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**PEER REVIEW PLAN  
FOR  
FEASIBILITY PHASE STUDY  
OF  
SPAVINAW CREEK BASIN  
DELAWARE & MAYES COUNTIES, OKLAHOMA  
Project number 106631**

# Peer Review Plan

## 1.0 INTRODUCTION

This Peer Review Plan outlines the review process for the Spavinaw Creek Basin Feasibility Study. The study is a single purpose ecosystem restoration feasibility study. The study will result in a decision document for authorization recommending a plan to restore the aquatic ecosystem in Eucha and Spavinaw Lakes. The NEPA document will be an Environmental Assessment.

### 1.1 Study Background

The study area includes both Spavinaw and Eucha lakes, which are reservoirs located on Spavinaw Creek in northeastern Oklahoma. Spavinaw Creek originates in northwestern Arkansas, several miles west of the City of Bentonville in Benton County, Arkansas. The creek flows westward through western portions of Benton County in northwestern Arkansas across the Oklahoma-Arkansas state line and into Delaware County, Oklahoma. In Delaware County, Spavinaw Creek is impounded to form Lake Eucha and approximately 7 miles downstream, Spavinaw Lake. Both impoundments are owned and operated by the City of Tulsa, Oklahoma. Portions of Spavinaw Lake are located in Mayes County, Oklahoma and discharges from this impoundment immediately enter Hudson Lake, Oklahoma on the Grand Neosho River. Tributaries to Spavinaw Creek above Eucha Dam include Beaty Creek, Brush Creek, Dry Creek, and Rattlesnake Creek. The Eucha / Spavinaw Lakes Watershed encompass roughly 400-square miles, approximately 60-percent of which is located in northeastern Oklahoma with the remainder in extreme northwestern Arkansas.

The study area in Oklahoma lies within the Congressional jurisdiction of Senators James Inhofe and Tom Coburn and Representative Dan Boren (2<sup>nd</sup> District in Oklahoma). In Arkansas, the watershed lies within the Congressional districts of Senators Blanche Lincoln and Mark Pryor and Representative John Boozman (3<sup>rd</sup> District of Arkansas).

The Eucha/Spavinaw watershed continues to experience an accelerating trend of aquatic and terrestrial degradation of habitat. This trend is evident in the declining aquatic habitat of both lakes and is magnified by the existing conditions and associated chemical processes that occur as a result. Both lakes are listed on the Oklahoma 2002 Integrated Report (formerly the 303(d) list) of impaired waters, indicating they fail to meet State-designated beneficial uses, citing low dissolved oxygen and high phosphorus concentrations.

The study team will identify and evaluate the restoration opportunities in Eucha and Spavinaw Lakes, and the portion of Spavinaw Creek between the two lakes. The study will culminate with a recommendation on the best solution to restore

the aquatic ecosystems and the water quality of both lakes. Since the lakes are man-made, it is unlikely that the aquatic ecosystems can be restored to pristine conditions while maintaining the existing benefits they currently provide; however, important opportunities exist that can restore ecosystem functions and processes to create and sustain natural aquatic habitats.

The feasibility study scope is limited to considering in-lake solutions. Recently-adopted efforts by others are underway to begin to address nutrient loading in the watershed. In order to avoid the uncertainties, risk, and cost associated with litigation, the City of Tulsa, Tulsa Metropolitan Utilities Authority (TMUA), corporations of the poultry industry, and the City of Decatur, Arkansas agreed in July of 2003 to settlement conditions aimed at reducing phosphorus loading resulting from poultry operations and point-source discharges in the watershed. The agreement includes development of site-specific, risk-based phosphorus indices (PI) for application of poultry litter on farms, establishment of a watershed monitoring team, a moratorium on litter application until appropriate nutrient management plans (NMPs) are in place for contract grower facilities, upgrade of the Decatur, Arkansas wastewater treatment plant for increased phosphorus removal efficiency, and establishment of a non-profit entity for best management plan (BMP) development.

Implementation of watershed efforts described above should eventually reduce phosphorus loading in the basin resulting specifically from poultry operations and point-source discharges. The result is expected to reduce cumulative loading contributions from these sources. However, agreements do not address in-lake restoration efforts for impacts resulting from cumulative nutrient loading from a variety of non-point sources that ultimately impact ecosystems of Eucha and Spavinaw Lakes.

