

**FINAL
SUPPLEMENTAL WATERSHED PLAN NO. 1
AND
ENVIRONMENTAL ASSESSMENT**

**REHABILITATION OF
FLOODWATER RETARDING STRUCTURE NO. 7
SWITZLER CREEK WATERSHED
OSAGE COUNTY, KANSAS
OCTOBER 2009**

REVISED JUNE 2010



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(6)

SUPPLEMENTAL WATERSHED AGREEMENT

between

Switzler Creek Watershed District No. 63
Sponsoring Local Organization (SLO)

Osage County Soil Conservation District
Sponsoring Local Organization (SLO)

and the

U.S. Department of Agriculture
Natural Resources Conservation Service (NRCS)

Whereas, the Switzler Creek Watershed Work Plan was prepared under the authority of the Soil Conservation District Act of 1935 (Public Law [P.L.] 46, 74th Congress) with funds initially appropriated in 1953 by the 83rd Congress, and

Whereas, the Osage County Soil Conservation District Board of Supervisors agreed by resolution to sponsor the project on August 11, 1953, with Switzler Creek being officially designated as a pilot watershed project by the Administrator, Soil Conservation Service (SCS, now NRCS) on August 19, 1953, and

Whereas, on June 8, 1954, the Osage County Soil Conservation District Board of Supervisors reviewed and approved the watershed plan and officially incorporated it into the district work plan. The plan proposed to construct works of improvement necessary to bring about the maximum practical reduction of erosion, sediment, and floodwater damages in the watershed. Included in the plan was a system of five floodwater retarding structures (FRS) for the purpose of temporarily storing excess runoff and releasing it slowly to prevent flooding on the floodplains.

Whereas, four of the five planned FRS were installed within the watershed boundaries, and

Whereas it has become necessary to upgrade one of the installed FRS (Switzler Creek Site No. 7) due to changed land use conditions in the watershed or changed safety criteria applicable to the dam;

Whereas, in order to extend the watershed plan for said FRS No. 7 beyond its current evaluated life, it has become necessary to supplement said Watershed Protection Agreement; and

Whereas, the rehabilitation of said FRS No.7 has been authorized by Section 14 of P.L. 83-566 (enacted by Section 313 of P.L. 106-472), otherwise known as the

"The Small Watershed Rehabilitation Amendments of 2000," and

Whereas, it has become necessary to supplement said watershed work plan by modifying FRS No.7 to bring it up to current performance and safety standards and to extend the service life of the dam for an additional 100 years; and

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

Whereas, a supplemental watershed plan/environmental assessment that modifies the watershed work plan for said watershed has been developed through the cooperative efforts of the SLO and the NRCS, which plan is annexed to and made a part of this agreement; and

Now, therefore, in view of the foregoing considerations, the Secretary of Agriculture, through the NRCS, and the SLO hereby agree upon this revised 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 watershed plan and including the following:

1. Term. The term of this agreement is for the installation period and evaluated life of the project (100 years) and does not commit NRCS to assistance of any kind beyond the end of the evaluated life unless agreed to by all parties.
2. Costs. The costs shown in this plan are preliminary estimates. Final costs to be paid by the parties hereto will be based on actual costs incurred for the installation of works of improvement and the cost-share percentages stated in this agreement.
3. Real property. The SLO 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 costs to be borne by the SLO and NRCS are as shown in Section 5 hereof.
4. Uniform Relocation Assistance and Real Property Acquisition Policies Act. The SLO hereby agree to comply with all of the policies and procedures of the Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 United States Code [U.S.C.] 4601 et. seq. as further provided by Uniform Relocation Assistance and Real Property Acquisition for Federally Assisted Programs, 49 Code of Federal Regulation [C.F.R.] Part 24, and 7 C.F.R. Part 21) when acquiring real property interests for this federally assisted project. If the SLO is legally unable to comply with the real property acquisition requirements of the Act, 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. Rehabilitation of Floodwater Retarding Structure (FRS) No.7. The amount and percentages of the total rehabilitation project cost to be paid by the SLO and the NRCS are as follows:

Works of Improvement	NRCS	Sponsors	Total
Cost Sharable Items			
Rehabilitation of Switzler Creek Site 7 (Construction Costs)	\$651,700	\$303,100	\$954,800
Relocation	\$0	\$0	\$0
Sponsors Planning Costs	NA	\$0	\$0
Sponsors Engineering Costs	NA	\$0	\$0
Sponsors Project Administration	NA	\$47,700	\$47,700
Subtotal: Cost-Share Costs	\$651,700	\$350,800	\$1,002,500
Cost-Share Percentages^{a/}	65.0%	35.0%	100.0%
Non Cost-Sharable Items^{b/}			
NRCS Engineering & Project Administration	\$381,900	NA	\$381,900
Natural Resource Rights	NA	\$0	\$0
Federal, State and Local Permits	NA	\$0	\$0
Real Property	NA	\$0	\$0
Subtotal: Non Cost-Share Costs	\$381,900	\$0	\$381,900

^{a/} Maximum NRCS cost-share is 65% of Cost-Sharable Items not to exceed 100% of Construction Costs (including replacement-in-kind; required decent, safe, sanitary; and flood proofing of downstream properties).

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

6. Flood Plain Management. The SLO agrees to participate in and comply with applicable federal flood plain management and flood insurance programs before construction starts.

7. Water and mineral rights. The SLO 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 shall be borne by the SLO and these costs are not eligible as part of the SLO cost-share.

8. Permits. The SLO 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 SLO cost-share.

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

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

It is further agreed that the Switzler Creek Watershed District No. 63 will assume all responsibility for the entire SLO share of the costs of rehabilitating FRS No. 7, and will assume and carry out all O&M responsibilities associated with FRS No. 7 for its entire lifespan.

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

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

13. Operation and Maintenance (O&M). The SLO assumes responsibility for the operation, maintenance, and any needed replacement of the works of improvement by actually performing the work or arranging for such work, in accordance with an O&M agreement. An O&M agreement will be entered into before federal funds are obligated and continue for the project life (100 years). Although the SLO responsibility to the federal government for O&M ends when the O&M agreement expires, the SLO acknowledge that continued liabilities and responsibilities associated with works of improvement may exist beyond the evaluated life.

14. Emergency Action Plan. Prior to construction, the SLO shall prepare an Emergency Action Plan (EAP) for FRS No.7. The EAP shall meet the minimum content specified in Part 500.52 of the NRCS National Operation and Maintenance Manual, 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 of the structure. EAPs shall be reviewed and updated by the SLO annually.

15. Nondiscrimination provisions. Activities conducted under this agreement will be in compliance with the nondiscrimination provisions as contained in Titles VI and VII of the Civil Rights Act of 1964, as amended by the Civil Rights Restoration Act of 1987 (P.L. 10-259) and other nondiscrimination statutes, namely Section 504 of the Rehabilitation Act of 1973, Title IX of the Education Amendments of 1972, the Age

Discrimination Act of 1975, and in accordance with regulations of the Secretary of Agriculture (DR43003). The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotope, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer. By signing this agreement the recipient assures the USDA 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.

16. Certification Regarding Drug-Free Workplace Requirements (7 C.F.R. 3017, Subpart F). By signing this Supplemental Watershed Agreement, the SLO is providing the certification set out below. If it is later determined that the SLO 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. 812) and as further defined by regulation (21 C.F.R. 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 the SLO directly engaged in the performance of work under this and related agreements, including: (i) all direct charge employees; (ii) all indirect charge employees unless their impact or involvement is insignificant to the performance of the agreement; and, (iii) temporary personnel and consultants who are directly engaged in the performance of work under the agreement and who are on the SLO's payroll. This definition does not include workers not on the payroll of the SLO (e.g., volunteers, even if used to meet a matching requirement; consultants or independent contractors not on the SLO's payroll; or employees of sub-recipients or subcontractors in covered workplaces).

Certification:

A. The SLO certifies it will or will continue to provide a drug-free workplace by:

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

(2) Establishing an ongoing drug-free awareness program to inform employees about (a) the danger of drug abuse in the workplace; (b) the grantee's policy of maintaining a drug-free workplace; (c) any available drug counseling, rehabilitation, and employee assistance programs; and (d) the penalties that may be imposed upon employees for drug abuse violations occurring in the workplace;

(3) Making it a requirement that each employee to be engaged in the performance of the agreement 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 agreement, the employee will (a) abide by the terms of the statement; and (b) notify the employer in writing of his or her conviction for a violation of a criminal drug statute occurring in the workplace no later than five calendar days after such conviction;

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

(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; and

(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 SLO may provide a list of the site(s) for the performance of work done in connection with a specific project or other agreement.

C. Agencies shall keep the original or all disclosure reports in the official files of the agency.

17. Certification Regarding Lobbying (7 C.F.R. 3018) (applicable if this agreement exceeds \$100,000):

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

(1) No federal appropriated funds have been paid or will be paid, by or on behalf of the SLO, 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; and

(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.

B. The SLO 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.

C. 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, of the U.S.C. 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.

18. Certification Regarding Debarment, Suspension, and Other Responsibility Matters Primary Covered Transactions (7 C.F.R. 3017).

A. The sponsors certify to the best of their knowledge and belief, that they and their 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 three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state, or local) transaction or contract under a public transaction; violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

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

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

B. Where the primary SLO is unable to certify to any of the statements in this certification, it shall attach an explanation to this agreement.

19. Clean Air and Water Certification.

A. 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. 7413(c)) or the Federal Water Pollution Control Act (33 U.S.C. 1319(c)) and is listed by EPA, or is not otherwise exempt.

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

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

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

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

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

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

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

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

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

D. 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. 7401 et seq.).

(2) The term "Water Act" means Federal Water Pollution Control Act, as amended (33 U.S.C. 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. 7414) or an approved implementation procedure under section 112 of the Air Act (42 U.S.C. 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. 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. 1317).

(5) The term "facility" means any building, plan, installation, structure, mine, vessel, or other floating craft, location or site of operations, owned, leased,

or supervised by a sponsor, to be utilized in the performance of an agreement or sub-agreement. Where a location or site of operations contains or includes more than one building, plan, installation, or structure, the entire location shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are collocated in one geographical area.

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

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

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

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

The signing of this agreement was authorized by a resolution of the Switzler Creek Watershed Board No. 63 adopted at a meeting held on 10-26-2009

Switzler Creek Watershed District No. 63
Sponsoring Local Organization

Fred L. Rein
PRESIDENT

11/3/2009
DATE

The signing of this agreement was authorized by a resolution of the District Board of Supervisors adopted at a meeting held on 11-5-2009

Osage County Soil Conservation District
Sponsoring Local Organization

David W. Horgan
PRESIDENT

11-5-09
DATE

U.S. Department of Agriculture
Natural Resources Conservation Service

ERIC B. BANKS
State Conservationist

DATE

**FINAL
SUPPLEMENTAL WATERSHED PLAN NO. 1 AND ENVIRONMENTAL ASSESSMENT**

for the

**REHABILITATION OF FLOODWATER RETARDING STRUCTURE 7
SWITZLER CREEK WATERSHED
OSAGE COUNTY, KANSAS**

Prepared by

**U.S. Department of Agriculture, Natural Resources Conservation Service
Kirkham Michael and Associates, Inc.
and
Terracon, Inc.**

for

**Switzler Creek Watershed Joint District No. 63
Osage County Conservation District**

Prepared under the Authority of the Watershed Protection and Flood Prevention Act, Public Law 83-566, as amended by Section 313 of Public Law 106-472, The Small Watershed Rehabilitation Amendments of 2000, and in accordance with Section 102 (2) (c) of the National Environmental Policy Act of 1969, Public Law 91-190, as amended (42 USC 43221 et seq.).

For submitting comments or requesting additional information, contact:

ERIC B. BANKS
State Conservationist
Natural Resources Conservation Service
760 South Broadway
Salina, Kansas 67401
Phone: 785-823-4500
www.ks.nrcs.usda.gov

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SWITZLER CREEK WATERSHED Site No. 7 - REHABILITATION

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**FINAL
WATERSHED PLAN SUPPLEMENT NO. 1
AND ENVIRONMENTAL ASSESSMENT
FOR REHABILITATION OF FLOODWATER RETARDING STRUCTURE 7
SWITZLER CREEK WATERSHED
OSAGE COUNTY, KANSAS
2nd CONGRESSIONAL DISTRICT**

ABSTRACT

The Switzler Creek Watershed Joint District No. 63 and the Osage County Conservation District signed the Work Plan agreement (POW) with the Soil Conservation Service (now the Natural Resources Conservation Service) on August 11, 1953. Federal participation in carrying out the POW was authorized by the Soil Conservation Act of 1935 as part of the Pilot Watershed Program. A series of five floodwater impoundments were formulated to reduce the damaging effects of floods, reduce erosion, and stabilize grades. Four of these sites were constructed. Site 7 was part of the plan to address these issues. The economic life of these structures was planned for 50 years. An Operation and Maintenance (O&M) Agreement was signed in 1960 that detailed responsibilities for O&M for structures within this plan.

The Switzler Creek Watershed Joint District No. 63 and the Osage County Conservation District, as Sponsors of the Switzler Creek Watershed Plan, applied to NRCS for technical assistance to perform an assessment of Floodwater Retarding Dam No. 7 (Site 7). The assessment was conducted by NRCS using the Dam Safety Inspection Report completed by King & Associates Engineering, with additional work done by NRCS. The inspection report indicated several deficiencies for Site 7 including hydrologic inadequacy as a high hazard class dam. The Kansas Department of Agriculture, Division of Water Resources (DWR) submitted correspondence requiring work to be completed, although no formal order has been issued by DWR.

As a result of the findings in the assessment, the Sponsors submitted an application to NRCS in June of 2006 for federal assistance to provide rehabilitation planning to address concerns associated with Site 7. Federal Rehabilitation Program funding for planning was made available to NRCS in 2007. Additionally, the Sponsors made application for financial assistance from the State Conservation Commission, Small Watershed Program, for rehabilitation, and were approved.

The attached supplemental document was developed in response to the rehabilitation application submitted by the Sponsors to NRCS.

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**SUPPLEMENTAL WATERSHED PLAN NO. 1
AND ENVIRONMENTAL ASSESSMENT FOR
SWITZLER CREEK WATERSHED
OSAGE COUNTY, KANSAS
2nd CONGRESSIONAL DISTRICT**

SUMMARY OF WATERSHED PLAN

Sponsoring Local Organizations (SLOs)

Switzler Creek Watershed Joint District No. 63
Osage County Conservation District

Proposed Action

The proposed action (Project) is the rehabilitation of Switzler Creek Watershed Structure No. 7 (Site 7) (see Figure 1, Project Location Map and Drainage Area) under the Natural Resources Conservation Service (NRCS) Public Law 83-566 (PL-566) Watershed Program.

Purpose and Need for Action

The purpose of the federal action is to meet current state and NRCS safety standards and to maintain current flood damage reduction benefits associated with Site 7 and within Osage County and Burlingame, Kansas (PL 83-566 approved purpose “flood prevention”). With federal action, Site 7 can continue to provide flood damage reduction benefits to rural areas within Osage County and the City of Burlingame in a manner that minimizes the risk of loss of human life and is both cost efficient and environmentally acceptable.

State of Kansas and NRCS standards for High Hazard Class structures have become more stringent since Site 7 was constructed in 1960. Site 7 does not currently meet the current NRCS and state High Hazard Class standards. Improvements to the principal spillway, embankment, and auxiliary spillway are needed in order to meet current high hazard class criteria.

