ECONOMIC TABLE 2: ESTIMATED COST DISTRIBUTION – WATER RESOURCE PROJECT MEASURES

Scraper Hollow Creek Watershed, Oklahoma (Dollars)[1]

Installation Cost - Public Law 83-566		
Works of Improvement FWRS No. 2	Construction	$5,863,400
	Engineering	$885,300
	Real Property Acquisition	$0
	Project Admin. Costs	$1,030,300
	Total Public Law 83-566	**$7,779,000**
Installation Cost – Other Funds		
Works of Improvement FWRS No. 2	Construction	$2,988,700
	Engineering	$135,000
	Real Property Rights	$1,500
	Project Administration	$32,000
	Real Property Rights	$0
	Annual O&M	$7,400
	Total Other Funds	**$3,164,600**
	TOTAL Installation Costs	**$10,943,600**

1/ Discount rate 2.75 with a 102 year period of analysis. Price base: 2024. Prepared July 2024.

STRUCTURAL TABLE 3: DAMS WITH PLANNED STORAGE CAPACITY

Scraper Hollow Creek Watershed, Oklahoma

Item	Unit	FWRS No. 2
Class of structure		High Hazard
Seismic zone / Peak ground acceleration	Gravities (g)	Zone 1 / 0.15
Uncontrolled drainage area	mi^2	2.06
Controlled drainage area	mi^2	1.96
Total drainage area	M63	1.96
Runoff curve No. (1-day) (AMC II)	AMC 2/3	63
Time of concentration (T_c)	hrs	1.29
Elevation top dam	ft (NAVD88)	1005.03
Elevation crest auxiliary spillway	ft (NAVD88)	998.3
Elevation principal spillway inlet	ft (NAVD88)	978.12
Auxiliary spillway type		Roller compacted concrete
Auxiliary spillway bottom width	ft	50
Auxiliary spillway exit slope	percent	5.73
Maximum height of dam	ft	48
Volume of fill [1]	yd^3	98,447
Total capacity [2]	acre ft	799.4
Sediment submerged	acre ft	59
Sediment aerated	acre ft	55
Beneficial use (identify use)	acre ft	N/A
Floodwater retarding	acre ft	460.47
Surface area		
Sediment pool [3]	acres	9
Beneficial use pool	acres	N/A
Floodwater retarding pool [2]	acres	38

Item	Unit	FWRS No. 2
Principal spillway design		
Rainfall volume (1-day)	in	8.42
Rainfall volume (10-day)	in	13.7
Runoff volume (10-day)	in	5.21
Capacity	ft^3/s	86.1
Dimensions of conduit	ft/in	30
Type of conduit		Reinforced concrete pipe slip-lined with HDPE
Frequency operation-auxiliary spillway	percent chance	1
Auxiliary spillway hydrograph		
Rainfall volume	in	11.3
Runoff volume	in	6.41
Storm duration	hrs	6
Velocity of flow (Ve)	ft/s	6.08
Max. reservoir water surface elevation	ft (NAVD88)	1005.3
Freeboard hydrograph		
Rainfall volume	in	26.1
Runoff volume	in	20.17
Storm duration	hrs	6
Max. reservoir water surface elevation	ft (NAVD88)	1005.3
Capacity equivalents		
Sediment volume	in	1.04
Floodwater retarding volume	in	4.19
Beneficial volume	in	N/A

Prepared July 2024.

ECONOMIC TABLE 4: AVERAGE ANNUAL NED COSTS

Scraper Hollow Creek Watershed, Oklahoma (Dollars)[1/]

Evaluation Unit	Project Outlays		
	Amortization of Installation Cost[2/]	Operation, Maintenance and Replacement Cost	Total
FWRS No. 2	$320,900	$7,400	$328,300
Grand Total[3/]	**$320,900**	**$7,400**	**$328,300**

[1/] Price base: 2024. Prepared July 2024.

[2/] Amortized over 100 years at a 2024 discount rate of 2.75 percent.

ECONOMIC TABLE 5: ESTIMATED AVERAGE ANNUAL FLOOD DAMAGE REDUCTION BENEFITS

Scraper Hollow Creek Watershed, Oklahoma (Dollars)[1/,2/,3/]

Damage Category	Estimated Average Annual Damages without Project[3/]	Estimated Average Annual Damages with the Project[3/]	Estimated Average Annual Benefits
Structures	$22,100	$22,000	$100
Crops and Pastureland	$100	$100	$100
Road Crossings	$7,500	$6,900	$600
Roads	$95,500	$96,800	($1,500)
Erosion and Sedimentation	$15,600	$2,200	$13,400
Total[4/]	**$140,800**	**$128,000**	**$12,700**

[1/] Price base: 2024. Prepared July 2024.

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

[3/] Damages and benefits will accrue from floods of greater magnitude than the 1,000-year frequency event, but these were not evaluated.

ECONOMIC TABLE 6: COMPARISON OF BENEFITS AND COSTS

Scraper Hollow Creek Watershed, Oklahoma (Dollars)[1/]

Works of Improvement	Average Annual Benefits[2/]	Average Annual Cost[3/]	Benefit/Cost Ratio	Net Benefit
Alternative 2, FWRS No. 2	$12,700	$328,300	0.04	($315,600)

1/ Price base: 2024. Prepared July 2024.

2/ From Table 5

3/ From Table 4

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10.0 LIST OF PREPARERS

The table below identifies the individuals who were directly responsible for providing significant input into the preparation of the Plan-EA, along with their experience. Appreciation is extended to the many individuals, agencies, and organizations for their input, assistance, and consultation, without which this document would not have been possible.

Name	Present Title	Education	Years of Exp.	Licenses and Registrations
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Ad Astra				
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Name	Present Title	Education	Years of Exp.	Licenses and Registrations
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The draft watershed plan and environmental evaluation was reviewed and concurred by State staff specialists having responsibility in agronomy, soils, biology, forestry, geology, and engineering. This review was followed by review of the document by the National Watershed Management Center.				

11.0 DISTRIBUTION LIST

Comments were requested on the Draft Supplemental Plan-EA from the following agencies and organizations.

Federal Agencies	Response Received
U.S. Army Corps of Engineers	
U.S. Department of Agriculture	
U.S. Department of the Interior, Fish and Wildlife Service	
U.S. Environmental Protection Agency	
Federal Emergency Management Agency	

Native American Tribes

Caddo Nation Tribal Historic Preservation Office (THPO)

Cherokee Nation

Choctaw Nation of Oklahoma THPO

Muscogee Nation THPO

Osage Nation THPO

Quapaw Tribe of Indians THPO

Wichita and Affiliated Tribes THPO

State Agencies

Oklahoma Archeological Survey

Oklahoma Conservation Commission

Oklahoma State Historic Preservation Office (SHPO)

Oklahoma Water Resources Board

Other

12.0 INDEX

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