### **1.2 Peer Review Plan**

The purpose of the peer review plan is to assign the appropriate level and review independence, establish the procedures, and assign responsibilities for conducting the independent technical reviews (ITRs) of all applicable decision documents to ensure the quality and credibility of all decision documents developed during the study. This plan is compliant with EC 1105-2-408 Peer Review of Decision Documents, 31 May 2005, section 6, parts a. through j. This plan was reviewed and approved by SWD in October 2007.

The feasibility cost sharing agreement between the Tulsa District and the city of Tulsa, Oklahoma was executed on June 30, 2004. The study is cost shared \$303,500 Federal and \$303,500 local. The sponsor share of the study cost is a mix of cash and in-kind services. Federal funding was suspended during FY06 and

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work by Tulsa District was delayed until additional Federal funds were received in May 2007 for the 2007 fiscal year.

The project delivery team is presented in Table 1. The project manager is the main point of contact at Tulsa District for more information about this project and the peer review plan.

**TABLE 1.**  
**FEASIBILITY PHASE PROJECT DELIVERY TEAM**

<u>Discipline-Team Member</u>	<u>Office/Agency</u>
Project Manager-	CESWT-PP-C
Planning Center of Expertise-	CEMVD
Program Analyst-	CESWT-PP-C
Plan Formulation-	CESWT-PE-P
Report Formatting/Editing-	CESWT-PE-P
NEPA Coordinator-	CESWT-PE-E
Cultural Resources-	CESWT-PE-E
Environmental Engineering	Contract
Biology/ Limnology-	CESWT-PE-E
Civil Design-	CESWT-EC-DC
Mapping/GIS/Modeling-	CESWT-PE-E
Hydraulics & Hydrology	Contract
Cost Engineering-	CESWT
Real Estate-	CESWT-RE
Office of Counsel-	CESWT-OC
Sponsor	City of Tulsa

## 2. PROJECT SIGNIFICANCE

The Feasibility Report and Environmental Assessment are not likely to develop or contain influential scientific information or to be an influential scientific assessment. Therefore, the documents (i.e the Draft Feasibility Report, Technical Appendices, and Environmental Assessment) will only be reviewed by an ITR team. An external peer review will not be conducted.

A waiver will be requested in lieu of the Value Engineering Study. The proposed plan is expected to use established, off-the-shelf technologies and to be less than \$10 million for the first cost.

### 3. REVIEW SCHEDULE

Early formulation efforts have focused on evaluating existing documents and screening applicable restoration measures to determine the direction of the remainder of the study. The Feasibility Scoping Meeting support document review was completed by an ITR team at SWF in January 2006. Future study documents (Environmental and civil engineering design, with project conditions for final alternatives, CE/ICA, AFB documents, draft report, Environmental Assessment) will be reviewed by a team approved by the PCX. Table 2 is the schedule.

**TABLE 2.  
SCHEDULE**

<b><u>Task</u></b>	<b><u>Start Date</u></b>	<b><u>End Date</u></b>
Sign FCSA	30-Jun-2004	30-Jun-2004
ITR-FSM Document	15-Nov-2005	25-Jan-2006
Scoping Meeting	12-Mar-2007	12-Mar-2007
Feasibility Scoping Meeting	29-Mar-2007	29-Mar-2007
ITR-AFB Document	5-May-2008	16-May-2008
Alternative Formulation Briefing	23-Jul-2008	23-Jul-2008
ITR-Draft Report	22-Aug-2008	18-Sep-2008
Public Review	5-Aug-2008	5-Sep-2008
Division Engineer's Transmittal	30-Sep-2008	30-Sep-2008
HQUSACE Policy Review	1-Oct-2008	11-Nov-2008
CWRB	12-Nov-2008	21-Nov-2008
Chief's Report	22-Nov-2008	23-Dec-2008

### 4. EXTERNAL PEER REVIEW

An external peer will not be conducted as the study is not likely to develop or contain influential scientific information and is not expected to be an influential scientific or controversial assessment.

### 5. PUBLIC REVIEW OPPORTUNITIES

The public has been invited to comment directly to the PDT through the public scoping meeting, which was held on March 12, 2007. A public review of the draft EA is included in the feasibility schedule. A public review of the final EA and feasibility report will not be conducted unless the final document is significantly different from the draft, which is not expected.