Rehabilitation of this impoundment will allow continued flood prevention and floodwater damage reduction for an additional 100 years, reduce the risk of loss of life, and address identified problems.

Description of the Recommended Plan

The rehabilitation of Site 7 to the NRCS High Hazard Class criteria (Federal Reconstruction) would extend the life of the structure by 100 years. Rehabilitation activities would include replacement of the principal spillway, increasing the height of the embankment, reconstruction of the stilling basin, and relocating the auxiliary spillway to the left abutment. With these modifications, Site 7 will continue to provide flood damage reduction to agricultural lands, roads and bridges, and the City of Burlingame, Kansas. These modifications will also allow 100-years of sediment storage volume, with the majority of this sediment above the crest of the principal spillway (aerated sediment). The modified embankment is designed to be a High Hazard Class structure at 41 feet in height and 2000 feet in length.

SWITZLER CREEK WATERSHED Site No. 7 - REHABILITATION

Resource Information

Table S-1 provides relevant resource information for the Project.

Table S-1 Resource Information

Resource	Site 7
Latitude and Longitude	Latitude -95.8226 Longitude 38.7686
14-Digit Hydrologic Unit Code	10290101030040 Upper Marais des Cygnes (10290101)
Climate	Continental and temperate, cold winters, warm and hot summers, low to moderate humidity, light precipitation in the winter, pronounced rainfall peak late in spring and early in summer, and moderate amount of wind. Average Daily Maximum temperature: July = 89.1 degrees F Average Daily minimum temperature: January = 16.5 degrees F
Annual Precipitation	36.9 inches
Topography	Rolling to hilly, gently sloping to nearly level; with small valleys and narrow floodplains
Watershed Size (acres)	Drainage Area – 3,143 acres Switzler Creek Watershed Drainage area – 19,910 acres
Land ownership	99% private 1% State-Local and Federal
Population/Demographics (Osage County)	Population: 16,958 Demographics: White persons – 97.7% Black persons – 0.3% American Indian and Alaska Native persons – 0.7% Asian persons– 0.2% Native Hawaiian and Pacific Islander - 0.1% Persons reporting two or more races– 1.1% Persons of Hispanic or Latino origin – 1.5% White persons not Hispanic – 96.2%
Average Farm Size (Osage County)	397 acres
Number of farms	1 farm within immediate Project area for construction activities
Prime and important farmland	Approximately 5 acres temporarily impacted by short-term construction activities
Number of minority farmers	None
Number of limited resource farmers	None
Wetlands	7.8 acres of wetlands were identified as PABFh (Palustrine, Aquatic Bed, Semipermanently Flooded, Diked/Impounded) and PSSAh (Palustrine, Scrub-Shrub, Temporarily Flooded, Diked/Impounded)
Floodplains	Approximately 0.08 to 0.11 agricultural acres impacted by construction activities
Highly erodible cropland	Approximately 5 acres temporarily impacted by short-term construction activities
Threatened and endangered species	None
Cultural resources	None
Environmental values changed or lost	None

Sources: Osage County Soil Survey; U.S. Census Bureau, 2000, 2005, 2006; 2002 Census of Agriculture, WETS tables

SWITZLER CREEK WATERSHED Site No. 7 - REHABILITATION

Table S-1A Project Beneficiary Profile

	For the Site 7 project area identified by Block Number (201390102002) on the EPA Environmental Justice Geographic Assessment Tool website	County	State	Nation
Per Capita/Median Household Income	\$16,890	\$17,691/\$44,829	\$20,506/\$47,341	\$21,587/\$50,740
Education Level	% High School Diploma: 41.05 % Bachelor degree or up: 10.08	% High School Diploma: 85.5 % Bachelor degree or up: 14.3	% High School Diploma: 86.0 % Bachelor degree or up: 25.8	% High School Diploma: 80.4% % Bachelor degree or up: 24.4%
Poverty Level	Percent Below Poverty: 9.04%	Percent Below Poverty: 10.9%	Percent Below Poverty: 11.2%	Percent Below Poverty: 13.0%
Unemployment Rate	NA	6.0% to 6.9%	7.1%	9.5%
Home Values	NA	\$67,600	\$83,500	\$119,600
Median Age	NA	39.8	36.2	36.8
Population	NA	16,327	2,802,134	304,059,724
Age 65 and over	NA	15.5%	13.1%	12.8%
Minority population	2.71%	5%	20.4%	20.2%

Notes:

NA: Not available

Sources: US Census Bureau: <http://quickfacts.census.gov/qfd/index.html>

CNN: http://money.cnn.com/pf/features/lists/state_unemployment/

Bureau of Labor Statistics: <http://www.bls.gov/lau/maps/twmcort.pdf>

The Switzler Creek Drainage area has experienced limited land use change or growth since the original plan was approved. Table S-2 provides existing land use classification and acreages for the Site 7 drainage area.

Table S-2 Summary of Land Use

Land Use Description	Acres 1/
Crop, Row Crop and Small Grain	1187
Hayland, Tame and Native	460
Pasture, Tame	90
Grazed Range	918
Wildlife, herbaceous and deciduous	331
Water	24
Farmstead	58
Roads	75
Total	3143

Note:

1/ Rounded to the nearest acre.

SWITZLER CREEK WATERSHED Site No. 7 - REHABILITATION

Alternative Plans Considered

Table S-3 summarizes the alternative plans considered for this project.

Table S-3 Alternative Plans Considered

Alternative	Summary of Alternative	Studied in Further Detail
No Federal Action High Hazard	This alternative rehabilitates Site 7 to meet state hazard criteria only. This would involve increasing the height of the embankment, lining the principal spillway, and modifying the auxiliary spillway	Yes
Federal Decommissioning	This alternative involves removing a portion of the dam and stabilizing the structure and accumulated sediment with a riprap chute. Downstream hazards would be removed.	No
Federal Reconstruction	This alternative rehabilitates Site 7 to meet current state and NRCS design criteria. The structure would control flooding caused by the 100-year, 24-hour rainfall event and be designed to provide a 100-year design life, replace the existing principal spillway pipe and inlet, and add fill to the embankment.	Yes
No Federal Action – Hazard Removal	This alternative removes all downstream hazards from the flood zone. Homes and businesses would be removed or protected. Transportation structures would be modified to convey flood flows.	No
No Federal Action – Low Hazard	This alternative removes the floodwater retarding capacity of the structure after the federal interest of the site has expired.	No
National Economic Development (NED) Alternative	To maximize net economic gain.	Yes

Project Costs

Table S-4 summarizes the allocation of total eligible project installation cost between the SLO and NRCS for the Project.

Table S-4 Allocation of Total Estimated Eligible Project Costs

Works of Improvement	SLO	PL 83-566 Funds 1/	Total Estimated Eligible Project Costs
Rehabilitation of Site 7 1/	\$350,800	\$651,700 ¹	\$1,002,500

Note:

1/ Estimated Project Cost excludes \$381,900 in NRCS Engineering and Project Administration costs. NRCS cost share shall be 65% of the total eligible project cost not to exceed 100% of the actual construction costs.

Project Benefits

Project benefits include meeting state and federal dam safety criteria for a high hazard structure, increased sediment storage, flood reduction, and flood damage reduction.

Net Beneficial Effects

Economic benefits and impacts associated with the Project were extensively evaluated in the original Switzler Creek Watershed Plan of Work (POW). Economic benefits were calculated based on the flood damage reduction benefits Site 7 provides to agriculture, roads and bridges, and the City of Burlingame, Kansas.

Table S-5 Economic Benefits and Comparison of Alternatives

Alternative	Average Annual Cost	Average Annual Benefits	Benefit-Cost Ratio (Most Probable Value)
No Federal Action – High Hazard	\$41,200	\$84,100	2.04
Federal Reconstruction	\$65,900	\$84,100	1.28

Period of Analysis

The period of analysis is 101 years, which includes 1 year for installation and 100 years for the design life of the structure.

Project Life

The Project life is based on a 100-year design life for this structure.

Environmental Considerations and Effects

Table S-6 describes all resource elements that were identified during scoping and summarizes the potential impacts related to the Project.

Table S-6 Summary of Resource Concerns and Impacts of the Federal Reconstruction Alternative

Identified Resource Concerns	Summary of Concern	Effects Summary for Federal Reconstruction (Recommended Plan)
National Economic Development	Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G) must be followed	P&G must be applied to any watershed project to determine the alternative that has the greatest net benefit.
Erosion and Sedimentation	Primary purpose is flood control, sedimentation life not specifically evaluated. Sedimentation life does not change as piped spillway remains at current elevation.	Would retain existing erosion and sedimentation levels.
Water Quality	Erosion and resultant sedimentation is a potential concern. The capture and retention of this sedimentation in the pool results in improved water quality in the downstream waters.	Would retain existing impoundment and related long term water quality benefits.
Economic and Social	The dam currently does not meet current State and Federal criteria for high hazard class dams. There is a risk of loss of life if the design flood event should occur, and the dam has not been reconstructed to current design standards.	Would protect downstream populations from flooding
Flood Control	The primary purpose of the structure is flood control and meeting current safety criteria.	Retain/upgrade existing flood control benefits.
Land Use	Minor land use changes in the area of the dam/spillway would occur with either alternative from modifications to the structure.	Limited loss of land due to dam expansion and no loss of agricultural land.

SWITZLER CREEK WATERSHED Site No. 7 - REHABILITATION

Transportation	Highway 56 (East Santa Fe Avenue) and a railroad line exist approximately one mile downstream (south) of Site 7 along the Hoover Branch of Switzler Creek. Several local streets as defined in Section 2.5.3 exist between 1 and 2 miles downstream of Site 7. A potential catastrophic dam breach will impact downstream roads and the railroad located in the inundation area.	Would protect downstream populations and transportation systems from flooding.
NRCS Planning Requirements	Summary of Planning Consideration	Effects Summary for Federal Reconstruction (Recommended Plan)
Floodplain Management	Site 7 is located within a Zone "A" (no base flood elevations) as mapped by the Federal Emergency Management Agency (FEMA) floodplain designation for Osage County, Kansas and Unincorporated Areas, Page 3 of 8, dated August 9, 1977.	Would protect downstream populations from flooding.
Riparian Area	Riparian areas exist within the Project area.	Approximately 2.6 acres would be affected.
Wetlands	Wetlands are present. Approximately 7.8 acres of wetlands were identified as PABFh (Palustrine, Aquatic Bed, Semipermanently Flooded, Diked/Impounded) and PSSAh (Palustrine, Scrub-Shrub, Temporarily Flooded, Diked/Impounded).	No permanent loss of wetlands is anticipated to occur as pool level will remain the same.
Waters of the U.S.	Waters of the U.S., stream channels and the impoundment are present in the Project area. Wetlands, as a Water of the U.S., are present in the Project area. Waters of the U.S. are regulated by the U.S. Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act.	Due to increase in width of the structure and extension of the toe of the embankment, there would be a loss of 37 feet of stream channel that averages 10 feet in width. Approximately 130 feet of riparian area along with 37 feet of stream channel will be impacted below the dam. As a result, approximately 2.6 acres of riparian area will be impacted. A Nationwide Permit is anticipated for re-construction.

A complete list of the scoping items (resource concerns and NRCS planning requirements), such as cultural resources and threatened/endangered species (a no effect determination was made), is listed and discussed in Table 3-1. Only the identified resource concerns that required additional discussion are listed in the table above (Table S-6).

Short-term effects to water, air quality, erosion and sedimentation associated with construction will be minimal with the recommended plan. Rehabilitation activities would include enhancement of the existing structure rather than removal of the structure, and best management practices (such as silt fences, mulching, seeding, wetting construction roads/paths, etc.) will be used during construction activities. These short-term effects will be generally restricted to the immediate construction area.

Mitigation

Approximately 5 acres of prime and important farmland and highly erodible cropland may be temporarily impacted by the construction activities in the area of Site 7. Best management practices through the preparation of a storm water pollution prevention plan will be employed during construction activities to minimize and/or avoid impacts to water quality. These construction areas will be restored by excavating and stockpiling the topsoil, then replacing the topsoil in the impacted area after construction activities are complete. These areas will be reseeded with similar species as were present minimizing impact to the environment.

SWITZLER CREEK WATERSHED Site No. 7 - REHABILITATION

The location of the borrow area is not currently fixed but based on the alternative locations, they appear to be outside of the riparian system.

Due to an increase in width of the structure and extension of the toe of the embankment, there would be a loss of 37 feet of stream channel that averages 10 feet in width. Approximately 2.6 acres of riparian area will be impacted below the dam due to construction of the auxiliary spillway and two waterway outlets. This impacted area will be mitigated with 2.6 acres of riparian woodland planting at a location downstream of the dam.

The current pool level is not changing and the planned change in down stream flow is negligible. Therefore, long term impacts appear to be avoided and/or minimized.

Major Conclusions

In this analysis, there were two alternative plans – No Federal Action – High Hazard plan and the Federal Rehabilitation plan – that met the sponsors purpose and need. The benefits and costs of these alternative plans were compared. There is no net difference in flood reduction benefits between these plans. The NED alternative plan for this EA is the alternative that has the highest net economic benefits while protecting the nation's resources. The No Federal Action – High Hazard alternative is therefore the NED plan.

Not all project considerations or benefits can be quantified and monetized when it comes to some ecological system and social effects. The existing dam does not meet current State and Federal design criteria for High Hazard structures. A risk of loss of life exists if the design storm should occur. Federal funding is available to quickly implement the Federal Reconstruction alternative. The No Federal Action alternative would need to be funded solely by the Sponsor, and funding could take years to acquire. Therefore, the Federal Reconstruction alternative is the Recommended Plan.

Areas of Controversy

None known.

Issues to be Resolved

None known.

CHAPTER 1 PURPOSE AND NEED FOR ACTION

1.1 Project Overview

Site 7 was designed in 1959 as a high hazard dam and construction was completed in 1960. The rationale for the current hazard classification is due to the traffic count on U.S. Highway 56; with an Average Annual Daily Traffic (AADT) of 1910 as shown on “2009 TRAFFIC FLOW MAP KANSAS STATE HIGHWAY SYSTEM” map. Additionally, there are also 27 structures on the east side of Burlingame that would be flooded in the event of a catastrophic breach. US Highway 56 and an Amtrak Railroad are located below the site, which may be affected by such a breach. The hydrologic criteria for a high hazard structure have increased since this dam was designed and that is why it does not currently meet the required criteria. There are structural deficiencies in the existing embankment that fall short of the current safety guidelines.

The Sponsors’ request to rehabilitate Site 7 was initiated due to the hydrologic inadequacy of the dam. DWR issued a written statement (memo dated February 8, 2005) to the watershed district, which provided requirements and recommendations to address issues identified in an inspection report (March 30, 2004).

1.2 Purpose of the Project

The purpose of the federal action is to meet current state and NRCS safety standards and to maintain current flood damage reduction benefits associated with Site 7 and within Osage County and Burlingame, Kansas (PL 83-566 approved purpose “flood prevention”).

1.3 Need for the Project

The Kansas Department of Agriculture, Division of Water Resources (DWR) has required the district to make modifications to the dam as recorded in correspondence (letter dated February 8, 2005). Four items relate directly to structural measures, while four other issues relate to operation and maintenance. The first item addressed is the hydrologic inadequacy of the structure. A second item is an existing gully into the stilling basin and its steep slopes; which the district has recently repaired. The third item involves excavation around the drain outlet pipes and to make repairs as needed. The fourth item is an identified leak in the corrugated metal pipe outlet section of the principal spillway.

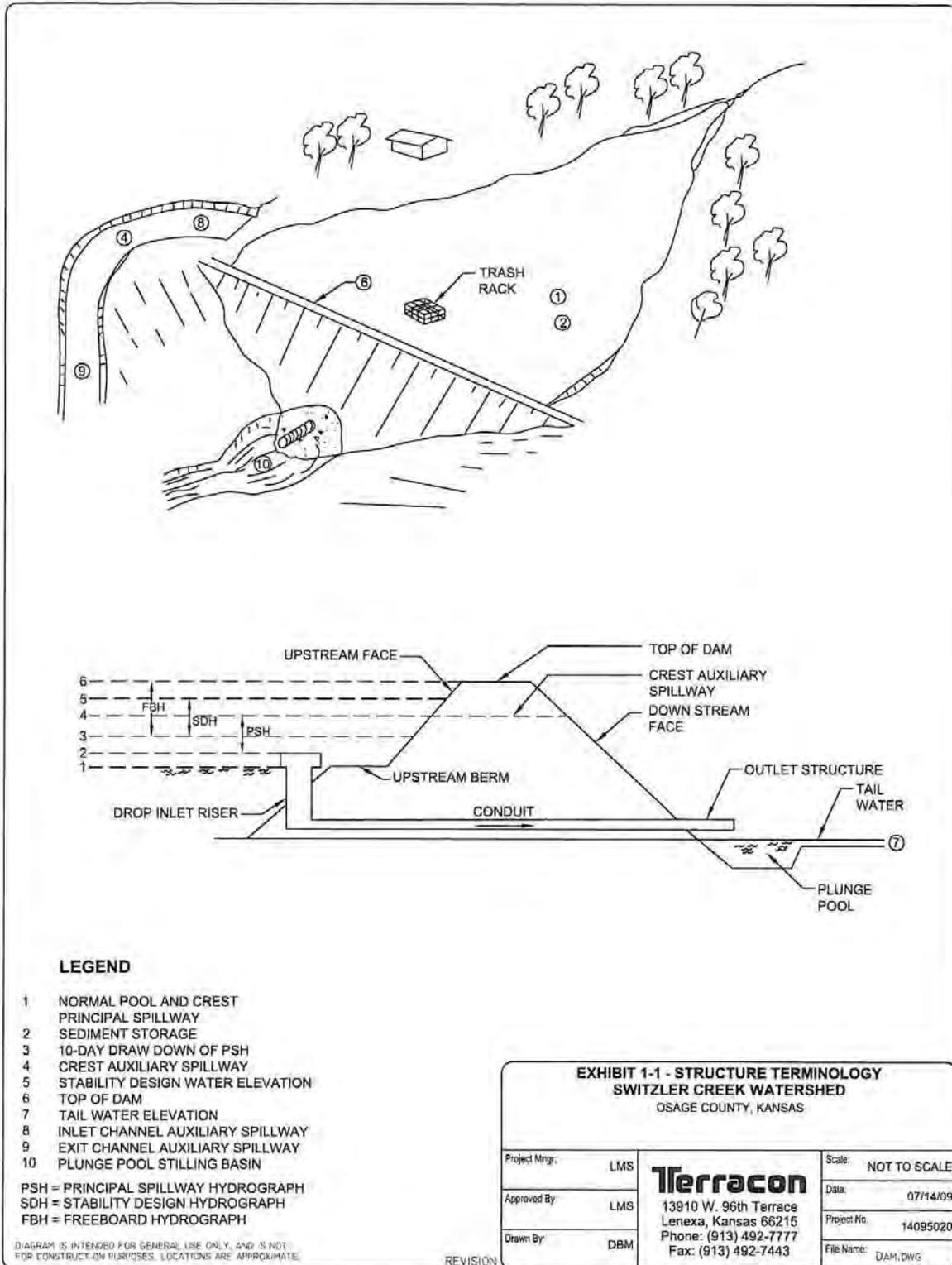
NRCS conducted an on-site investigation, where pictures were manually taken within the pipe. Five locations were found where there were cracks noted in the pipe, showing staining around them. These pictures were sent to the NRCS National Design Engineer, and it was his opinion that there was not imminent danger of pipe failure. Discussions were also held with a pipe manufacturer for guidance on whether there was anyone in the industry that could inspect the pipe and assess its integrity. The manufacturer indicated that life of a pipe in this condition would be difficult to estimate.

1.3.1 Flood Control Protection

Exhibit 1-1 Structure Terminology

See the following page for relevant structure terminology.

SWITZLER CREEK WATERSHED Site No. 7 - REHABILITATION



1.3.2 Dam Hazard Criteria

Site 7 was originally designed and built as a High Hazard Class dam. A High Hazard Class is for structures having any potential in the event of a breach for loss of life or any serious damage to homes, commercial buildings, important public utilities, main highways, or railroads.

State of Kansas and NRCS standards for High Hazard Class structures have become more stringent since Site 7 was constructed in 1960. Site 7 does not meet the current NRCS and state High Hazard Class standards.

1.4 Problems and Opportunities

The economic life of the structure will be completed in 2010, but the benefits of flood protection will continue as long as the structure has floodwater retarding capacity. Until the federal interest is completed for this project, any significant modifications to the structure must be approved by the NRCS. Consequently, any modifications that decrease the flood benefits of this dam would not be approved during this term. In 2010, once the economic life has passed, the district may request that NRCS no longer have federal interest in the dam and then modifications would not need to be approved by NRCS. If federal interest were foregone, the Kansas Department of Agriculture, Division of Water Resources (DWR) would have controlling authority as the state dam safety agency.

1.4.1 Problems

The original dam, designed in 1959 and built in 1960, had a design life of 50 years. The dam was originally designed as a high hazard class dam. The current dam safety standards have been upgraded and the existing dam falls short of the safety requirements for a high hazard class dam. The downstream embankment slopes are steeper than current design standards allow. The principal spillway needs replaced or repaired if the dam were to be rehabilitated.

1.4.2 Opportunities

The potential opportunities from this dam include continued flood control to the downstream facilities and the city of Burlingame, Kansas, incidental recreation and water quality.

CHAPTER 2 AFFECTED ENVIRONMENT

2.1 Project Setting

Switzler Creek Watershed Site No. 7 (Site 7) is located one and one-half miles north of Burlingame, Kansas, on the Hoover Branch of Switzler Creek (see Appendix F – Figure 1 - Project Location Map and Drainage Area). The drainage area contributing to Site 7 is approximately 4.9 square miles. The entirety of the contributing drainage area is privately owned with the exception of any publicly owned roads, bridges, and rights-of-way.

2.1.1 Original Project

The Switzler Creek Watershed Plan of Work (POW) was authorized by the Agricultural Appropriation Act for the fiscal year 1954 (Public Law 156, 83rd Congress) under the authority of the Soil Conservation Act of 1935 (Public Law No. 46, 74th Congress). The POW was completed in September 1954 and originally approved in 1958.

The plan formulated measures to address erosion control and watershed flooding and protection. These measures included a system of five floodwater retarding impoundments/structures and land treatment practices. The floodwater retarding structures were earth fill dams with uncontrolled outlets with a vegetated spillway. The land treatment practices included conversion of cropland to pasture lands, farm ponds, tree planting, diversion construction, contour farming, terracing, crop rotation, crop residue management, land use adjustments, and accelerated farm and ranch planning. Refer to the original Switzler Creek Watershed POW (Appendix E) for floodwater retarding impoundments/structures and land treatment practice details.

2.1.2 Physical Data

Site 7 is located in the Osage Scarped Plains Common Resource Area. The Scarped Osage Plains CRA is a smooth plain interrupted by low, ragged escarpments trending southwest-northeast in which limestone bedrock is regularly exposed. Local relief reaches 150 feet in the escarpment zones but elsewhere averages less than 100 feet. Valley bottoms are exceptionally broad for the size of the streams. Geologic parent materials are mainly thin-bedded Pennsylvanian limestones and shales. Pre-settlement vegetation was mostly prairie, with belts of scattered timber along limestone scarps and valleys. Most of the land is in farms, both pasture and cropland. The Kansas City metropolitan area exerts urbanization pressure on land use in the northwest.

Switzler Creek is a tributary of Dragoon Creek located in northwestern Osage County, Kansas near the Marias des Cygnes or Osage River Watershed areas. The drainage area for the Switzler Creek Watershed is 19,910 acres or 31.1 square miles. The majority of the watershed is located in the Burlingame Township. The climate of the area is continental and temperate, with cold winters, warm and hot summers, low to moderate humidity, light precipitation in the winter, pronounced rainfall peak late in spring and early in summer, and moderate amount of wind. The average daily maximum temperature in July is 89.1 degrees Fahrenheit and the average daily minimum temperature in January is 16.5 degrees Fahrenheit. Annual precipitation is 36.9 inches.

The original POW details additional physical attributes.

2.1.3 Land Use

Current land use within the drainage basin to Site 7 is identified in Table 2-1 (see Appendix C, Support Maps – Land Use and Treatment Map).

Table 2-1 Land Use and Treatment in Drainage Basin for Site 7

Land Use Description	Acres	Treated
Crop, Row Crop and Small Grain	1187	Y
Hayland, Tame and Native	460	Y
Pasture, Tame	90	Y
Grazed Range	918	Y
Wildlife, herbaceous and deciduous	331	Y
Water	24	N/A
Farmstead	58	N/A
Roads	75	N/A
Total	3143	

The treatment level above in no way implies that all resource concerns within the contributing drainage area have been addressed. Issues may still exist within this area. Those issues and concerns are identified by landowners and addressed through voluntary efforts.

2.2 Existing Conditions

Resource concerns are issues related to the natural environment. These issues are identified by local interests and the public as they relate to soil, water, air, plants, and animals. The human factor must also be considered.

The existing conditions of the site include an impoundment of open water surrounded by riparian areas on the north, grass-covered rangeland on the east and west, and a grass-covered earthen dam on the south. The area immediately downstream of the dam consists of grass-covered rangeland. Farther south downstream of the dam, the area consists of cropland, tree and grass-covered land, rangeland, and few structures. The Hoover Branch, a tributary of Switzler Creek, discharges from the dam to the south and appears generally tree-covered. The site is accessed via a metal gate west of the lake off Kansas Road, about 1.3 miles northeast of the town of Burlingame, Kansas. Once on site, the dam is accessed via a dirt path from the metal gate toward the east and south to the dam. The dam is located on a private land with an easement for the dam and its appurtenances. The gate is normally locked. The emergency overflow spillway is located on the west side of the dam (right abutment).

2.2.1 Human Health and Safety/Public Health and Safety

Site 7 was originally designed as a high hazard class structure. The information and technology that have been developed since that time provide a better understanding of design for floodwater retarding impoundments. Because of this, Site 7 does not currently meet state and NRCS high hazard class criteria. This inadequacy poses a risk to human health and safety in that a catastrophic breach of the current dam would lead to the potential loss of human life. This, coupled with the lack of breach notification, intensifies the potential risks associated with the existing structure.

2.2.2 Water Quality

Approximately 6 acres of riparian areas and 25 acres of rangeland exists immediately adjacent to the normal pool and rangeland exists downstream of the structure. These areas act as a trap for sediment, nutrients and pesticides, and organic loadings. This results in relatively slowing the degradation of the water quality of the upstream pool and downstream waters due to the capture and retention of incoming pollutants (sediment, nutrients, pesticides, and organics) in runoff waters.

In addition, the capture and retention of these pollutants in the pool reduces the transport of sediment and attached nutrients, pesticides, and organic loadings in the downstream waters.

Surface Water

The Hoover Branch of Switzler Creek and the associated impoundment at Site 7 are not listed on the Kansas Department of Health and Environment (KDHE) 2008 303(d) List of Impaired Waters. However, Switzler Creek near Burlingame is listed in the 303(d) List of Impaired Waters with an impaired aquatic life use. The impairment is listed as atrazine and zinc. The priority ranking is low.

According to the Marais Des Cygnes Basin Total Maximum Daily Load (TMDL) report for Switzler Creek, the water quality impairment is listed as selenium and the impaired use is “expected aquatic life support.” The designated use of Switzler Creek was identified as “Expected Aquatic Life Support, Secondary Contact Recreation and Food Procurement for Main Stem Segment.” According to the TMDL report, “Because it appears this watershed’s selenium load is predominately natural, this TMDL will be a Low Priority for implementation,” and “Because of the natural, climatically driven contribution of this impairment, no priority subwatersheds or stream segments will be identified.” TMDLs were not identified for the Hoover Branch of Switzler Creek or the associated impoundment at Site 7.

Groundwater

The underlying geology of the Project area consists of alluvium and low terrace deposits with a limestone/shale bedrock component. Groundwater water quality problem documents for the Switzler Watershed have not been found.

2.2.3 Erosion and Sedimentation

Sediment from upland areas is transported to the Project site and is deposited in the reservoir pool area. As the velocity of the water coming into the reservoir slows, sediment is deposited at the upper end and continues to fill the reservoir until it reaches the inlet elevation of the principal spillway. Once at that elevation, sediment is no longer deposited at the same rate and consequently is then transported downstream.

A bathymetric survey was completed to determine the deposited sediment amount in the reservoir. This elevation was compared to the estimated borrow limits and original ground from the bathymetric survey as correlated to the original ground level measured from the as-built drawings developed for the original design. The echo-sounding device used for the bathymetric survey is calibrated to echo the surface of existing sediment and original ground. This survey indicates there is an average pool depth just less than two feet (see Appendix D – Section 1.0).

The Sponsors requested a sediment and chemical analysis be performed on deposited sediment in the permanent pool. This was not completed as there was no borrow material to be used from the sediment, no removal of sediment, and no disturbance of sediment in the reservoir expected to occur.

2.2.4 Recreation

Site 7 and its surrounding area provide minimal aquatic and other passive recreational opportunities. Fishing boats with trolling motors, paddleboats, canoes, and rowboats could be used within the areas of the normal pool. Other recreational opportunities of Site 7 and its surrounding area include bird watching, hunting, and fishing. However, any recreational opportunities associated with Site 7 are limited to the private property owner and his guests.

2.2.5 Transportation

South Kansas Road (access road to the site) is located approximately 675 feet west of the dam at Site 7. Highway 56 (East Santa Fe Avenue) and a railroad line exist approximately one mile downstream (south) of Site 7 along the Hoover Branch of Switzler Creek. A few local streets, including East Jackson Avenue, North Delaware Street, East Lincoln Avenue, North and South Kansas Streets, South Peoria Street, East Seward Avenue, East Hall Avenue, East Chase Avenue, and East Banks Avenue (West 177th Street) exist between 1 and 2 miles downstream of Site 7.

2.2.6 Fish and Wildlife Resources

The drainage area of Site 7 consists of lands dedicated to agricultural use, with riparian areas located along the Hoover Branch of Switzler Creek. The dam impounds a third-order, intermittent stream, immediately downstream of the confluence of several first and second-order tributaries, as defined by the “blue-line” streams on 1:24,000-scale US Geological Survey topographic mapping. Existing agricultural practices and existing minimal low-density rural residential development have altered the natural habitat in various areas within the drainage basin. As Table 2-1 indicates, 1,187 acres of Crop, Row Crop and Small Grain space currently exist within the drainage basin of Site 7. However, some fish and wildlife resources likely remain in the vicinity.