## **6. AVAILABILITY OF PUBLIC COMMENTS TO ITR TEAM**

Public input from the NEPA workshop will be available to the ITR members. However, the draft EA will be independently reviewed prior to the public comment period, and, therefore, these comments will not be available to the ITR members. In the event that the final EA and report is significantly revised from the draft, another ITR will be scheduled and public comment on the draft will be available to the reviewers.

## **7. ANTICIPATED NUMBER OF REVIEWERS**

For future efforts, the ITR team is to include 4 to 6 independent reviewers. This number is based on the disciplines required to develop the feasibility products and the draft and final EA and feasibility report. The review cost is limited to \$20,000 for the total effort. The final Cost Estimate will be reviewed by the NWW Cost Estimating Directory of Expertise.

The study is not addressing precedent setting environmental problems. There is no controversy or significant social effects surrounding the study. The measures considered are all widely applied. The level of risk is similar to any ecosystem restoration study in that ecosystem response to restoration methods is often difficult to predict.

## **8. PRIMARY DISCIPLINES AND EXPERTISE NEEDED FOR THE ITR**

The proposed ITR team members are presented in Table 3. The following expertise is needed: Plan Formulation, Water Quality, Limnology, Incremental Cost Analysis, Civil or Structural Design, Hydrology and Hydraulics. The Review Team leader has expertise in aquatic ecosystem quality parameters, limnology, water quality, and restoration of degraded reservoirs. The Plan Formulation/Economics team member is a senior planner and economist. The remaining team members will be selected by the team leader based on expertise and availability.

**TABLE 3**  
**PROPOSED INDEPENDENT TECHNICAL REVIEW TEAM**

<u>Discipline</u>	<u>Reviewer</u>	<u>Office</u>
Review Team Leader		CENWK-PM-PR
Plan Formulation /Economics		CENWK-PM-PF
Biological Analysis		CENWK-PM-PR
Civil Design		CELRN
Hydrology & Hydraulics		CELRN
Real Estate	TBD	CENWK
Cost Engineering	TBD	CENWW-EC-X

The review was selected on the basis of having the proper knowledge, skills, and experience necessary to perform the task and their lack of affiliation with the development of the study.

Technical reviewers will use appropriate analytical methods for each technical area. Technical review will rely on periodic technical review team meetings to discuss critical plan formulation or other project decisions, and on the review of the written feasibility report documentation and files. Independent technical review will ensure that:

- the feasibility report and EA are consistent with current criteria, procedures and policy
- clearly justified and valid assumptions that are in accordance with established guidance and policy have been utilized, with any deviations clearly identified and properly approved
- concepts, features, analytical methods, analyses, and details are appropriate, fully coordinated, and correct
- problems/issues are properly defined and scoped
- conclusions and recommendations are reasonable.

All review will be completed through **DRCHECKS** where comments and comment resolution are captured.

## 9. EXTERNAL PEER REVIEWERS

An external peer review will not be conducted as the study is not likely to develop or contain influential scientific information and is not expected to be an influential scientific or controversial assessment of the conditions in Spavinaw or Eucha Lakes. The expected implementation cost is \$6 to \$10 million.

## **10. PUBLIC SELECTION OF PEER REVIEWERS**

Public recommendation or selection of ITR or other reviewers is not anticipated at this time.

## **11. USE OF MODELS**

Alternative evaluation will be based on the increased volume of oxygenated water produced by each alternative over the base condition. This approach was discussed with the HQUSACE team during the FSM. The method for determining output volume for the measures depends on the type of measure. The output from measures involving operational changes is based on the hydrologic budget of the reservoir. The output from aeration or mixing measures is based on the specifications of typical equipment available on the market and the reservoir morphology.

IWR-PLAN will be used to perform cost effectiveness and incremental cost analysis (CE/ICA). The output will be acre-feet of oxygenated water. IWR-PLAN is the preferred mechanism for performing CE/ICA on ecosystem restoration studies. The model will not be modified for use on this study and so should not need certification.

The USFWS Habitat Suitability Models for the gizzard shad (forage fish) and largemouth bass (piscivorous fish) are the specific models being considered to further refine and quantify outputs on the selected plan. The models will not be modified for use on this study. These USFWS published HSI models are approved for use.