The wildlife, plant, and animal species found near Site 7 are likely common for the region. Much of the land within the basin has been disturbed by agricultural practices, making agricultural land one of the primary wildlife habitats in the area. Wildlife species found on the agricultural land in the area are those associated with disturbance and cropping situations. Approximately 17 acres of timber and range surround the normal pool areas of the structure. These areas, consisting of trees (Honey Locust, Silver Maple, Black Willow, Siberian Elm, Osage Orange, Walnut, Mulberry, Cedar, Cottonwood), shrubs (Dogwood, Buckbrush), vines (Grape, Poison Ivy), grass (Wildrye), and forbs (False Indigo, Nightshade, Ironweed) provide additional habitat for wildlife species. Wildlife that can be found in the general area can include white-tailed deer, rabbits, mice, squirrels, striped skunks, raccoons, and songbirds (such as robins), and avian species such as crows, hawks, and pheasants.

Wetland areas identified as PSSAh (Palustrine, Scrub-Shrub, Temporarily Flooded, Diked/Impounded) have established within the backwater areas to the north and east of the dam and on the hill slope to the west side associated with Site 7. Wildlife species found in the wetlands may vary from season to season due to changes in wetland hydrological conditions.

2.2.7 Water Features

Wetlands

Wetlands in the area were identified via a determination as performed by the NRCS. Wetland areas classified through the NRCS non-certified determination include artificial (man-made). The wetlands include areas occurring within the back water areas to the north and east of the dam, and two small pond site areas on the hill slope to the west side that have been silted in and also classify as wetland. A total of 7.8 acres of wetlands were identified as PABFh (Palustrine, Aquatic Bed, Semipermanently Flooded, Diked/Impounded) and PSSAh (Palustrine, Scrub-Shrub, Temporarily Flooded, Diked/Impounded).

Wetland types were not identified by the NRCS and electronic online wetland maps of the site area were not available.

Impoundments

Impoundments or pool areas are associated with Site 7. Table 2-2 provides details on the normal pool associated with Site 7.

Table 2-2 Impoundment Pool Information Summary

Drainage Area (acres)	Normal Pool Area (acres)	As-Built Maximum Depth (feet)
3143	32.3	15

Drainages

The main hydrological feature associated with Site 7 is the Hoover Branch of Switzler Creek (see Appendix F: Project Map, Figure 1). Adjacent riparian areas appear to be associated with the Hoover Branch downstream of the dam.

2.3 Status of Operation and Maintenance (O&M)

The Kansas Department of Agriculture, Division of Water Resources has recommended maintenance and monitoring activities in a letter to the watershed district dated February 8, 2005. Their recommendations included eradicating musk thistle, filling and monitoring rodent holes, and repairing and replacing the fence around the dam to allow controlled grazing. Other O&M concerns include removing any driftwood and logs that accumulate against the orifice trash rack, and removing/treating any brush/trees on the dam.

In response to the Division of Water Resource’s recommendations, the SLO has increased attempts to remove debris from the principal spillway inlet structure. This has been a recurring maintenance problem that has been documented in previous inspection reports. Other progress in addressing previous deficiencies include the removal of debris from the beach berm and upstream slope of the dam, the removal/treatment of small trees on the dam and throughout the emergency spillway, the mowing and treatment of the dam for weed and brush control, and the placement of riprap on the slope leading to the stilling basin. Additional progress includes the removal of silt and debris from the stilling basin to approximately 150 feet downstream, the construction of wing berms to direct flow into the waterway and out of the gully, and the construction of a rock-lined chute into the stream channel. After the maintenance reported in a November 25, 2005 letter from King and Associates Engineering, two significant O&M issues remain: (1) the dilapidated fence that allows cattle onto the dam; and (2) the corroded CMP principal spillway outlet pipe. Both issues would be resolved through the rehabilitation of the high hazard structure. Ongoing efforts are required to control weeds and brush and to remove debris from the principal spillway inlet structure.

2.4 Sedimentation

Table 2-3 Predicted 50/100-year Sediment Accumulations

2007 Surveyed Remaining Sediment Storage Capacity 1/ (acre-feet) 2/	50/100-year Predicted Sediment Storage Requirement (acre-feet)	Structure Status for 50/100-year Sediment Requirement
224	215/430	Sufficient capacity available for the 50-year predicted sediment volume below the open-top weir elevation of the principal spillway. An additional 50-year sediment capacity is available as aerated sediment above the principal spillway weir elevation.

Notes:

- 1/ Remaining sediment storage defined between the surveyed reservoir bottom and the open-top weir elevation of the principal spillway riser. 48 acre-feet is available between the surveyed reservoir bottom and the low orifice of the principal spillway. The remaining 176 acre-feet are available between the low orifice elevation and the open-top weir elevation.
- 2/ Acre-feet is a unit of volume, defined as covering a surface area of 1 acre (43,560 square feet) by a depth of 1 foot of material

Table 2-4 Historical and Predicted Average Annual Reservoir Sediment Rates

Historical Sediment Rate (acre-feet per year)	Predicted Sediment Rate 1/ (acre-feet per year)
4.3	4.3

Note:

- 1/ No significant land use changes are expected. Predicted sediment rate is equal to the historic sediment rate.

2.5 Existing Hazard Class and Breach Analysis

2.5.1 Existing Hazard Class

As discussed briefly in Section 1.3.2, Dam Hazard Criteria, Site 7 was originally built as a High Hazard Class Dam.

2.5.2 Breach Analysis

A breach analysis was conducted for Site No. 7 to provide a prediction of the extent and timing of flooding from a catastrophic breach of the dam. The results from this analysis are sufficient for developing an inundation map and/or an emergency action plan. Due to limitations in modeling the flow dynamics of a severe, abrupt, and debris-laden breach wave, the modeling and results should be considered approximate. The dam breach analysis was performed using equations in NRCS Technical Release 60 (TR-60), NRCS Technical Release 66 (TR-66) criteria, and Dave Froehlich's peak flow equation (Froehlich, 1995) to develop an analytical breach hydrograph. The U.S. Army Corps of Engineer's Hydrologic Engineering Centers - River Analysis System (HEC-RAS) software model was used to route the floodwater downstream to determine peak discharges and water surface elevations through the reach below the modeled breach failure.

2.5.3 Interpretation of Breach Analysis

In analyzing the results in total, it appears that a High Hazard Class designation of Site No. 7 is appropriate. A catastrophic breach has the potential to affect several houses, a major US Highway, and an Amtrak rail line.

The following roads are located within the breach area: South Kansas Road, North Kansas Street, Santa Fe Avenue, East Santa Fe Avenue (also called West 173rd Street and US 56 Highway), East

Jackson Avenue, North Delaware Street, East Lincoln Avenue, East Fremont Avenue, East Dayton Avenue, South Peoria Street, East Seward Avenue, East Hall Avenue, East Chase Avenue, and East Banks Avenue (also called West 177th Street). An Amtrak Railroad is also below the site, which may be affected by a breach.

Additionally, there are also several homes (approximately 27) and a few apparent businesses (approximately 4) on the east side of Burlingame that would be flooded in the event of a catastrophic breach. The number of structures was based on review of the aerial breach inundation map.

2.6 Potential Modes of Dam Failure

Due to the classification of the dam as a high hazard structure, several modes of dam failure were examined, namely:

- Sedimentation
- Hydrologic capacity
- Seepage
- Scour at the toe of the dam
- Material deterioration
- Seismic

2.6.1 Sedimentation

The Site 7 dam was designed for a 50-year sediment storage capacity below the low flow orifice elevation on the principal spillway. At current sediment rates, this capacity will be filled in less than 10 years. Future sedimentation rate is expected to be similar or less depending on the farming methods and any residential development. The sedimentation presents a low potential of failure for Site 7 dam.

2.6.2 Hydrologic Capacity

Hydrologic failure of a dam can occur by breaching the auxiliary spillway or overtopping the dam during a storm event. The integrity and stability of the auxiliary spillway is dependent on the depth, velocity, and duration of flow; the vegetative cover; and the embankment's resistance to erosion. Site 7 was originally designed as a High Hazard Class structure. The current criteria for sizing the auxiliary and principal spillways are found in TR-60.

The auxiliary spillway is 70 feet wide and would need to be widened and the top of dam would need to be raised to provide a combination of storage capacity and auxiliary spillway conveyance to pass the design storm without overtopping the dam.

The storage capacity of the structure does not meet current state or federal standards. The auxiliary spillway outlet channel has recently required repair and stabilization of gully erosion, which shows a propensity for future erosion damage. Therefore, the potential of failure due to inadequate hydraulic capacity is moderate.

2.6.3 Seepage

All earth dams develop steady seepage conditions in the long-term. The existing dam does not indicate any seepage problem at this time. Although the internal toe drain outlet appears to be dry, this needs to be checked and restored to ensure internal seepage is controlled.

The seepage through the embankment under the normal principal spillway operating level does not appear to be a problem, because of the siltation and a low-pressure head in the pool area. There is

evidence of cracks and holes in the drain outlet pipe that may lead to seepage related failure in the future. The potential of failure due to seepage is low at this time. The risk may increase if the pipe material continues to degrade.

The current design standards for high hazard class structures have changed. If this dam were to be rehabilitated, an internal chimney drain would be recommended.

2.6.4 Scour

The principal spillway outlet is located at the toe of the existing dam in its deepest section. There is extensive scour and erosion in the plunge pool area of the stilling basin. The plunge pool needs to be excavated to proper depths to act as a dissipating plunge pool and slopes stabilized with riprap. The dam toe slope is too steep at the outlet location, requiring extension of the outlet pipe and backfill to repair the downstream slope of the dam. The outlet channel banks need to be protected against bank erosion. Slope stability of the plunge pool will not have a great effect on stability of the rest of the structure. Therefore, the relative potential for failure due to scour of the outlet channel is low.

2.6.5 Material Deterioration

The material deterioration could be a concern due to the age of the structure. The embankment and foundation materials of the dam have become saturated over the years. Natural degradation of materials would affect the shear strengths of the embankment and foundation materials. The embankment appears to be visually stable. The downstream slope of the embankment is steeper than what is required for a high hazard dam of this size. Therefore, the existing embankment needs to be modified with additional earthfill to meet the current standards as well as account for any material degradation. There is evidence of reservoir slope erosion due to wave action.

Evidence of deteriorating concrete in the principal spillway riser and the precast concrete conduit has been observed. In order to extend the life of the structure, the old concrete structures need to be repaired or reconstructed. The dam is not in imminent danger of failure due to material degradation, however, continued degradation of the principal spillway will increase the risk of failure. Therefore, the potential of failure due to material deterioration is currently moderate, but the potential of failure will be high if the principal spillway materials continue to degrade.

2.6.6 Seismic

A seismic event creates additional loading on the structures that may affect the slope stability of the embankment. The foundation soils appear to be non-liquefiable materials under a seismic shaking. This site is located in Zone 2 as described in NRCS TR-60 technical release. The seismic coefficient is fairly low. The seismic stability is not considered to be a concern. The potential of failure due to seismic activity is low. During design stage a pseudo-static stability analysis with seismic loading should be performed.

2.7 Consequences of Dam Failure

The consequences of a failure of the existing dam include flood damage and potential loss of life at locations below the dam. Flood damage would include interruption of the railway and road traffic, damage to residences, roads, bridges, railways, and utilities. Additional flood damage would include scour of the downstream channel, damage to the lower grazing areas and cropland, and the transport of undesirable sediment. The potential for loss of life is greatest in the City of Burlingame, as the city lies in the potential inundation zone below the dam. There are currently 27 houses, 200 acres of agricultural land, US Highway 56, and an Amtrak railroad that are located in the predicted breach inundation area.

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The current dam is hydrologically inadequate and could be breached by overtopping. Although slope stability is not a concern at this time, sloughing and erosion should be expected to continue.

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CHAPTER 3 SCOPE OF THE ENVIRONMENTAL ASSESSMENT

The scope of the EA includes the drainage area of Site 7 and its benefit area (see Appendix F, Project Location Map and Drainage Area). This chapter identifies the issues relevant in defining the problems and formulating and evaluating alternative solutions. This chapter also includes a record of the issues that were considered but not found to require detailed discussion.

Scoping was conducted to determine the objectives and primary concerns of the SLO and to identify other relevant issues and environmental concerns associated with this Project. Selected agencies were contacted that might have input on the project: US Army Corps of Engineers, Kansas State NRCS, US Fish & Wildlife Service, Kansas Department of Wildlife and Parks, Kansas State Historical Society, Kansas Department of Agriculture, Division of Water Resources, and several Native American Tribes (Citizen Pottawatomie Nation, Kaw Nation, Omaha Tribe of Nebraska, Osage Nation of Oklahoma, Prairie Band Pottawatomie Nation, Sac & Fox of the Mississippi in Iowa, Sac & Fox Nation of Missouri, and Wichita and Affiliated Tribes).

Table 3-1 identifies the primary resource concerns within the scope of the project as well as other special environmental concerns required to be studied by NRCS. When a resource concern is found to be not relevant and sufficient rationale is provided, then the concern can be eliminated from further consideration. Each of the resource concerns that are noted in Table 3-1 as “Yes” in the “Relevant to the Proposed Action” column is then carried forward to Chapter 4, Alternatives and Table 4-3 Comparison of Alternatives. It is in Table 4-3 that the scoping concerns are further reviewed to see if they are pertinent to the individual alternatives. Those pertinent concerns are then evaluated for that alternative in Chapter 5, Environmental Consequences. Those noted as “No” in the “Relevant to the Proposed Action” column will not be discussed further in this EA.

Table 3-1 Summary of Scoping

Resource Concerns of SLO, Public, and Agencies	Relevant to Proposed Action		Comments
	Yes	No	
Human Health and Safety	X		The dam currently does not meet current State and Federal criteria for high hazard class dams. There is a risk of loss of life if the design flood event should occur, and the dam has not been reconstructed to current design standards. Federal Reconstruction Alternative will upgrade the dam to meet current NRCS and state high hazard class criteria; The No Federal Action alternative will upgrade the dam to meet current state hazard criteria, but Federal High Hazard criteria will not be met. The purpose of both alternatives is to protect human populations from flooding events and provide flood protection in a manner that minimizes the risk of loss of human life.
Water Quality	X		Water quality as it relates to erosion and resultant sedimentation is a potential long-term concern.
Air Quality		X	The Project area is not in an air quality attainment area (40 Code of Federal Regulations [CFR] 81). Dust emission during construction would be controlled. Open burning of cleared vegetation would not occur without approval from the KDHE or local authority.

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Economic and Social	X		<p>The Project is not anticipated to affect the economic and social resources in or around the Project area as both alternatives protect downstream populations from flooding.</p> <p>The dam currently does not meet current State and Federal criteria for high hazard class dams. There is a risk of loss of life and property if the design flood event should occur, and the dam has not been reconstructed to current design standards.</p>
Erosion and Sedimentation	X		Bathymetric survey provides existing accumulated sediment level within reservoir. A potential opportunity of the Project is to provide additional erosion and sedimentation control for existing agricultural sources
Flood Control	X		The primary purpose of the structure is flood control.
Land Use	X		Land use changes in the area of the dam/spillway would occur with either alternative from modifications to the structure. Land use would change from woodland to grassland in the constructed auxiliary spillway area.
Recreation		X	The structure has minimal existing and future recreational value limited to the site owner and his guests.
Regional Water Resource Plans		X	No watershed management plans have been found for the Project area. However, a Watershed Restoration And Protection Strategy For The Upper Marais Des Cygnes (HUC 10290101) does exist.
Transportation	X		Although local transportation systems are not located in the immediate area of the site, Highway 56 (East Santa Fe Avenue) and a railroad line exist approximately one mile downstream (south) of Site 7 along the Hoover Branch of Switzler Creek. Several local streets as defined in Section 2.5.3 exist between 1 and 2 miles downstream of Site 7. Since the existing condition of the dam does not meet the federal or state high hazard criteria, a dam breach will likely impact downstream roads and the railroad located in the inundation area. The Project is anticipated to beneficially affect transportation systems in or around the Project area as both alternatives protect downstream populations from flooding.
NRCS Planning Requirements 1/	Relevant to Proposed Action		Comments
	Yes	No	
Cultural Resources		X	The Kansas State Historic Preservation Office (SHPO) was contacted. The Project area was reviewed by the Kansas State Historical Society. No significant archeological sites were found in the Project area. See Cultural Resource reports, which are attached. Review of the online National Register of Historic Places (NRHP) website did not reveal the presence of the site structure on the NRHP. Tribal consultation was completed by the NRCS.
Threatened and Endangered (T&E) Species		X	No known T&E or critical habitat will be disturbed. Based on review of the Habitat Assessment letter prepared in July 2007 (Section 5.7) and based on the planned site activities a no effect determination has been made.
Environmental Justice		X	No concerns as alternatives do not impact area populations due to maintained flood control.

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Fish and Wildlife Coordination Act		X	Tri-agency* habitat assessment conducted in July 2007. US Fish and Wildlife Service, NRCS, and the Kansas Department of Wildlife and Parks participated. No SINC (Species In Need of Conservation), Endangered, or Threatened Species were identified during the assessment,” and “no impacts to T&E, to SINC, or to Critical Habitat was identified. An additional Tri-agency habitat assessment was conducted on April 28, 2010 to address a modified auxiliary spillway alignment. No additional impacts were found to T&E, SINC, or Critical Habitat.
Floodplain Management	X		Osage County participates in the National Flood Insurance Program (NFIP). Site 7 is located within a Zone “A” (no base flood elevations) as mapped by the Federal Emergency Management Agency (FEMA) floodplain designation for Osage County, Kansas and Unincorporated Areas, Page 3 of 8, dated August 9, 1977. According to a FEMA map from the Department of Housing and Urban Development, City of Burlingame, Kansas (not dated), the potential dam breach flood inundation area along Switzler Creek downstream of the dam is included in Zone “A.” A stream obstruction permit will be necessary for any action alternative. It is not anticipated that any of the alternatives would result in an adverse effect or incompatible development within the base floodplain. Issues relating to increased flood hazard will be addressed in the hydrology related sections. True mapping of the floodplains for FEMA is not part of this project. The dam currently does not meet current State and Federal criteria for high hazard class dams. There is a risk to the floodplain if the design flood event should occur and the dam has not been reconstructed to current design standards.
Invasive Species		X	All precautions will be taken to reduce or eliminate invasive species from developing in the Project area.
Migratory Birds		X	No anticipated effect. Construction should occur outside the nesting season of April 1 to July 15.
Natural Areas		X	None exist.
Prime and Unique Farmlands		X	Areas of Prime Farmland are adjacent to Site 7. No long-term effect will occur with any alternative as Prime and Unique Farmlands are not planned for conversion to non-agricultural use. Approximately 5 acres of prime and important farmland may be temporarily impacted by the construction activities in the area of Site 7. These areas will be restored by excavating and stockpiling the topsoil, and replacing the topsoil in the impacted area after construction activities are complete. These areas will be reseeded with similar species as were present prior to impact.
Riparian Area	X		Riparian areas exist within the Project area. Approximately 2.6 acres would be affected. Based on new State and Federal high hazard criteria; the dam may present a risk to the riparian areas if Site 7 is not reconstructed to current high hazard standards.

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Wetland	X		<p>On-site wetland determination indicated existing reservoir is a wetland (identified on a National Wetlands Inventory Map as a L1UBHh [Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded]). Stream has definable ordinary high water mark and bed and bank and is under COE jurisdiction</p> <p>A wetland determination was conducted by the NRCS in 2007, which revealed approximately 7.8 acres of “artificial” wetlands identified as PABFh (Palustrine, Aquatic Bed, Semipermanently Flooded, Diked/Impounded) and PSSAh (Palustrine, Scrub-Shrub, Temporarily Flooded, Diked/Impounded) at Site 7.</p>
Waters of US/Clean Water Act	X		Nationwide Permit is anticipated for re-construction
Wild and Scenic Rivers		X	None are present in the Project area.
National Economic Development	X		Rehabilitation requires application of the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G).
Fish Habitat		X	Fish habitat may exist in the lake; however, the pool elevation will not be changed by the preferred/NED alternative. The permanent pool may be temporarily drawn down to perform the work. Placement of fill would not encroach into the permanent pool or stilling basin. Any disturbed areas would be restored to pre-work conditions. As a result, fish habitat will not be affected. Additionally, no known T&E or critical habitat will be disturbed. See Habitat Assessment letters prepared in July 2007 and May, 2010.
Wildlife Habitat		X	Areas temporarily impacted by construction activities will be restored to pre-construction conditions, thereby not permanently affecting wildlife habitat. Additionally, no known T&E or critical habitat will be disturbed. See Habitat Assessment letters prepared in July 2007 and May, 2010.
HEL (Highly Erodible Land)		X	Highly erodible cropland is present in the area of Site 7. Approximately 5 acres of highly erodible cropland may be impacted by the construction of the auxiliary spillway and grassed waterway. These areas will be restored by excavating and stockpiling the topsoil, then replacing the topsoil in the impacted area after construction activities are complete. The waterway will be seeded with native species

Notes:

- 1/ Based on KS-CPA-52, “Environmental Effects for Conservation Planning,” revised February 2009 and as provided in the NWM (National Watershed Manual), Section 504.37.
- 2/ Tri-agency groups include US Fish and Wildlife Service, Kansas Department of Wildlife and Parks, and NRCS.

CHAPTER 4 ALTERNATIVES

4.1 Formulation Process and Alternatives Eliminated from Detailed Study

A range of alternatives to satisfy the purpose of the Project was initially considered during the original plan formulation. The range of alternatives included both structural and non-structural concepts with which to meet the Project purpose. Input on the range of alternatives was identified during original planning and again was sought at the agency and public scoping meeting held on January 9, 2006.

A screening process was used for the range of alternatives. Alternatives that failed any one of the following sets of general screening criteria were not carried forward for detailed study:

- Considered not technically reliable (Completeness)
- Not justifiable by tangible and/or intangible benefits¹ (Efficiency)
- Not socially and/or environmentally acceptable (Acceptability)
- Unable to fulfill the Project purpose (Effectiveness)

Table 4-1 summarizes the range of alternatives considered and the screening of the alternatives. Table 4-1 also identifies the alternatives eliminated and those carried forward for detailed study.

Table 4-1 Range of Alternatives and Determination for Detailed Study

Alternative	Summary of Alternative	Screening of Alternative	Carried Forward for Detailed Study
No Federal Action High Hazard	Rehabilitate Site 7 to meet current state dam safety criteria for high hazard structures.	This alternative would meet the purpose and need of the Sponsors.	Yes
Federal Decommissioning	Remove the embankment, stabilize the grade, reconnect the channel, and vegetate bare and denuded areas. Remove downstream hazards by removing or protecting homes, realigning US Hwy 56 and enlarging the bridge.	This alternative does not fulfill the Project purpose of flood control. This alternative is not justifiable because it results in increased flood damages. It is not environmentally acceptable due to reduced water quality. The cost of hazard mitigation is prohibitive.	No
Federal Reconstruction	Rehabilitate Site 7 to meet current state and NRCS dam safety criteria for high hazard structures.	This alternative would meet the purpose and need of the Sponsors.	Yes
No Federal Action Hazard Removal	Enlarge concrete bridge and abutments on Highway 56, and protect infrastructure in Burlingame.	This alternative does not fulfill the Project purpose of flood control. The cost of removing hazards is prohibitive. Costs include reconstructing roads, bridges, and railways, as well as flood-proofing or removing homes.	No
No Federal Action Low Hazard	Complete the federal interest of the site, and Sponsors remove floodwater-retarding capacity of structure.	This alternative does not fulfill the Project purpose of flood control. Removing the dam results in an increase in flood damages, reduced water quality, and significant dam removal costs.	No

¹ Tangible benefits are those for which a measurable benefit can be quantified, such as land values. Intangible benefits are those for which an improvement is obtained when quantification by a defined measurement is prohibitive, such as visual enhancement or water quality improvements.

4.2 Description of Alternative Plans

4.2.1 Alternative 1 – No Federal Action - High Hazard

This alternative modifies the dam to meet the State of Kansas High Hazard Class criteria, without reducing the flood control benefits. These modifications would not meet NRCS criteria. This alternative is the most likely to be installed if federal assistance was not available.

If federal assistance were not available, the Sponsoring Local Organization (SLO) would likely rehabilitate the dam to meet minimum criteria for a Kansas High Hazard dam. This would include lining the principal spillway and raising the dam only to the extent to meet minimum state standards. These repairs would last approximately 50 years before the principal spillway would need to be replaced. Therefore, the SLO would face a future cost for principal spillway replacement approximately 50 years after the repairs were made. Adverse impacts caused by construction would be mitigated as described in Section 7.8 – Mitigation.

This alternative is not eligible for federal funds, so the sponsor would need to fund all engineering, construction, and Project administration costs. The sponsor would also forgo NRCS technical assistance for the life of the structure. This alternative would likely not be implemented for several years, due to the availability of funding.

4.2.2 Alternative 2 – Federal Decommissioning

Decommissioning Site 7 is required to be considered during evaluation under the Watershed Rehabilitation Program. Decommissioning involves considerable planning and forethought so that no hazards remain once the structure is taken out of service. This includes removal of the embankment, stabilizing the overfall at the embankment and existing principal spillway, creating a stable channel through the reservoir area so that water may flow unabated through the newly established channel, and stabilizing the deposited sediment within the reservoir pool area. This alternative would also require mitigating future damages by protecting or removing downstream hazards located within the 100-year flood zone. Hazard mitigation would include removing 15 homes and businesses from the flood zone and purchasing easements on 200 acres of cropland (See Table D4-2 for more information). In addition, mitigation would include increasing the size of the bridge on US Highway 56, and realigning the highway to allow greater flood flows between the highway and railroad overpass.

The removal of the dam removes the beneficial effects of the structure. Flooding will resume to pre-construction levels below the structure and put lives and property at risk of flooding. The reservoir pool area will be reduced and/or eliminated as the structure will be removed, vegetative establishment will be difficult on the exposed sediment. A riprap grade control structure would need to be constructed to eliminate any overfall and erosion from the existing sediment deposited to the outlet channel below the principal spillway outlet. During and after removal, and until vegetative establishment, there will be an increase of sediment into the stream during out-of-bank flows.

Mike Orth, Hydraulics Engineer for the Kansas Department of Transportation indicated that improvements in water conveyance capacity near the intersection of Highway 56 and the Amtrak line would be difficult to achieve. The road realignment would be needed to produce a larger conveyance channel between the highway and the railroad overpass. He questioned if this realignment would provide enough conveyance capacity to remove the highway from the flood zone. The site may not have a practical way to increase flood conveyance adequately. The bridge replacement and highway realignment would be costly and disrupt traffic.

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An opinion of probable costs for dam removal, mitigation, and property acquisition is approximately \$2,950,000. The SLO would be responsible for O&M costs for this alternative. This alternative does not meet the purpose and need of the sponsor, and costs more than rehabilitation alternatives. This alternative also removes the downstream flood benefits. For these reasons, this alternative was not carried forward for further evaluation.

4.2.3 Alternative 3 - Federal Reconstruction

Through federal rehabilitation Site 7 will be reconstructed to meet NRCS dam safety criteria for high hazard structures. These requirements exceed state dam safety criteria for high hazard structures in Kansas.

Principal spillway riser, inlet, and pipe would be replaced with new components. The embankment would be raised approximately 6 feet to meet hydrologic capacity of a high hazard class structure by placing fill on the top of the dam and on the downstream face of the embankment. The principal spillway would be designed as a two stage riser; the first stage will be a designed orifice set at elevation 1075.0 and is designed as an un-gated water control structure, the crest of the of the inlet on the principal spillway would be set at elevation 1079.3. The auxiliary spillway crest would be raised approximately 2.5 feet, and the width increased from 75 feet to approximately 200 feet. The auxiliary spillway will be moved to the left abutment. Adverse impacts caused by construction would be mitigated as described in Section 7.8 – Mitigation.

An opinion of probable project costs for federal reconstruction is approximately \$1,384,400. The SLO would also be responsible for O&M costs for this alternative.

Table 4-2 summarizes the existing and proposed structural parameters.

Table 4-2 Spillway Parameters for Federal Reconstruction – High Hazard Class Alternative

Description	Existing Conditions 1/	High Hazard Rehabilitation
Principal Spillway Crest Elevation (feet)	1079.3	1079.3
Diameter of Conduit (inches)	30	30
Auxiliary Spillway Crest Elevation (feet)	1091.0	1093.5
Bottom Width (feet)	70	200
Top of Embankment Elevation (feet)	1095.5	1101.1

Note:

1/ Based on as-built drawings of this structure.

4.2.4 Alternative 4 - No Federal Action - Hazard Removal

This alternative would involve leaving the structure in place and removal and/or protection of hazards (homes, roads, railroads, and bridges) below Site 7. This alternative would include enlarging and raising the bridge on Kansas Highway 56 directly below Site 7, evaluating the train track and overpass, and flood proofing or removing the structures affected by a catastrophic breach. Enlarging and raising the existing bridge structure would be required as a modeled catastrophic breach wave overtops Highway 56 creating a potential for loss of life. The train track and overpass would need to be evaluated to determine what effect a breach wave would have on these structures. Flood-proofing the affected homes would entail installing dikes or walls to an elevation that would protect those structures from the breach wave, or removing the structures from the breach zone. There are approximately 27 structures in the breach zone downstream of the dam.

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Costs for removing downstream hazards would be greater than the cost for the federal decommissioning alternative, since 27 structures are located in this breach zone. The cost to replace the highway bridge and railroad overpass would be similar to the cost associated with the federal decommissioning alternative.

This alternative was not evaluated in further detail as associated costs were too great and did not meet the purpose of the Project.

4.2.5 Alternative 5 - No Federal Action – Low Hazard

This alternative will not be viable until the economic life has expired and an agreement is reached between the watershed district and NRCS that there is no longer a federal interest in this dam.

Removing the floodwater retarding storage of the dam would increase downstream flooding. The minimum size dam would be a low hazard NON-flood control dam.

This alternative was not evaluated any further as a federal interest remains and this alternative does not meet the purpose of the Project.

4.3 Comparison of Alternatives

Table 4-3 includes relevant concerns identified in Chapter 3, Table 3-1, Summary of Scoping, and then adds pertinent economic details. These items are then compared to each of the alternatives carried forward for detail study. Applicable items are identified for a more detailed comparison in Chapter 5, Environmental Consequences. For more detailed information regarding the existing structure and specific details regarding each alternative, see Appendix D: Investigation and Analysis Report.

Table 4-3 Comparison of Alternatives

General Information	No Federal Action – High Hazard – Future Without Federal Project (NED)	Federal Reconstruction High Hazard Class (Recommended Plan)
Alternative Description	Rehabilitate to State Standards. This project includes two 50-year construction phases.	Rehabilitate floodwater-retarding structure to meet High Hazard Class criteria.
Project Cost 1/	\$866,000	\$1,384,400
National Economic Development (NED)	No Federal Action – High Hazard – Future Without Federal Project (NED)	Federal Reconstruction – High Hazard Class (Recommended Plan)
Beneficial, Annual	\$84,100	\$84,100
Adverse, Annual	\$41,200	\$65,900
Net Benefit	\$42,900	\$18,200
Regional Economic Development (RED)	The RED Account was not included in the plan since it was not identified as an issue during plan development.	

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Environmental Quality (EQ) - Relevant Issues and Concerns		
Resource Concerns of SLO, Public, Agencies	No Federal Action – High Hazard – Future Without Federal Project (NED)	Federal Reconstruction High Hazard Class (Recommended Plan)
Human Health and Safety	Continues the operation and risk of the present dam until rehabilitation practices can be funded and constructed. Would retain flood control and related downstream potential for residential and roadway flooding for rain event under a 100 year event	Reduces the threat of a breach. Would retain existing flood control benefits for an event exceeding the 100-year rain event.
Water Quality	Would retain existing impoundment and related long term water quality benefits.	Would retain existing impoundment and related long term water quality benefits.
Economic and Social	Would protect downstream populations from flooding.	Would protect downstream populations from flooding.
Erosion and Sedimentation	Would retain existing erosion and sedimentation levels.	Would retain existing erosion and sedimentation levels.
Flood Control	Retain/upgrade existing flood control benefits.	Retain/upgrade existing flood control benefits.
Land Use	Limited loss of land due to dam expansion and no loss of agricultural land.	Limited loss of land due to dam expansion and less than 3 acres of agricultural land loss.
Transportation	Would protect downstream populations and transportation systems from flooding.	Would protect downstream populations and transportation systems from flooding.
NRCS Planning Requirements	No Federal Action – High Hazard – Future Without Federal Project (NED)	Federal Reconstruction High Hazard Class (Recommended Plan)
Floodplain Management	Would protect downstream populations from flooding.	Would protect downstream populations from flooding.
Riparian Area	Approximately 0.08 acres would be affected.	Approximately 2.6 acres would be affected.
Wetlands	No permanent loss of wetlands is anticipated to occur as pool level will remain the same.	No permanent loss of wetlands is anticipated to occur as pool level will remain the same.
Waters of US/Clean Water Act	Due to increase in width of the structure and extension of the toe of the embankment, there would be a loss of 28 feet of stream channel that averages 10 feet in width. Nationwide Permit is anticipated for re-construction.	Due to increase in width of the structure and extension of the toe of the embankment, there would be a loss of 37 feet of stream channel that averages 10 feet in width. Nationwide Permit is anticipated for re-construction.

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Other Social Effects (OSE) 2/		
OSE	No Federal Action – High Hazard – Future Without Federal Project (NED)	Federal Reconstruction High Hazard Class (Recommended Plan)
Urban and Community Impacts	Positive – expanded flood protection; no impacts as community will function as it has in the past with flood protection	Positive – expanded flood protection; no impacts as community will function as it has in the past with flood protection
Income and employment	Positive – expanded flood protection	Positive – expanded flood protection
Population distribution	Positive – expanded flood protection	Positive – expanded flood protection
Long term productivity	Positive – expanded flood protection	Positive – expanded flood protection
Energy requirements	None	None
Energy conservation	None	None
Loss of life	Beneficial – reduction in loss of life from breach flood No federal assistance is available to the sponsor for this alternative. Therefore, it may be years before sponsor obtains the funds required to implement this alternative. It is not certain where the sponsor will obtain funding. As a result, the risk inherent in a dam that does not meet current design criteria will remain until dam is rehabilitated.	Beneficial – reduction in loss of life from breach flood Federal funds are currently available to fund the federal portion of this alternative. The sponsor's share of funding for this alternative will be significantly less than the funding required to implement the No Federal Action Alternative. Therefore there this alternative will be implemented sooner than the No Federal Action Alternative
Health and Safety	Beneficial – reduction in potential breach due to heavy rain event	Beneficial – reduction in potential breach due to heavy rain event

Notes:

- 1/ Project Cost includes NRCS engineering and project administration.
- 2/ The OSE account is a means of displaying and integrating into water resources planning information of alternative plan effects from perspectives that are not reflected in the other three NED, RED, and EQ accounts.

CHAPTER 5 ENVIRONMENTAL CONSEQUENCES

5.1 Effects of Alternative Plans

5.1.1 Human Health and Safety and Economic and Social

Existing Conditions

The existing structure currently provides flood control benefits to downstream areas. If Site 7 had a catastrophic breach, approximately 440 acres of floodplains located between the toe of the embankment and the southern boundary line of Section 14 (approximately 2 miles) would be affected, and thus a high risk of loss of human life caused by the flooding event. Switzler Creek (the stream channel carrying the breach flow) flows under Highway 56 and an Amtrak railway at Burlingame, Kansas. The highway and railroad may suffer damage as a result of a breach.

The dam currently does not meet current State and Federal criteria for high hazard class dams. There is a risk of loss of life and property if the design flood event should occur and the dam has not been reconstructed to current design standards.

The two alternatives would provide flood control benefits to downstream areas while protecting against the loss of human life from a catastrophic breach in the next 100 years.

No Federal Action – High Hazard Alternative

This alternative modifies the dam to meet the state of Kansas high hazard class criteria, without reducing the flood control benefits. Site 7 would be designed to control up to a 100-year rain event with a 100-year design life.

Federal Reconstruction Alternative

Through federal rehabilitation, Site 7 will be reconstructed to meet NRCS dam safety criteria for high hazard structures. These requirements exceed state dam safety criteria for high hazard structures in Kansas. The design life of the Project is planned for 100 years. Site 7 would be designed to control a rainfall event that exceeds a 100-year frequency event.

Human health and safety/public health and safety (health and safety) would increase by removing the threat of a breach inundation in the long term. The risk of breach inundation to existing and future downstream property would be reduced. By rehabilitating to current safety criteria, any downstream structures would have additional protection. In addition, this alternative would improve the existing flood control benefits of the structure due to improved floodwater retarding pool storage.

5.1.2 Water Quality

Existing Conditions

Existing water quality conditions for the onsite lake appear to be typical for impoundments in the local area. The lake functions to accumulate pollutants such as sediment, nutrients, pesticides, and organic loading as would be expected to be discharged to the lake from the surrounding land.

No Federal Action – High Hazard and Federal Reconstruction Alternatives

There would be no long-term effect on existing water quality both downstream and within the impoundment as the two alternatives provide the same water quality benefits. Pollutants such as sediment, nutrients, pesticides, and organic loading are not anticipated to increase downstream with either alternative. Water Quality Indicators such as water transparency and aquatic habitat are not anticipated to change.

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Temporary short-term effects on surface water quality would result from construction activities. All excavated material not suitable for use in raising the structure, would be placed in a suitable upland location. These construction activities would not have adverse effects on groundwater quality. Standard BMPs such as silt fencing and seeding with sod-forming species on disturbed areas would be implemented to minimize erosion and sediment load transport and the subsequent temporary effects on surface water quality related to construction activities. State permitting requirements would help ensure that surface water quality impacts are kept at an acceptable level.

No Federal Action – High Hazard Alternative

For this alternative, there would be approximately a 227 acre-foot increase in the floodwater retarding pool storage. Construction activities would include adding fill to the embankment, lining the principal spillway, enlarging the principal spillway, protecting the embankment with fence, and miscellaneous earthmoving activities.

Federal Reconstruction Alternative

For this alternative, there would be approximately a 435 acre-foot increase in the floodwater retarding pool storage, thereby allowing for some additional storage of storm water runoff and subsequent settling of sediment and nutrients during larger precipitation events. Construction activities would include adding fill to the embankment, replacing the existing principal spillway pipe and inlet, protecting the embankment with fence, relocating the auxiliary spillway to the left abutment, and miscellaneous earthmoving activities. The permanent pool elevation will remain at the original pool elevation, and the detention pool will continue to collect sediment from storm events. Therefore, this alternative will have an insignificant effect on water quality after construction, both upstream and downstream of the dam.

5.1.3 Erosion and Sedimentation

Existing Conditions

The existing structure currently provides flood control benefits to downstream areas. Sediment accumulations in the detention pool would diminish flood storage capacity and increase the frequency of auxiliary spillway flow. This would result in increased erosion of the auxiliary spillway outlet.

No Federal Action – High Hazard and Federal Reconstruction Alternatives

The dam would continue flood control benefits. The sediment storage capacity for a 100-year design life would be provided. Temporary short-term effects on erosion and sedimentation would result from construction activities. Standard BMPs such as silt fencing and seeding with sod-forming species on disturbed areas would be implemented to minimize erosion and sediment load transport under a storm water pollution prevention plan as more than 1 acre of land is being disturbed.

5.1.4 Flood Control

Existing Conditions

The existing structure currently provides flood control benefits to downstream areas. If Site 7 were catastrophically breached, approximately 440 acres of floodplains located between the toe of the embankment and the southern boundary line of Section 14 (approximately 2 miles) would be affected. The dam currently does not meet current State and Federal criteria for high hazard class dams. There is a risk of loss of life and property if the design flood event should occur and the dam has not been reconstructed to current design standards.

No Federal Action – High Hazard Alternative

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This alternative provides flood control for events for 100-year storm events by increasing the height of the dam. The existing pipe spillway elevation will remain the same. The floodwater retarding storage (measured to the auxiliary spillway crest) would increase from 1628 ac-ft to 1855 ac-ft of storage. The detention pool is drained through the principal spillway for events up to the 100-year rain event. Therefore, this alternative will have minimal effect on downstream flooding for flood events up to the 100-year rain event.

Federal Reconstruction Alternative

This alternative provides flood control for events above the 100-year storm events by increasing the height of the dam higher than the No Federal Action – High Hazard Alternative. The existing principal spillway elevation will remain the same. The floodwater retarding storage (measured to the auxiliary spillway crest) would increase from 1628 ac-ft to 2063 ac-ft of storage. This additional storage will detain a design storm that is greater than the 100-year storm event, and will reduce the frequency of use of the auxiliary spillway. The effect on flood control for this alternative is minimal for all storm events at or below 100-year frequency event. Temporary inundation losses of upstream areas for storms above the 100-year frequency event will be minimal due to the brief inundation duration for areas above the 100-year flood inundation elevation.

5.1.5 Land Use

Existing Conditions

Existing land use in the area of Site 7 includes range land in the immediate area of the lake under ownership by one farmer. Area use beyond the lake includes additional range land, cropland, hay land, wildlife, pasture, and homesteads.

No Federal Action – High Hazard and Federal Reconstruction Alternatives

There would be no changes to the normal pool of Site 7. Increasing the height and extending the toe of the dam will modify the land surface, but this area will remain in native grassland after construction. The auxiliary spillway expansion will result in the conversion of 4.6 acres of upland woodland into native grass and 2.5 acres of riparian woodland. The riparian woodland will be mitigated with 2.6 acres of riparian woodland planting. Additionally, no conversion of prime or unique farmland will be converted to non-agricultural use.

5.1.6 Transportation

Existing Conditions

Although local transportation systems are not located in the immediate area of the site, Highway 56 (East Santa Fe Avenue) and a railroad line exist approximately one mile downstream (south) of Site 7 along the Hoover Branch of Switzler Creek. A few local streets, including East Jackson Avenue, North Delaware Street, East Lincoln Avenue, North and South Kansas Streets, South Peoria Street, East Seward Avenue, East Hall Avenue, East Chase Avenue, and East Banks Avenue (West 177th Street) exist between 1 and 2 miles downstream of Site 7. Since the existing condition of the dam does not meet the federal or state high hazard criteria, a dam breach will likely impact downstream roads and the railroad located in the inundation area.

No Federal Action – High Hazard and Federal Reconstruction Alternatives

The Project is anticipated to beneficially affect transportation systems in or around the Project area as both alternatives protect downstream populations from flooding. Both alternatives will increase flood protection to the downstream transportation systems only for storms in excess of the 100-year storm event. Therefore, the effect on transportation will be insignificant for these two alternatives.

5.1.7 Cultural Resources

Existing Conditions, No Federal Action – High Hazard and Federal Reconstruction Alternatives

The Kansas State Historic Preservation Office (SHPO) was contacted by the NRCS and the Project area was reviewed by the Kansas State Historical Society. No significant archeological sites were found in the Project area. See Cultural Resource reports which are attached. Review of the online National Register of Historic Places (NRHP) website did not reveal the presence of the site structure on the NRHP. Tribal consultation was completed by the NRCS.

5.1.8 Floodplain Management

Existing Conditions

Osage County participates in the National Flood Insurance Program (NFIP). Site 7 is located within a Zone “A” (no base flood elevations) as mapped by the Federal Emergency Management Agency (FEMA) floodplain designation for Osage County, Kansas and Unincorporated Areas, Page 3 of 8, dated August 9, 1977. According to a FEMA map from the Department of Housing and Urban Development, City of Burlingame, Kansas (not dated), the potential dam breach flood inundation area along Switzler Creek downstream of the dam is included in Zone “A.” The dam in its existing condition is safe but does not meet new State and Federal high hazard criteria. Therefore, the dam may present future risk to flood plain management within this Project area and downstream through the watershed area due to catastrophic breach if not brought to current high hazard standards.

No Federal Action – High Hazard and Federal Reconstruction Alternatives

A stream obstruction permit will be necessary for any action alternative. It is not anticipated that any of the alternatives would result in an adverse effect or incompatible development within the base floodplain. Both alternatives will increase flood protection to downstream properties for storms up to the 100-year precipitation event by raising the auxiliary spillway to either state and/or federal criteria.

5.1.9 Riparian Area

Existing Conditions

Riparian areas exist along the Hoover Branch creek below the existing dam structure. A larger riparian area (approximately 6 acres) is present to the north of the impoundment. The dam currently does not meet current State and Federal criteria for high hazard class dams. There is a risk to adjacent and down stream riparian areas due to a catastrophic breach if the design flood event should occur and the dam has not been reconstructed to current design standards.

No Federal Action – High Hazard and Federal Reconstruction Alternatives

Due to increase in width of the structure and extension of the toe of the embankment, there would be a loss of 37 feet of stream channel that averages 10 feet in width. Based on review of aerial photographs, approximately 2.6 acres of riparian area along with 37 feet of stream channel will be impacted below the dam. This represents a very small percentage of the habitat in the area in the watershed, and does not significantly affect the total riparian area of the watershed. Even though the impact is not significant, the impact will be further reduced by mitigating the loss with 2.6 acres of woodland planting

A habitat assessment of the site dated July 31, 2007 has been completed by the NRCS, USFWS, and KDWP. According to the habitat assessment, “no SINC (Species In Need of Conservation), Endangered, or Threatened Species were identified during the assessment,” and “no impacts to T&E, to SINC, or to Critical Habitat was identified on July 18, 2007.” An additional habitat assessment was conducted by the same agencies on April 28, 2010 to address a new auxiliary spillway alignment. No additional impacts to T&E, to SINC, or to Critical Habitat was identified on this assessment.

5.1.10 Wetlands and Other Waters of the U.S.

Existing Conditions

On-site wetland determination indicated that the existing reservoir is an artificial wetland (identified on a National Wetlands Inventory Map as a L1UBHh [Lacustrine, Limnetic, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded]). A wetland determination was conducted by the NRCS in 2007, which revealed approximately 7.8 acres of “artificial” wetlands identified as PABFh (Palustrine, Aquatic Bed, Semipermanently Flooded, Diked/Impounded) and PSSAh (Palustrine, Scrub-Shrub, Temporarily Flooded, Diked/Impounded) at Site 7. With increased floodwater capacity, wetland areas identified to the north and west of Site 7 may become temporarily inundated during storm/flood events. However, once surface waters return to normal pool elevation, these wetland areas should return to normal conditions.

The dam currently does not meet current State and Federal criteria for high hazard class dams. There is a risk to surrounding wetland areas and downstream waters of the US due to a catastrophic breach if the design flood event should occur and the dam has not been reconstructed to current design standards.

No Federal Action – High Hazard Alternative

During construction there would be a potential for work activity to temporarily encroach into the reservoir area and into the downstream stilling basin and outlet channel. The permanent pool may be temporarily drawn down to perform the work. Placement of fill would not encroach into the permanent pool or stilling basin. Any disturbed areas would be restored to pre-work conditions.

A wetland determination was conducted by the NRCS in 2007, which revealed approximately 7.8 acres of “artificial” wetlands at Site 7. With increased floodwater capacity, wetland areas identified to the north and west of Site 7 may become temporarily inundated during storm/flood events. However, once surface waters return to normal pool elevation, these wetland areas should return to normal pre-work conditions.

Federal Reconstruction Alternative

During construction there would be work activity in and at the fringes of the permanent pool, downstream stilling basin, and outlet channel. The permanent pool would be released at a controlled rate to draw down the permanent pool to an elevation at which work could be accomplished. Placement of fill to raise the embankment will encroach into the permanent pool and stilling basin. Any disturbed areas would be restored to pre-work conditions.

A wetland determination was conducted by the NRCS in 2007, which revealed approximately 7.8 acres of “artificial” wetlands at Site 7. With increased floodwater capacity, wetland areas identified to the north and west of Site 7 may become temporarily inundated during storm/flood events. However, once surface waters return to normal pool elevation, these wetland areas should return to normal pre-work conditions.

5.2 Cumulative Effects of Alternatives

A cumulative impact is defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7). Cumulative impacts include the direct and indirect effects of a project together with effects from reasonably foreseeable future actions of others. For a project to be reasonably foreseeable, it must have advanced far enough in the

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planning process that its implementation is likely. Reasonably foreseeable actions are not speculative, are likely to occur based on reliable sources, and are typically characterized in planning documents.

This assessment of the cumulative effects for Federal, State, and private actions is required by Council on Environmental Quality (CEQ) regulations developed from the National Environmental Policy Act of 1969 (NEPA). Cumulative effects were evaluated in accordance with CEQ guidance (CEQ, January 1997; CEQ, June 24, 2005).

The methodology for identifying cumulative issues used for this study involved identifying resources affected by the proposed Project, consideration of the types of effects likely for other reasonably foreseeable projects, and a determination of the approximate timeframes and locations of impacts.

The primary cumulative impact issues associated with the Project would be effects on human health and safety, and flood control associated with both Alternatives.

For this Project, cumulative effects on these issues were evaluated within the Switzler Creek Watershed in Osage County, Kansas. For the purpose of this evaluation, health and human safety is linked to flood control and potential flood hazard. Currently, there are no plans for major State or County roadway expansions within the Switzler Creek Watershed, with the following exception: There are plans to upgrade Highways 31 and 56 through the town of Burlingame with funds allocated through the American Recovery and Reinvestment Act of 2009. However, there are no plans for major upgrades of other roads in the area. Cumulative effects of the Project are analyzed in relation to proposed development near the structure. There are no short-term or long-term plans for development around the site area. Site 7 is located outside of the city limits of Burlingame. There are plans to convert an abandoned railroad property on the east side of Burlingame to a park. This railroad property is located approximately one to two blocks from Switzler Creek on the east side of Burlingame. The conversion of the railroad property may occur in about one or two years. This railroad property is also in the KDHE Brownfields Cleanup Program as a result of historic railroad property use. An FCA Coop facility also identified in the Brownfields Cleanup Program is also located on the east side of Burlingame, approximately one to two blocks from Switzler Creek. The railroad property and FCA Coop facility appear to be located within or near the benefit/breach area of Site 7 as identified in the Emergency Action Plan.

Future development does not appear to have cumulative effects on the above-listed resources with the selection of either the No Federal Action – High Hazard or the Federal Reconstruction Alternatives.

Health and Human Safety and Flood Control

The existing structure currently provides flood control benefits to downstream areas. If Site 7 were catastrophically breached, approximately 440 acres of floodplains located between the toe of the embankment and the southern boundary line of Section 14 (approximately 2 miles) would be affected, and thus a high risk of loss of human life caused by the breach event. At Burlingame, Switzler Creek (the stream channel carrying the breach flow) flows under Highway 56 and an Amtrak railway. The highway and railroad may suffer damage as a result of a breach.

Both the No Federal Action – High Hazard and Federal Reconstruction Alternatives would provide additional flood control benefits to downstream areas protecting the loss of human life from breaches/flooding in the next 100 years. The cumulative effects on health and human safety are not considered to be significant with either alternative as the purpose of this structure is flood control. Federal Reconstruction to meet current state and NRCS dam safety criteria for high hazard

structures would provide increased flood control benefits over the No Federal Action – High Hazard Alternative.

5.3 Indirect Effects

Indirect effects are project-induced effects (positive or negative) that would affect the human socioeconomic and/or natural environment beyond the construction corridor and would occur later in time or be farther removed in distance from the Project.

One potential indirect effect of both Alternatives is the preservation of existing developed properties and associated property values as the Alternatives extend flood protection/control for the existing structure in the future.

5.4 Risk and Uncertainty

5.4.1 Engineering/Environment

The short-term effect of sediment being released into the stream, from the pool drawdown during construction, on aquatic species is not known. Increased sediment in the stream temporarily affects aquatic life. Controlling the rate of release of water from the permanent pool will minimize this effect.

The water control structure set at elevation 1075.0, will maintain the permanent pool elevation to the existing pool elevation for some time. As sediment accumulates in the reservoir, the permanent pool will fill with sediment, and subsequent sediment accumulations will deposit above the principal spillway elevation. The effect of the drawdown time on the woodlands at the upper end of the permanent pool is unknown. The water control structure is designed with the largest orifice NRCS is allowed to design, with the size of the principal spillway outlet pipe, with the intent to minimize the effects on those habitats.

5.4.2 Economics

In order to account for the flood control benefits associated with the structure, the Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (P&G), and guidance from the National Watershed Manual (NWM) was used.

The economic benefits contain a moderate degree of uncertainty. This was explicitly recognized throughout the analysis. Economic benefit values were taken from the 1954 Plan of Work and indexed to 2009 dollars, consistent with guidance in Section 507.01 (f) of the NWM. See Appendix D – Section 5 – Economic Analysis.

5.4.3 Risk and uncertainty

Assessment of threatened and endangered species/habitat, cultural resources, and migratory bird habitat contains a moderate degree of risk and uncertainty when utilizing maps, inventories, and/or reports prepared by others. Such information was used in preparation of this EA report. Data obtained from inventories, maps, and reports prepared by others was not field verified. The actual effects or impacts to these resources from the alternatives may vary slightly either beneficially or adversely but is not anticipated to have significant impact to the findings of this EA. This risk and uncertainty would be similar for both alternatives.

5.5 Controversy

There are no known controversial issues associated with this project.

5.6 Precedent for Future Actions with Significant Impacts

This project will not set precedence for future actions.

5.7 Compliance with Federal, State, and Local Laws

5.7.1 Federal

Section 404 Permit

A Section 404 permit from USACE is required for impacts to wetlands and other waters of the U.S. USACE requires prior authorization of discharges of dredged or fill material, including those for temporary construction purposes, into waters of the U.S. (33 USC 1344).

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Federal Reconstruction Alternative

Due to increase in width of the structure and extension of the toe of the embankment, there would be a loss of 37 feet of stream channel that averages 10 feet in width. A Section 404 nationwide permit from the USACE is required for this project and will be authorized prior to construction of the Project. A Section 401 Clean Water Act, Water Quality Certification, permit will be obtained prior to construction of the Project, along with the Section 404 permit.

Endangered Species Act

The agency taking the action makes a determination if the proposed action has either a “no effect” or “may affect” on a listed species or designated critical habitat. If the agency determines there is a “may affect” then, Section 7(a)(2) of the Endangered Species Act states that the federal agency shall consult with U.S. Fish and Wildlife Service (USFWS).

Federal Reconstruction Alternative

A habitat assessment of the site dated July 31, 2007 has been completed by the NRCS, USFWS, and KDWP. According to the habitat assessment, “no SINC (Species In Need of Conservation), Endangered, or Threatened Species were identified during the assessment,” and “no impacts to T&E, to SINC, or to Critical Habitat was identified on July 18, 2007.” An additional habitat assessment was conducted by the same agencies on April 28, 2010 to address a new auxiliary spillway alignment. No additional impacts to T&E, to SINC, or to Critical Habitat was identified on this assessment. As such, this alternative will be in compliance with the Endangered Species Act.

National Historic Preservation Act, Section 106

The Kansas State Historic Preservation Office and Kansas State Historical Society were requested to provide recommendations regarding compliance with section 106 of the National Historic Preservation Act (NHPA).

Federal Reconstruction Alternative

An on-site investigation was conducted and SHPO and KSHS provided clearance for the proposed activities associated with this project as no cultural resources or historic properties were identified. No significant archeological sites (i.e. sites potentially eligible for listing on National Register of Historic Places (NRHP)) were found in the Project area. In addition, the NRCS has determined that the structure itself is not eligible for listing on the NRHP. A request for input from tribes, which may have interest in this project, was completed. No responses were received from those tribes consulted. As such, this alternative will be in compliance with section 106 of the National Historic Preservation Act (NHPA).

In the event that cultural resources (excluding human remains) are discovered during installation, NRCS will cause work to stop in that area and conduct an investigation and evaluation by a qualified cultural resources specialist. If human remains are discovered, work will cease in that area and protocol as described in the Kansas Unmarked Burial Sites Preservation Act will be implemented.

Bald and Golden Eagle Protection Act

According to the USFWS website, the “Bald and Golden Eagle Protection Act (1940) protects eagles from commercial exploitation and safeguards their continued survival in the United States.”

Federal Reconstruction Alternative

A habitat assessment of the site dated July 31, 2007 has been completed by the NRCS, USFWS, and KDWP. According to the habitat assessment, “no SINC (Species In Need of Conservation), Endangered, or Threatened Species were identified during the assessment,” and “no impacts to

T&E, to SINC, or to Critical Habitat was identified on July 18, 2007.” An additional habitat assessment was conducted by the same agencies on April 28, 2010 to address a new auxiliary spillway alignment. No additional impacts to T&E, to SINC, or to Critical Habitat was identified on this assessment. As such, this alternative will be in compliance with the Bald and Golden Eagle Protection Act.

Migratory Bird Treaty Act

According to the USFWS website, the Migratory Bird Treaty Act “made it illegal for people to “take” migratory birds, their eggs, feathers or nests.”

Federal Reconstruction Alternative

To avoid impacts, needed vegetation clearing would be proposed to occur outside of the primary nesting period of April 1 to July 15 to avoid or minimize effects on nesting migratory birds. Should clearing activities be required during this time period, a survey of the affected habitats may be conducted to determine if nesting migratory birds are present. A survey would be coordinated with USFWS to determine if any migratory birds would be affected. As such, this alternative will be in compliance with the Migratory Bird Treaty Act.

Fish and Wildlife Coordination Act

According to the USFWS website, the Fish and Wildlife Coordination Act “provides the basic authority for the Fish and Wildlife Service's involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It also requires Federal agencies that construct, license or permit water resource development projects to first consult with the Service (and the National Marine Fisheries Service in some instances) and State fish and wildlife agency regarding the impacts on fish and wildlife resources and measures to mitigate these impacts.”

Federal Reconstruction Alternative

A habitat assessment of the site dated July 31, 2007 has been completed by the NRCS, USFWS, and KDWP. According to the habitat assessment, “no SINC (Species In Need of Conservation), Endangered, or Threatened Species were identified during the assessment,” and “no impacts to T&E, to SINC, or to Critical Habitat was identified on July 18, 2007.” An additional habitat assessment was conducted by the same agencies on April 28, 2010 to address a new auxiliary spillway alignment. No additional impacts to T&E, to SINC, or to Critical Habitat was identified on this assessment. As such, this alternative will be in compliance with the Fish and Wildlife Coordination Act.

5.7.2 State

Kansas Department of Agriculture, Division of Water Resources (DWR) Construction Permit

Through the Kansas Stream Obstruction Act (K.S.A. 82a-301 to 305a, 2004), a permit is required to be obtained prior to the construction of a dam or other water obstruction.

The Kansas Water Appropriations Act (K.A.R. 5-6-2, Storage of water in watershed district reservoirs) states that a permit may be issued to appropriate water for beneficial use that proposes the storage of water in a watershed district reservoir. The landowner is to have the use of space in the sediment pool to store the water to which he or she might be entitled under the water appropriation act. The watershed district board of directors allocated or gave to the landowner all or a specified part of the sediment pool for the storage of water in accordance with the water appropriation act. (Authorized by K.S.A. 82a-706a; modified, L. 1978, ch. 460, May 1, 1978.)

Additional Kansas law requires that (K.A.R. 5-30-1. Approval of or permits for dams) the chief engineer shall not approve or grant a permit for any dam subject to the jurisdiction of the chief engineer under the authority of K.S.A. 1979 Supp. 82a-301 through 305a as amended, unless the applicant also receives prior approval of his or her application to appropriate water for beneficial use to be diverted by means of the dam for which the approval or permit is sought, unless the sole proposed use for the water is for domestic use. (Authorized by K.S.A. 82a-706a, 82a-709; effective May 1, 1980.)

Section 401 Water Quality Certification

As part of the Section 404 permit, Section 401 Water Quality Certification must be obtained from the Kansas Department of Health and Environment (KDHE). This certifies that the proposed action will not violate State water quality standards (33 USC 1341). The certification must be provided or waived before USACE can issue a Section 404 permit for any project. Any specific permit conditions required for compliance with the State's water quality standards would be specified in the Section 401 certification and in the permit conditions of the issued Section 404 permit.

The 401 Water Quality Certification for the reconstruction of the Project is anticipated to be issued in conjunction with the Section 404 permit.

Section 402 National Pollutant Discharge Elimination System

KDHE administers the Federal National Pollutant Discharge Elimination System (NPDES) and issues permits for storm water discharges for construction activities (33 USC 1342). The purpose of the program is to improve water quality by reducing or eliminating contaminants in storm water. Disturbance of more than 1 acre requires an NPDES permit. Because the Project would involve disturbance of more than 1 acre, a storm water discharge permit for construction activities would be obtained from KDHE prior to construction of the Project.

Kansas Unmarked Burial Sites Preservation Act

The Unmarked Burial Sites Preservation Act (KSA 75-2741-75-2754) is the state law for the protection of unmarked burials. If human remains are found during construction activities, construction must stop in that area and procedures set forth by the State must be followed. The purposes of this act are to:

- (1) Provide adequate protection for unmarked burial sites and human skeletal remains located on all lands within the state of Kansas;
- (2) Prohibit unauthorized disturbance of any unmarked burial sites; and
- (3) Provide procedures for the proper care and protection of unmarked burial sites and human skeletal remains found in the state of Kansas.

Under the provisions of the Kansas Unmarked Burial Sites Preservation Act; the law specifically relates to unmarked burial sites, human remains and artifacts on private and public lands. No one without a permit may disturb an unmarked burial site or possess human remains or grave goods. Possession of grave goods obtained prior to January 1, 1990 is exempted. No one may display human remains or artifacts from burials or trade in such artifacts. Anyone with knowledge of such activities must report it or is guilty of a misdemeanor with a fine of not less than \$100 or more than \$500. Anyone discovering human skeletal remains must immediately notify the local law enforcement agency, which notifies the coroner. The coroner determines if the remains are forensic, and then notifies the State Historical Society. The Society consults with the Unmarked Burial Sites Preservation Board. After disinterment, the remains and goods may be studied for up to one year by the State Historical Society. Scientific study may be extended by six months. Upon completion of the analysis, the remains and goods will be under the direction of the Unmarked Burial Sites Preservation Board. The Secretary of the State Historical Society will establish, with

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Board approval, a cemetery on state land for re-interment of human skeletal remains and grave goods from unmarked burials.

5.7.3 Local

Compliance with local zoning, regulated floodplain, or other watershed plans is anticipated.

CHAPTER 6 CONSULTATION AND PUBLIC PARTICIPATION

6.1 Public Participation

The watershed district and conservation district hold regular meetings that are open to the public.

Interested agencies were invited to the Environmental Evaluation to review the Project on June 7, 2007. Comments were requested from interested agencies by July 18, 2007. No written responses were received.

Tribes with potential interest were identified and sent correspondence to seek any interest in the Project. Responses were due by July 31, 2007. No written responses were received.

A public meeting was held in September 24, 2007 to review the Project and determine what additional issues are associated with this project.

Switzler Creek Watershed Board meetings were held on June 18, 2009 and July 9, 2009 to review alternatives and their effects on the environment. At the June 18 meeting, alternatives were introduced and the Project was explained to the public. The SLOs agreed at the July 9 meeting that the Federal Reconstruction Alternative was the preferred alternative and met the overall purpose and need for the Project.

6.2 Agency Consultation

Agencies were requested to participate in an environmental evaluation during the scoping process (June 7, 2007). Comments were requested by all interested agencies. No comments were received from agencies during the comment period.

The Kansas State Historic Preservation Office (SHPO) was contacted. The Project area was reviewed by the Kansas State Historical Society. No significant archeological sites were found in the Project area. Review of the online National Register of Historic Places (NRHP) website did not reveal the presence of the site structure on the NRHP. Tribal consultation was completed by the NRCS.

A habitat assessment of the site dated July 31, 2007 has been completed by the NRCS, USFWS, and KDWP. According to the habitat assessment, "no SINC (Species In Need of Conservation), Endangered, or Threatened Species were identified during the assessment," and "no impacts to T&E, to SINC, or to Critical Habitat was identified on July 18, 2007." An additional habitat assessment was conducted by the same agencies on April 28, 2010 to address a new auxiliary spillway alignment. No additional impacts to T&E, to SINC, or to Critical Habitat was identified on this assessment.

The US Army Corps of Engineers (USACE) was offered the opportunity to provide comment on the Project and assist in identifying permits needed for the alternatives at an on-site meeting August 28, 2007. The USACE indicated that a nationwide permit number 3 would be appropriate for this project. The (USACE) was offered a second opportunity to provide comment on the Project after the auxiliary spillway alignment was moved to the left abutment. The USACE responded via email dated April 16, 2010. No jurisdictional area would be affected by the new spillway location.

Agencies were notified of the June 18, 2009, Switzler Creek Watershed Board meeting and asked to provide comments. Comments were received from the State Association of Kansas Watersheds and the Kansas Conservation Commission. Comments are included in Appendix B.

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CHAPTER 7 PROVISIONS OF THE RECOMMENDED PLAN

7.1 Selection of the Recommended Plan

Site 7 is a high hazard class dam. The existing earthfill dam has a principal spillway consisting of a concrete riser and barrel, and an earthen auxiliary spillway. The PL-83-566 purpose for this project is flood prevention.

The Federal Reconstruction alternative will modify the dam to meet current state and NRCS safety standards and to maintain flood damage reduction benefits associated with Site 7. Works of improvement include raising the top of dam elevation, replacement of the principal spillway, and moving the auxiliary spillway to the left abutment. These works of improvement will extend the life of this structure for an additional 100 years. Refer to Appendix A, Tables: Table A-3 for additional structure data. No impacts to cultural resources are expected. Refer to Section 5.7.1 for information concerning the discovery of cultural resources during construction.

The No Federal Action – High Hazard alternative was found to be the NED alternative in this EA. P&G guidance requires that the National Economic Development, or NED Alternative, which maximizes monetary net benefits, be selected for implementation unless there is an overriding reason for selecting another alternative based on federal, state, local, or international concerns related to the social and environmental accounts.

The Federal Reconstruction alternative was selected as the Recommended Plan based upon the following overriding reasons:

- The PL-83-566 purpose for this project is flood prevention. The existing dam currently does not meet current State and Federal criteria for high hazard class dams. There is a risk of loss of life and property if the design flood event should occur and the dam has not been reconstructed to current design standards. The estimated inundation area resulting from a catastrophic failure of the dam includes 27 structures, US Highway 56, and an Amtrak rail line. The Federal Reconstruction alternative will reduce the risk of failure by replacing the principal spillway, enlarging the auxiliary spillway, and increasing the flood detention capacity of the the reservoir.
- The No Federal Action – High Hazard alternative must be funded solely by the Sponsor. Estimated Project costs are approximately \$866,000. It could take many years for the Sponsor to acquire the needed funds. Therefore the risk associated with a dam that does not meet current standards is likely to remain for some time.
- Federal funds are available for the Federal Reconstruction alternative, and construction could begin within a year. The sponsor's share of Project cost is estimated at \$350,800. The sponsor will be able to acquire these funds far sooner than if the No Federal Action – High Hazard alternative is chosen.

The following information in this chapter relates to the Federal Reconstruction Alternative, as it would be implemented with federal program assistance.

7.2 Rationale for the Recommended Plan

The purpose of the federal action is to meet current state and NRCS safety standards and to maintain flood damage reduction benefits associated with Site 7 and within Osage County and Burlingame, Kansas (PL 83-566 approved purpose “flood prevention”). The Federal Reconstruction Alternative meets the Project purpose of continued flood control benefits. Site 7 would have a project cost of \$1,384,400 and an average annual benefit of \$84,100. See Appendix A: Tables, Tables A-5 and A-6, for additional information. Additional information regarding the economic

analysis for the Project can be found in Appendix D: Investigation and Analysis Report, Section 5.0 Economic Evaluation.

7.3 Permits and Compliance

The U.S. Army Corps of Engineers requires a dam modification or operation and maintenance permit (NWP 3) for reconstruction. Special conditions will be associated with this permit.

The Kansas Department of Agriculture, Division of Water Resources, requires an application for a permit to modify a dam. All of the activities for modification are covered under this application. The plans, specifications, and design report will need to meet the requirements outlined in KAR 5-40-76 (repair or modifications of a permitted or pre-jurisdictional dam).

Impoundment of more than 15 acre-feet of surface water requires a permit issued under the Kansas Water Appropriation Act. A water rights application is required to account for the additional evaporation from the increased surface area created by raising the principal spillway inlet. The principal spillway inlet elevation will remain at Elevation 1079.3 after rehabilitation of the dam.

7.4 Costs

The following sections describe the major components of installation costs, the percentage of cost share of each component, and components of the recommended costs. See Appendix A: Tables, Tables A-1, A-2, and A-4, and Appendix D: Investigation and Analysis Report, Section 5.0, Economic Evaluation, for values for installation costs and recommended costs. The Switzler Creek Watershed Supplemental Agreement between the SLO and NRCS also details these costs and cost sharing between the SLO and NRCS.

7.4.1 Installation Costs

Construction

Major components of construction costs consist of mobilization; clearing and grubbing; erosion and sediment control; removal of existing structural components such as the riser, conduit, and spillway; site work; earthwork; and seeding.

NRCS will pay up to 65 percent of the eligible project costs but not exceed 100 percent of the total construction costs. The cost share rate for Site 7 is 65 percent NRCS PL 83-566 funds and 35 percent SLO funds. See Appendix A: Tables, Tables A-1 and A-2, for a summary of construction costs and cost share and Appendix D: Investigation and Analysis Report, Table D4-5, for a detailed estimate of construction costs values for Site 7 for each major construction component.

Engineering

Major components of engineering costs consist of design, surveys, geotechnical investigation, and construction observation. Engineering costs were estimated to be 30 percent of the total construction costs. NRCS would provide 100 percent of funding for the cost of engineering. See Appendix A: Tables, Tables A-1 and A-2, for a summary of real property acquisition, easement costs, and cost share.

Real Property Acquisition and Easements

The Project has existing easements in place, which were recorded prior to original installation. These easements will be evaluated to determine applicability for each alternative.

Additional easements may be required prior to reconstruction. Easements will be required to the top of dam elevation as required by state statute.

Project Administration

Project administration primarily consists of legal review, survey, and documentation of new property acquisition and easement areas. Project administration costs were estimated to be 15 percent of construction costs. The SLO would be required to provide 100 percent of funding for its own project administration costs. NRCS project administration includes contract administration and supervision. See Appendix A: Tables, Tables A-1 and A-2, for summary project administration cost and cost share.

7.4.2 Annual Costs

In Appendix A: Tables, Table A-4 identifies the average annual costs for the Recommended Plan. The average annual cost includes installation costs as well as operation, maintenance, and repair costs.

Amortization of Installation Costs

The amortized installation costs were determined by amortizing the project cost over a period of 101 years using the Fiscal Year 2010 Federal discount rate of 4.375 percent.

Operation, Maintenance, and Replacement Costs

Annual operation, maintenance, and replacement costs were estimated at 0.4% of construction costs.

7.5 Installation and Financing

7.5.1 Framework for Carrying Out the Plan

Structural measures will be installed during year one of the evaluation period. The SLO will secure all needed permits, easements, and rights for installation, operation, and maintenance. NRCS will provide technical assistance, engineering services, consultation for special environmental concerns, and project administration.

Table 7-1 summarizes the allocation of Project installation costs between the SLO and NRCS for the Federal Reconstruction alternative.

Table 7-1 Total Estimated Project Costs – Federal Reconstruction 1/

Works of Improvement	SLO 2/	PL 83-566 Funds 2/	Total Estimated Project Costs 2/
Federal Reconstruction of Site 7	\$350,800	\$1,033,600	\$1,384,400

Notes:

1/ Price Base 2009

2/ From Table A-2

Sep 09

7.5.2 Planned Sequence of Installation

All easements, permits, and installation will be completed in year one of the evaluation period. The SLO has taxing authority for Project funding. The SLO has the power of eminent domain and may exercise their authority as needed to acquire any necessary land rights.

The reconstruction of the Project will occur within a year. Breaching the dam at the principal spillway and pipe and removal of such will occur first. A coffer dam with a control structure will be constructed above the principal spillway to allow for construction to occur. A by-pass channel will be constructed around the pipe to allow for controlled flows to occur during construction and allow

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for a controlled release of any water above the sediment level. This will be completed in order to control excessive erosion and sediment being transported downstream.

After the principal spillway and pipe are installed, earthfill will be placed and compacted.

7.5.3 Responsibilities

The SLO is responsible for obtaining the permits and following the compliance actions as identified in Section 7.3 Permits and Compliance. In addition, the SLO is responsible for obtaining land rights, water rights and construction easements required for the Project.

The SLO has analyzed their financial needs in consideration of the scheduled installation of the works of improvement and is able to make funds available when needed. NRCS is responsible for technical assistance, engineering services, project administration, and construction. The availability of Federal funds is contingent upon appropriations available for this purpose.

Prior to entering into agreements that obligate funds of NRCS, the SLO will have a financial management system for control, accountability, and disclosure of PL 83-566 funds received and for control and accountability for property and other assets purchased with PL 83-566 funds.

NRCS is responsible for planning, design, construction inspection, and checkout.

The Sponsors' responsibilities include permits, easements, financing up to 35 percent of the total project costs, and operation and maintenance of the Project.

7.5.4 Contracting

Site 7 will be rehabilitated through project agreements between NRCS and the SLO by means of Federal contract procedures and resultant contracts.

7.5.5 Real Property and Relocation

The watershed district has the authority to acquire necessary easements for the Project. Easements are required to the top of dam elevation as required by Kansas statute administered by DWR. These easements are required to be in place for the life of the structure.

Current easements were recorded in the late 1950's. These easements do not include an elevation or specific area for the structure, only legal tracts of land.

The watershed district is pursuing an attorneys opinion to provide adequate assurance that easements are in place and adequate for the work to be completed.

7.5.6 Financing

The watershed district has the authority to levy taxes for operation and maintenance and rehabilitation activities. These funds may be used for easement acquisition, administration, and construction.

The watershed has been approved for state funding through the State Conservation Commission, Small Watershed Rehabilitation Program. These funds are authorized for construction and administration, and in combination with federal financial assistance are not to exceed 80 percent of the total Project cost.

7.5.7 Conditions for Providing Assistance

The cost of rehabilitating Site 7 is \$1,384,400. NRCS, under authority of PL 83-566, will provide \$1,033,600. The SLO, using other authorities, will provide \$350,800. Federal technical assistance, engineering services, project administration, and funds for construction are contingent upon appropriations for these purposes.

7.6 Operation, Maintenance, and Replacement

A new Operation and Maintenance (O&M) Plan and Agreement will be developed prior to construction of the selected alternative. The Plan and Agreement will be based on guidance found in the National Operations and Maintenance Manual, and will detail the responsibilities for operation and maintenance for the Sponsors and NRCS. The term of the agreement will be for 100 years, and must be signed by the NRCS and the Sponsors before the NRCS provides financial assistance to the Project.

7.7 Emergency Action Plan

The sponsors will provide leadership in developing an Emergency Action Plan (EAP) and will update the EAP annually with local emergency response officials. NRCS will provide technical assistance in preparation and updating of the EAP. The purpose of the EAP is to outline appropriate actions and to designate parties responsible for those actions in the event of a potential failure of a floodwater retarding structure. The NRCS State Conservationist will determine that an EAP is prepared prior to the execution of fund obligating documents for construction of the structure. The EAP shall be reviewed and updated by the sponsors annually.

7.8 Mitigation

Approximately 5 acres of prime and important farmland and highly erodible cropland may be temporarily impacted by the construction activities in the area of Site 7. Best management practices through the preparation of a storm water pollution prevention plan will be employed during construction activities to minimize and/or avoid impacts to water quality. These construction areas will be restored by excavating and stockpiling the topsoil, and then replacing the topsoil in the impacted area after construction activities are complete. The proposed waterways will be seeded with native species, as well as smooth brome.

Potential borrow areas are located in the detention pool, as well as west and south of the dam. These areas are outside of the riparian system.

Due to an increase in width of the structure and extension of the toe of the embankment, there would be a loss of 37 feet of stream channel that averages 10 feet in width. Approximately 2.6 acres of riparian area will be impacted below the dam due to construction of the auxiliary spillway and two waterway outlets. This impacted area will be mitigated with 2.6 acres of riparian woodland planting at a location downstream of the dam.

The current pool level is not changing and the planned change in down stream flow is negligible. Therefore, long term impacts appear to be avoided and/or minimized.

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LIST OF PREPARERS

Name	Present Title	----- Education -----		Experience Titles & Time in Job-Yrs	Other (Licenses, etc.)
		Degree	Cont. Educ.		
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